

0 NORTHERN TELECOM
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PRACTICE 297-1001-450
RELEASE 28.01
ISSUED 19931203

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DIGITAL SWITCHING SYSTEM

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DMS-100* FAMILY

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PROVISIONING

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* DMS-100 is a trademark of Northern Telecom Limited

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0 DMS-100 FAMILY PROVISIONING

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0 PREFACE

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Preface

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0 General

0 This practice describes the rules and guidelines for provisioning the
0 DMS-100 Family switching machine, its components and its features.

0 The DMS-100 Family of digital multiplex switching systems consists of
0 a series of modular, software-controlled, digital central office
0 switches, providing local and/or toll service with a variety of op-
0 tional features. The particular package of services and features,
0 specified by the customer, is assembled by selecting types and quanti-
0 ties of hardware and software modules from the DMS-100 Family range of
0 products. The following basic types and capacities of switches are
0 available:

0 (a) DMS-100 A local central office, having a capacity of 1500 to
0 more than 100,000 subscriber lines.

0 (b) DMS-200 A toll central office, capable of handling from 400
0 to 60,000 trunks of various types.

0 (c) DMS-100/200 A local and toll central office, handling combina-
0 tions of subscriber lines and trunks, within the
0 ranges of (a) and (b) and as specified by the cus-
0 tomer.

0 (d) DMS-300 An International (Gateway) switching center capable
0 of handling up to 25,000 international trunks.

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0 Practice Application

0 The information contained in this practice is applicable to offices
0 having Batch Change Supplement Release 36 (BCS-36) software.

0 It is also applicable to offices having a BCS release greater than
0 BCS-36 unless reissued. The application of all Northern Telecom Prac-
0 tices (NTP) editions with respect to a given BCS release is given in
0 297-1001-001.

0 The information contained in this NTP is subject to change since
0 Northern Telecom reserves the right, without notice, to make changes
0 in equipment design or components as progress in engineering or manu-
0 facturing methods may warrant. Such changes will be reflected in sub-
0 sequent issues of this NTP.

0 Reason For Reissue

0 This practice has been reissued to reflect the following changes in
0 format and organization:

0 Change	Description
0 -----	-----

0 1	- The existing sections on hardware provisioning have been 0 re-sequenced to conform more closely to the provisioning 0 (direct order) sequence. As a result, the document is 0 now divided into 29 chapters, and some material is 0 repeated in chapters where the provisioning process 0 overlaps.

0	The intent of these changes is to make individual chapters 0 more useful and complete, reducing the need for extensive 0 reading in multiple chapters during any one phase of the 0 provisioning process.

0 2	- Material on BCS Gating Requirements has been added in Appendix 0 A of this book.

0 3	- The Traffic Provisioning material has been moved to Appendix 0 B of this book.

0 4	- The Software Reference section has been moved to Appendix S.

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0 (1 MAP is a trademark of Northern Telecom.)
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0 5 - The content of the NTP450 was previously created using a manual
0 extract from the provisioning-related content of the Engineering
0 Change Memoranda (ECMs). Effective this issue, this
0 content is being extracted AUTOMATICALLY from the latest closed
0 issues of ECMs. This automatic extract will guarantee that
0 the information in the NTP450 reflects the most up to date
0 provisioning information available at the NTP release date.
0 However, ECMs in older formats cannot be automatically
0 extracted, and must be updated before they can be included
0 automatically. A transition process will therefore be required.

0 To avoid any possible loss of content during this transition
0 process, we have preserved the previous contents of some of
0 the NTP450 chapters, and have added new material to them.
0 You will probably notice some duplications of material
0 until we have finished streamlining these chapters over
0 the next few issues.

0 6 - Building Blocks provisioning information is now
0 included automatically in the NTP content.

0 PLEASE NOTE: THIS PRACTICE WILL BE UNDERGOING EXTENSIVE
0 REORGANIZATION AND REVISION OVER THE NEXT 4 BCS
0 CYCLES.

0 No changes in hardware provisioning have been added since the previous
0 release of this document. Change bars ('|') mark the changes found in
0 this document.

0 Software Identification

0 Software applicable to a specific DMS-100 Family office is identified
0 by a BCS release number and by Northern Telecom (NT) Product Engineer-
0 ing Codes (PEC).

0 A display of the BCS number and PEC for the NT feature packages avail-
0 able in a specific office can be obtained by entering the command
0 string:

0 PATCHER;INFORM LIST;LEAVE

0 at a Maintenance and Administration Position (MAP¹).

0 (1 MAP is a trademark of Northern Telecom.)
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0 References

0 References listed as prerequisites are essential for an understanding
0 of this practice. Those listed as informative contain detailed infor-
0 mation concerning other items mentioned in this practice, but are not
0 essential. References are inserted at the appropriate places in the
0 text.

0 NOTE: The documents listed may exist in more than one version.
0 See 297-1001-001 and GFXINDEX to determine the release
0 code of the version compatible with a specific release
0 of software.

0 Prerequisite References

0 DOCUMENT

0 NUMBER TITLE

0 297-1001-100 System Description

0 Informative References

0 DOCUMENT

0 NUMBER TITLE

0 GFXINDEX General Feature Description Index of Documents

0 297-1001-001 Master Index of Practices
0 297-1001-010 Electrostatic Discharge Protection
0 297-1001-101 Central Control Complex Description
0 297-1001-102 Network Description Types NT0X48 and NT5X13
0 297-1001-103 DMS-100 Family Peripheral Modules
0 297-1001-110 DMS-100 Family Maintenance and Administration
0 Position
0 297-1001-119 Automatic Message Accounting - Northern Telecom
0 Format
0 297-1001-121 Automatic Trunk Testing Description
0 297-1001-122 DMS-100 Family Alarm System Description
0 297-1001-128 Automatic Message Accounting - Bellcore Format
0 297-1001-132 DMS-100 Family Blue Box Fraud Detection Feature
0 Description

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0 297-1001-137 Common Channel Signalling CCIS6 and CCITT6 System
0 Description
0 297-1001-141 Common Channel Signalling 7 Description
0 297-1001-151 Distribution Frame Layout
0 297-1001-152 Trunk Selection and Compatibility
0 297-1001-154 DMS-100 Family Circuit Pack Sparing
0 297-1001-156 Disk Maintenance Subsystem Reference Manual
0 297-1001-157 NT5X64 Series Communication Modules Description,
0 Ordering Information, Operation and Maintenance
0 297-1001-451 DMS-100 Family Common Customer Data Schema
0 297-1001-455 DMS-100 Office Parameters Reference Manual
0 297-1001-471 Service Analysis
0 297-1001-516 Trunks Maintenance Reference Manual
0 297-1001-522 Automatic Board-To-Board Testing Reference Manual
0 297-1001-523 PM Pre-Testing and Cutover Man-Machine Interface
0 Description
0 297-1001-526 Disk Maintenance Subsystem Reference Manual
0 297-1001-527 Digital Recorded Announcement Machine Maintenance
0 Reference Manual
0 297-1101-003 General Feature Description NTX250AA Datapath
0 297-2001-100 Integrated Business Network Services General
0 Description
0 297-2001-101 Integrated Business Network Services Attendant
0 Console Description
0 297-2001-102 Integrated Business Network Services Console
0 Attendant's Manual
0 297-2001-103 Integrated Business Network Services Feature
0 Description

0 297-2011-100 Business Set Feature Description and Operation
0 297-2011-180 Business Set Line Engineering
0 297-2011-200 Business Set General Description, Installation,
0 Maintenance and Ordering Information

0 297-2101-451 DMS-100 Local Customer Data Schema
0 297-2101-516 Line Maintenance Reference Manual

0 297-2111-100 DMS Circuit Switched Digital Data Service

0 297-2121-101 DMS-100 Family Datapath Unit General Description
0 297-2121-226 Data Unit Installation and Maintenance
0 297-2121-228 DMS-100F Datapath - 3270 Network Switched Access
0 With 3194 Distributed Function Terminals Support
0 - Installation and Maintenance

0 297-2131-100 DMS-MTX System Description
0 297-2131-103 DMS-MTX Supplement Peripheral Modules Description

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0 297-2181-451 DMS-100 International Customer Data Schema

0 297-2201-451 DMS-200 Toll Customer Data Schema

0 297-2271-100 DMS-200 TOPS General Description

0 297-2271-101 TOPS Rating System Description

0 297-2271-102 Hotel System Description

0 297-2271-105 DMS-200 TOPS Auxiliary Operator Services System
0 General Description

0 297-2271-450 DMS-200 TOPS Traffic Provisioning

0 297-2271-516 Maintenance Reference Manual

0 297-2271-750 DMS-200 TOPS MP Engineering Reference Manual

0 297-2281-100 DMS-200 TOPS MP General Description

0 297-2281-155 DMS-200 TOPS MP Planning and Engineering

0 297-2281-156 DMS-200 TOPS MP Power Dist and Gnd Systems

0 297-2301-451 DMS-300 Gateway Customer Data Schema

0 297-4101-100 Automatic Call Distribution (ACD) General
0 Description0 297-4101-101 Automatic Call Distribution (ACD) Management
0 Reports Data Stream I/F

0 297-4101-102 Automatic Call Distribution (ACD) Load Management

0 297-4101-300 Automatic Call Distribution (ACD) Feature Operation
0 and Testing

0 450-1061-101 DMS-SCP General Description

0 502-8601-200 Logic 10 Key Telephone Sets

0 502-8751-200 Logic 20 Key Telephone Sets

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0 CHAPTER 1

0 HOST - LINE EQUIPMENT

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Host - Line Equipment
Chapter 1

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0 1.0 Line Concentrating Module

0 1.1 Introduction

0 (i) Line Equipment General Description

0 The new DMS-100 line peripherals consist of two (2) modules - the
0 Line Concentrating Module (LCM) which interfaces with the sub-
0 scriber lines via line cards, and the control module, the Line
0 Group Controller (LGC) or the Line Trunk Controller (LTC), de-
0 scribed in Section 35.

0 DMS Line Concentrating Modules are packaged in Line Concentrating
0 Equipment (LCE) Frames. Each LCE frame accommodates two Ringing
0 Generators and two LCM modules each of which houses two (2) Line
0 Concentrating Array (LCA) shelves. Each LCA shelf accommodates
0 up to five (5) Line Drawers (LD) and each drawer has sixty-four
0 (64) line card slots.

0 The sixty-four (64) line card slots are arranged in four rows of
0 sixteen (16) slots each.

0 The line drawer is functionally divided into two (2) Line Sub
0 Groups (LSG), each with thirty-two (32) line card slots. One LSG
0 is composed of the two lower rows of line card slots and the
0 other is composed of the two upper rows of line card slots.

0 Hence, each LCA shelf within the LCM has, five (5) Line Drawers
0 or ten (10) LSG's. Each LCM, has ten (10) LD's or twenty (20)
0 LSG's. Line Drawers are not numbered. LSG's are numbered from
0 00 to 19 within each LCM. Each LD has an even numbered LSG on
0 the bottom and an odd numbered LSG on the top. The left most LD
0 on the lower shelf has LSG 00 and 01. The right most LD on the
0 lower shelf has LSG 08 and 09. The left most LD on the upper
0 shelf has LSG 10 and 11. The right most LD on the upper shelf
0 has LSG 18 and 19. Each LSG has one cable to the MDF.

0 Each LCM has a physical termination capacity of 640 line card
0 slots. Of these, 639 are available for directory number (DN) as-
0 signment. The remaining card is reserved for LCM testing.

0 Depending on the traffic requirements, each LCM will interface
0 with the LGC or LTC module via two, three, four, five or six
0 speech links. An LCM so configured is referred to as a 2-port
0 LCM, 3-port LCM, 4-port LCM, 5-port LCM, or 6-port LCM respec-
0 tively.

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0 (ii) Multi-Frequency Ringing Generator Types

0 DMS supports standard multi-frequency ringing types as listed in
0 Table 35.3 by means of a switch on the Ringing Generator. Both
0 LCM modules of a given LCE must have the same type of MF ringing.

0 In an office serving more than one MF ringing type, subscriber
0 lines must be segregated by MF type and terminate only on corre-
0 spondingly equipped LCE frames. LCM provisioning must take this
0 into account.

MF TYPE		FREQUENCIES (Hz)
Harmonic		16-2/3, 25, 33-1/3, 50, 66-2/3
Decimonic		20, 30, 40, 50, 60
Synchromonic (16 Hz)		16, 30, 42, 54, 66
Synchromonic		20, 30, 42, 54, 66
NOTE: DMS supports only 4 frequencies in each group. Any four may be selected.		

0 MULTI-FREQUENCY RINGING TYPES

0 Table 35.3

0 (iii) Line Concentrating Device Provisioning

0 Prior to BCS28, the maximum number of LCD line peripherals that
0 can be datafilled on a DMS is equal to 200. There is a minimum
0 of 54 and a maximum of 185 LCDs reserved for Virtual IDs. The
0 combined total LCDs for Virtual IDs and line peripherals is 255.

0 In BCS 28 and 29, the number of LCD peripherals which can be
0 datafilled on a DMS is equal to 255. There are no minimum LCDs
0 reserved for Virtual IDs. The maximum number of LCDs for Virtual
0 IDs is 185. The combined total LCDs for Virtual IDs and line pe-
0 ripherals is 255.

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0 In BCS 30, the following changes are made for the Supernode only:
0 The total combined LCD limit for Virtual IDs and line peripherals
0 is increased to 1000. The maximum number of LCDs for Virtual IDs
0 is 441. The maximum number of allowed RCS devices is increased
0 to 511, while that allowed for the other devices remains at the
0 255 maximum.

0 In summary:

0		Maximum	Minimum	Maximum	*Number of
0		number of	number of	number of	*Number of
0		line per.	Virtual IDs	Virtual IDs	total LCDs
0	BCS27	200	54	185	255
0	and				
0	below				
0	BCS28	255	-	185	255
0	and				
0	BCS29				
0	BCS30	511	-	441	1000
0	(Supernode)				
0	BCS30	255	-	185	255
0	(NT40)				

0 *It is recommended that an office be provisioned only to within 5
0 of the total LCD limit.

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0 Number of LCDs = Number of line peripherals +
0 (# of Virtual IDs on all business and ISDN sets/1024)

0 Where:

0 line peripherals include:

0 LCMs, RLCMs, OPMS (number of entries in LCMINV)
0 LMs (number of entries in LMINV)
0 RCSs (number of entries in RCSINV for BCS 28 and
0 29)
0 (number of entries in RSCINV/8 for BCS 30
0 and above)
0 RCUs (number of entries in RCUINV)
0 RCTs (number of entries in RCTINV)
0 ISLMs (number of entries in ISLMINV)
0 DLMS (number of entries in DLMINV)
0 LDTs (number of entries in LDTINV)
0 VSRs (number of entries in VSRINV-international
0 only)
0 LRUs (number of entries in LRUINV)
0 RDTs (number of entries in RDTINV)
0 IDTs (number of entries in RDTINV)

0 Virtual IDs are assigned to Electronic Business sets
0 (EBS) and ISDN sets as follows:

0 1) One for each directory number

0 2) One for EACH of the following features:

0 CWT - Call Waiting
0 RAG - Ring Again
0 ICM - Intercom
0 GIC - Group Intercom
0 AUL - Automatic Line
0 CAG - Call Agent (ACD)
0 CLSUP - Calling Line Supervisor (ACD)

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0 Host - Line Equipment
0 Chapter 1

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0 3) One if the Business Set has ANY of the following
0 keys:

0 CFW - Call Forwarding
0 MSB - Make Set Busy
0 MWT - Message Waiting
0 QTD - Query Time and Date
0 SPS - Speed Call Short
0 SPL - Speed Call Long
0 EMK - Emergency Key
0 AAB - Auto Call Back
0 MMI - Man Machine Interface
0 TME - Terminal Management Key
0 AUD - Auto Dial
0 INSPECT - Inspect Key
0 ACDNR - ACD Not Ready
0 UC DLG - UCD Login

0 1024 represents the maximum number of virtual IDs that
0 can be stored on one LCD.

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0 1.1.1 Host Office With Unique LCE/LCM Numbering Option

0 With this option, the LCE/LCM numbering can be unique per site or
0 per office (i.e. host and all remote sites).

0 If the RLCM/LCM or LCE/LCM numbering is unique per remote site,
0 then the numbering will start with RLCM 00 LCM 00 0 or LCE 00 LCM
0 00 0 respectively for each remote site.

0 If the RLCM/LCM or LCE/LCM numbering is unique per office, then
0 the numbering will be contiguous to the LCE/LCM's in the host of-
0 fice.

0 If the remote site already has RLM's, then the RLCM/LCM or
0 LCE/LCM numbering will be contiguous to the RLM frame/RLM bay
0 number of this site.

0 If the remote site already has RLCM's or RSC's, then the RLCM/LCM
0 or LCE/LCM numbering will be contiguous to the existing RLCM/LCM
0 or LCE/LCM numbering of this site.

0 If the host office already has LME's, then the LCE/LCM numbering
0 will be contiguous to the existing LME frame/LM bay number of
0 this host office.

0 Once the numbering option has been chosen, it cannot be changed
0 at a subsequent extension.

0 If the Line Equipment Numbers (LEN) (i.e. for LM, RLM, LCM) will
0 be unique per office, in order to have sequential (contiguous)
0 LEN numbers for the host office and each remote site, the cus-
0 tomer may reserve groups of numbers for future growth in the host
0 and each remote site (i.e. gaps are allowed in the numbering).

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0 1.1.2 Line Cards

0 (a) General Description

0 The line card provides circuitry for one (1) subscriber line.

0 (b) Reference

0 Chapter 3, Section 3.7 Office Maintenance
0 Section 3.8 Office Miscellaneous

0 (c) Provisioning Considerations:

0 (i) Line circuit quantities are determined for the busy sea-
0 son prior to exhaust based on forecasts.

0 (ii) Line cards contain one line circuit each and are avail-
0 able in the following configurations:

0 1. Line Card Type A

- 0 - Plain Ordinary Telephone Service (POTS).
- 0 - supports a single, two-party, and PBX analog tele-
0 phone sets (type 500 or 2500) and provides signalling
0 interface.
- 0 - occupies one (1) line card slot

0 Domestic

- 0 - NT6X17AA--POTS line card.
- 0 - NT6X17AB--POTS line card. For U.S. offices, this
0 line card is to be provided instead of the
0 NT6X17AA.
- 0 - NT6X17AC--Optimized line card.

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0 International

- 0 - NT6X93AA--600 ohm POTS Line Card.
- 0 - NT6X93BA--600 ohm POTS Line Card. Used for Caribbean
- 0 Expansion Project (CEP).
- 0 - NT6X93CA--POTS Line Card for China.
- 0 - NT6X93FA--POTS Line Card for China (Extended Range)
- 0 - NT6X17AA--Used in international applications for
- 0 North American 500 telephone sets and to
- 0 interface attendant consoles.

0 2. Line Card Type B

- 0 - provides all features of the Type A line card plus
- 0 multiparty lines.
- 0 - supports coded ringing, PBX ground start,
- 0 Hotel/Motel, and analog pay telephone sets requiring
- 0 coin control.
- 0 - occupies one (1) line card slot.

0 Domestic

- 0 - NT6X18AA--standard Type B line card.
- 0 - NT6X18AB--provided in offices where +48V method of
- 0 coin fraud prevention is required. It is
- 0 recommended that every Type B line in this
- 0 office that does not require coin fraud
- 0 prevention be equipped with the NT6X18AB.

0 International

- 0 - NT6X94AB--600 ohm line card used for meter pulsing
- 0 coin control or for reversals for coin or
- 0 PBX lines.
- 0 - NT6X94BA--same as NT6X94AB. Used for Caribbean Ex-
- 0 pansion Project (CEP).
- 0 - NT6X94BB--replaces NT6X94BA for BCS-24.
- 0 - NT6X94CA--Same as NT6X94AB. Used for China.

0 The World Line Card (WLC) is a universal type B line
0 card introduced to replace domestic and international
0 type B line cards. The cards it replaces are:

- 0 NT6X33AA - Japan Type A
- 0 NT6X94AB - Turkey, Belize and Guyana
- 0 NT6X94BB - Caribbean
- 0 NT6X94CA - China

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0 NT6X93DA - Morocco
0 NT6X18AA - North America

0 The WLC has software selectable loop current limit
0 characteristics and software selectable automatic
0 loss equalization. The card is capable of adjusting
0 to a wide variety of input and balance impedances.
0 This capability gives the WLC potential for being
0 used in a wide range of market areas, including those
0 not already penetrated by NT.

0 The WLC is designed to work in the LCM, LCME, LCMI,
0 ILCM, RLCM, OPM, SRU, RSC, RSCI, SRSC, XLCM and LCM
0 peripherals.

0 The WLC works with both DTMF and DP units. It is com-
0 patible with CLASS/CMS signalling and MTU equipment.
0 It also has electronic overvoltage protection to im-
0 prove its robustness in hostile environments.

0 Compared with the the line cards it replaces, the WLC
0 has increased reliability due to reduced component
0 count and lower operating temperature which is a re-
0 sult of lower power consumption.

0 The World Line Card Type B may be accommodated by any
0 of the following line drawers:y

- 0 * Line Drawer (Domestic)
0 * ISDN Line Drawer
0 * ISDN Enhanced Line Drawer
0 * Line Drawer (International)

0 Software selectable parameters enable the WLC to re-
0 place existing domestic and international line cards.
0 These parametric variants are held in templates which
0 can be applied from the MAP.

0 Software features required for the WLC are:

- 0 * AE0905 - World Line Card Software Support (BCS33)
0 * AE0896 - World Line Card in the LCM (BCS33)

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- 0 | * AE0945 - WLC in the SRU and LCME (BCS34)
- 0 | * AE0946 - WLC Enhancements - Type A and B (BCS34)
- 0 | * AE0956 - Cutover by DN (BCS 34)
- 0 | * AE1013 - WLC Overvoltage Reporting
- 0 | * TBD - Register Recall Earth and Earth Left
0 | (British Telecom) (BCS TBD).

0 3. Line Card Type C

- 0 - interface for the IBN Electronic Business Set (P-
0 Phone).
- 0 - requires one (1) slot
- 0 - will only support the Business Set
- 0 - NT6X21AB--standard line card. Replaced by NT6X21AC.
- 0 - NT6X21AC--standard line card.
- 0 - NT6X21BC--standard line card modified for A-Law oper-
0 ation. Introduced for U.K. application.

0 4. Line Card Type D

- 0 - provides data transmission interfaces for operation
0 with computer terminals (Data Units).
- 0 - requires two (2) slots
- 0 - will only support the Data Unit
- 0 - NT6X71AA--standard line card. Replaced by NT6X21AC.
- 0 - NT6X71AB--standard line card. Provide for each modem
0 pool member.

0 5. Line Card Type E (NT6X19AA)

- 0 - provides all the features of the Type A line circuit
0 plus a message-waiting lamp driver circuit.
- 0 - message waiting line card requires one (1) slot

0 6. Asynchronous Interface Line Card (NT6X76AA/AC)

- 0 - used in conjunction with an Asynchronous Interface
0 Module (AIM) to interface a user's DTE to the SL-100
0 switch.
- 0 - can be used with equipment (terminals, packet
0 assembler/disassemblers or protocol converters) that
0 uses a compatible RS-422 interface.

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0 The NT6X76AA/AC AILC is a two slot line card similar
0 to regular data unit line cards except that it draws
0 more of the 15V current supply per slot than normally
0 allowed. The total 15V power capability of a line
0 drawer would be consumed by twenty-one (21)
0 NT6X76AA/ACs.

0 If data penetration in an office is equal to or less
0 than 10% (total NT6X71 and NT6X76 cards = or < 10% of
0 total lines), then the NT6X76AA/AC can be treated as
0 a regular 2 slot circuit pack and all remaining line
0 card slots can be provisioned as required. If data
0 penetration exceeds 10%, the NT6X76AA/AC must be
0 treated as a three (3) slot circuit pack to prevent
0 overextending the power supply in a partial failure
0 mode.

0 This line card mix rule is based on 15V power con-
0 sumption only and further consideration must be given
0 to traffic factors.

0 7. Integrated Bit Error Rate Testing (IBERT) (NT6X99AA)

- 0 - provides testing data loops in DMS offices with
0 Datapath features. The IBERT card is NOT a line card
0 in the normal sense as there is no subscriber loop or
0 set associated with it. The only interaction with
0 this card is achieved from a MAP through the
0 DMS/IBERT messaging interface. Refer to Section 3.7
0 for more provisioning information.
0 - requires two (2) slots

0 (iii) For economic reasons the basic line card type should be
0 selected wherever possible.

0 (iv) One Type A line card in slot 00 on line sub group 00 must
0 be provided per LCM to be dedicated for
0 diagnostic/testing purposes when analog ringing is re-
0 quired. This card is not assignable to a subscriber. If
0 analog ringing is not required, this slot is available
0 for subscriber use.

0 (v) At least one line card per equipped LSG is required to
0 enable the Telco to commission and diagnose the Bus
0 Interface Card of each LSG during in service. For LSG 00
0 this means that there will be a minimum of two (2) line
0 cards required (i.e. this requirement is in addition to

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0 LSG 00 line card 00). This card can be assigned to a
0 subscriber.

0 (vi) In addition to the requirement of paragraph (v) above,
0 for each initial and extension office, host or remote
0 site, at least thirty-two (32) line cards must be avail-
0 able in the office in order to enable commissioning of
0 the LSG-MDF cables.

0 (vii) For each modem pool member, provide one (1) NT6X17AB Type
0 A Line Card and one (1) NT6X71AB Type D Line Card. The
0 Type D Line Card can be mounted only in LCM. However, the
0 Type A Line Card can be mounted in either the LCM or the
0 LM/RLM (NT2X17AB is used as the Type A line card on the
0 LM/RLM). For more provisioning information, refer to
0 Section 3.8.

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RINGING FEATURE		LINE CIRCUIT TYPE		
		ANI	A TYPE	B TYPE
SINGLE PARTY				
- 20Hz Bridged or Divided (Ring only)		NA	*	*
- MF Bridged or Divided (Ring only)		NA	*	*
TWO PARTY				
- 20Hz Divided		YES	*	*
- MF Divided		YES		*
- MF Bridged		NO	*	*
FOUR PARTY				
- 20Hz Coded Bridged		NO		*
- MF Divided		YES		*
- MF Bridged		NO	*	*
- Superimposed (Semi-Selective) Divided		NO		*
- Superimposed (Fully Selective) Divided		YES	*	*
EIGHT PARTY				
- 20Hz Coded Divided		NO		*
- MF Divided		NO		*
- Superimposed (Semi-Selective) Divided		NO		*
TEN PARTY				
- 20Hz Coded Divided			*	*

0 LINE CARD FEATURES

0 RESIDENTIAL LINES

0 Table 35.4

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0 0 0 0 0 0	FEATURE	LINE CIRCUIT TYPE		
		A TYPE	B TYPE	B TYPE WITH +48V
0	COIN:			
0	Prepay - Dial Tone First (Loop ST)		*	*
0	- Rotary Dial		*	*(3)
0	- Digitone +48V on ring fraud prevention		*	*(1)
0	- Digitone -48V T/R REV fraud prevention (2)		*	*
0	- Digitone no fraud prevention			
0	Prepay - Coin First (Ground ST)		*	*
0	- Rotary Dial		*	*(3)
0	- Digitone +48V on ring fraud prevention		*	*(1)
0	- Digitone -48V T/R REV fraud prevention (2)		*	*
0	- Digitone no fraud prevention			
0	Semi - Post Pay		*	*

0	PBX:			
0	- Loop Start	*	*	*
0	- Ground Start		*	*
0	- Toll Diversion (4)		*	*
0	- Hotel/Motel (5)		*	*
0	- WAT's & TWX Divided	*	*	*

0 LINE CARD FEATURES

0 COIN & PBX

0 Table 35.5

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0 NOTES FOR TABLE 35.5

- 0 1. When no ground isolation is provided in the coin station, a 900
0 ohm limit applies.
- 0 2. This feature disables the Touch-Tone pad in the coin stations by
0 providing a Tip/Ring reversal on operator connections. This uses
0 the -48V office battery. This feature will be used in the major-
0 ity of offices.
- 0 3. This method provides +48V on the Ring and ground on the Tip dur-
0 ing a reversal condition to disable the Touch-Tone pad in the
0 coin station. A +48V power converter must be supplied.
- 0 4. Indication provided by reverse battery.
- 0 5. Indication provided by reverse battery to PBX message registers.

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0 1.1.3 Line Concentrating Module

0 (a) General Description

0 The Line Concentrating Module (LCM) provides voice and signalling
0 interfaces between 2, 3, 4, 5 or 6 32-channel 2.56 Mb/sec with
0 640 analog subscriber lines. This procedure will determine the
0 number of LCM's needed based on physical and traffic calcu-
0 lations.

0 (b) Reference

0 Chapter 2 Traffic Criteria and Capacities.

0 (c) Provisioning Considerations:

0 (i) LCM provisioning is based on traffic criteria and phys-
0 ical terminations criteria requirements. Traffic criteria
0 requirements are based on ABSBH and HDBH traffic.

0 (ii) Each LCM has 640 line card slots to accommodate the dif-
0 ferent line card types. These line cards are to be
0 spread evenly over all LCM's in the office. Within each
0 LCM, the line cards are to be spread evenly over the
0 LSG's.

0 (iii) One Type A line card must be provided per LCM to be dedi-
0 cated as a test card. This card is not assignable to a
0 subscriber.

0 (iv) The maximum number of IBN Business Set Multiple Appear-
0 ance Directory Number (MADN) members of the same MADN
0 group is eight (8) per LCM.

0 (v) Some special LCM applications characterized by very short
0 subscriber loops and high traffic (such as for example
0 PBX or RLCM on a subscriber's premises) will require ad-
0 ditional engineering attention. NTL should be consulted
0 when provisioning LCM's in such offices.

0 (vi) There is a fifty (50) foot cabling length restriction be-
0 tween the LCM and the LGC/LTC.

0 (vii) Provide LCM Common CP fill as follows:

0 NT6X04AB - Domestic applications.

0 NT6X04BA - International applications.

0 The LCM NT6X04AB can handle up to 256KB of processor mem-
0 ory.

0 The ILCM NT6X04BA can handle up to 64KB of processor mem-
0 ory.

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0 1.1.4 Line Drawer

0 (a) General Description

0 The Line Drawer contains 64 card slots for line cards. This sec-
0 tion may affect the number of LCM's provisioned.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) Each Line Drawer (LD) has sixty-four (64) line card
0 slots.

0 (ii) There are two (2) Line Sub Groups (LSG) per LD. Each LSG
0 has thirty-two (32) line card slots.

0 (iii) Each LSG has one cable to the MDF.

0 (iv) Where DF zoning is employed, the number of LSG's must be
0 an integer multiple of zones. For non-zero DF's let num-
0 ber of zones equal 1.

0 (v) There shall be an equal mix of line cards on all LSG's.
0 Cards are evenly distributed over all LCM's filling up
0 all LSG's evenly.

0 (vi) As a minimum requirement, provide one (1) Power Converter
0 +48V (NT6X23AA) for each Line Drawer which is to be
0 equipped with at least one NT6X18AB card which requires
0 +48V to support its assigned features. For optimum flex-
0 ibility in an office requiring NT6X23AA cards, the stand-
0 ard procedure is to provide one (1) NT6X23AA for each LD
0 equipped with NT6X18AB cards (whether they require the
0 +48V feature or not). This card requires two (2) slots
0 on a line drawer.

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0 (vii) One Message Waiting Converter Card is required in each
0 Line Drawer which could accommodate message waiting line
0 cards; i.e. Type E Line Cards. The Message Waiting Con-
0 verter Card requires two (2) line card slots.

0 (viii) Only one converter card is assignable per Line Drawer.
0 Therefore, Line Card Type E requiring message waiting and
0 Line Card Type B requiring fraud prevention feature can-
0 not co-exist in the same Line Drawer.

0 (ix) One (1) Metering Tone Converter 12 and 16 kHz (NT6X95AB)
0 is provided per line drawer equipped with Type B line
0 cards for meter pulsing control (not required for line
0 drawers with Type B line cards for reversals only). It
0 requires one (1) slot on a line drawer.

0 (x) Since the Asynchronous Interface Line Card (AILC) re-
0 quires 55 mA of +15V power in standby mode and 70 mA when
0 active, it is important to consider an LCM that is heav-
0 ily populated with AILCs. The +15V supply is limited to
0 15A when operating off a single power supply; therefore,
0 this could limit the number of line cards to 23 per line
0 drawer.

0 (xi) The following line cards are mountable on the NT6X05AA
0 Line Drawer:

0 NT6X17AA, NT6X17AB, NT6X17AC
0 NT6X18AA, NT6X18AB
0 NT6X19AA
0 NT6X20AA
0 NT6X21AB, NT6X21AC
0 NT6X23AA
0 NT6X71AA, NT6X71AB
0 NT6X76AA, NT6X76AC
0 NT6X93AA
0 NT6X99AA

0 The following line cards are mountable on the NT6X05BA
0 International Line Drawer:

0 NT6X93AA, NT6X93BA, NT6X93CA, NT6X93FA
0 NT6X94AB, NT6X94BA, NT6X94CA
0 NT6X95AB
0 NT6X98AA

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0 (xii) A maximum of 10 Line Drawer can mount on a LCM. Ensure
0 that an adequate number of LCMs are provided to support
0 the Line Drawers.

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0 1.1.5 PCM-30 Line Drawer (PLD)

0 (a) General Description

0 In the United Kingdom (UK), Mercury Communications Limited (MCL)
0 has defined a standard for POTS line interface multiplexors which
0 is supported on the trunk side of the DMS-250 switch. This con-
0 figuration is limited to small applications because each customer
0 must be assigned a dedicated trunk group for billing purposes,
0 and there is a maximum of 2048 trunk groups per DMS.

0 An alternative configuration is provided by the PCM-30 Line
0 Drawer, which offers two PCM-30 2.048 Mbit/sec interfaces for
0 connecting Type 1 Mercury Exchange Line Multiplexor (MEL MUX)
0 equipment. This equipment is used by Mercury Communications Lim-
0 ited in the UK to interface POTS subscribers. A total of 60 dig-
0 ital lines per drawer can be connected via the two PCM-30 links.
0 MEL Loop Calling and MEL Earth Calling signaling protocols are
0 supported. Since the subscribers are treated as normal line ap-
0 pearances, the trunk group limitation does not apply.

0 The configuration consists of an NT6X05CA PCM-30 Line Drawer
0 (PLD) with one always provided NT6X54AC PLD Bus Interface Card
0 (BIC) and one (1) always provided NT6X27CA PCM-30 Interface Card
0 (PIC). The PIC provides two ports for direct termination of the
0 PCM-30 links.

0 PCM-30 Line Drawers may be assigned to the PRLCM or host LCM/ILCM
0 in any combination with standard line drawers.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) The PLD employs the LCM/ILCM to effect economic concen-
0 tration of line traffic. If the level of traffic per
0 line is sufficiently high, it is more economical to con-
0 nect the PCM-30 links directly to an IDTC, which does not
0 employ any concentration. The total number of lines al-
0 lowed in this configuration is limited by the fact that
0 one trunk group is required per line for billing pur-
0 poses, and a maximum of 2048 trunk groups are allowed in
0 the DMS switch. The initial estimate based on economic
0 considerations is as follows: If total traffic from the

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0 MEL MUX exceeds 270 CCS per PCM-30 link, assign the
0 PCM-30 links to IDTC, subject to the total line quantity
0 restriction (2048). Otherwise, assign the links to
0 PCM-30 Line Drawers.

0 Further, it is assumed that individual MEL MUX sites will
0 be relatively small and therefore it will not be feasible
0 to forecast line growth and traffic levels with accuracy.
0 On the basis of this assumption, each PCM-30 link shall
0 be treated as 30 traffic sources each offering busy hour
0 traffic at the maximum economic level mentioned above;
0 that is, 9 CCS per line.

0 (ii) Provision one (1) PCM-30 link per thirty (30) subscribers
0 homing on a MEL MUX. Provision one (1) NT6X05CA PCM-30
0 Line Drawer for every two (2) PCM-30 links; the NT6X27CA
0 PCM-30 Interface Card and NT6X54CA PLD Bus Interface Card
0 are always provided with the line drawer. Assign the
0 line drawer to the PRLCM or host LCM/ILCM as required.

0 (iii) Telcos often fully equip the LCM/ILCMs with line drawers.
0 Where there are two types of line drawer (regular and
0 PCM-30) to choose from, it is recommended to maintain the
0 same ratio of drawer types across all LCM/ILCMs, while
0 maximizing the traffic on each LCM/ILCM. To determine
0 the optimum configuration and calculate the LCM/ILCM
0 links, use the following method:

0 A = Total number of non-PCM-30 line drawers

0 To calculate this value use standard methods based on
0 line card slot width and 64 slots per drawer.

0 B = Total number of line drawers

0 = A + Number of PLD

0 C = Total number of LCM or ILCM

0 = B / 10 (round up)

0 D = Number of non-PCM-30 line drawers per LCM or ILCM

0 = A / C (do NOT round up or down yet)

0 E = Average line traffic (not including MEL MUXs)

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0 Using standard methods, calculate this value by sum-
0 ming the components of local line traffic (POTS, MDC,
0 Datapath, DIALAN, etc.) and dividing by the number
0 of lines.

0 F = Average line drawer traffic (non-PCM-30)

0 = E * 64

0 G = Actual number of non-PCM-30 line drawers per LCM or
0 ILCM

0 If F is greater than or equal to 540, round up the
0 value calculated in step D (maximum 9); otherwise,
0 round it down (minimum 1). Call the rounded value
0 "G".

0 Note that the number 540 represents the economic
0 level of traffic assumed for MEL MUX lines; that is,
0 9 CCS per line * 30 lines per PCM-30 link * 2 links
0 per drawer. This step maximizes the traffic carried
0 per LCM/ILCM.

0 H = Number of PCM-30 line drawers per LCM or ILCM

0 = 10 - G

0 J = Traffic carried per LCM or ILCM

0 = (F * G) + (540 * H)

0 K = Number of links per LCM or ILCM

0 This is computed using standard LCM Carried Traffic
0 Capacity tables, using the value in step J and the
0 required Grade of Service. The value in step E is to
0 be used when selecting from multiple tables parti-
0 tioned based on CCS/line.

0 (iv) Provide the following software package when the PCM-30
0 Line Drawer is equipped:

0 NTXK00AA PCM-30 Line Drawer

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0 1.1.6 Line Concentrating Equipment (LCE) Frame Provisioning

0 (a) General Description

0 The primary function of this frame is to house Line Concentrating
0 Modules.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) This frame can accommodate four shelves of equipment
0 (i.e. two modules). Modules are filled and numbered on
0 the frame from the bottom up.

0 (ii) Ringing Generators are required to provide analog ring-
0 ing. There are three versions of the Ringing Generators:

0 NT6X30AA for Domestic applications
0 NT6X30AB for U.K. applications
0 NT6X30DA for China

0 (iii) The Business Set and the Data Unit do not require analog
0 ringing.

0 (iv) If required, two Ringing Generators are mounted on the
0 LCE frame.

0 (v) Ringing type and level are set by means of a switch on
0 the Ringing Generator.

0 (vi) Both LCM modules of a given LCE frame must have the same
0 type of MF ringing.

0 (vii) If analog ringing is required for an LCE frame which con-
0 tains only one LCM module, both Ringing Generators are
0 still required.

0 (viii) Normally one Ringing Generator serves one LCM. However,
0 under a failure condition, the remaining good Ringing
0 Generator can serve both LCM's on the frame.

0 (ix) When ISG is being applied to an office, LCE frames and
0 their associated Common Peripheral Controller frame (i.e.

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0 LGE/LTE/RCE/RCME/SME) must be served by the same PDC
0 frame.

0 (x) The minimum packfill for BCS-32/33 is NT6X03RA/RB and
0 NT6X04AA for LCMS.

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0 2.0 Integrated Services Digital Network (ISDN)

0 2.1 Introduction

0 The concept of ISDN is to integrate many different services
0 (voice and data, circuit switched, packet data etc.) onto a sin-
0 gle network to which a user has access through a limited set of
0 multi-purpose user-network interfaces.

0 The services that are offered by the ISDN are defined as bearer
0 services and tele services.

0 Bearer services represent the digital connections used for commu-
0 nication and may be circuit switched or packet connections. Sup-
0plementary bearer services represent different ways of
0 manipulating these connections to provide features i.e. call for-
0 warding etc.

0 Teleservices are higher level services, such as voice or text
0 messaging, which use the bearer services for connections and run
0 messaging protocols over these connections to control the service
0 operation.

0 Users have access to these services through two multi-purpose
0 user-network interfaces: Basic Rate Interface (BRI) and Primary
0 Rate Interface (PRI).

0 Basic Rate Interface

0 ISDN Basic Rate Interface (BRI) is provided to the subscriber via
0 the ISDN LCM, U-ISLC and NT1. This is designated as 2B+D, with
0 the B1 and B2 channels each consisting of 64 kbps data, and the D
0 channel consisting of 16 kb data and signalling. A further 16
0 kbps bandwidth is used between the U-ISLC and the NT1 for mainte-
0 nance and framing purposes. Either of the two 64 kbps B channels
0 may be used for circuit-switched voice, circuit-switched data or
0 packet-switched data, with associated signalling being performed
0 on the common 16 kbps D-channel. Low-speed packet data, together
0 with its associated signalling, may also be sent on the D chan-
0 nel.

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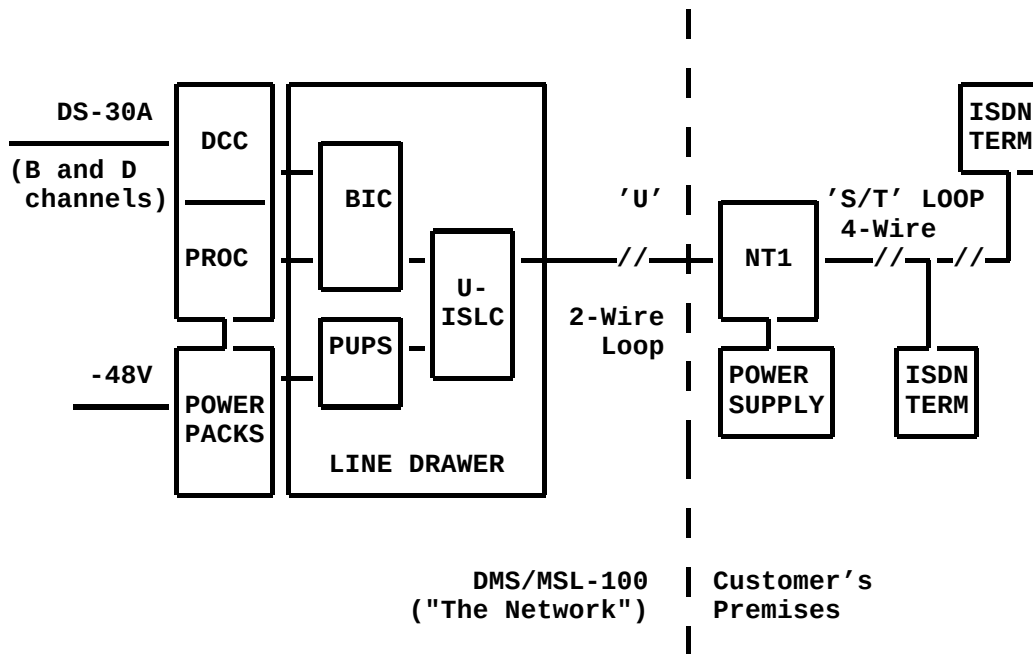
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Key:

- DCC - ISDN LCM Digroup Controller
- PROC - LCME Processor
- BIC - Bus Interface Card
- PUPS - Point of Use Power Supply
- U-ISLC - U-loop ISDN 2B1Q Line Card

Figure 316.1:

ISDN Basic Rate Interface via the LCME, U-ISLC, and NT1

The ISDN 2B1Q Access Subsystem represents Northern Telecom's first product offering that supports the American National Standards Institute (ANSI) standard ISDN 2B1Q (Two Binary One Quarternary) U-loop interface. It is deployed as an enhancement of the current Phase 1C ISDN offering, which supports the AMI (Alternate Mark Inversion) U-loop interface. The 2B1Q Access Subsystem will be subtended from a DMS-100/MSL-100 LTCI/LGCI or RSCI peripheral. It will provide access for most existing LCM line types plus ISDN 2B1Q-U and ISDN S/T.

The ISDN 2B1Q Access Subsystem will offer the North American Standardized 2B1Q U Loop ISDN Basic Rate Interface (BRI) from an enhanced capacity ISDN LCM (LCME). The LCME is basically a LCMI that has been utilized for 2B1Q interface. It will offer S/T

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0 ISDN services in BCS-31 and continue to offer EBS (P-Phone),
0 Datapath, S/T ISDN and POTS services in BCS-32. The 2B1Q (2 Bi-
0 nary, 1 Quarternary) Access Subsystem will not support the AMI
0 line card.

0 The ISDN 2B1Q Access Subsystem adds the following components to
0 the LCME:

- 0 - A single slot 2B1Q U-Loop ISDN line card (U-ISLC).
- 0 - A new high capacity line drawer.
- 0 - A new Enhanced Bus Interface Card.
- 0 - New ISDN LCM power packs.

0 The 2B1Q line card will be used in both host and remote lo-
0 cations.

0 The 2B1Q line drawer will accomodate 60 single slot line cards,
0 with eight (8) line drawers per LCME. Thus the LCME will support
0 480 single slot 2B1Q lines.

0 Primary Rate Interface

0 For the CPEI configured as a DTCTI, the PRI interface offers 479B
0 + D channels.

0 Primary Rate Interface may also be structured as eB + fD where e
0 = 0 to g, f = 0 to (24-g), g = 0 to 23.

0 For PRI, both B-channel and D-channel bandwidths are 64 Kbps.

0 The PRI links will be used for applications such as connecting
0 PBXs to the DMS-100 switch.

0 The current definition of the INWATS service in Canada does not
0 allow it to be supported on PRI. By definition (i.e. Service
0 Regulations), INWATS service currently must terminate on dedi-
0 cated incoming only lines.

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0 System Overview

0 For the implementation of Basic Rate Interface (reference Figure
0 316.2), access termination for the 2B+D lines is furnished by the
0 ISDN LCM and ISDN line cards.

0 The Peripheral Controller for the ISDN LCM has the capability of
0 handling the D channel. The configuration that has been phased
0 out used the Integrated Access Controller (IAC) which has an LTC
0 combined with a Message Switch Buffer (MSB) and Signalling Termi-
0 nal (ST) cards to handle the D channels. The D channel handler
0 capability is now integrated into the standard Peripheral Con-
0 troller, which for ISDN is called the ISDN Common Peripheral Con-
0 troller, or CPEI. The CPEI frame is named LGEI, LTEI, or DTEI
0 depending on the access modes supported (BRI, PRI, etc.). The
0 CPEI frame is named DTE when the non-ISDN DTC module is used on
0 the frame.

0 Effective BCS-32, all IACs in an office must be replaced with
0 LGCI/LTCI or LGC/LTC modules with ISDN capabilities prior to ac-
0 cepting a BCS-32 or above load.

0 Access to the packet network to accomodate user packet data is
0 furnished via DS-1 (B8ZS) clear 64 Kbps connection from the CPEI
0 to the Packet Handler (PH) equipment. The packet handler equip-
0 ment is based on Digital Packet Network (DPN) technology.

0 Customer Premise Equipment (CPE) is required to interface the
0 customer's terminals to the ISDN line. The NT1 is available to
0 interface the standard ISDN 'S/T' interface to the 2 wire 'U'
0 interface line card. A Digital Phone based on NT's Meridian
0 product enables PCM voice services using a B channel. The phone
0 will be marketed in Canada as the T2317C and in the US as M5317T.
0 Terminal Adapters (TA) are available to allow the connection of
0 IBM PCs to the 'S/T' interface. Under development are interfaces
0 to be used with dumb ASCII terminals. An M5317T/T2317C with a
0 personal computer provides an integrated voice and data work sta-
0 tion.

0 The S/T interface is a 4-wire digital bus supporting multiple
0 terminals per loop (8 terminals maximum - 2B + 6D) requiring bus
0 termination built into the NT1 (switchable) or external. Termi-
0 nals are identified by a logical terminal number (LTID) for each
0 terminal on the switch. The LTID must be unique for each termi-
0 nal. Within each loop a Terminal End-point Identifier (TEI) is
0 used to differentiate messaging. These must be unique within the
0 loop. There can be up to 16 logical TEI per BRI interface.

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0 Line Concentrating Device Provisioning

0 Prior to BCS28, the maximum number of LCDs allowed in an office
0 was 254 with the maximum number of real LCDs limited to 200.
0 Changes in BCS 28 allow up to 254 real LCDs. The use of virtual
0 LCDs will lower the number of real LCDs allowed. For BCS30 and
0 above, the calculation of LCDs per SLC will be changed to 8 SLCs
0 per real LCD.

0 The ISLM is considered a real line module in the LCD provision-
0 ing. Refer to the Line Concentrating Module, Section 450/35, for
0 more information.

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0 2.2 Features

0 None.

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0 2.3 Equipment Provisioning

0 2.3.1 ISDN Line Controller Equipment

0 (a) General Description

0 For the implementation of Basic Rate Interface, access termination for the 2B+D lines is furnished by the ISDN LCM. Each module houses eight line drawers each of which can support forty-eight line cards. The primary function of the LCEI is to support ISDN line cards. The ISDN Line Concentrating Equipment Frame is a standard DMS frame which houses two dual shelf LCMI modules. The LCEI is an evolution of the standard LCE frame.

0 The ISDN LCM will be allowed from 2-18 DS-30A links to the serving CPEI. The ISDN-LCM may have up to:

- 0 - 160 ISDN 'U' line cards, or
- 0 - 192 ISDN 'S/T' line cards, or
- 0 - 384 Business Set Line Cards, or
- 0 - 192 Data Line Cards, or
- 0 - 384 POTS Line Cards, or some combination of the above line cards. It is structured similar to the standard LCE frame.

0 The 'U' line card interfaces to standard 2-wire outside plant for connection to the NT1 at customer premises. NTB27AA is the new ISDN 2B1Q U Line Card which replaces the AMI U Line Card NTB25AB. The 2B1Q U-interface will be supported through the use of the NTB27AA. The 2B1Q line card NTB27AA is used in the high capacity 2B1Q line drawer for host and remote locations.

0 In BCS-28, an 'S/T' line card will be introduced which does not require an NT1. It will interface directly to the 4-wire S/T interface, with a restricted loop range. The S/T line card is only intended for applications where a remote system or Private Branch Exchange (PBX) is located in the customer premise. If the S/T line card is to be engineered in a C.O. environment where it will interface to outside plant wiring, overvoltage protection that meets the requirements of LSSGR Bell Communications Research (Bellcore) Spec TR-TSY-000057 First Level Surge Tests must be used.

0 'U' and 'S/T' line card types can be mixed within a line subgroup.

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0 (b) References

0 Chapter 2 Traffic Criteria and Capacities
0 Chapter 3, Section 3.5 Peripheral Modules - Host
0 System Engineering Bulletin (SEB) 88-10-001

0 (c) Provisioning Considerations

0 (i) ISDN Enhanced Line Concentrating Module (LCME)

0 The LCME is a new peripheral module and is numbered the
0 same as already existing LCM/LCMIs. The number assigned
0 to each LCM/LCMI/LCME must be unique. The individual
0 modules in a frame will be numbered from the bottom up.

0 The discrimination numbering of frames must also be
0 unique. LCE and LCEI frames should be numbered sequen-
0 tially. If LCE 00 - 11 exist in an office and an LCEI is
0 added, it should be numbered LCEI 12 and the next frame
0 would continue the numbering consecutively.

0 There are eight (8) drawers per LCME with a maximum of 18
0 DS30A links per LCME. Refer to Figure 316.3 for a layout
0 of the LCME and the numbering of line drawers existing in
0 it.

0 One (1) LCME and one (1) LCMI can coexist on the same
0 LCEI frame (for field retrofit only).

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LINE DRWR 4	LINE DRWR 5	LINE DRWR 6	LINE DRWR 7	D C C 1	D C C 0	P R C 0	6 X 5 3 C A	B X 7 2 A A	LCAI 1
LINE DRWR 0	LINE DRWR 1	LINE DRWR 2	LINE DRWR 3	D C C 1	D C C 0	P R C 0	6 X 5 3 C A	B X 7 2 A A	LCAI 0

LINE DRWR -ISDN Enhanced Line Drawer NTB32BA
DCC 0/DCC 1-ISDN LCM Digroup Controller NTB35AA
PROC -ISDN Enhanced LCM Processor NTB34BA
6X53CA -ISDN LCME Power Converter NT6X53CA
BX72AA -ISDN LCME Battery & Ring Router NTB72AA

Figure 316.3: LCME Module

ISDN AMI Line Concentrating Module (LCMI)

Provide one LCMI module to accommodate up to 160 ISDN U Line Cards, or 192 ISDN S/T Line Cards, or a mixture of U Line Cards, S/T Line Cards, Business Set, Data and POTS Line Cards as detailed below.

- (ii) The ISDN 2B1Q Line Drawer NTB32BA will not support AMI line cards. The ISDN AMI Line Drawer NTB32AA will not support 2B1Q line cards.

There is no mixing of NTB32BA and NTB32AA line drawers allowed within an ISDN LCM module.

- (iii) Service Mix

The 2B1Q Access Subsystem will support many line card types. The list below summarize which are and are not supported.

The 2B1Q Access Subsystem will support the following line card types:

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- 0 1. POTS Type A line cards (NT6X17AA/AB/AC).
0 2. Datapath Data line cards (NT6X71AA/AB).
0 3. Datapath Asynchronous Interface line card
0 (NT6X76AA/AC).
0 4. Datapath IBERT line card (NT6X99AA).
0 5. EBS P-Phone line card (NT6X21AC).
0 6. Message Waiting POTS type line card (NT6X19AA).
0 This card requires a power converter line
0 card (NT6X20AA) to function.
0 7. ISDN S/T-Interface line card (NTBX26AA). This
0 card offers a digital 4-wire ISDN S/T
0 Interface for ISDN services.
0 8. ISDN U-Interface (2B1Q) line card (NTBX27AA).
0 This card offers a digital 2-wire ISDN U
0 Interface for ISDN services.

0 The 2B1Q Access Subsystem will not support the following
0 line card types:

- 0 1. POTS Type B line cards (NT6X18AA/AB).
0 2. ISDN AMI U-Interface line cards (NTBX25AA/AB).

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Line Capacity

Line Card Type	AMI LCMI	2B1Q LCME
ISDN 2B1Q U-I/F	0	480
ISDN AMI U-I/F	160	0
ISDN S/T I/F	192	240
POTS Type A	384	480
POTS Type B (ANI/COIN)	0	0
POTS Message Waiting	376	472
EBS (P-Phone)	384	480
Datapath Data Line Card	192	240
Datapath AILC Line Card	192	208
Datapath IBERT Line Card	1	1

Table 316.1: Line Capacities for the 2B1Q ISDN LCME

Powering for a full frame of 2B1Q U ISDN Line Cards, EBS Line Cards, POTS Line Cards, Data Line Cards, or S/T ISDN Line Cards is provided.

Power limits the NT6X76AA Asynchronous Interface Line Card to 26 per drawer. The NT6X76AC AILC has no greater current limit than a regular 2-slot line card; therefore, there is no limit to the provisioning of the NT6X76AC (maximum 30 per drawer).

(iv) LCME Line Card Distribution

In BCS-31, the LCME will support only ISDN lines.

In BCS-32 (and beyond), any of the line cards supported can be mixed with any other line card at the drawer of logical subgroup level. However, if there is more than eight (8) S/T-Interface line cards in the same row as POTS line cards, then the POTS line cards will NOT stay in-service on PUPS failure. The Data Line Cards cannot be mounted in the five line card position (slots 18 to 26) in the top LSG next to the PUPS line card. It is permitted to mount the Data Line Card in the lower LSG directly under the PUPS. Refer to Chapter 3, Section 3.5 for more information on the non-ISDN line cards and their provisioning rules.

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0 The LCME provides flexible Time Division Multiplexing
0 (TDM) groups. This enables an ISDN line to be placed
0 anywhere in a drawer. Any four ISDN lines from the same
0 physical drawer can belong to the same TDM group subject
0 to rule that lines in a particular TDM group must come
0 from the same physical drawer.

0 D-channels from line cards within one physical drawer
0 will be multiplexed together in any manner. D-channels
0 from line cards in different physical drawers will not be
0 multiplexed together.

0 (v) LCMI Line Card Distribution BCS-28 (and up)

0 In BCS-28, S/T line cards can be assigned to the ISDN
0 line drawer. Any combination of U and S/T line cards is
0 permitted within a drawer as long as the respective lim-
0 its of 20 U loops and/or 24 S/T loops is not exceeded.

0 Up to 384 POTS lines can be equipped in BCS-28 subject to
0 the assignment rules for mixing ISDN loops and non-ISDN
0 lines described in the above point.

0 (vi) LCMI Line Card Distribution BCS-27

0 Mixed ISDN, Business Set and Data line types are sup-
0 ported within the physical line drawer starting from
0 BCS-27 with the only restriction that ISDN lines may not
0 be mixed in the same line subgroup. Business Set and
0 Data line types can be mixed within the same line sub-
0 group as required.

0 Assign the Business Set and Data line cards as follows:

0 1) When all of the ISDN line cards have been spread, the
0 unused line sub groups (if there are any) may be used
0 for Business Set line cards and Data line cards.
0 Business Set line cards are limited by power dissipa-
0 tion when mixed within a physical drawer with ISDN
0 line cards.

0 If Business Set and Data line cards are to be mixed
0 in a Line Drawer with ISDN line cards then the maxi-
0 mum number of slots that may be equipped is given un-
0 der "maximum # of slots in mixed drawer". This limit
0 is based on the most efficient multiplexing of D
0 channels.

0	ISDN 'U'	Max. Business Set	Maximum Data	Maximum # of
0	Loops in	Line Cards	Line Cards	Slots in
0	Drawer	in Drawer	in Drawer	Mixed Drawer
0	20	0	0	0
0	16	8	8	8
0	8	30	16	30
0	0	48	24	48

0 An additional limit is imposed by power consider-
0 ations in mixing line types. The following table
0 summarizes the configurations which satisfy both
0 physical and power constraints at the module level:

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Number of ISDN BLD	Number of Non-ISDN BLD	Total Number of ISDN Loops per LCMI	Total Number of Single Slot Non-ISDN Lines per LCMI
0	6 (BLD 1-6)	0	384
1 (BLD 1)	5 (BLD 2-6)	24 28 32	320 316 308
2 (BLD 1, 4)	4 (BLD 2, 3, 5, 6)	52 56 60 64	256 252 240 232
3 (BLD 1, 3, 4)	3 (BLD 2, 5, 6)	80 84 88 92 96	192 182 172 164 156
4 (BLD 1, 3, 4, 6)	2 (BLD 2, 5)	104 108 112 116 120 124 128	128 124 116 108 96 88 77
5 (BLD 1, 2, 3, 4, 6)	1 (BLD 5)	132 136 140 144 148 152 156	64 60 48 40 28 20 12
6 (BLD 1-6)	0	160	0

Table 316.2: ISDN Module Configurations

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0 2) If IBERT line card is to be equipped, assign it to
0 slot 0 of first line sub group which is to be used
0 for Business Set and/or Data Line Cards. If the LCMI
0 is full with other line card types, the IBERT line
0 card may be located in another line module in the
0 same office.

0 3) Equip the single slot Business Set line cards start-
0 ing at slot 0, 8, 1, 9, 2, 10, 3, 11, 4, 12 etc.

0 4) Equip the 2-slot Data line cards after all of the
0 Business Set line cards have been spread starting at
0 slot 7, 6, 5, 4, etc.

0 5) Continue until all of the remaining D line cards have
0 been assigned.

0 (vii) LCMI Line Card Distribution BCS-26

0 The ISDN line cards each interface one 16 Kbps 'D' chan-
0 nel. Four of these 'D' channels are multiplexed into one
0 DS-0 channel in the LCMI. Four 'D' channels will then
0 occupy one DS-0 channel to the host.

0 The four channels that are multiplexed together are se-
0 lected by a fixed mapping scheme from a Block of Logical
0 Drawers (BLD). The D channel time division multiplexing
0 is done by combining the D channel from the same slot in
0 four line sub groups (logical drawers). For example, the
0 D channels from slot 0 LSG0, slot 0 LSG 1, slot 0 LSG6
0 and slot 0 LSG 7 are combined. The BLDs are as shown be-
0 low.

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BLD LINE SUB GROUPS

BLD	LINE SUB GROUPS	TOTAL 'U' LINE CARDS	TOTAL 'S/T' LINE CARDS
1	0, 1, 6, 7	32	32
2	2, 3, 8, 9	16	32
3	4, 5, 10, 11	32	32
4	12, 13, 18, 19	32	32
5	14, 15, 20, 21	16	32
6	16, 17, 22, 23	32	32

Starting with BCS-26, the restriction of six c-side ports is removed and a maximum of eighteen c-side ports are now available. The full potential of 160 ISDN 'U' lines or 192 ISDN 'S/T' lines per LCMI will only be realizable with the LCMI/CPEI combination. Also in BCS-26, the IBERT line card may be equipped for Datapath and ISDN loop testing.

The provisioning information outlined below for filling the line drawer is based on the following:

- Taking advantage of the fixed mapping of the four D channel multiplexing. Although the time division multiplexing feature of the four D channels is available starting from BCS-27 only when the CPEI/LCMI combination is introduced, this method will be used for BCS-26, bearing in mind the CPEI retrofit.
- Balancing the real time load between the two units of the LCMI.

It is recommended that starting from BCS-26, the following provisioning rules be observed:

- a) ISDN line cards (or loops) should be equipped in groups of four, occupying parallel slots in a BLD. Thus when one ISDN line card is allocated, the D

0 channel multiplexing servicing for the other three in
0 the BLD are automatically allocated.

- 0 b) BLD should be allocated as a "group" to either ISDN
0 or Business Set or Datapath. In other words, it is
0 recommended that infringement of ISDN with non-ISDN
0 BLD not take place unless necessary. If possible, it
0 is better to partially fill ISDN BLD than mix differ-
0 ent line types. This will ease future expansion when
0 mixed line types are permitted (BCS-27) and allow ef-
0 ficient use of the LCMI/DCH bandwidth and DCH D chan-
0 nel processing capacity.

0 Thus the order of filling the two LCMI units will be
0 BLD1, BLD4, BLD3, BLD6, BLD2 and BLD5. When using ISDN
0 'U' line cards, BLD2 and BLD5 are only half filled (slots
0 0-3 only so as to limit the number of ISDN 'U' line cards
0 per physical drawer to a maximum of 20).

0 The IBERT line card may be equipped for Datapath and ISDN
0 loop testing.

0 (viii) LCMI Line Card Distribution BCS-25

0 Due to power limitations of the LCMI, a maximum of 20
0 ISDN 'U' line cards can be supported per physical drawer.
0 For BCS-25, a maximum of only six c-side ports can be
0 datafilled for the LCMI, the minimum number of c-side
0 ports being two. This restricts the number of ISDN lines
0 for BCS-25 to 58 only. Since call processing is done
0 with static connections only, for BCS-25 the ISDN line
0 cards will be supported in pre-defined slot positions
0 only.

0 The total of 58 ISDN line cards are spread equally over
0 both the units of the LCMI. It should be noted that all
0 six c-side ports are utilized in this case, three for
0 each unit of the LCMI.

- 0 (ix) Any drawer containing NT6X19AA Type E Line Cards requires
0 a NT6X20AA Message Waiting Power Converter. In BCS-28,
0 Message Waiting Power Converters are restricted to LSG1
0 in each physical drawer (ie. logical drawers
0 1,4,7,10,13,16,19, and 22). In BCS-29, this restriction
0 is removed; the Converter is permitted in any logical
0 drawer. Type E Line Cards and Message Waiting Power Con-

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0 verter are not permitted in a Line Sub Group containing
0 ISDN line cards.

0 (x) Each LCME/LCMI may have from two to eighteen DS-30A links
0 to the supporting CPEI. Refer to the Traffic Criteria
0 and Capacity (Chapter 2) for the traffic tables required
0 for link provisioning.

0 (xi) The LCMI modules in the frame will be numbered from the
0 bottom up. In an office equipped with both LCE and LCEI
0 frames, the LCMI modules must be uniquely numbered. They
0 may not be numbered the same as already existing LCM mod-
0 ules (ie. LCM 01 and LCMI 01 cannot co-exist in an of-
0 fice).

0 (xii) ISDN 2B1Q Line Drawer

0 NTBX32BA ISDN Enhanced Line Drawer has been introduced
0 for 2B1Q Access Subsystem. The NTBX32BA is a new high
0 capacity line drawer replacing NTBX32AA. It will in-
0 crease the ISDN LCM capacity from 48 slots to 60 slots.
0 This will provide a physical capacity of 480 single slot
0 lines per LCME. Each drawer can support up to 60 single
0 slot line cards. The D channel of each line is statis-
0 tically multiplexed at a 4 to 1 ratio at the LCME and
0 sent to the D Channel Handler for processing.

0 The ISDN 2B1Q line drawer consists of the following:

- 0 - One Bus Interface Card (BIC)
- 0 - Sixty line card slots
- 0 - One Point of Use Power Supply (PUPS). The PUPS con-
0 verts the common equipment -48V BATTERY to +5V. This
0 +5V is routed to the line card slots.

0 Each drawer is divided into two (2) logical drawers or
0 subgroups. This differs from the LCMI which has three
0 (3) logical subgroups per each physical drawer.

0 The individual logical subgroups in a line drawer will be
0 numbered from the bottom up; starting as subgroup 0 at
0 the first line drawer (Line Drawer 0) and continuing, in
0 sequential order, up to subgroup 15 (at the top of Line
0 Drawer 7).

0 ISDN AMI Line Drawer

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0 Each physical line drawer is comprised of three logical
0 drawers and associated sub group from a software aspect.
0 The logical drawer is individually maintained, provi-
0 sioned and with respect to call processing, failure of
0 one logical drawer does not affect other logical drawers.

0 Each logical drawers (or line sub group) has the physical
0 capacity to hold up to 16 line cards. Each LCMI has the
0 physical capacity to hold up to eight (8) physical line
0 drawers.

- 0 (xiii) An LTID number is required for each terminal on the
0 switch. The current limit for LTIDs is 32,000 per
0 switch. The limit for packet data devices will remain at
0 16,000 for the packet handler equipment. Therefore, the
0 switch will only be able to accommodate 1022 packet

0 Up to eight terminals may be assigned to each loop. A
0 maximum of 2 B channel devices (voice, circuit switched
0 data or 64K packet data) + 6 D channel devices (16K
0 packet data), 1B + 7D or 8D may be assigned to each loop.

- 0 (xiv) MTU for 2B1Q Lines on a LCME.

0 For every MTA that has a LCME on the vertical there must
0 be at least one MTU on a horizontal of that MTA. Each MTU
0 (NT2X10BA and NT2X11BA card set) has two test access
0 ports; that is two (2) sets of tip and ring. Thus it can
0 test two 2B1Q lines at the same time. A LTU that has ac-
0 cess to an MTA that has a LCME on the vertical will NOT
0 be used to perform any metallic testing on the 2B1Q
0 lines. Any rover test units (ones shared across MTAs)
0 that has access to the MTA that has a LCME on it must be
0 a MTU for it to be used on the LCME.

0 The physical installation of MTUs in MTMs is no different
0 for 2B1Q than for POTS. For more information on MTUs,
0 refer to Section 3.5.

- 0 (xv) The following chart illustrates the call types which im-
0 pact Real Time Engineering of the LCMI.

CALL TYPE	BCS			
	25	26	27	28
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ISDN Circuit Switched	Y	Y	Y	Y
B Channel Packet Switched	N	N	N	N

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0	D Channel Packet Switched	N	N	N	N
0	Electronic Business Set	N	N	Y	Y
0	Datapath	N	N	Y	Y
0	Other (POTS and MDC)	N	N	N	Y

0 Refer to System Engineering Bulletin (SEB) 88-10-001 for
0 BCS 25-27 Abbreviated Real Time Engineering Guidelines
0 for the LCMI.

0 PRI CC REALTIME - PRI calls cost approximately 5- 20%
0 more in realtime than equivalent POTS-type calls from a
0 PBX. Use 10% as a good average to convert existing PBX
0 calls to equivalent PRI; that is, multiply existing call-
0 type by 1.1.

0 (xvi) The NTB31AD LCMI Processor Memory Upgrade Kit is pro-
0 vided to field upgrade NTB31AA LCMI Common CP (contain-
0 ing NTB34AA LCMI Processor CP) to NTB31AC LCMI Common
0 CP (containing NTB34AB LCMI Processor CP). This upgrade
0 is required for BCS-28 application.

0 (xvii) EMI protection hardware is available for LCEI frames in a
0 Remote Switching Center office being equipped with ISDN
0 2B1Q service.

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0 3.0 NT6X17BA - World Line Card (WLC) Type A

0 NT6X17BA World Line Card (WLC) is a universal type A line card
0 introduced to replace domestic and international type A line
0 cards.

0 The cards it replaces are:

0 NT6X17AC - North America
0 NT6X93AA - Turkey, Belize
0 NT6X93BA - Carribean
0 NT6X93CA - China
0 NT6X93DA - Morocco
0 NT6X93EA - Australia
0 NT6X98AA - UK Scopedia
0 NTMX29AA - British Telecom

0 |

0 The WLC has software selectable loop current limit character-
0 istics and software selectable automatic loss equalization. The
0 card has the flexibility to generate a wide variety of input and
0 balance impedances that may allow it to be used in potential new
0 markets.

0 The WLC is designed to work in the LCM, LCME, LCMI, ILCM, RLCM,
0 OPM, SRU, RSC, RSCI, SRSC, XLCM, XRLCM and SMBR/NSM peripherals.

0 The WLC functions with both DTMF and DP units. It is compatible
0 with CLASS/CMS signalling and MTU equipment. It also has elec-
0 tronic overvoltage protection to improve its robustness in hos-
0 tile environments.

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0 Note:

0 For North American markets, the NT2X10/NT2X11 MTU combination is
0 to be provisioned. The NT4X97/NT4X98 MTU combination is the
0 equipment to be provisioned for International markets.

0 The WLC has increased reliability due to reduced component count
0 and lower operating temperatures because of lower power consump-
0 tion.

0 3.1 HARDWARE PROVISIONING

0 3.1.1 HARDWARE USAGE RESTRICTIONS

0 For jobs being provisioned by RNS in Richardson, the NT6X17AC is
0 still the type 'A' line card of choice. Until the NT6X17BA be-
0 comes fully compliant with RNS market requirements, the NT6X17AC
0 is to be provisioned for all RNS jobs.

0 BCS33 software and XLCM hardware are required for all interna-
0 tional applications for the type 'A' WLC.

0 In North American markets, the WLC defaults to NT6X17AC config-
0 uration and therefore can be used with BCS30 and newer software
0 with the application of the appropriate software patches.

0 3.1.2 HARDWARE DEPENDENCIES

0 XLCM hardware running BCS33 software is required for interna-
0 tional DMS offices in order to use the type 'A' WLC.

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0 3.1.3 PROVISIONING CONSIDERATIONS

0
0 Currently, 2FR and 4FR multiparty applications are not supported
0 by the NT6X17BA. For 2FR and 4FR multi-party applications, pro-
0 vide the the type 'B' World Line Card, NT6X18BA.

0 3.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 3.1.5 TRAFFIC TABLES

0
0 Not Applicable.

0 3.2 PRODUCT/SYSTEM SPECIFICATION

0

0 3.2.1 PHYSICAL CHARACTERISTICS

0

0 POWER DISSIPATION

0
0 The power dissipation of a fully loaded LCM frame (1280 lines)
0 with NT6X17BA is given below:

000000000000

```
0 The estimated temperature rise of a fully loaded LCM will not exceed
0 17.5 °C with 40 mA current limit and 21.5 °C with 75 mA current limit
0 selected.
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00

0 3.2.3 SPARING INFORMATION

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0 3.3 SOFTWARE PROVISIONING

0

0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Software selectable parameters enable the NT6X17BA to replace ex-
0 isting domestic and international line cards. These parametric
0 variants are held in templates which can be applied from the MAP.
0 An NT6X17BA with no template allocated will behave as an
0 NT6X17AC.

0 Software packages required for the WLC are:

- 0 * NTXW00AA World Line Card Base (BCS33)
- 0 * NTXW02AA World Line Card Cutover by DN (BCS34)
- 0 * NTXW03AA World Line Card Over Voltage Report (BCS34)
- 0 * NTXW20AA World Line Card 900 +2 (BCS33)
- 0 * NTXW22AA World Line Card, UK (BCS33)

0 For Type 'B' only:

- 0 * NTXW01AA World Line Card Type 'B' (BCS34)
- 0 * NTXW21AA (BCS34)

0 3.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Offices equipped with the WLC must have a minimum of BCS33 re-
0 lease software for international applications.

0 North American offices can utilize the World Line Card with BCS30
0 software plus applicable software patches. The North American op-
0 eration at BCS30 is possible due to the fact that the World Line
0 Card Type 'A' defaults to NT6X17AC operation when no template
0 overlays are in use in the software.

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0 3.3.3 MEMORY PROVISIONING

0
0 Not Applicable.

0 3.4 REAL TIME IMPACT

0 Not applicable.

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0 4.0 World Line Card Type B

0 The World Line Card (WLC) is a universal type B line card introduced
0 to replace domestic and international type B line cards. The cards it
0 replaces are:

- 0 * NT6X33AA - Japan Type A
- 0 * NT6X94AB - Turkey, Belize and Guyana
- 0 * NT6X94BB - Carribean
- 0 * NT6X94CA - China
- 0 * NT6X93DA - Morocco
- 0 * NT6X18AA - North America

0 The World Line Card (WLC) Type B simplifies engineering by re-
0 places many line card types. This is accomplished by combining
0 the characteristics of many line cards in one card type.

0 The WLC has software selectable loop current limit character-
0 istics and software selectable automatic loss equalization. The
0 card is capable of adjusting to a wide variety of input and bal-
0 ance impedances. This capability gives the WLC type B the capa-
0 bility of being used in many market areas having diverse line
0 characteristics throughout the world.

0 The WLC is designed to work in the LCM, LCME, LCMI, ILCM, RLCM,
0 OPM, SRU, RSC, RSCI, SRSC, XLCM and LCM peripherals.

0 The WLC works with both DTMF and DP units. It is compatible with
0 CLASS/CMS signalling and MTU equipment. It also has electronic
0 overvoltage protection to improve its robustness in hostile envi-
0 ronments.

0 Compared with the the line cards it replaces, the WLC has in-
0 creased reliability due to reduced component count and lower op-
0 erating temperature and lower power consumption.

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0 4.1 Hardware Provisioning

0

0 4.1.1 Hardware Usage Restrictions

0

0 Not applicable.

0 4.1.2 Hardware Dependencies

0

0 Not applicable.

0 4.1.3 Provisioning Considerations

0

0 The World Line Card Type B may be accommodated by any of the fol-
0 lowing line drawers:y

0 * Line Drawer (Domestic)

0 * ISDN Line Drawer

0 * ISDN Enhanced Line Drawer

0 * Line Drawer (International)

0

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0 Not applicable.0 4.1.5 Traffic Tables0
0 Not applicable.0 4.2 Product/System Specification

0

0 4.2.1 Physical Characteristics

0

0 Power Dissipation

0

0 The power dissipation of a fully loaded LCM frame (1280 lines)
0 with WLC Type B given below:0
0
0
0
0
0
0
0

No of Active	Power Dissipation (W)	
	40 mA CL	75 mA CL
0	210	210
107 (3 CCS)	430	541

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0			
0			
0			
	284 (8 CCS)	790	1087

0 | The estimated temperature rise of a fully loaded LCM will not ex-
0 ceed 17.5 degrees Celsius with 40 mA current limit and 21.5 de-
0 grees Celsius with 75 mA current limit selected.

0 4.2.2 EMI/Earthquake Information

0
0 Not applicable.

0 4.2.3 Sparing Information

0
0 | World line Card Type B has a Mean Time Between Failure (MTBF) of
0 1,300 years at an operating temperature of 40 degrees Celsius.

0 4.3 Software Provisioning

0

0 4.3.1 Required Software Packages and Interdependencies

0
0 Software selectable parameters enable the WLC to replace existing
0 domestic and international line cards. These parametric variants
0 are held in templates which can be applied from the MAP.

0 Software features required for the WLC are:

0 * AE0905 - World Line Card Software Support (BCS33)

0 * AE0896 - World Line Card in the LCM (BCS33)

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- 0 * AE0945 - WLC in the SRU and LCME (BCS34)
- 0 * AE0946 - WLC Enhancements - Type A and B (BCS34)
- 0 * AE0956 - Cutover by DN (BCS 34)
- 0 * AE1013 - WLC Overvoltage Reporting
- 0 * TBD - Register Recall Earth and Earth Left (British Telecom)
- 0 (BCS TBD).
- 0 Software packages for the above features that are required by the
- 0 WLC are not available at the time of issue of this NTP.

0 4.3.2 Software Usage Restrictions

0

0 Offices equipped with WLC must have at least BCS33 load.

0 4.3.3 Memory Provisioning

0

0 Not applicable.

0 4.4 Real Time Impact

0 Not applicable.

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0 5.0 Building Block Engineering - LCE

0 The Line Concentrating Equipment Frame (LCE) building block concept
0 deals with a higher level of Product Engineering Code (PEC) ordering
0 and simplifies the engineering order process. Line cards will be or-
0 dered per usual methods.

0 5.1 Hardware Provisioning

0

0 5.1.1 Hardware Usage Restrictions

0

0 None identified.

0 5.1.2 Hardware Dependencies

0

0 None identified.

0 P and C Side Port Requirements

0

0 DMS Bus Port Requirements

0

0

0

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0 Circuits per Card

0

0 Discrimination Numbering

0

0 5.1.3 Provisioning Considerations

0

- 0 1. Utilization higher than 80% requires a detailed capacity
0 study using PRTLALC.
- 0 2. When MADN penetration is higher than 40%, then a detailed ca-
0 pacity study is required using PRTLALC.
- 0 3. Deviation from NTI assignment rules requires that detailed
0 capacity study be performed.
- 0 4. Meridian Digital Centrex (MDC) call timings include Elec-
0 tronic Business Set without display and Data Path.

0 ASSUMPTIONS:

- 0 1. 50/50 Orig/Term split provides a worse case scenario.
- 0 2. 4 secondary members per MADN group.
- 0 3. 40 percent Custom Calling Feature assignment to POTS lines.
- 0 4. 100 percent Custom Calling Feature assignment to MDC lines.
- 0 5. 100 percent UTR provisioning.
- 0 6. 100 percent secondary member ringing for MADN groups.

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0 7. 50 percent secondary member answer.

0 8. 100 percent of Dialan lines will have voice and data.

0 Customer Questions

0

0 1. Which market area, check one of the following:

0 a. US _____

0 b. Canada _____

0 2. Earthquake requirements, check one of the following:

0 a. Earthquake resistant frames required _____

0 b. Non-earthquake resistant frames required _____

0 c. EMI compliance required _____

0 Calculations

0

0 Note In the following calculations, the provisioning of equipment
0 for the International market area is not covered.

0 1. Total LCMs:

0 Calculate the quantity of LCMs required according
0 to method given in ECM-497, Simplified Traffic
0 Provisioning and enter the result _____

0 2. Total LCDs for Canadian application

0 If Canada = yes (Question 1.a), then
0 Total LCMs (Calc. 1.)/2 (round up to next integer)
0 else 0 _____

0

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- 0 3. Total Earthquake LCDs (NTZZ08AA/NTZZ08AB) for US application:
0 If US = yes (Question 1.b)
0 and Earthquake = yes (Question 2.a)
0 and EMI = no (Question 2.c), then
0 Total LCMS (Calc. 1.)/2 (round down)
0 else 0 —
- 0 4. Earthquake LCE (NTZZ08AA/NTZZ08AB) for US application:
0 If US = yes (Question 1.b)
0 and Earthquake = yes (Question 2.a)
0 and EMI = no (Question 2.c), then
0 if total LCMS is odd number then 1 (one) LCE
0 else 0 —
- 0 5. Total Non-earthquake LCDs (NTZZ08CC/NTZZ08CD) for US applica-
0 tion:
0 If US = yes (Question 1.b)
0 and Non-earthquake = yes (question 2.b)
0 and EMI = no (Question 2.c), then
0 Total LCMS (Calc. 1.)/2 (round down)
0 else 0 —
- 0 6. Non-earthquake LCE (NTZZ08CC/NTZZ08CD) for US application:
0 If US = yes (Question 1.b)
0 and Non-earthquake = yes (question 2.b), then
0 and EMI = no (Question 2.c), then
0 If total LCMS is odd number, then 1 (one)
0 else 0 —
- 0 7. Total LCE (NT6X03AA with NT0X25AE FW) Non-Earthquake/EMI
0 compliant:
0 If US = yes (Question 1.b), and
0 If EMI = yes (Question 2.c), and
0 If non-earthquake = yes (Question 2.b), then
0 Total LCMS (Calc. 1.)/2 (round up to next integer)
0 else 0 —
- 0 8. Total LCE (NT6X03AA with NT0X25AL FW) EQ/EMI Compliant
0 If US = yes (Question 1.b), and
0 if EMI = yes (Question 2.c), and
0 if earthquake = yes, then
0 Total LCMS (Calc 1.)/2 (round up)
0 else 0 —

0

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0
0

0 5.1.4 Office Layout Information

0
0 Not applicable

0 5.1.5 Traffic Tables

0
0 Not applicable

0 5.2 Product/System Specification

0 Not applicable

0 5.2.1 Physical Characteristics

0
0 Not applicable

0 5.2.2 EMI/Earthquake Information

0
0 Not applicable

0

0

0

0 5.2.3 Sparing Information

0
0 Use standard sparing algorithm.

0 5.2.4 Power Feed and Fusing Requirements

0

0 5.2.5 Current Drain Information

0
0 5.3 Software Provisioning

0 Not applicable

0 5.3.1 Required Software Packages and Interdependencies

0
0 Not applicable

0 5.3.2 Software Usage Restrictions

0
0 Not applicable

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0 5.3.3 Memory Provisioning

0
0 Not applicable

0 5.4 Real Time Impact

0 Not applicable

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0 6.0 Meridian Cabinet Line Module

0 The MCLM cabinet houses two dual shelf ELMs (enhanced Line Modules).
0 Each ELM has eight (8) line drawers. Each Line Drawer has two (2) line
0 subgroups of thirty-two(32) line card slots each. the maximum capac-
0 ity of each ELM is 512 line card slots and a total of 1024 line card
0 slots per MCLM.

0 6.1 HARDWARE PROVISIONING

0

0 6.1.1 HARDWARE USAGE RESTRICTIONS

0
0 When provisioning the NT6X60BA Japan Ringing Generator, remove
0 Ringing generator cables from FSP TB02-9 and TB02-10. Grounded
0 Tip & Ring are not required on the Japan Card and will in fact
0 blow the fuse on the card. The cables in question will be re-
0 moved during installation.

0 6.1.2 HARDWARE DEPENDENCIES

0
0 Not applicable.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0

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0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable0 6.1.3 PROVISIONING CONSIDERATIONS0
0 The following line card circuit packs are provionable on the
0 MCLM:

0	PEC	DESCRIPTION	TYPE	SLOTS REQ'D
0	-----	-----	-----	-----
0	NT6X17AC	Optimized Line Card	A	1
0	NT6X18AA	Full Featured LC w/o -48v	B	1
0	NT6X18AB	Full Featued LC w/ -48v	B	1
0	NT6X21AC	Business Set	C	1
0	NT6X71AB	Interface for Data Unit	D	2

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0	NT6X19AA	Interface for Telephone set	E	1
0		with message waiting lamp		
0	NT6X20AA	Message Waiting Converter		2
0	NT6X23AA	Power Converter (+48v)(provision w/6X18)		2
0	NT6X87AA	Data above voice POTS		4
0	NT6X76AA	Async. I/F Line Card		2
0	NT6X99AA	IBERT Test Card		2
0	NT6X33AA	Japan General Use LC		1

0 6.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 6.1.5 TRAFFIC TABLES

0
0 Not applicable.

0 6.2 PRODUCT/SYSTEM SPECIFICATION

0
0 6.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

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0 6.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 6.2.3 SPARING INFORMATION

0
0 Not applicable.

0 6.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 The following fuses and feeds are required:

0 6.2.5 CURRENT DRAIN INFORMATION

0
0 Current Drain for the circuit packs are:

0 6.3 SOFTWARE PROVISIONING

0

0 6.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Not applicable.

0
0
0

0 6.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

0 6.3.3 MEMORY PROVISIONING

0
0 Not applicable.

0 6.4 REAL TIME IMPACT

0 Not applicable.

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0 CHAPTER 2

0 HOST - LINE TRUNK CONTROLLER EQUIPMENT

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Host - Line Trunk Controller Equipment
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0 1.0 Common Peripheral Controller

0 1.1 Introduction

0 The Common Peripheral Controller modules are microprocessor- con-
0 troller Peripheral Modules which are responsible for:
0 - scanning the lines in the modules for changes of circuit
0 state,
0 - performing timing functions for call processing,
0 - collecting and storing digits,
0 - generating digital tones,
0 - detecting tones (MF, DTMF) through the Universal Tone Re-
0 ceiver (UTR),
0 - sending and receiving signaling and control information
0 to and from the CCC,
0 - providing integrity checking of the network.
0 The message system provides the control interface between the Pe-
0 ripheral Modules and the rest of the system.

0 Tones for subscriber lines (DTMF) and for trunks (MF) are de-
0 tected by the Universal Tone Receiver (UTR) located in associated
0 PMs (LGC, DTC, LTC, SCM and RSC). Use of the UTR removes the re-
0 quirement for a network connection to a pool of receivers at the
0 Trunk Module (TM) and Maintenance Trunk Module (MTM). This
0 functionality offers improvements in CC, LGC, and RSC real time.

0 (i) Line Group Controller Equipment General Description

0 The LGC performs the medium-level processing tasks associ-
0 ated with subscriber line interfaces both for host office
0 and remote units. The LGC has duplicated control on two
0 shelves.

0 It can interface with up to 16 32-channel (30 voice and two
0 signal) speech links to the network, and up to 20
0 32-channel speech links (DS30A protocol) to its associated
0 Line Concentrating Modules (for host lines), or up to 20
0 24-channel DS1-rate lines serving remote equipment (RLCM,
0 OPM, or RSC). The same holds true for the International
0 Line Group Controller Modules, except for the interface to
0 the international remote equipment (IRLCM). Up to 20
0 30-channel PCM 30 lines can interface the remote equipment.

0 (ii) Digital Trunk Controller Equipment General Description

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0 The DTC is indential to the LGC except that it contains
0 hardware to extract or insert A/B bit signaling and is pro-
0 grammed to perform trunk-oriented tasks.

0 The DTC is a two-shelf module and contains up to 10
0 DS1-rate interface cards, each having the capability of
0 interfacing with up to two DS1-rate lines. The 20
0 24-channel DS1-rate lines interface with 16 32-channel (30
0 voice + 2 signal) speech links to the network.

0 For international applications, the International Digital
0 Trunk Controller (IDTC) is the same as the DTC except it
0 interfaces with PCM 30 lines. Up to 20 30-channel PCM 30
0 lines can be interfaced with the IDTC.

0 (iii) Line Trunk Controller Equipment General Description

0 The LTC is a hybrid of the LGC and the DTC and is capable
0 of supporting the LCMS, remotes, and digital trunk inter-
0 faces. The LTC is a two-shelf module and has 20 ports
0 available to be assigned to host lines (DS30A protocol),
0 remote lines (DS1 protocol) and digital trunks (DS1 proto-
0 col). It can interface with up to 16 32-channel (30 voice
0 + 2 signal) speech links to the network. Like the DTC, the
0 LTC provides A/B bit scanning capability.

0 (iv) Subscriber Module Equipment General Description

0 The Subscriber Carrier Module SCM-100 Family of peripheral
0 modules provide interfaces between DMS-100 Family Systems
0 and non DMS-100 remote equipment. There are three versions
0 of the SCMs, Subscriber Module Remote (SMR), Subscriber
0 Carrier Module for SLC-96 (SMS) and Subscriber Carrier Mod-
0 ule - Urban (SMU).

0 a) The Subscriber Module Remote (SMR), also referred to as
0 Subscriber Carrier Module Rural (SCMR), is the first
0 peripheral in the SCM-100 family. It replaces the Con-
0 trol Concentrator Terminal (CCT) of the DMS-1R sub-
0 scriber carrier system and provides direct digital
0 interface between the DMS-1R Remote Concentrator Termi-
0 nal (RCT) and the DMS-100F.

0 The SMR provides all basic tones to a RCT, including
0 dial tone, busy tone, reorder tone, audible ringing
0 (ringback) tone, high tone, receiver offhook tone and

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0 call waiting tone. Additionally, the SMR supports all
0 the currently available ringing schemes: coded, fre-
0 quency selective and superimposed.

0 b) The Subscriber Carrier Module (SMS) will interface on a
0 direct digital basis with the SLC-96 Remote Terminal
0 (RT) via DS-1 transmission facilities.

0 The SMS will replace the Central Office Terminal (COT)
0 currently associated with the RT thus eliminating indi-
0 vidual analog line circuits currently necessary to com-
0 municate on a line by line basis with the SLC-96.

0 The SLC-96 can operate in one of three modes:

0 MODE I - (non-concentrated line mode)

0 Used primarily for single and multiparty lines. Mode I
0 supports up to 96 subscriber lines and connects to the
0 SMS through up to five (5) DS-1 lines. One of these
0 lines is a protection line, active only when any of the
0 remaining four is out of service.

0 MODE II - (concentrated line mode)

0 Used for subscriber lines, special service and coin
0 lines. Mode II supports up to 96 subscriber lines and
0 connects to the SMS through up to three (3) DS-1 lines.
0 One of these lines is used for a protection line. Each
0 shelf group of 48 subscribers (two shelf groups total)
0 at the SLC-96 must compete for 24 channels on the DS-1
0 line.

0 MODE III - (non-concentrated single shelf group)

0 Used for special service and coin circuits. Mode III
0 supports up to 48 lines and connects to the SMS through
0 up to three (3) DS-1 lines. One of these lines is used
0 for a protection line.

0 c) The Urban Subscriber Carrier Module (SMU) (NT6X02EA)
0 will interface on a direct digital basis with a DMS-1
0 Urban Remote Terminal (RCU) via DS-1 transmission fa-
0 cilities.

0 The SMU is designed to replace the Central Control Ter-
0 minal (CCT) now required when the RCU is connected to a

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0 DMS-100 Family switch. This will eliminate the need
0 for duplicated line circuits and will reduce floor
0 space required at the DMS-100 host office.

0 (v) Common Peripheral Controller Equipment Frame

0 The Common Peripheral Controller modules are housed in a
0 standard DMS frame named the Common Peripheral Equipment
0 Frame. Up to two modules can be mounted in this frame.
0 Since it is possible to house two different types of PM
0 within the same frame, the frame name assumes the identity
0 of the PM in the bottom of the frame. Possible frames
0 names are:

- 0 - Line Group Equipment (LGE) frame (for LGCs)
- 0 - Digital Trunk Equipment (DTE) frame (for DTCs)
- 0 - Line Trunk Equipment (LTE) frame (for LTCs)
- 0 - Subscriber Module Equipment (SME) frame (for SMR, SMS
0 or SMU)

0 (vi) Line Concentrating Device Provisioning

0 Prior to BCS28, the maximum number of LCDs allowed in an
0 office was 254 with the maximum number of real LCDs limited
0 to 200. Changes in BCS 28 allow up to 254 real LCDs. The
0 use of virtual LCDs will lower the number of real LCDs al-
0 lowed. For BCS30 and above, the calculation of LCDs per
0 SLC will be changed to 8 SLCs per real LCD.

0 SMS, SMR, SMU are classed as real time modules when consid-
0 ering LCD provisioning. Refer to the Line Concentrating
0 Module section for more information.

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0 1.2 Features

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0 1.3 Equipment Provisioning

0 1.3.1 DS30A Interface Cards

0 (a) General Description

0 To enable the Telco to specify the quantity of interface circuit
0 packs required to interface the DS30A ports from the Line Concen-
0 trating Module (LCM).

0 (b) Reference

0 None

0 (c) Provisioning Considerations

0 (i) NT6X48AA is required to interface with the DS30A ports of
0 the LCM module (domestic and international).

0 (ii) There can be a maximum of two (2) pairs of NT6X48AA cards
0 (four cards in total) per LGC module.

0 (iii) One pair of NT6X48AA cards provides an interface for up
0 to 10 DS30A ports from LCM's.

0 (iv) For each new LGC module that links to LCMs, always pro-
0 vide two (2) pairs of DS30A Interface Cards.

0 (v) When an existing LGC has only one (1) pair of the DS30A
0 Interface Cards, order one more pair if there will be
0 more than 10 DS30A links from the LCMs.

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0 1.3.2 DS1 Interface Cards

0 (a) General Description

0 To enable the Telco to specify the quantity of interface circuit
0 packs required to interface the DS1 digital carrier system and
0 the DS1 links from the Remote Line Concentrating Module (RLCM),
0 the Remote Switching Centre (RSC) and the Outside Plant Module
0 (OPM).

0 (b) Reference

0 NTP 297-1001-451 DMS-100 Family Common Customer
0 Data Schema

0 (c) Provisioning Considerations

0 (i) The DS1 Interface Cards are required to interface with
0 the DS1 digital carrier systems and the DS1 links from
0 the Remote Sites (i.e. Remote Line Concentrating Module
0 (RLCM), Remote Switching Center (RSC), Outside Plant Mod-
0 ule (OPM)).

0 (ii) There can be a maximum of ten (10) DS1 I/F cards per
0 LGC/DTC/LTC module.

0 (iii) One NT6X50AA/AB card provides an interface for up to two
0 (2) DS1 links. The NT6X50AB card will replace the
0 NT6X50AA card as the DS1 I/F card in many but not all ap-
0 plications (- the NT6X50AB will not be used in SMR, RSC,
0 and RLCM).

0 In order to support the enhanced features of the NT6X50AB
0 (i.e. ESF and 64 Kb/s clear channel capability based on
0 B8ZS), the DTC/LGC/LTC modules must be equipped with new
0 messaging (i.e. NT6X69AA/79AA or NT6X69AB) and new memory
0 (i.e. NT6X46AB/BA and NT6X47AB or NT6X47AC) cards. Pick
0 the appropriate DTC/LGC/LTC circuit pack fills.

0 The full support of the NT6X50AB card will not be avail-
0 able in DTC/LGC/LTC modules which have small memories
0 (i.e. NT6X46AA, NT6X47AA) and old messaging (i.e.
0 NT6X43AA). In these modules, the NT6X50AB can be used as
0 replacements for normal NT6X50AA carriers but the en-
0 hanced DS-1 feature set will not be available.

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0 The above is only applicable to DMS host offices and not
0 to remotes such as RSC and RLCM.

0 The Customer cannot use NT6X50AB to substitute for
0 NT6X50AA unless NTX270AA software is loaded and
0 datafilled for the respective XPM's. It is recommended
0 that NT6X50AA cards and NT6X50AB cards not be mixed on a
0 shelf to minimize cases where the Customer forgets that
0 NT6X50AB needs to be explicitly software datafilled. The
0 datafill is via software table CARRMTC.

0 (iv) The DS-1 Interface Circuit Pack provisionable to the SMS
0 is the NT6X85AA or NT6X85AB. If software package
0 NTX299AB is present, the NT6X85AB is required for all
0 modules that require special services features. Other SMS
0 modules may use NT6X85AA packs but will be unable to use
0 the special services features of the software package
0 NTX299AB. (Check availability reports for the proper or-
0 dering PEC.)

0 The SMU DS-1 CP Product Engineering Code (PEC) is
0 NT6X85AB. Each NT6X85AB CP contains two (2) DS-1 cir-
0 cuits. A maximum of ten (10) NT6X85AB CP may be provi-
0 sioned on each SMU.

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0 1.3.3 PCM 30 Interface Cards

0 (a) General Description

0 To enable the Telco to specify the quantity of interface circuit
0 packs required to interface the PCM 30 links from the Interna-
0 tional Remote Line Concentrating Module (IRLCM) and the PCM 30
0 Digital Carrier Systems.

0 (b) Reference

0 Chapter 3, Section 3.3 Operator Services
0 NTP 297-1001-451 DMS-100 Family Common Customer
0 Data Schema

0 (c) Provisioning Considerations

0 (i) The PCM 30 Interface Cards are required to interface with
0 the PCM 30 digital carrier systems and the PCM 30 links
0 from the Remote Sites (i.e. International Remote Line
0 Concentrating Module (IRLCM)).

0 (ii) One NT6X27AA/AB card provides an interface for up to two
0 (2) PCM 30 links.

0 (iii) There can be a maximum of eight (8) PCM 30 I/F cards per
0 International DTC (IDTC) module.

0 (iv) A DMS-100 host interfaces with an IRLCM over 2-6 PCM 30
0 links. The PCM 30 I/F cards mount on the ILGC.

0 (v) There can be a maximum of two (2) NT6X27AB PCM 30 I/F
0 cards per ILGC/IDTC module when the interoffice synchro-
0 nization feature is required.

0 (vi) When ITOPS is equipped on a DMS-100/200 configuration,
0 loop around trunks (NT6X27AA) must be provisioned to
0 route traffic between the DMS-100 and the DMS-200 portion
0 of the switch. Refer to Section 3.3 - Operator Services,
0 for more ITOPS provisioning information.

0 (vii) Provide one pair of NT6X28AA PCM 30 Signalling CP per
0 IDTC if TS16 signalling is used on the PCM link.

0 (viii) Provide one pair of NT6X28AA PCM 30 Signalling CP per
0 ILGC which supports LCM equipped with Metering Tone Con-

0 verter line cards (see the subsection on the Line Draw-
0 ers, found in this chapter, for more information on the
0 Metering Tone Converter line card).

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0 1.3.4 Line Trunk Controller (LTC) Module0 (a) General Description

0 The LTC provides the interface between the LCM and the DMS net-
0 work. It is also an interface between the Remote Sites and the
0 DMS network and an interface between the DS1 digital carrier sys-
0 tem and the DMS network.

0 (b) Reference

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

- 0 (i) The LTC module is a two shelf module.
- 0 (ii) Each LTC module can accommodate up to four (4) DS30A LCM
0 Interface Cards and up to ten (10) DS1 Interface Circuit
0 Packs. Each module can interconnect with the network via
0 up to sixteen (16) speech links.
- 0 (iii) Each LTC can terminate up to a maximum of twenty (20)
0 ports on the peripheral side, in any combination of DS30A
0 or DS1 ports (i.e. up to a maximum of twenty (20) DS30A
0 ports or up to a maximum of twenty (20) DS1 ports or any
0 combination of DS30A and DS1 ports up to a maximum of
0 twenty (20) ports).
- 0 (iv) Each LTC can terminate up to 16 DS30 ports x 30 = 480
0 speech channels on the CPU (network) side.
- 0 (v) The peripheral ports (DS30A and DS1) in the LTC can be
0 assigned in either a concentrating or a non-concentrating
0 configuration. In the concentrating configuration, up to
0 600 P-side speech channels can be assigned; while in the
0 non-concentrating configuration, a maximum of 480 P-side
0 speech channels can be assigned. Each DS30A link sup-
0 ports 30 speech channels. Each DS1 link supports 24
0 speech channels.
- 0 (vi) In offices with BCS-22 or earlier, the host LGC/LTC can
0 support up to a maximum of 18 p-side datafilled software
0 nodes, where a node is defined as host LCMs, RSC LCMs,
0 RCC, RLCM, OPM, RMMs, ESA processor (for RLCM/OPMs) and
0 dummy software nodes.

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0 In BCS-23, this node limit is raised to a maximum of 62
0 p-side nodes.

0 (vii) A host LTC is required, rather than a LGC, when the RSC
0 trunking option (NTX152AB) is planned/provisioned.

0 (viii) It is recommended that the host LTC interface to only one
0 RSC. However, a maximum of two RSCs per LTC is allowed
0 (except for the Dual RCC configuration).

0 (ix) Dual RCC configurations require one LTC per RCC. The host
0 LTC will not interface to a second RCC.

0 (x) Provision RSCs off of the host LTC first. The remaining
0 LTC ports can be used to provision host LCMs, RLCMs,
0 OPMs, or DS1 digital carriers as host LTC capacity per-
0 mits. However, consideration should be given to RSC
0 growth.

0 (xi) The maximum number of Remotes (RSC, RLCM, OPM) that a
0 Host LGC can support is defined as follows:

- 0 - Two (2) RSCs from a single configuration.
- 0 - One (1) RSC from a dual configuration and one (1) RSC
- 0 from a single configuration.
- 0 - Traffic, Real Time and software Nodal requirements do
- 0 not exceed the recommended engineering limits.

0 In addition, the remaining p-side ports can be configured
0 for two (2) RLCMs and OPMs if the Traffic, Real Time and
0 software Nodal requirements do not exceed the recommended
0 engineering limits.

0 (xii) All ports from an LCM module must terminate onto the same
0 LTC module.

0 (xiii) All ports from an RLCM must terminate onto the same LTC
0 module.

0 (xiv) All ports from an OPM must terminate onto the same LTC
0 module.

0 (xv) There is a fifty (50) foot cabling length restriction be-
0 tween the LTC and the LCM.

0 (xvi) The newly provisioned modules can be linked to existing
0 LGC/LTCs. Take this into account when provisioning new
0 LTCs.

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0 (xvii) When a LTC module is handling CCIS voice trunking, two
0 (2) Continuity Tone Detector cards are required.

0 (xviii) The following LTC Common Peripheral Controller CPs sup-
0 port the following applications:
0 NT6X02MC supports RSC, UTRs
0 replaces NT6X02AK/AG (BCS-27)

0 (xix) For each NT6X02MC ordered (BCS-27), provide:

- 0 - four (4) XPM Processor CP NT6X45AF/BA
- 0 - two (2) DS30 Network Interface CP NT6X40AC
- 0 - two (2) SP Memory Plus CP NT6X46BB
- 0 - two (2) MP Memory Plus CP NT6X47AC
- 0 - two (2) MSG Protocol & Tone CP NT6X69AC
- 0 - two (2) Power Converter CP NT2X70AE

0 NT6X02MC is to be ordered instead of NT6X02MA.

0 (xx) NT6X02MC is the minimum packfill level for new offices
0 (for BCS-32 or later). NT6XMA/AU is the minimum packfill
0 level required to support BCS-32 or later in existing of-
0 fices.

0 Upon general availability, the NT6X45BA CP will become
0 the standard XPM Processor offering instead of the
0 NT6X45AF CP.

0 If optional software feature NTXA66AA (Enhanced Office
0 Recovery) or NTXA67AA (Extended XPM Diagnostics) are
0 present, then the XPM Processor CP must be the NT6X45BA.
0 Provide four (4) NT6X45BA XPM Processor CP for upgrading
0 existing offices.

0 (xxi) If interface to the Enhanced Network (ENET) is required,
0 then the relevant DTC/LGC/LTC modules must have the
0 NT6X69AC Msg Protocol & Tone CP. NT6X69AC replaces
0 NT6X69AB.

0 Provide 1 NT6X02BQ change kit for each DTC/LGC/LTC module
0 you are upgrading to ENET. This change kit applies only
0 to modules provisioned at NT6X02 AS/IA, AT/LA or AU/MA
0 levels. Modules provisioned at earlier levels must be
0 upgraded to these levels before the NT6X02BQ change kit
0 can be applied.

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0 (xxii) If ENET interface is not required, use the product change
0 kit NT6X02EQ to upgrade LTC modules from NT6X02IA/LA/MC
0 to NT6X02IC/LC/MC levels.

0 (xxiii) In new offices, at BCS32 or later, the minimum packfill
0 level for DTC modules (to be used for CCS6/CCS7) is
0 NT6X02IC.

0 (xxiii) There are two methods available to satisfy 4 MB MP memory
0 requirements in existing DTC/LGC/LTC modules. The first
0 method is to apply one NT6X02EQ product change kit to
0 each DTC/LGC/LTC module to be upgraded as in item (1) be-
0 low. Per customer request, a second pair of office sup-
0 plied NT6X47AB packs may be added to each DTC/LGC/LTC
0 module to be upgraded as in item (2) below. Do not order
0 new NT6X47AB packs for the upgrade of NT6X02IA, LA, MA mod-
0 ules. The NT6X47AB packs that have been removed from up-
0 graded DTC/LGC/LTC modules may then be applied to other
0 relevant DTC/LGC/LTC modules.

0 1) Provision NT6X02EQ Product Change Kit to replace the
0 NT6X47AB MP Memory Plus circuit packs in slot 10 with
0 NT6X47AC packs. The NT6X02EQ kit may only be applied
0 to the following modules:

0	DTC	(CCS7)	:	BCS-27	and later	(NT6X02AS/IA)
0	DTC	(other)	:	BCS-33	and later	(NT6X02AS/IA)
0	LGC	(all)	:	BCS-31	and later	(NT6X02AT/LA)
0	LTC	(all)	:	BCS-30	and later	(NT6X02AU/MA)

0 2) Existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT0X50AA, Filler Face Plate, in Slot 09.
0 Provide two (2) NT6X47AB, MP Memory Plus CP for the
0 above listed modules.

0 One NT6X47AC in slot 10 (item 1) has the same mem-
0 ory capacity as two (2) NT6X47AB in slots 9 and 10
0 (item 2).

0 Existing DTC/LGC/LTC module is presently equipped
0 with two NT6X69AB in slot 18. If existing module is
0 not required to interface ENET, new cards are not re-
0 quired for these slots.

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0 Provide one (1) NT6X02BQ Product Change kit for each
0 existing DTC/LGC/LTC module to be upgraded to inter-
0 face ENET. The NT6X02BQ contains (2) NT6X69AC circuit
0 packs. The NT6X02BQ will convert the NT6X02IA/AS to
0 NT6X02IC, the NT6X02LA/AT to NT6X02LC, and the
0 NT6X02MA/AU to NT6X02MC.

0 If an existing DTC/LGC/LTC module has ALREADY been
0 upgraded to the NT6X02IC/LC/MC packfill level via the
0 NT6X02EQ KIT, provide two NT6X69AC circuit packs in
0 slot 18 to upgrade the module for ENET interface.

0 (xxiv) Provide two (2) NT6X78AA, Class Modem Resource CP, for
0 each LTC module that is handling Custom Local Area Sig-
0 naling Services (CLASS -U.S.) or Call Management Services
0 (CMS -Canada) -Calling Number Display. This rule only
0 applies to the following LTC modules:

0 NT6X02MC/MA, NT6X02AU

0 Upon general availability, the NT6X78AB will replace the
0 NT6X78AA as the standard CLASS Modem Resource CP. When
0 this happens, provide two (2) NT6X78AB CLASS Modem Re-
0 source CP in slot 13 of each LGC/LTC module that is han-
0 dling CLASS-Calling Number Display.

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0 (1) NT6X02ER XPM PC Kit
0 (1) NT6X02ZL Wiring Kit
0 (2) NT0X50AA Filler Face Plate
0 (2) NT6X47AC Master Proc Memory Plus CP
0 (2) NT6X46BB Signal Processor Memory Plus CP
0 (2) NT6X69AC CPP Msg Protocol & Tone CP
0 (2) P0711663 Desig. Label for NT6X47AC
0 (2) P0711664 Desig. Label for NT6X46BB
0 (2) P0710476 Desig. Label for NT6X69AC

0 (NOTE: The NTZZ04GA includes all circuit packs required
0 to upgrade a NT6X02AC module except the NT6X45 cards.

0 The NTZZ04GA building block kit may be used to upgrade
0 the NT6X02AC module as follows:

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Building Block	From	To
NTZZ04GA	NT6X02AC (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

0 | (xxvi) Existing DTC/LGC/LTC module is presently equipped with
0 four (4) NT6X45AA, XPM Processor CP, in Slots 08 & 12.
0 Application of the NTZZ04EA/NTZZ04GA makes these slots
0 provisionable and replacement cards must be ordered as
0 follows:

0 For A-stock upgrades provide four (4) NT6X45BA cards in
0 slots 8 and 12 of the upper and lower shelves of the pe-
0 ripheral modules. If B-stock material is required, then
0 four NT6X45BB packs must be merchandise ordered via an
0 88K.

0 | The existing NT6X45AA packs must be replaced because they
0 will not work with New Messaging. The only reason NT6X45
0 cards are not included in the NTZZ04EA/GA upgrade kit is
0 because there is an option between NT6X45BA and NT6X45BB
0 packs. Either the NT6X45BA packs or the NT6X45BB packs

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0 must be ordered or the upgrade will not have been done
0 correctly.

0 (xxvii) The existing DTC/LGC/LTC module is presently equipped
0 with the following DS30 Network Interface CP in Slots 22
0 & 23: four (4) NT6X40AA.

0 If copper interface to the Network is required, then DO
0 NOT order new circuit packs for these slots.

0 If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP in Slot 22, and two (2) NT6X40DA, DS512 Pad-
0 dle Board, in Slot 22R of each relevant DTC/LGC/LTC mod-
0 ule. Also, provide one (1) NT6X02BU, Fiber I/F Hardware
0 Assembly, for each DTC/LGC/LTC module interfacing to the
0 Enhanced Network (ENET). The NT6X02BU Fiber Assembly
0 mounts on the backplane of the lower array in a module
0 and provides the fiber interface for both arrays.

0 Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

0 (xxviii) The existing DTC/LGC/LTC module is presently equipped
0 with four (4) NT6X47AA, MP Memory CP, in Slots 09 & 10.
0 Application of the NTZZ04EA/NTZZ04GA replaces these cir-
0 cuit packs with two NT6X47AC Master Processor Memory cir-
0 cuit packs.

0 (xxix) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X46AA Signal Processor Memory Plus CP in
0 slot 11. Application of the NTZZ04EA/NTZZ04GA replaces
0 these circuit packs with two NT6X46BB circuit packs.

0 (xxx) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X43AA, Msg Interface CP, in Slot 18. Ap-
0 plication of the NTZZ04EA/NTZZ04GA replaces these circuit
0 packs with two NT6X69AC Msg Protocol & Tone circuit
0 packs.

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0 (xxxi) If the existing module was a NT6X02AA, then the NTZZ04EA
0 provides two (2) NT2X70AE, Power Converter CP, in Slot 25
0 of each DTC/LGC/LTC module.

0 If the existing module was a NT6X02AC, then two (2)
0 NT2X70AD, Power Converter CP, already exist in Slot 25 of
0 each DTC/LGC/LTC module. DO NOT order new circuit packs
0 for these slots unless requested by the customer. Per
0 Telco request, the existing NT2X70AD CP's in each
0 DTC/LGC/LTC can be replaced by the NT2X70AE, Power Con-
0 verter ESD CP.

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0 2.0 Peripheral Modules Features

0 2.1 Introduction

0 This section describes the line-oriented software features that
0 require special hardware provisioning to make the feature work.

0 2.2 Features

0 The line-oriented software features included in the Peripheral
0 Modules Features that require special hardware provisioning con-
0 siderations are listed below:

0 Custom Local Area Signalling Services (CLASS) or Call Man-
0 agement Services (CMS)

0 Residential Enhancement Services

0 Enhanced Coin Services

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0 2.3 Equipment Provisioning

0 2.3.1 CLASS/CMS Feature

0 (a) General Description

0 Custom Local Area Signalling Services or CLASS Features are a set
0 of line-oriented features which the telephone company can deploy
0 in their residential or Centrex customer environment to generate
0 additional revenue. These features operate within a single
0 switch or transparently between users on different end-office
0 switches by means of CCS7-based signalling in a multi-node switch
0 configuration. In the U.S., this feature is called CLASS and in
0 Canada, the feature is called CMS. In this document, the feature
0 will be referred to as CLASS.

0 CLASS Features are separated into Phase I and Phase II features.
0 Phase I features include

- 0 - Automatic Callback (ACB) - allows a calling party to automat-
0 ically call again the number most recently dialed, whether
0 that call was answered, unanswered, or busy. If the station
0 is busy, the user may queue against that station and be re-
0 called when it becomes idle. The Automatic Callback feature
0 is very similar to the Ring Again (RAG) feature, but will be
0 deployed in the Public Network.
- 0 - Automatic Recall (AR) - enables the end user to return his
0 latest incoming call automatically, regardless of whether the
0 incoming call was answered, and regardless of whether the end
0 user knows the identity of the calling party. If the station
0 is busy, the user may queue against that station and be re-
0 called when it becomes idle. With two (2) level activation,
0 the directory number of the last call is voiced back prior to
0 completing the call.
- 0 - Calling Number Delivery or Calling Number Display (CND) - en-
0 ables receipt and display of the calling party's directory
0 number and Date/Time during the ringing cycle. This allows
0 the end user with a display set to make an informed decision
0 about answering the call.
- 0 - Calling Number Delivery Blocking (CNDB) - permits the origi-
0 nating customer, by designating his calling identity as "pri-

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0 vate", to prevent his directory number from being transmitted
0 for Calling Number Delivery. The calling party may change
0 his DN Suppression default - Suppress DN or not Suppress DN -
0 to the opposite status.

0 - Customer Originated Trace (COT) - enables the called party to
0 request an automatic trace of the last call received. The
0 trace record identifies the calling party and other call-
0 related information. The results of the trace are not pro-
0 vided directly to the end user, but are made available only
0 to an authorized agency, such as the telephone company or law
0 enforcement agency.

0 Note that CLASS features are available only to lines with a line
0 class code of RES (Residential Enhanced Services). Note that
0 this does not include ISDN RES lines.

0 Automatic Recall Date and Time Feature (ARDT)

0 This feature provides the date and time voiceback capability for
0 the Automatic Recall (AR) two-level activation sequence.

0 CLASS Configuration

0 Figure 35.2 illustrates a typical configuration with a CLASS ter-
0 minal on the DMS. This terminal is equipped with an enhanced
0 Man-Machine Interface (MMI), such as a Liquid-Crystal Display
0 (LCD) panel. The terminal could also consist of a standard tele-
0 phone with a CLASS add-on unit. An integrated telephone set,
0 such as NTL's MAESTRO, can also be used. The telephone section
0 of the Customer Premises Equipment (CPE) is loop powered, whereas
0 the CPE section providing CLASS features is powered by local AC.

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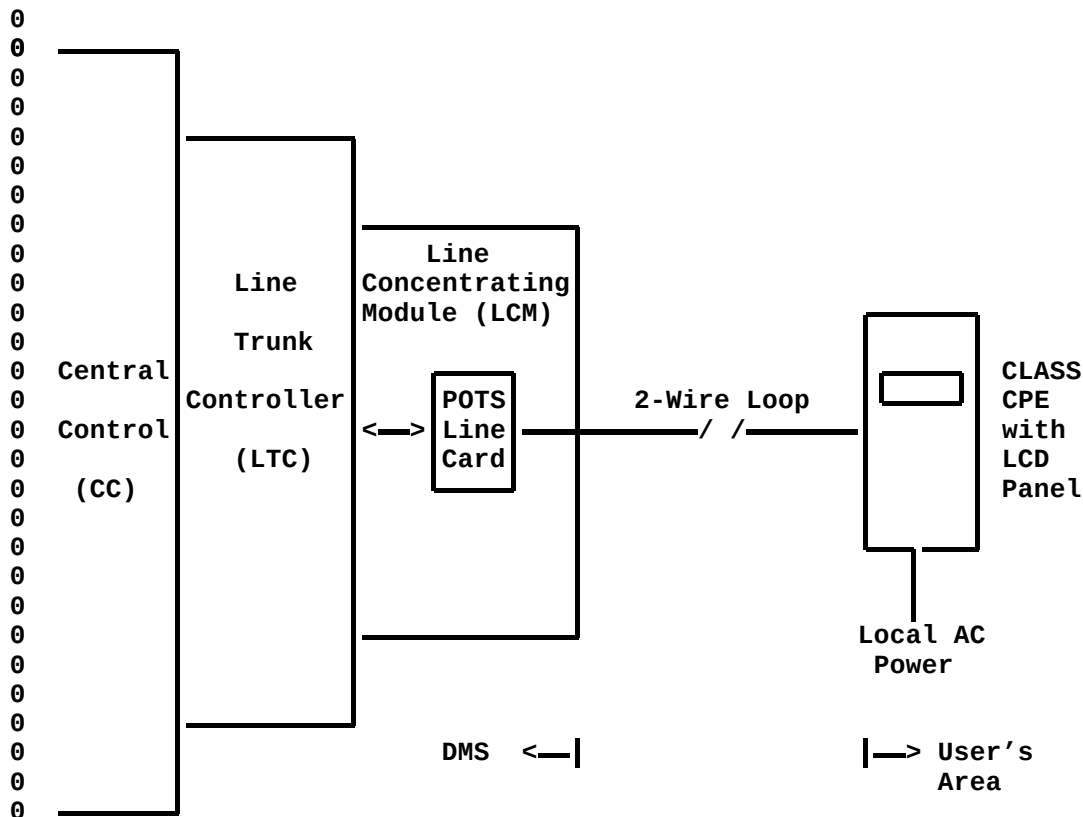
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0 Figure 35.2 Typical Configuration with a CLASS CPE

0 The transmission of the calling party number to the Customer Premises
0 Equipment (CPE) is accomplished via asynchronous FSK simplex-mode
0 transmission at 1200 bits/sec over the 2-wire loop, in accordance with
0 the Bell 202A standard. A burst of data is transmitted to the CPE
0 during the silent interval between the first and second ring of the
0 telephone set, before the incoming call is answered. The data link
0 terminates at a 202A modem in the CPE, which outputs the calling party
0 number to the LCD panel.

0 (b) Reference

0 Chapter 3, Section 3.4 Meridian Business Services

0 Section 3.15 Common Channel Signaling Systems

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0 (c) Provisioning Considerations

0 (i) CCS7 Signalling is required when CLASS features are ac-
0 cessed between nodes. Within the same node, CCS7 Signal-
0 ling is NOT required. Refer to Section 3.15 for more
0 information on CCS7 Signalling.

0 (ii) An optional feature exists called Automatic Recall Date
0 and Time (ARDT). This feature requires announcements
0 provided on a pair of CPs; NT1X76JA and NT1X76JB. The
0 NT1X76AJ and the NT1X76AK cards are required when the
0 NT1X76JA and NT1X76JB cards are ordered. The NT1X76AJ,
0 NT1X76AK, NT1X76JA, and NT1X76JB should be assigned to
0 the same DRA module. In a Class Phase 1 English office,
0 the NT1X76JA/JB can be assigned to a DRA where the
0 NT1X76AJ/AK cards are existing and there is room. Other-
0 wise, in other offices or where the DRAs with NT1X76AJ/AK
0 cards are filled, an additional set of NT1X76AJ/AK cards
0 must be ordered.

0 (iii) LCM Processor Cards, NT6X51AB, are required to support
0 CND in LCMS. LCM Common CP, NT6X04AB, contains NT6X51AB
0 and hence can support CND. Only LCMS which contain lines
0 utilizing the CND feature must be upgraded to use the
0 NT6X51AB.

0 (iv) In addition to the LCM Processor Card NT6X51AB, the CLASS
0 Modem Resource (CMR) card NT6X78AA has been developed to
0 support the introduction of CND.

0 The CMR card will support software to provide SP
0 processor - CMR messaging and thus provide CMR sanity
0 supervision, software downloading,
0 maintenance/diagnostics, operational measurements and
0 swact activity.

0 When the CND feature is required, provide two (2) CMR
0 cards per LGC/LTC/RCC/SMS/SMU module (i.e. one (1) card
0 per shelf). It is not necessary to equip all the
0 LGC/LTC/RCC/SMS/SMU in the office with the CMR card. Only
0 LGC/LTC/RCC/SMS/SMUs that will provide CND to the sub-
0 scribers that home on these peripherals will require the
0 CMR card. Any number of LGC/LTC/RCC/SMS/SMUs of a given
0 DMS may be equipped with CMR cards.

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- 0 (v) For Canadian Applications when the NT6X78AA cards are
0 provisioned into an LGC, LTC, or SMS module,

0 EITHER:

- 0 1. Retrofit the NT6X69AA/NT6X79AA card combination (if
0 existing) to an NT6X69AB card via the application of
0 the NT6X12ZY PC Kit.

0 This upgrade kit allows card slot 18 to be provi-
0 sioned with the CLASS Modem Resource (CMR) card
0 NT6X78AA which is used for the CND feature. The
0 power-reduced NT6X78AB replaces NT6X78AA and does not
0 require this upgrade.

0 OR

- 0 2. Limit the number of NT6X50AA DS-1 cards to four per
0 shelf (i.e. eight per module).

0 This is required to limit the shelf's overall +5 volt
0 power requirements to below 55 amps.

- 0 (vi) There are optional announcements available for CLASS fea-
0 tures to indicate successful or denied operation.

0 For BCS-27, the NT1X75BA DRAM Controller must be provi-
0 sioned for all CLASS applications.

0 There are two groups of announcements, Phase 1 CLASS DRA
0 Announcements and Phase 2 CLASS DRA Announcements. If the
0 CLASS/CMS feature is required, at least one group of an-
0 nouncements (i.e. Phase 1 or Phase 2) must be provided.
0 The Customer can either have Phase 1 announcements or
0 Phase 2 announcements or both.

- 0 (vii) Phase 1 CLASS DRA Announcements

0 For the optional Phase 1 CLASS DRA Announcements, the
0 Customer can either make up his own announcements or he
0 can order the pre-recorded ones from NT.

0 For provisioning the Digital Recorded Announcement Re-
0 cordable Memory cards (NT1X77AA/79AA), divide the total
0 length of the announcements (in seconds) by 31. This de-
0 termines the number of circuits required for these an-
0 nouncements. These are the announcements that the
0 Customer can make up himself.

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0 If the Customer chooses to create his own announcements,
0 and if he wants the Automatic Recall (AR) feature with
0 the Voice Back Option within NTXA00AA activated, then the
0 CLASS Phase 1 English Announcements (2) of (2) CP card,
0 NT1X76AK, and/or the CLASS Phase 1 French Announcements
0 (2) of (2) CP card, NT1X76BK, must be provided. Other-
0 wise, if the Voice Back Option is not to be activated,
0 then NT1X76AK and/or NT1X76BK are optional.

0 If the Customer wants our pre-recorded announcements, the
0 following DRA cards are available:

0	PEC	DESCRIPTION
0	NT1X76AJ	CLASS Phase 1 English Announcements
0		(1) of (2) CP
0	NT1X76AK	CLASS Phase 1 English Announcements
0		(2) of (2) CP
0	NT1X76BJ	CLASS Phase 1 French Announcements
0		(1) of (2) CP
0	NT1X76BK	CLASS Phase 1 French Announcements
0		(2) of (2) CP

0 The above cards are the approved Telecom Canada Phase 1
0 CLASS DRA Announcements.

0 If bilingual announcements are required (e.g. French fol-
0 lowed by English on the same announcement), then the
0 Phase 1 CLASS DRA Announcement cards must be provisioned
0 on the same DRA shelf (i.e. NT1X76AJ/AK/BJ/BK).

0 The Phase 1 CLASS DRA Announcement cards are only avail-
0 able in sets (e.g. NT1X76AJ/AK or NT1X76BJ/BK) and cannot
0 be provisioned separately. However, the NT1X76AK and
0 NT1X76BK cards can be ordered separately for the Auto-
0 matic Recall feature (noted above). The NT1X76AK card
0 can be ordered separately for the Call Forward Remote Ac-
0 tivation (CFRA) feature. (See Meridian Business Ser-
0 vices, Section 3.4, for more information on Residential
0 Enhanced Services.)

0 If the optional announcements are not selected, confirma-
0 tion tone can be used for successful feature operation
0 and fast busy (120 ipm) can be used for denial of feature
0 operation. This is only applicable to Calling Number De-
0 livery Blocking (CNDB) and Customer Originated Trace
0 (COT).

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0 (viii) Phase 2 CLASS DRA Announcements

0 For Phase 2 CLASS DRA Announcements, the Digital Recorded
0 Announcement Recordable Memory cards (NT1X77AA/79AA) can-
0 not be used.

0 For provisioning, two groups of Phase 2 CLASS DRA An-
0 nouncements are available:

0 1) Phase 2 CLASS DRA Announcements (List 1-12)

0 2) Phase 2 CLASS DRA Announcements (List 13-31)

0 The following are the Phase 2 CLASS DRA Announcement
0 (List 1-12) cards:

0	PEC	DESCRIPTION
0	NT1X76AP	CLASS Phase 2 English Announcements
0		(1) of (8) CP
0	NT1X76AQ	CLASS Phase 2 English Announcements
0		(2) of (8) CP
0	NT1X76AR	CLASS Phase 2 English Announcements
0		(3) of (8) CP
0	NT1X76AS	CLASS Phase 2 English Announcements
0		(4) of (8) CP
0	NT1X76AT	CLASS Phase 2 English Announcements
0		(5) of (8) CP
0	NT1X76AU	CLASS Phase 2 English Announcements
0		(6) of (8) CP
0	NT1X76AV	CLASS Phase 2 English Announcements
0		(7) of (8) CP
0	NT1X76__*	English "Personality" card
0	NT1X76BP	CLASS Phase 2 French Announcements
0		(1) of (8) CP
0	NT1X76BQ	CLASS Phase 2 French Announcements
0		(2) of (8) CP
0	NT1X76BR	CLASS Phase 2 French Announcements
0		(3) of (8) CP
0	NT1X76BS	CLASS Phase 2 French Announcements
0		(4) of (8) CP
0	NT1X76BT	CLASS Phase 2 French Announcements
0		(5) of (8) CP
0	NT1X76BU	CLASS Phase 2 French Announcements
0		(6) of (8) CP
0	NT1X76BV	CLASS Phase 2 French Announcements
0		(7) of (8) CP

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0 NT1X76__* French "Personality" card

0 The following are the Phase 2 CLASS DRA Announcement
0 (List 13-31) cards:

0	PEC	DESCRIPTION
0	NT1X76GA	CLASS Phase 2 English Announcements
0		(1) of (4) CP
0	NT1X76GB	CLASS Phase 2 English Announcements
0		(2) of (4) CP
0	NT1X76GC	CLASS Phase 2 English Announcements
0		(3) of (4) CP
0	NT1X76__	English "Personality" card

0 If Customers want Phase 2 CLASS DRA Announcements, the
0 group of List 13-31 cards are optional.

0 If either group or both groups of Phase 2 CLASS DRA An-
0 nouncements are required, provide a "Personality" card
0 for each group. Note that if both groups are required,
0 two "Personality" cards of the same type (i.e. one for
0 each group) must be provided.

0 The following are the Phase 2 CLASS DRA "Personality"
0 cards:

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0	PEC	CPC
0	NT1X76AW	CLASS Phase 2 English Announcements (8) of (8) CP
0	NT1X76BW	CLASS Phase 2 French Announcements (8) of (8) CP
0	NT1X76GE	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type I CP For Bell South
0	NT1X76GF	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type II CP For Bell Atlantic
0	NT1X76GG	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type III CP For United Tel
0	NT1X76GH	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type IV CP For GTE
0	NT1X76GJ	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type V CP For Pacific Bell
0	NT1X76GK	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type VI CP For Ameritech
0	NT1X76GL	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type VII CP For Southwest Bell

0 * The "Personality" card, NT1X76AW, contains only Bell
0 Canada names and Bell South BCS-29 VO information. The
0 "Personality" card, NT1X76BW, contains only Bell Canada
0 names. It must be determined up front which "Personal-
0 ity" cards are required by which Customer. When engi-
0 neering a DMS job (initial or extension) which will
0 require Phase 2 CLASS DRA Announcements, the onus will be
0 on the Customer to determine which "Personality" card is
0 required.

0 The Phase 2 CLASS DRA Announcement cards are only avail-
0 able in sets (e.g. NT1X76AP/AQ/AR/AS/AT/AU/AV/AW or
0 NT1X76BP/BQ/BR/BS/BT/BU/BV/BW or NT1X76GA/GB/GC) and can-
0 not be provisioned separately. Note that the only excep-
0 tion to this is the "Personality" card (e.g. NT1X76AW)
0 which will be provisionable with other Customer specific
0 packs (as highlighted above).

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- 0 (ix) Automatic Recall Date and Time (ARDT) CLASS DRA Announce-
0 ments

0 The customized announcements require a DRAM with a
0 NT1X75BA controller card. A set of AR Date and Time
0 Phrase List PROM Cards NT1X76JA and NT1X76JB are required
0 for ARDT (English) announcements. Each CP contain two
0 (2) virtual card credits because they are double density
0 cards.

0 The following are the AR Date and Time Phrase List PROM
0 cards:

0	PEC	CPC	
0	NT1X76JA	B0231819	Automatic Recall Date/Time
0			Announcements (1) of (2) CP
0	NT1X76JB	B0231820	Automatic Recall Date/Time
0			Announcements (2) of (2) CP

0 The NT1X76AJ and the NT1X76AK cards are required and
0 should be assigned to the same DRA module as the NT1X76JA
0 and NT1X76JB cards. In a Class Phase 1 English office,
0 the NT1X76JA/JB can be assigned to a DRA where the
0 NT1X76AJ/AK cards are existing and there is room. Other-
0 wise, in other offices or where the DRAs with NT1X76AJ/AK
0 cards are filled, an additional set of NT1X76AJ/AK cards
0 must be ordered.

- 0 (x) The DRA cards (either recordable or pre-recorded) can
0 mount on DRA modules (i.e. NT2X58AM, NT2X58CB, NT2X58AK,
0 NT2X58AG).

0 The DRA module can accommodate one (1) NT1X75BA DRAM Con-
0 troller card and up to a maximum of eight (8) virtual
0 card credits (i.e. the addressing range of the NT1X75BA).

0 The DRA Recordable Memory cards (NT1X77AA and NT1X79AA)
0 each contain one (1) virtual card credit because they are
0 single density cards.

0 The existing DRA pre-recorded announcement card NT1X76AA
0 contains one (1) virtual card credit. Currently, this is
0 the only NT1X76__ card which contains one (1) virtual
0 card credit. All other NT1X76__ cards contain two (2)
0 virtual card credits because they are double density
0 cards.

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0 All Phase 1 and Phase 2 CLASS DRA pre-recorded announce-
0 ment cards (i.e. NT1X76AJ/AK/BJ/BK, NT1X76AP-AW,
0 NT1X76BP-BW, NT1X76GA-GC, NT1X76GE-GL) each contain two
0 (2) virtual card credits because they are double density
0 cards. Hence, a DRA module can accommodate a maximum of
0 eight (8) single density cards or a maximum of four (4)
0 double density cards.

0 The two (2) Phase 1 CLASS DRA Announcement cards (Eng-
0 lish) can be mounted on half of a DRA module. The two
0 (2) Phase 1 CLASS DRA Announcement cards (French) can be
0 mounted on half of a DRA module. If both English and
0 French are required, then the four (4) Phase 1 CLASS DRA
0 Announcement cards (English and French) can be mounted on
0 one (1) DRA module.

0 The eight (8) Phase 2 CLASS DRA Announcement (List 1-12)
0 cards (English) can be mounted on two (2) DRA modules.
0 The eight (8) Phase 2 CLASS DRA Announcement (List 1-12)
0 cards (French) can be mounted on two (2) DRA modules.

0 A quantity of five (5) DRA modules may be provisioned on
0 a TME frame, NT0X46AB, if and only if double density DRA
0 cards are provisioned on these modules. Any double den-
0 sity DRA cards (i.e. all NT1X76__ cards with the excep-
0 tion of NT1X76AA which is a single density card), up to a
0 maximum of four (4) per module, may be provisioned. Oth-
0 erwise, only four (4) DRA modules may be provisioned on a
0 TME frame.

0 Hence, a DMS office requiring both Phase 1 and Phase 2
0 (List 1-12) pre-recorded CLASS DRA Announcements in Eng-
0 lish and French can have all twenty (20) double density
0 DRA cards mounted on five (5) DRA modules and these five
0 (5) modules could be mounted onto one (1) TME frame.

0 Redundancy of announcements is available as an option in
0 the U.S. only. If redundancy is provided, ensure that
0 the announcement MTMs are on different power feeds.

0 The assignment rules for mounting Phase 1 and Phase 2
0 CLASS DRA Announcement cards onto DRA modules are the
0 same as the rules pertaining to the existing NT1X76__ DRA
0 Announcement cards. Cards NT1X76AP/AQ/AR/AS must be
0 mounted together onto the same DRA module. Cards
0 NT1X76AT/AU/AV/AW must be mounted together onto the same
0 DRA module. Similarly, cards NT1X76BP/BQ/BR/BS must be

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0 mounted together onto the same DRA module and cards
0 NT1X76BT/BU/BV/BW must be mounted together onto the same
0 DRA module. Cards NT1X76GA/GB/GC/+"Personality" Card
0 must be mounted together onto the same DRA module. The
0 previous cards within each DRA module can be in any or-
0 der. (See DRA System Provisioning in this section for
0 further information on the DRA.)

0 (xi) Log messages are produced when a subscriber activates the
0 Customer Originated Trace (COT) feature. If the
0 customer/telco wants these log messages to be routed to a
0 dedicated TTY, then a separate I/O port (i.e. one port
0 off of a NT1X67BC card) is required. Otherwise, these
0 log messages will be routed along with other log messages
0 to the customer specified TTY.

0 (xii) Canadian customers will be able to obtain CLASS Terminals
0 from NTCL or from outside suppliers. To obtain CLASS
0 terminals (i.e. an integrated telephone set, such as
0 MAESTRO) from NTCL, Canadian customers will contact
0 London Terminal Division.

0 U.S. customers will obtain CLASS terminals from outside
0 suppliers.

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0 2.3.2 Common Peripheral Controller Equipment

0 (a) General Description

0 The Signalling Data Link (SDL) is channel on a T1 Carrier which
0 terminates on a DTC, DCM or LTC. ISDN trunks must terminate on a
0 DTC since they are only supported on DTCs.

0 (b) Reference

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations:

0 (i) The DTC may be used for SDL and ISDN trunks, however, for
0 reliability against failures, it is recommended to dis-
0 tribute the ISDN trunks and SDL across several peripher-
0 als.

0 (ii) CCS7 trunks must terminate on DTCs ONLY. Signalling Links
0 can terminate on DTCs, DCMs or LTCs. Signalling Links
0 and CCS7 trunks can be assigned to the same DTC.

0 (iii) CCS7 trunks can be mixed with PTS trunks on the same DTC,
0 however, both cannot be in the same trunk group.

0 (iv) Provision one (1) NT6X55AB DS0A Signaling Interface CP on
0 the DTC for each DS0A CCS7 signaling link. (Refer to
0 section 3.5 for more information.)

0 (v) DTC modules supporting CCS7 trunks must be equipped with
0 Extended Memory (NT6X46) and Enhanced Messaging (NT6X69).

0 (vi) The maximum number of DTCs utilizing CCS7 is 60 per of-
0 fice based on each DTC requiring 2 IPMLs per MSB7.

0 (vii) Each DTC utilizing CCS7, requires two continuity cards
0 NT6X70AA for continuity checking on ISUP trunks for BCS23
0 and earlier. In BCS24 and later, the software require-
0 ment for Continuity Cards was removed so that customers
0 requesting the cost reduction when testing is not re-
0 quired are not required to order the cards.

0 For U.S. applications only, since the NT6X70-- is re-
0 quired for the COT test, it is recommended that continu-

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0 ity cards continue to be provisioned in most cases.
0 Provisioning Continuity Cards on CCS7 DTCs should be con-
0 sidered standard. Only per customer request can they be
0 omitted.

0 For Canadian applications only, many customers have a
0 high penetration of digital trunk facilities and do not
0 require the Continuity card. Provision these cards only
0 on DTCs whose trunks support analog facilities at some
0 point in the end-to-end connection of the trunk.

0 (viii) Refer to Section 3.5 for more information on the DTC, DCM
0 and LTC.

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0 2.3.3 Network Termination 1 (NT1)

0 (a) General Description

0 The Network Termination One (NT1) will provide the interface be-
0 tween 2B+D 2-wire U-interface and the customers 4-wire S/T inter-
0 face.

0 The NT1 is a standalone device located at the customers premisis.
0 It is AC powered.

0 (b) References

0 None.

0 (c) Provisioning Considerations

0 (i) Provide one (1) NT1 NTB11AB for each ISDN 'U' Line Card.
0 All standalone NT1 units are to be Merchandise Ordered by
0 the customer.

0 (ii) The T-Side termination hardware will be supplied by the
0 customer to connect from one to eight terminals.

0 (iii) The physical dimensions of the NT1 are 1.5"H x 7.8"W x
0 6.7" L. It has a separate power supply always provided
0 with dimensions 3.9"H x 2.4"W x 2.3"L

0 The supply is connected directly to an AC outlet. It will
0 supply voltages of +5v, +15v and -15v via a cable to the
0 NT1.

0 (iv) The NT1 is not required for loops using the ISDN 'S/T'
0 Line Card.

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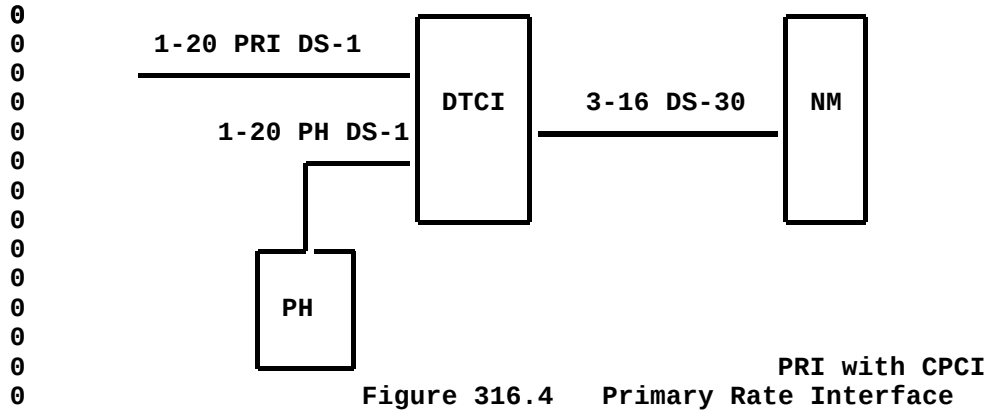
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0 2.3.4 Primary Rate Interface System Level Provisioning

0 (a) General Description

0 Primary Rate Interface (PRI) will be implemented on the CPEI
0 frame.

0 Primary Rate Interface is configured as per Figure 316.4.



0 (b) References

0 None.

0 (c) Provisioning Considerations

0 (i) Primary Rate Interface Link Provisioning

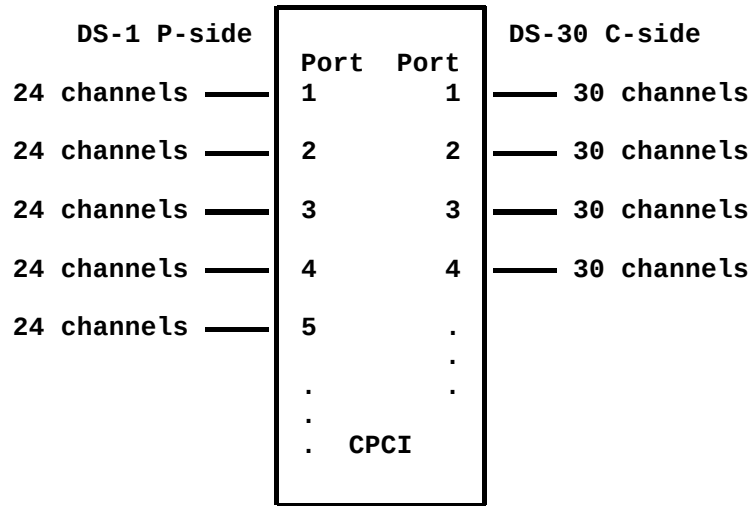
0 The sixteen network ports (C-side) on the peripheral con-
0 trollers are pre-allocated for each p-side trunk member.
0 For example, the first five DS-1 links are mapped onto
0 the first four C-side ports (reference Figure 316.5):

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24 channels X 5 ports = 120 channels total 30 channels X 4 ports = 120 channels total

Figure 316.5

Pre-Allocated Network Ports

Therefore, for most efficient usage of ports, the DS-1 ports should be allocated in contiguous groups of five (5) and the DS-30 ports in contiguous groups of four (4).

A single PRI D channel may provide signalling for up to 16 DS-1 links (383 B channels). All of these DS-1 facilities must be present on the same ISDN peripheral.

The CPEI has twenty (20) peripheral ports. These are divided between the incoming PRI DS-1 links and provisioned DS-1 links to the Packet Handler. On the LGEI/LTEI only, p-side ports are reserved for DS-30A links from LCE and LCEI frames (BRI or combined BRI/PRI access).

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0 2.3.5 Primary Rate Interface Equipment Provisioning

0 (a) General Description

0 This section deals with the frame level provisioning for Primary
0 Rate Interface (PRI).

0 (b) References

0 None.

0 (c) Provisioning Considerations

0 (i) For the CPCI peripheral controller:

- 0 1. Provide one (1) NT6X01AB ISDN Common Peripheral Con-
0 troller Equipment frame.
- 0 2. Provide one (1) NT6X02NA ISDN Common CP Fill for each
0 module to be equipped.
- 0 3. Provide one (1) NT6X50AB to accommodate two DS-1
0 links up to a maximum of ten circuit packs (20 DS-1
0 links) per DTCI module.

0 If the module is only equipped for PRI it will be called
0 DTCI, and if equipped for BRI/PRI it will be called LTCI.
0 D-channel Handler (DCH) CP are not required on the DTCI,
0 nor where the CPCI supports only non-ISDN LCMs.

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0 3.0 DTC/LGC/LTC Modules - DETAIL/BUILDING BLOCK ENGINEERING

0 The current packfills for the DTC/LGC/LTC peripheral controller
0 modules replace the existing NT6X02IA,LA,MA packfills. The cur-
0 rent packfills for the DTC/LGC/LTC modules are the
0 NT6X02IC,LC,MC. These packfills consist of newly-designed cir-
0 cuit packs having a lower power consumption than existing equiv-
0 alent packs. The current packfills also have increased master
0 processor memory from 2Meg to 4Meg.

0 Following are the peripheral packfills to be ordered for new pe-
0 ripheral modules:

DESCRIPTION	NEW-ORDER PACKFILL PEC	REPLACES PEC
DTC Common CP	NT6X02IC	NT6X02IA
LGC Common CP	NT6X02LC	NT6X02LA
LTC Common CP	NT6X02MC	NT6X02MA
NOTE: The NT6X02IC,LC,MC are the standard DTC/LGC/LTC offerings. All initials and extensions ordering new XPM modules will receive the NT6X02IC,LC,MC packfills.		

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0 3.1 HARDWARE PROVISIONING

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0 3.1.1 HARDWARE USAGE RESTRICTIONS

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0 The DTC/LGC/LTC modules have a power consumption limitation which
0 affects the provisioning of circuit packs on these modules. This
0 limitation MUST be taken into consideration before any
0 DTC/LGC/LTC module is engineered, new or existing.

0 IN U.S. - Refer to ECM-441, XPM Power Provisioning, for further
0 information on this subject.

0 IN CANADA - Currently the only power consumption limitation oc-
0 curs when the CLASS Modem Resource (CMR) card, NT6X78AA, is pro-
0 visioned into a LGC, LTC, or SMS module. For further
0 information, refer to ECM-332, CLASS - U.S. / CMS - Canada.

0

0 3.1.2 HARDWARE DEPENDENCIES

0

0 N/A

0 P AND C SIDE PORT REQUIREMENTS

0

0 P-Side Ports

0 LGC 2-6 DS-30A
0 2-6 DS-1 When connecting to an RSC that does not have
0 CDO/PBX Trunking. Refer to ECM618 for more
0 details.

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0 LTC 2-20 DS-1
0 2-20 DS-30A
0 DTC 1-20 DS-1

0 C-Side Ports
0 LGC 3-16 DS-30
0 LTC 2-16 DS-30
0 DTC 2-16 DS-30

0 DMS BUS PORT REQUIREMENTS

0
0 N/A

0 CIRCUITS PER CARD

0
0 N/A

0 DISCRIMINATION NUMBERING

0
0 N/A

0 3.1.3 PROVISIONING CONSIDERATIONS

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0 Ordering New Peripheral Modules

0
0 Information in sections 2.4.1 - 2.4.9 is contained in the Engi-
0 neering manual sections for the NT6X01AA/AD frames and has been
0 removed from this ECM body.

0 o Application of XPM PLUS to LGC, and LTC modules
0 is mandatory (BCS Gating) for BCS-38. Application of
0 XPM PLUS to DTC modules is mandatory for BCS-41.

0 o As of BCS 35 the MP/SP processor will no longer be
0 shipped for new orders of the LGC/LTC/DTC. The Unified
0 process (XPM Plus) will be shipped for all new LGC/DTC/LTC/
0 modules ordered.

0 Refer to ECM 678 for additional information on XPM Plus.

0 3.1.4 OFFICE LAYOUT INFORMATION

0
0 N/A

0
0 3.1.5 TRAFFIC TABLES

0
0 Refer to ECM-350, The Credit System.

0 The following information supplements the Credit System Assump-
0 tions in ECM350 DMS-100 Traffic Provisioning "The Credit System":

0

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0 In ECM350, it is stated that a maximum of 62 software nodes can
0 be datafilled on an LGC/LTC P-side in BCS23 and onwards. The term
0 "software nodes" is defined fully in the ECM.

0 However, there is an additional restriction due to the limited
0 number of direct messaging channels to the LGC/LTC P-side. A
0 maximum of thirty (30) channels is available for this purpose.
0 Each of the following nodes consumes two (2) direct messaging
0 channels:

- 0 - LCM
- 0 - RCC
- 0 - RLCM/OPM
- 0 - Each RMM shelf on the RLCM/OPMs
- 0 - Each ESA Processor (NT6X75AA CP) on the RLCM/OPMs

0 The total number of nodes provisioned on the LGC/LTC P-side can-
0 not exceed the maximum (30) available.

0 Nodes that do NOT require a direct messaging channel comprise
0 those interfaced to the LGC/LTC via a Remote Switching Center
0 (RSC), ie. any LCMs, RLCM/OPMs, RMM shelves, and ESA Processors
0 off the P-side of the RCC. The TOTAL of these nodes plus those
0 above which require direct messaging channels cannot exceed 62.
0 Refer to Figure A on the following page.

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0 3.1.6 PROVISIONING CONSIDERATIONS (BUILDING BLOCK ENGINEERING)

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0 LGE/LTE/DTE CUSTOMER QUESTIONS

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0 Assumptions

- 0 1. Capacity figures in this document are based on REAL:QUICK.
0 2. 50/50 Orig/Term split provides a worst case scenario.
0 3. 4 secondary members per MADN group.
0 4. 40 percent Custom Calling Feature assignment to POTS lines.
0 5. 100 percent Custom Calling Feature assignment to MDC lines.
0 6. 100 percent UTR provisioning.
0 7. 100 percent secondary member ringing for MADN groups.
0 8. 50 percent secondary member answer.
0 9. Trunks are data filled requiring A and B Scanning,
0 CSM and DS-1 maintenance overheads.

0 Considerations

- 0 1. Utilization higher than 80 percent requires a detailed
0 capacity study using PRTCALC.
0 2. When MADN penetration is higher than 40 percent, then
0 a detailed study is required using PRTCALC.
0 3. Deviation from recommended NTI assignment rules will
0 dictate a detailed capacity study.
0 4. Special applications of the LGC will require detailed
0 capacity study using PRTCALC.
0 5. Call timings used reflect average work times for the
0 lines types.

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0 Q1. DS-1 Link Information

0 a) Complete the following table (for LGC/LTC applications):

	# LINKS PER REMOTE (i)						
	16	15	14	13	12	11	10
No. RCC W/ CDO or PBX Trunks (RW)							
No. RCC W/O CDO or PBX Trunks (R)							
No. RLCM	XX	XX	XX	XX	XX	XX	XX
No. RLCC	XX	XX	XX	XX	XX	XX	XX
No. OPM	XX	XX	XX	XX	XX	XX	XX
(TOTAL) T = RLCM + RLCC + OPM	XX	XX	XX	XX	XX	XX	XX

	# LINKS PER REMOTE (i)							
	9	8	7	6	5	4	3	2
No. RCC W/ CDO or PBX Trunks (RW)								
No. RCC W/O CDO or PBX Trunks (R)								
No. RLCM	XX	XX	XX					
No. RLCC	XX	XX	XX					
No. OPM	XX	XX	XX					
(TOTAL)								

0	T = RLCM + RLCC	XX	XX	XX					
0	+ OPM								
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0 b) Total DS-1 Span Lines (DTC applications) _____

0 (Applications for span lines are detailed as follows:)

0 Standard Span Lines

0 CCS7 Span Lines

0 Span lines req'd for TOPS DA ARU links.

0 Span lines req'd for TOPS VSN voice links.

0 Span lines req'd for TOPS voice links.

0 Span lines req'd for TOPS MPX VSN voice links

0 Span lines req'd for TOPS loop-around
0 trunking.

0 Span lines req'd for E911 loop-around
0 trunking.

0 Span lines req'd for VMX interface.

0 Span lines req'd for VMX loop-around.

0 Spare DTC DS-1 Span Lines.

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0 Q2. Spread Information (LGC/LTC):

0 a) RSC's assigned to dedicated controller modules (Y/N) _____

0 Q3. Network Interface (select one):

0 a) DS-30 to Network (Y/N) _____

0 b) DS-512 to Enhanced Network (E-NET) (Y/N) _____

0 Q4. Optional Features (LGC/LTC)

0 a) CLASS-Calling Number Display required (Y/N) _____

0 Q5. LGC/LTC Real Time Questions (quantities):

0 a) No. of POTS Lines _____

0 b) No. of MDC Lines W/O MADN _____

0 c) No. of MDC Lines W/ MADN _____

0 d) No. of RES Lines W/O CLASS _____

0 e) No. of RES Lines W/ CLASS _____

0 f) No. of Trunks _____

0 Q6. LGC/LTC Real Time Questions (call attempts):

0 a) POTS 2-Way HDBH Call Attempts per Line _____

0 b) MDC 2-Way HDBH Call Attempts per Line _____

0 c) RES 2-Way HDBH Call Attempts per Line _____

0 d) RSC Call Attempts _____

0 e) HDBH Call Attempts per Trunk _____

0 f) Average DTMF Holding Time in seconds _____

0

0 Q7. DTC REAL Time Questions (quantities):

0 a) No. of MF Trunks _____

0 b) No. of SS7 Trunks _____

0 Q8. DTC Real Time Questions (call attempts):

0 a) HDBH Call Attempts per Trunk _____

0 b) MF RCVR Holding Time in seconds _____

0 Q9. Quantity of CCS7 DS0A DTC links required ? _____

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0 LGE/LTE CALCULATIONS

0
0 (NOTE: The values used in these calculations are obtained
0 from section 2. LGE/LTE/DTE CUSTOMER QUESTIONS.)

0 (a) Real Time Calculations

0 Refer to REAL::QUICK program for REALTIME usage of the
0 LGC and LTC.

0 (b) Hardware Provisioning

0 Quantity of LGC = R126, R127 from ECM 497

0 Quantity of LTC = R136 from ECM 497

0 NTZZ02BA = LGC

0 NTZZ02CA = LTC

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0 (c) Frame Calculation

0 NTZZ22AA or NTZZ22BA (US) or NTZZ22DA (US)
0 = (NTZZ02BA + NTZZ02CA) / 2 (round-up)

0 If (NTZZ02BA + NTZZ02CA) = odd number,
0 then: provide one (1) NT6X02AB for last frame.

0
0 (d) DS-1 Calculation

0 i = #Links Per LCM

0 Ti = Ti - #LCM

0 # DS-1 Links = (R16 + RW16) * 16 + (R15 + RW15) * 15
0 + (R14 + RW14) * 14 + (R13 + RW13) * 13
0 + (R12 + RW12) * 12 + (R11 + RW11) * 11
0 + (R10 + RW10) * 10 + (R9 + RW9) * 9
0 + (R8 + RW8) * 8 + (R7 + RW7) * 7
0 + (R6 + RW6 + T6) * 6 + (R5 + RW5 + T5) * 5
0 + (R4 + RW4 + T4) * 4 + (R3 + RW3 + T3) * 3
0 + (R2 + RW2 + T2) * 2

0 NTZZ02DA = # DS-1 Links / 2 (round-up)

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0 (e) DS-30A Calculation

0 If Q2a is NO , then: NTZZ02JA = NTZZ02BA + NTZZ02CA

0 If Q2a is YES, then:

0 # DS-30A Links = (T6 * 6) + (T5 * 5) + (T4 * 4)
0 + (T3 * 3) + (T2 * 2)
0 + (#LCM * #Links Per LCM)

0 NTZZ02JA = # DS-30A / 20 (round-up)

0
0 (f) CMR Calculation

0 If Q4a is YES and Q2a is NO , then:

0 NTZZ02EA or NTZZ97AA = NTZZ02BA + NTZZ02CA

0 If Q4a is YES and Q2a is YES, then:

0 # DS-30A Links = (T6 * 6) + (T5 * 5) + (T4 * 4)
0 + (T3 * 3) + (T2 * 2)
0 + (#LCM * #Links Per LCM)

0 NTZZ02EA = # DS-30A / 20 (round-up)

0
0 (g) Network Interface Calculation

0 If Q3a is YES, then: NTZZ02GA = NTZZ02BA + NTZZ02CA
0 NTZZ02HA or NTZZ02HB/HM = 0

0 If Q3b is YES, then: NTZZ02GA = 0
0 NTZZ02HA or NTZZ02HB/HM NTZZ02BA + NTZZ02CA

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0 (h) UTR Calculation

0 POTS ORIG = (Q5a) * (0.5)

0 MDC W/O MADN ORIG = (Q5b) * (0.5)

0 MDC W/ MADN ORIG = (Q5c) * (0.5)

0 RES W/O CLASS ORIG = (Q5d) * (0.5)

0 RES W/ CLASS ORIG = (Q5e) * (0.5)

0 POTS DTMF CCS = (Q6f * Q6a) / 100

0 MDC DTMF CCS = (Q6f * Q6b) / 100

0 RES DTMF CCS = (Q6f * Q6c) / 100

0 UTR CCS POTS = (POTS DTMF CCS) * (POTS ORIG)

0 UTR CCS MDC W/O MADN = (MDC DTMF CCS) * (MDC W/O MADN ORIG)

0 UTR CCS MDC W/ MADN = (MDC DTMF CCS) * (MDC W/ MADN ORIG)

0 UTR CCS RES W/O CLASS = (RES DTMF CCS) * (RES W/O CLASS ORIG)

0 UTR CCS RES W/ CLASS = (RES DTMF CCS) * (RES W/ CLASS ORIG)

0 TOTAL UTR CCS = UTR CCS POTS
0 + UTR CCS MDC W/O MADN
0 + UTR CCS MDC W/ MADN
0 + UTR CCS RES W/O CLASS
0 + UTR CCS RES W/ CLASS

0 If UTR CCS = 0 to 765 , then NTZZ02FA = 1 * NTZZ02JA

0 If UTR CCS = 765 to 1600 , then NTZZ02FA = 2 * NTZZ02JA

0 If UTR CCS > 1600 , then issue following warning:
0 *****
0 * WARNING: UTR CCS is over (1600) *
0 *****

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0 (i) Filler Face Plate Calculation

0 NT0X50AA = 20 * (NTZZ02BA + NTZZ02CA)
0 - 1 * (NTZZ02DA)
0 - 2 * (NTZZ02EA + NTZZ02FA)
0 - 4 * (NTZZ02JA)

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0 DTE CALCULATIONS

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0 (NOTE: The values used in these calculations are obtained
0 from section 2. LGE/LTE/DTE CUSTOMER QUESTIONS.)

0 (a) Real Time Calculations

0 Refer to REAL::QUICK program for REALTIME usage of the DTC.

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0 (b) Hardware Provisioning0 $DTC = (Q1b + (Q9 \times 2)) / 20$ (round-up)0 $NTZZ04BA = DTC$

0 $NTZZ22AA$ or $NTZZ22BA$ (US) or $NTZZ22DA$ (US)
0 $= NTZZ04BA / 2$ (round-up)

0 If $NTZZ04BA =$ odd number,
0 then: provide one (1) $NT6X02AB$ for last frame.

0 $NTZZ02DA = Q1b / 2$ (round-up)0 $NTZZ04CA = NTZZ04BA$

0 If $Q3a$ is YES, then: $NTZZ02GA = NTZZ04BA$
0 $NTZZ02HA$ or $NTZZ02HB = 0$

0 If $Q3b$ is YES, then: $NTZZ02GA = 0$
0 $NTZZ02HA$ or $NTZZ02HB = NTZZ04BA$

0 $TRKI = MF \text{ Trunks Incoming} = (Q7a) * (0.5)$ 0 $MF \text{ RCVR CCS} = (Q8a * Q8b) / 100$ 0 $UTR \text{ CCS} = TRKI * MF \text{ RCVR CCS}$

0 If $UTR \text{ CCS} = 0$ to 765 , then $NTZZ02FA = 1 * NTZZ04BA$
0 If $UTR \text{ CCS} > 765$, then $NTZZ02FA = 2 * NTZZ04BA$

0 $NT0X50AA = (16 * NTZZ04BA) - (NTZZ02DA + 2*NTZZ02FA$
0 $+ 2*NTZZ04CA + NTZZ04AA)$

0

0 C-side Ports DTC = $(Q1b * 24) / 30$ (round-up)

0 NTZZ04AA = Q9

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0 3.2 PRODUCT/SYSTEM SPECIFICATION

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0 3.2.1 PHYSICAL CHARACTERISTICS

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0 3.2.2 EMI/EARTHQUAKE INFORMATION

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0 N/A

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0 3.2.3 SPARING INFORMATION

0

0 Apply standard sparing algorithms.

0 3.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 A DTE/LGE/LTE Frame shall be fused as follows:

0	A-Feed	Two	20 Amp Fuses
0	B-Feed	Two	20 Amp Fuses

0

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0 3.2.5 CURRENT DRAIN INFORMATION0
0 DTC/LGC/LTC Module: 8.5 Amps0 3.3 SOFTWARE PROVISIONING

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0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES0
0 Jobs that are ordering XPM Plus(UP Processor) in the NT6X01AD
0 frame at BCS 34 need the BCS 35 PM load and the NTRX42AA CC pack-
0 age.

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0 3.3.2 SOFTWARE USAGE RESTRICTIONS0
0 N/A

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0 3.3.3 MEMORY PROVISIONING

0
0 N/A

0 3.4 REAL TIME IMPACT

0 In the U.S., refer to PRTCALC.

0 In CANADA, for a detailed calculation of Peripheral Processor
0 (PP) realtime, use the XPRT program. Refer to the latest issue
0 of the Systems Engineering Letter (SEL) for details and opera-
0 tional instructions.

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0 4.0 NT6X50EC - DS1 Interface with Echo Cancellation

0 The NT6X50EC is to provide echo cancellation inside the DMS envi-
0 ronment. This function is now being done outside of the switch
0 using equipment not provided by NORTHERN TELECOM. Integration of
0 echo cancellation is required due to the high cost of operation
0 and maintenance of these external devices.

0 The NT6X50EC cancels the echo created by the impedance mismatch
0 in the near end hybrid. The cancellation prevents the far end
0 talker from hearing the echo of their own voice. Echo cancellers
0 are useful only where the delay is long enough for the echo to be
0 noticed.

0 4.1 HARDWARE PROVISIONING

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0 4.1.1 HARDWARE USAGE RESTRICTIONS

0
0 The NT6X50EC does not perform the permanent loop back for an in-
0 active port, therefore it cannot be used in the remote line con-
0 centrating module (RLCM)

0 This circuit pack cannot be installed on a trunk that is provi-
0 sioned with an echo suppressor.

0 4.1.2 HARDWARE DEPENDENCIES

0
0 If the NT6X50EC is to be installed in a DTE frame, an Auxiliary
0 Fuse Panel (AFP, NT6X0131) must be used. The AFP will allow -48V
0 power to be run up to the card slot of the NT6X01AA frame. The
0 NT6X0130 will include all cabling needed to power the card slots.

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0 4.1.3 POWER/HEAT DISSIPATION

0
0 This circuit pack connects to 5V, +/- 12V and -48V power sup-
0 plies. The majority of the power is derived from the -48V supply,
0 thereby reducing the demand on the existing 5V supply.

0 There will be a kit developed to run -48V up to the CP slots.
0 There is no pec code for this kit as of this release.

0 4.1.4 PROVISIONING CONSIDERATIONS.

0
0 The DTC and DTCI can be provisioned with up to 10 NT6X50EC cp's.

0 The NT6X50EC and NT6X50AB can be mixed on the same shelf. This
0 will allow the customer to chose wich trunks will have the echo
0 cancellation feature.

0 4.1.5 OFFICE LAYOUT INFORMATION

0
0 Not Applicable

0 4.1.6 TRAFFIC TABLES

0
0 The NT6X50EC traffic studies are the same as the NT6X50AB. The
0 only difference is that the NT6X50EC has echo cancellation.

0

0 4.2 PRODUCT/SYSTEM SPECIFICATION

0

0 4.2.1 PHYSICAL CHARACTERISTICS

0

0 Not Applicable

0 4.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not Applicable

0 4.2.3 SPARING INFORMATION

0

0 Standard algorithms for sparing apply.

0 4.3 SOFTWARE PROVISIONING

0

0 4.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCY

0

0 The software for the NT6X50EC will be incorporated into the BCS
0 30 software load.

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0 4.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Integrated echo cancellation is supported by BCS30 and later re-
0 leases. The new CC and XPM software required for use and control
0 of the NT6X50EC trunk interface will be integrated into the ex-
0 isting software structure with minimal impact. The software will
0 be backwards compatible, such that it will operate with either
0 the NT6X50AB/EC trunk interface cards. The table control modifi-
0 cations and new tables will be consistent with existing DMS-250
0 table control interface. New MAP displays will be built upon the
0 existing MAP hierarchy. The LOGS, alarm, and OM'S will all con-
0 form to the existing standards.

0 4.3.3 MEMORY PROVISIONING

0
0 Not Applicable

0 4.4 REAL TIME IMPACT

0 To perform echo cancellation, in each frame (125 usec) a single
0 DSP must perform 64 multiplies of 100ns each 8 channels.
0 $64 \times 100 \times 8 = 51.2 \text{ usec}$
0 51.2 usec is required for multiply/accumulate operations for echo
0 cancellation alone. Coefficient adaption requires another 51.2
0 usec for multiply accumulate operations. This leaves 22.6 usec
0 (18%) of each frame for overhead and other tasks. In order to
0 achieve this level of performance, the echo canceller is limited
0 to processing a maximum of two hybrids on a DS0 line at the same
0 time. Thus, the echo canceller can cancel echos for three-way
0 calling, but not for larger conference groups.

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0 5.0 International Cabinet LGE/DTE/LTE ISDN

0 The Australian DMS-300 International Gateway Switch is based on the
0 DMS-300 supplied to Turkey with the following enhancements:

- 0 - Signalling systems necessary to introduce the product
0 into the Australian National Network.
- 0 - Enhancements to the Call Detail Recording, Operational
0 Measurements and Call Progression tone systems.

0 Similarly, the DMS-300 Gateway Switch for Madley-B Digital Interna-
0 tional Switching Centre (DISC) in the United Kingdom is based on ex-
0 isting technology, adapted for that market.

0 The NTFX33CA International Cabinet LGE/DTE/LTE ISDN houses one or two
0 International PCM-30 LGC/DTC/LTC ISDN or not dual shelf modules in a
0 cabinet configuration for applications not requiring fiber network
0 interfaces.

0 5.1 HARDWARE PROVISIONING

0

0 5.1.1 HARDWARE USAGE RESTRICTIONS

0 Not applicable.

0 5.1.2 HARDWARE DEPENDENCIES

0 Not applicable.

0

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0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable0 5.1.3 PROVISIONING CONSIDERATIONS0
0 The NTFX33CA International Cabinet LGE/DTE/LTE ISDN is provi-
0 sioned as follows:0 The shelves within the LTEM cabinet are provisioned in the same
0 way as the domestic ISDN frame NT6X01AB, except that PCM-30

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0 interfaces are used instead of DS-1 and some circuit pack vin-
0 tages are different for the Offshore market.

0 Refer to the Engineering Manual sections for details on circuit
0 pack vintages and cabinet hardware provisioning.

0 Common Circuit Pack:

0 Provision up to two (2) NT6X02UB PCM-30 LGC/DTC Common Circuit
0 Pack (Offshore) per LTEM.

0 PCM-30 Interface:

0 Provision up to eight (8) NT6X27AC/BB PCM-30 Interface CP per
0 PCM-30 LGC/DTC module, to interface up to sixteen PCM-30 links (2
0 links per CP).

0 The NT6X27BB Enhanced PCM-30 Interface circuit pack is backward
0 compatible with the NT6X27AC/BA circuit packs. It is also a re-
0 placement for the NT6X27AA/AB circuit packs, although it cannot
0 be mixed with the NT6X27AA/AB in the same frame or cabinet.

0 The NT6X27BB includes enhancements over the NT6X27AA/AB such as:

- 0 - Full compliance to CCITT,
0 - Improved alarm handling, and
0 - Support for DCME.

0 The initial application for the NT6X27BB is all the frames and
0 cabinets where the NT6X27AC/BA are provisioned. The manufacture
0 of the NT6X27AC/BA is being discontinued.

0 PCM-30 Signaling Interface:

0 For each equipped LGC/DTC which supports PCM30 links or for each
0 equipped LGC module which supports links to an LCM which is
0 equipped with a PCM30 line drawer such as the NT6X05CA, provide:

0 two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 CND Feature:

0 When the Calling Number Delivery/Calling Number Display (CND)
0 feature is required, provision two (2) NT6X78AB CLASS Modem Re-
0 source CPs for each PCM-30 LGC/DTC module.

0 Network Interface:

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0 In an office with the Enhanced Network (ENET) provide a fiber
0 interface per module as follows:

0 two (2) NT6X40FA DS-512 Link Control CPs,
0 two (2) NT6X40GA DS-512 Link Control Paddleboards,
0 two (2) NT6X69LB DS-512 CPP Protocol & Downld CPs, and
0 one (1) P0736273 Fiber Cable Warning Label.

0 And for each cabinet

0 one (1) NTN33SD DS-512 Fiber Interface to Network Kit.

0 Depending on availability, NT6X40CA and NT6X40DA functional pair
0 may be used in place of the preferred NT6X40FA and NT6X40GA func-
0 tional pair. The paddleboards and circuit packs cannot be mixed
0 because they do not function in mismatched pairs.

0 In a non-ENET office, provide a copper interface as follows:

0 two (2) NT6X40AC DS30 Network Interface CPs
0 two (2) NT6X69LA/LB CPP Protocol & Downld CPs.

0 The NT6X69LA may be used for non-fiberised peripherals when the
0 preferred NT6X69LB is not available.

0 5.1.4 OFFICE LAYOUT INFORMATION

0 Please refer to Northern Telecom Practice 555-4001-103 Integrated
0 Services Network Meridian SL-100 Cabinetized General Description.

0 5.1.5 TRAFFIC TABLES

0 Not applicable.

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0 5.2 PRODUCT/SYSTEM SPECIFICATION

0

0 5.2.1 PHYSICAL CHARACTERISTICS

0

0 Fusing and current drain information for the four cabinets intro-
0 duced specifically for Australia is not available at this time.

0 5.2.2 EMI/EARTHQUAKE INFORMATION

0

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EMI COMPLIANT	PEC	ABBREVIATED NAME
YES	NTNX33GA	FCTM-ISDN

0 For resistance to earthquake damage, Anchor Kits are required.
0 When installing cabinet in ATC Zone 6 or 7, NEBS Zone 4 or UBC
0 Zone R, provision NTNX2540 kit for slab-type flooring or NTNX2578
0 for computer flooring.

0 In non-earthquake zones, a Frame Mounting Kit is sufficient.
0 Provision NTNX2579 kit for slab-type flooring or NTNX2580 for
0 computer flooring.

0 5.2.3 SPARING INFORMATION

0 Standard sparing algorithms apply.

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0 5.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 The following fuses and feeds are required:

0 5.2.5 CURRENT DRAIN INFORMATION

0
0 Current Drain for the circuit packs are:

0 5.3 SOFTWARE PROVISIONING

0

0 5.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 5.3.2 SOFTWARE USAGE RESTRICTIONS

0 Not applicable.

0 5.3.3 MEMORY PROVISIONING

0 Refer to MEMCALC for memory provisioning.

0

0 5.4 REAL TIME IMPACT

0 There is no real-time impact as a result of products introduced
0 by this ECM.

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0 6.0 International Cabinet LGE/DTE Fiber ISDN

0 The Australian DMS-300 International Gateway Switch is based on the
0 DMS-300 supplied to Turkey with the following enhancements:

0 - Signalling systems necessary to introduce the product
0 into the Australian National Network.

0 - Enhancements to the Call Detail Recording, Operational
0 Measurements and Call Progression tone systems.

0 Similarly, the DMS-300 Gateway Switch for Madley-B Digital Interna-
0 tional Switching Centre (DISC) in the United Kingdom is based on ex-
0 isting technology, adapted for that market.

0 The FCTM-ISDN houses one or two International ISDN LGC/DTC dual shelf
0 modules in a cabinet configuration supporting both copper and fiber
0 network interfaces.

0 6.1 HARDWARE PROVISIONING

0

0 6.1.1 HARDWARE USAGE RESTRICTIONS

0 Not applicable.

0 6.1.2 HARDWARE DEPENDENCIES

0 Not applicable.

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PRACTICE 297-1001-450

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

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0 6.1.3 PROVISIONING CONSIDERATIONS

0
0 The NTNX33GA International Cabinet LGE/DTE Fiber ISDN (FCTM-ISDN)
0 is provisioned as follows:

0 The shelves within the FCTM-ISDN cabinet are provisioned the same
0 as the domestic ISDN frame (NT6X01AB), except that PCM-30 inter-
0 faces are used instead of DS-1, and some circuit pack vintages
0 are different for the International market. Maximum eight (8)
0 PCM-30 Interface CP (supporting 16 PCM-30 links) may be equipped.
0 Refer to the Engineering Manual sections for details on circuit
0 pack vintages and cabinet hardware provisioning.

0 Provision up to two (2) NTNX33GB LGCI/DTCI Fiber Common CP
0 (International) per FCTM-ISDN.

0 Provision up to eight (8) NT6X27AC/BB PCM-30 Interface CP per
0 PCM-30 LGC/DTC module, to interface up to sixteen PCM-30 links (2
0 links per CP).

0 The NT6X27BB Enhanced PCM-30 Interface circuit pack is backward
0 compatible with the NT6X27AC/BA circuit packs. It is also a re-
0 placement for the NT6X27AA/AB circuit packs, although it cannot
0 be mixed with the NT6X27AA/AB in the same frame or cabinet.

0 The NT6X27BB includes enhancements over the NT6X27AA/AB such as:

- 0 - Full compliance to CCITT,
- 0 - Improved alarm handling, and
- 0 - Support for DCME.

0 The initial application for the NT6X27BB is all the frames and
0 cabinets where the NT6X27AC/BA are provisioned. The manufacture
0 of the NT6X27AC/BA is being discontinued.

0 When the Calling Number Delivery/Calling Number Display (CND)
0 feature is required, provision two (2) NT6X78AB CLASS Modem Re-
0 source CPs for each PCM-30 LGC/DTC module.

0 For each equipped LGC/DTC which supports PCM30 links or for each
0 equipped LGC module which supports links to an LCM which is

0

0| equipped with a PCM30 line drawer such as the NT6X05CA, provide:
0 two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 6.1.4 OFFICE LAYOUT INFORMATION

0 Please refer to Northern Telecom Practice 555-4001-103 Integrated
0 Services Network Meridian SL-100 Cabinetized General Description.

0 6.1.5 TRAFFIC TABLES

0 Not applicable.

0 6.2 PRODUCT/SYSTEM SPECIFICATION

0

0 6.2.1 PHYSICAL CHARACTERISTICS

0
0 Fusing and current drain information for the four cabinets intro-
0 duced specifically for Australia is not available at this time.

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0 6.2.2 EMI/EARTHQUAKE INFORMATION

EMI COMPLIANT	PEC	ABBREVIATED NAME
YES	NTNX33GA	FCTM-ISDN

0 For resistance to earthquake damage, Anchor Kits are required.
0 When installing cabinet in ATC Zone 6 or 7, NEBS Zone 4 or UBC
0 Zone R, provision NTNX2540 kit for slab-type flooring or NTNX2578
0 for computer flooring.

0 In non-earthquake zones, a Frame Mounting Kit is sufficient.
0 Provision NTNX2579 kit for slab-type flooring or NTNX2580 for
0 computer flooring.

0 6.2.3 SPARING INFORMATION

0 Standard sparing algorithms apply.

0 6.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 6.2.5 CURRENT DRAIN INFORMATION

0

0

0

0 6.3 SOFTWARE PROVISIONING

0

0 6.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 6.3.2 SOFTWARE USAGE RESTRICTIONS

0 Not applicable.

0 6.3.3 MEMORY PROVISIONING

0 Refer to MEMCALC for memory provisioning.

0 6.4 REAL TIME IMPACT

0 There is no real-time impact as a result of products introduced
0 by this ECM.

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0 7.0 XPM PLUS for Base Non-ISDN XPM

0 The XPM PLUS (Product Life Upgrade Strategy) Phase II program addresses the need for memory and processing enhancements by replacing the separate MP and SP circuit packs in DTC/LGC/LTC/RCC modules with the Unified Processor (UP). The UP increases available memory to 8Mb and increases RealTime processing power, compared to the current XPM. All existing functions, interfaces and tools continue to be supported.

0 The XPM PLUS schedule has been pulled in so that all new shipments of LTCI/LGCI from BCS-34 forward will utilize the Unified Processor (XPM PLUS). Support for Subscriber Carrier equipment is planned to V0 in BCS-36 and to be Generally Available in BCS-37.

0 This ECM describes both upgrades of existing equipment and new shipments of XPM+ peripherals on the combined ISDN/non-ISDN frame. XPM PLUS capability may also be supplied for both new shipments and upgrades to existing RCE frames.

0 7.1 HARDWARE PROVISIONING

0

0 7.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The following usage restrictions apply to the XPM+ Phase II product:
0

- 0 o RLCM and MSB7 are not to be upgraded to XPM PLUS with the Unified Processor.
- 0 o In order to use the new software that is available in BCS-35 and above, XPMs currently equipped with enhanced messaging will require upgrade from MP/SP processors to the XPM PLUS processor. Since XPMs must meet minimum BCS packfill requirements before these kits can be applied, the modules will be equipped with one of the following:

0 Base XPMs:
0 -----

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0 DTC Modules - NT6X02AS, NT6X02IA or NT6X02IC
0 LGC Modules - NT6X02AT, NT6X02LA or NT6X02LC
0 LTC Modules - NT6X02AU, NT6X02MA or NT6X02MC

0 The slots that mount the processors and memory are provisionable
0 in packfills NT6X02IC, NT6X02LC and NT6X02MC. Application of the
0 NT6X02XC kit to modules containing one of the other packfills
0 will bring the module to the NT6X02IC/LC/MC level, making these
0 slots provisionable.

0 Remote:

0 -----

0 RCC Modules - NT6X12AD, NT6X12AG and NT6X12CA

0 The processors and memory are Always Provided in these packfills.
0 Application of the NT6X12ZF to a module equipped with NT6X12AG
0 will change the RCC module to the NT6X12AK level. When applying
0 the NTZZ12ZF kit to a module equipped with NT6X12CA or any
0 packfill NT6X12AF or earlier, the NT6X72AA packs must be replaced
0 with NT6X72ABs. Application of the NT6X12ZF and the NT6X72AA re-
0 placement with NT6X72AB, upgrades these modules to the NT6X12AK
0 level. The slots requiring upgrade for XPM PLUS become
0 provisionable upon application of the NT6X12ZF kit. The NT6X12AK
0 is now available for new orders.

0 o Application of XPM PLUS to LGC, LTC and RCC modules
0 is mandatory (BCS Gating) for BCS-38. Application of
0 XPM PLUS to DTC modules is mandatory for BCS-41.

0 o As of BCS 35 the MP/SP processor will no longer be
0 shipped for new orders of the LGC/LTC/DTC/RCC. The Unified
0 Processor (XPM Plus) will be shipped for all new LGC/DTC/
0 LTC/RCC modules ordered.

0 7.1.2 HARDWARE DEPENDENCIES

0 The hardware required to implement XPM PLUS capability is the
0 Unified Processor, the terminator card (which mounts in a rear
0 side slot) and backplane strapping. These changes are applied to
0 the existing non-ISDN XPM equipment as described in the Product
0 Change Kit documents and will result in XPM packfills NT6X02IC,
0 NT6X02LC or NT6X02MC or RCC packfill NT6X12AK.

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0 P AND C SIDE PORT REQUIREMENTS

0
0 There are no P or C side ports associated with the Unified
0 Processor (XPM PLUS).

0 DMS BUS PORT REQUIREMENTS

0
0 There are no DMS BUS ports associated with the Unified Processor
0 (XPM PLUS).

0 CIRCUITS PER CARD

0
0 There is one Unified Processor per circuit pack.

0 DISCRIMINATION NUMBERING

0
0 There is no discrimination numbering associated with XPM PLUS.

0 7.1.3 PROVISIONING CONSIDERATIONS

0
0 The following kits are available for application as described be-
0 low:

0

0 Host - Line Trunk Controller Equipment
0 Chapter 2

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- 0 o Upgrade of host DTC/LGC/LTC to XPM PLUS:
0 Provide one XPM to XPM+ kit to upgrade one existing
0 host XPM module to XPM PLUS capability. All
0 provisionable circuit pack rules are unchanged
0 except for processors/memory, which are replaced
0 as part of kit application. The NT6X02XC kit
0 includes backplane stapping materials and
0 instructions for application on existing NT6X01AA
0 frames. The NTZZ99AN kit provides only the circuit
0 packs required and is used for applications where
0 the necessary wiring is already in place (i.e. the
0 upgrade of an existing module on a NT6X01AD frame).
- 0 o Upgrade of non-ISDN RSC to XPM PLUS:
0 Provide one RCC to XPM+ kit to upgrade one existing
0 RCC module to XPM PLUS capability. All
0 provisionable circuit pack rules are unchanged
0 except for processors/memory, which are replaced
0 as part of kit application.
- 0 o New shipments of XPMs with XPM PLUS:
0 Packfills are now available for application on the
0 combined ISDN/non-ISDN frame (NT6X01AD). New XPM+
0 shipments on the Model A CCPE (NTRX36AB) are NOT
0 supported. The packfills for NT6X01AD are:

0 NTZZ02PA for LTC with XPM+
0 NTZZ02QA for LGC with XPM+
0 NTZZ04HB for DTC with XPM+
- 0 o New shipments of RCCs with XPM PLUS:
0 Packfills are now available for application on the
0 RCE frame in either detail or Building Block format.
0 They are:

0 NTZZ46EA for RCC with XPM+ (in Building Block)
0 NT6X12AK for RCC with XPM+ (in detail)

0 7.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

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0 7.1.5 TRAFFIC TABLES

0
0 Not applicable.

0 7.2 PRODUCT/SYSTEM SPECIFICATION

0

0 7.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 7.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 7.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply to this product. Both the Uni-
0 fied Processor and Termination Card will need to be spared.

0 7.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 There is no fusing or power feed associated with the Unified
0 Processor.

0 7.2.5 CURRENT DRAIN INFORMATION

0
0 The NTMX77AA Unified Processor requires a maximum of 3.80 Amps
0 and the NTMX71AA Terminator CP requires a maximum of 0.68 Amps.

0 7.3 SOFTWARE PROVISIONING

0

0 7.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software package NTXR34-- is required to support the Unified
0 Processor and will be needed for all XPM PLUS upgrades.

0 Software package NTXR42-- is required to utilize the downloadable
0 firmware feature and is required with NTXR34--. In BCS-35,
0 NTXR34AB replaces NTXR34AA and NTXR34AA is declared Manufacture
0 Discontinued.

0 Refer to SMS/SOLID for software requirements and interdependen-
0 cies.

0 7.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

0

0 7.3.3 MEMORY PROVISIONING

0
0 Not applicable.

0 7.4 REAL TIME IMPACT

0 The Unified Processor provides an improvement in RealTime capac-
0 ity by a factor of approximately 1.6X compared to the existing
0 MP/SP.

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0 8.0 Detailed/Bldg Block Engineering - ISDN LCE

0 The ISDN 2B1Q Access Subsystem represents Northern Telecom's first
0 product offering that supports the American National Standards Insti-
0 tute (ANSI) standard ISDN 2B1Q (Two Binary One Quarternary) U-loop
0 interface. The 2B1Q Access Subsystem will be subtended from a
0 DMS-100/MSL-100 LTCI/LGCI, RCCI, or RCC2 peripheral module. It will
0 provide access for most existing LCM line types plus ISDN 2B1Q-U and
0 ISDN S/T.

0 The ISDN 2B1Q Access Subsystem will offer the North American Standard-
0 ized 2B1Q U Loop ISDN Basic Rate Interface (BRI) from an enhanced ca-
0 pacity ISDN LCM (LCME). The LCME is basically a LCMI that has been
0 utilized for 2B1Q interface. It will offer S/T ISDN services in
0 BCS-31 and EBS (P-Phone), Datapath, S/T ISDN and POTS services in
0 BCS-32. The 2B1Q (2 Binary, 1 Quarternary) Access Subsystem will not
0 support the AMI line card.

0 The ISDN 2B1Q Access Subsystem adds the following components to the
0 LCME:

- 0 * A single slot 2B1Q U-Loop ISDN line card (U-ISLC).
- 0 * A new high capacity line drawer.
- 0 * A new Enhanced Bus Interface Card.
- 0 * New ISDN LCM power packs.

0 The 2B1Q line card will be used in both host and remote lo-
0 cations.

0 The 2B1Q line drawer will accomodate 60 single slot line cards,
0 with eight (8) line drawers per LCME. Thus the LCME will support
0 480 single slot 2B1Q lines.

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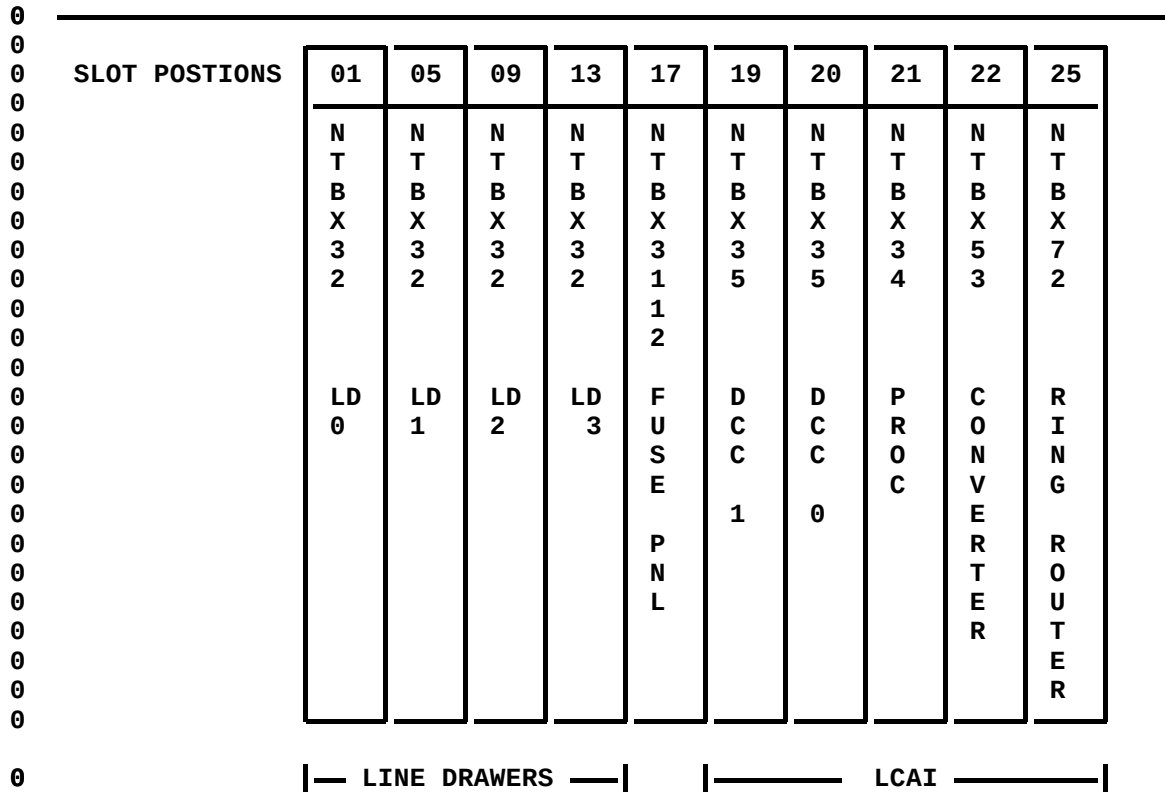
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0 The diagram below depicts the ISDN Line Drawer physical layout:



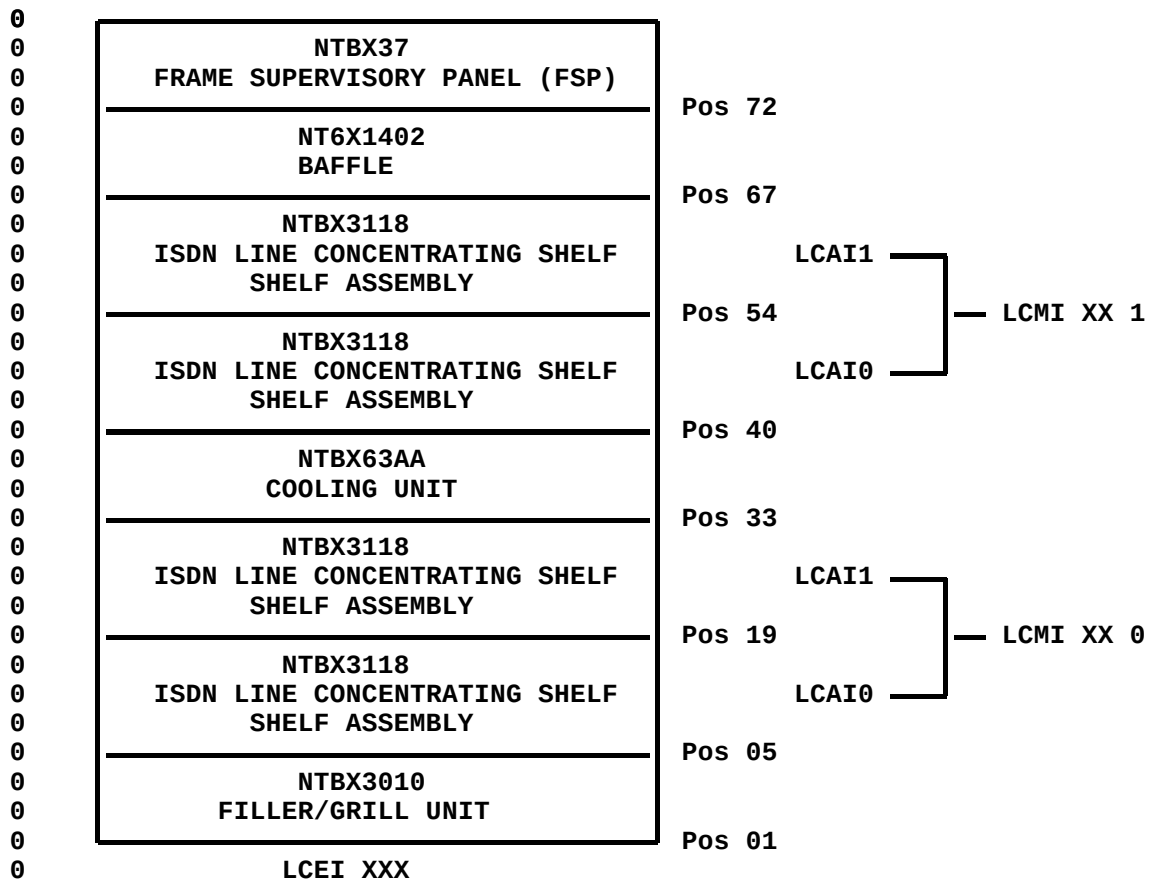
0 Figure 1: ISDN 2B1Q Line Drawer Layout

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0 Figure 2: ISDN 2B1Q Frame NTB30AB Layout
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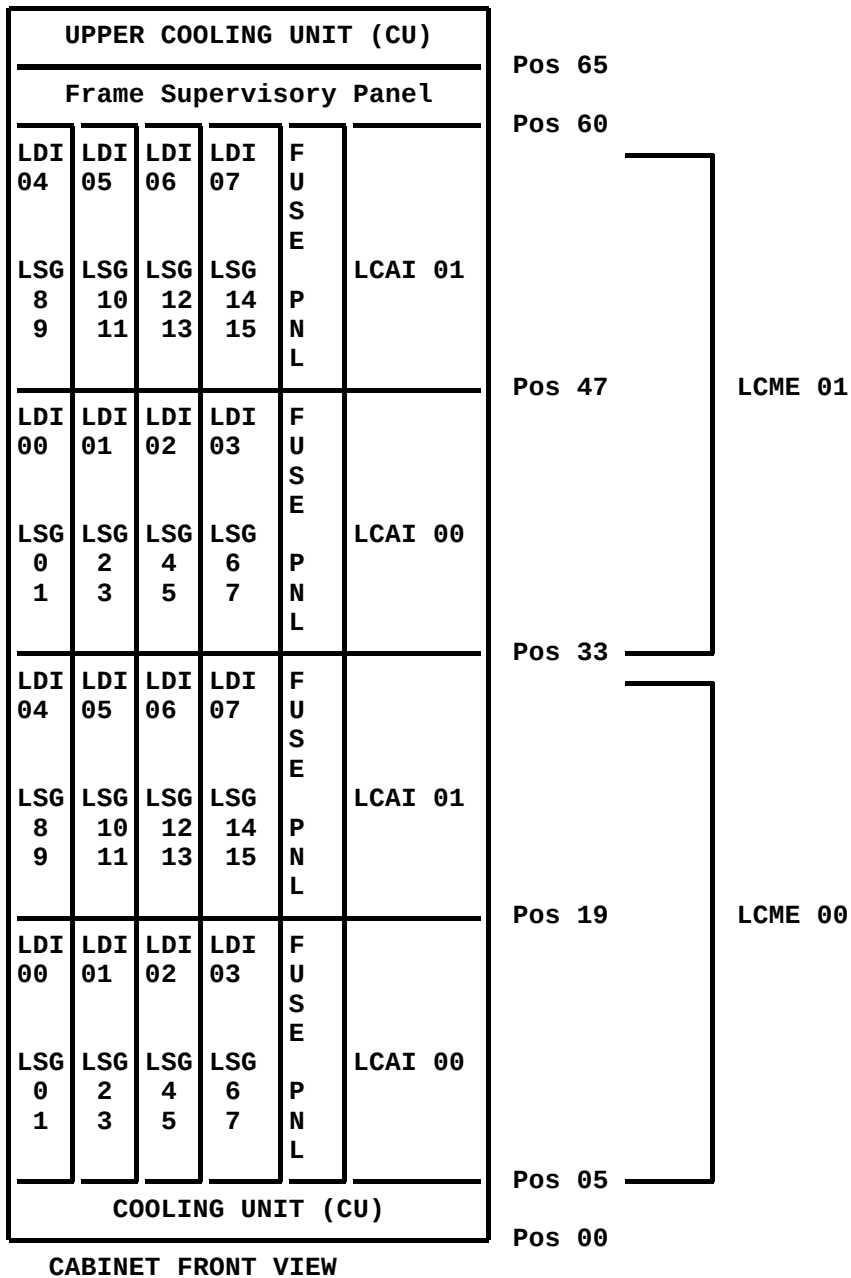


Figure 3: ISDN 2B1Q Cabinet Model A NTRX30BA Physical Layout

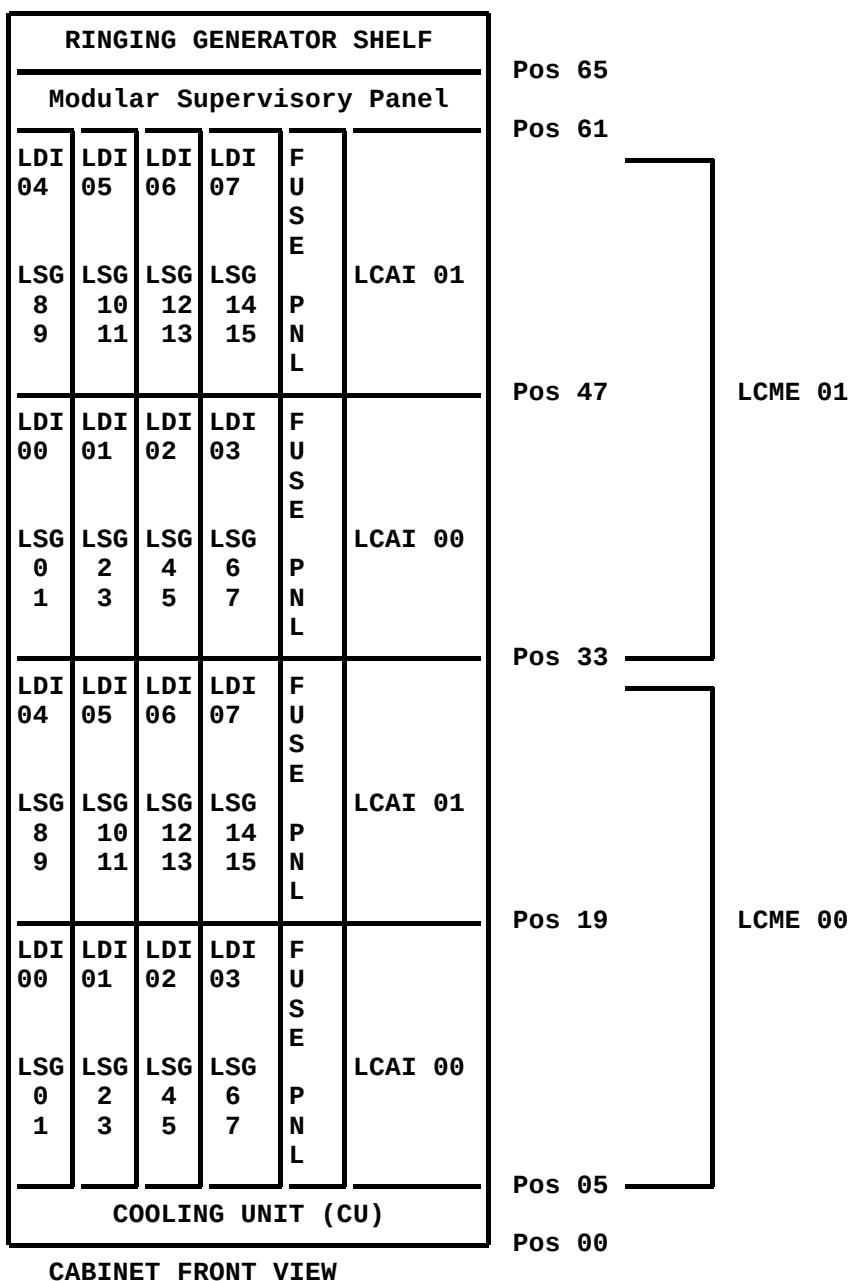
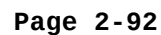


Figure 3: ISDN 2B1Q Cabinet Model B NTRX30DA Physical Layout



0 *NT2 is equivalent
0 to PBX or LAN

0 Figure 4: Preferred ISDN System Configuration For Packet DATA

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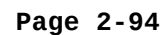
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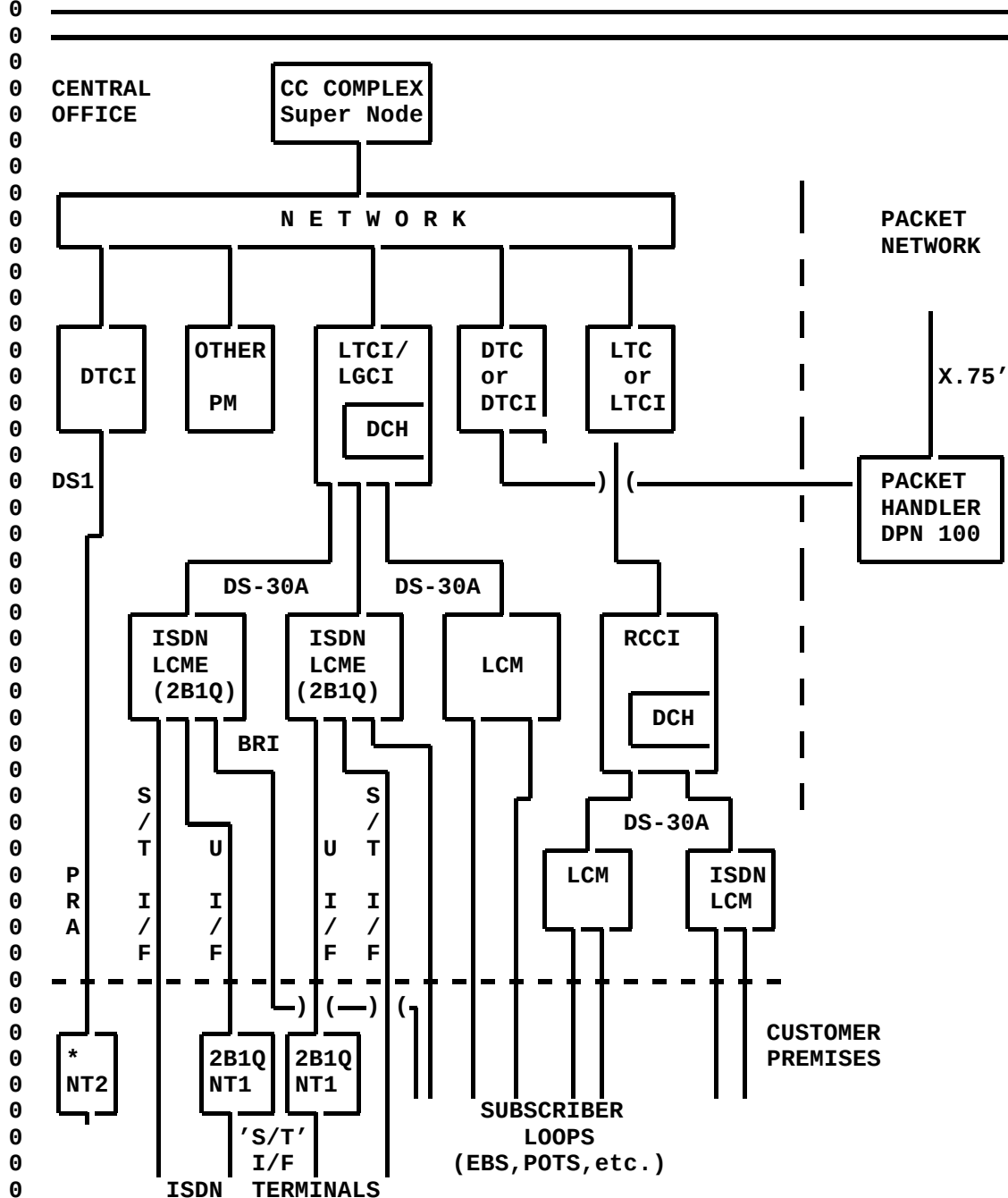
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0 Figure 5: ISDN System Configuration w/DMS-PH
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0 *NT2 is equivalent
0 to PBX or LAN

0 Figure 5J Preferred ISDN System Configuration w/DMS-PH

0 8.1 HARDWARE PROVISIONING

0 8.1.1 HARDWARE USAGE RESTRICTIONS

0
0 The ISDN 2B1Q Line Drawer NTB32BA will not support AMI line
0 cards. The ISDN AMI Line Drawer NTB32AA will not support 2B1Q
0 line cards.

0 There is no mixing of NTB32BA and NTB32AA line drawers allowed
0 within an ISDN LCM module.

0 An AMI LCMI and a 2B1Q LCME can coexist on the same LCEI frame
0 for field retrofit only. No mixed frames will be built from
0 scratch. The LCMI to LCME Upgrade Kit (NTB30BA) is used to
0 change an existing LCMI (AMI) to a LCME (2B1Q) on an existing
0 LCEI frame or to add a new LCME module to an existing LCEI frame
0 with only one LCMI module already equipped on it.

0 8.1.2 HARDWARE DEPENDENCIES

0
0 The software development for 2B1Q will be done in two phases. In
0 Phase I (BCS31): The LCME will support only ISDN lines. In Phase
0 II (BCS32): The LCME will support ISDN lines POTS, EBS, and
0 DATAPATH lines.

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0 P AND C SIDE PORT REQUIREMENTS

0
0 The Line Concentrating Equipment frame for ISDN is an evolution
0 of the standard LCE frame. The ISDN LCM will allow from 2-18
0 DS-30A links to the serving CPEI.

0 Each LCME may have from two to eighteen DS-30A links to the sup-
0 porting CPEI (i.e. either an LTCI, LGCI, RCCI, or RCC2). Refer
0 to the Traffic Engineering section for detailed link provisioning
0 worksheets based on traffic loading calculations in ECM-497.

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 ISDN LCE Frames and/or Cabinets must be numbered consecutively,
0 starting from LCEI 000 to completion or starting from the next
0 available Line Module number. For example:

0 * If no Line Modules exist and five (5) LCEIs are provisioned.
0 The LCEIs or CLMIs shall be numbered as 000 to 004, or

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0 * If LMEs exist from 00 0 to 03 1, and five (5) ISDN LCEs are
0 added start number LCEs as 004 to 009.

0 8.1.3 PROVISIONING CONSIDERATIONS

0
0 When provisioning ISDN Line Concentrating Equipment (LCEI) the
0 following must be considered:

0 * Module Housing (Frame or Cabinet)

0 When provisioning a cabinet based system refer to ECM-600 for
0 additional equipment which may be required in support of the
0 cabinet itself as opposed to the ISDN Line Function housed
0 therein.

- 0 - LCME Module 2 per frame or cabinet
- 0 - Line Drawers 8 Per Module
- 0 - Line Card provisioning 60/LD, 480/LCME

0 * Line Cards

- 0 - Type of cards provisionable
- 0 - Ringing Generators
- 0 - Line Card Spread

0 * Other Supporting Equipment

- 0 - MTU Requirement
- 0 - Peripheral Controller

0 LCEI Frames/Cabinets

0
0 The ISDN Line Concentrating Equipment (LCEI) is a single-bay
0 equipment frame or cabinet containing two ISDN Line Concentrating
0 Modules Enhanced (LCME). Provisioning this equipment in either
0 the frame or cabinet configuration is based on customer prefer-
0 ence.

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0 However, the LCEI cabinet based system offers EMI/RFI shielding
0 inherent in its design as opposed to the frame based system which
0 requires add-on devices to facilitate EMI/RFI shielding.

0 When provisioning a frame based system refer to ECM-125 for addi-
0 tional equipment which may be required in support of the frame
0 itself as opposed to the ISDN line function housed therein.

0 LCEI Modules (LCME)

0
0 The ISDN Line Concentrating Module (LCME) is a dual unit periph-
0 eral module which terminates ISDN lines. Each shelf in the mod-
0 ule is referred to as a ISDN Line Concentrating Array (LCAI). The
0 LCME consists of two Line Concentrating Arrays, which operate in
0 a load sharing mode with mutual takeover capability.

0 Each shelf (LCAI) in the ISDN Line Concentrating Module contains
0 four physical Line Drawers.

0 ISDN 2B1Q Line Drawers

0 There are eight (8) drawers per LCME with a maximum of 18 DS30A
0 links per LCME. Refer to Figure 03 for a layout of the LCME and
0 the numbering of line drawers existing in it.

0 NTB32BA ISDN Enhanced Line Drawer has been introduced for 2B1Q
0 Access Subsystem. The NTB32BA is a high capacity line drawer
0 replacing NTB32AA. It increases the ISDN LCM capacity from 48
0 slots to 60 slots. This provides a physical capacity of 480 sin-
0 gle slot lines per LCME.

0 Each drawer can support up to 60 single slot line cards. The "D"
0 channel of each line is statistically multiplexed at a 4 to 1 ra-
0 tio at the LCME and sent to the D Channel Handler for processing.
0 Refer to ECM-497 for calculations to determine provisioning based
0 on traffic levels.

0 The ISDN 2B1Q line drawer consists of the following:

- 0 * One Bus Interface Card (BIC)

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0 * Sixty line card slots

0 * One Point of Use Power Supply (PUPS).

0 The PUPS converts the common equipment -48V BATTERY to +5V.
0 This +5V is routed to the line card slots.

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Figure 9: 2B1Q Enhanced Line Drawer Layout

Each drawer is divided into two (2) logical drawers or subgroups. This differs from the LCMI which has three (3) logical subgroups per each physical drawer.

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0 LCME Provisionable Line Cards

0
0 The 'U' line card interfaces to standard 2-wire outside plant for
0 connection to the NT1 at customer premises. NTB27AA is the ISDN
0 2B1Q U Line Card which replaces the AMI U Line Card NTB25AB. The
0 2B1Q U-interface will be supported through the use of the
0 NTB27AA. The 2B1Q line card NTB27AA is used in the high capac-
0 ity 2B1Q line drawer for host and remote locations.

0 In BCS-28, an 'S/T' line card will be introduced which does not
0 require an NT1. It will interface directly to the 4-wire S/T
0 interface, with a restricted loop range. The S/T line card is
0 only intended for applications where a remote system or Private
0 Branch Exchange (PBX) is located in the customer premise. If the
0 S/T line card is to be engineered in a C.O. environment where it
0 will interface to outside plant wiring, overvoltage protection
0 that meets the requirements of LSSGR Bell Communications Research
0 (Bellcore) Spec TR-TSY-000057 First Level Surge Tests must be
0 used.

0 'U' and 'S/T' line card types can be mixed within a line sub-
0 group.

0 LCME Line Card Service Mix

0 The 2B1Q Access Subsystem will support many line card types.
0 The list below summarizes which are not supported.

0 The 2B1Q Access Subsystem will support the following line card
0 types:

- 0 1. POTS - Type-A Line Cards (NT6X17AA/AB/AC/BA).
- 0 2. POTS - Type-B Line Cards (NT6X18AA/AB/BA) (Non-coin/ANI only)
- 0 3. Datapath-Data line cards (NT6X71AA/AB/BA).
- 0 4. Datapath-Asynchronous Interface line card (NT6X76AA/AC/AD).
- 0 5. Datapath-IBERT line card (NT6X99AA).
- 0 6. EBS-P-Phone line card (NT6X21AC).
- 0 7. Message Waiting POTS type line card (NT6X19AA). This card
0 requires a power converter line card (NT6X20AA) to function.
- 0 8. ISDN-S/T-Interface line card (NTB26AA). This card offers a
0 digital 4-wire ISDN S/T Interface for ISDN services.

0 9. ISDN-U-Interface (2B1Q) line card (NTBX27AA). This card of-
0 fers a digital 2-wire ISDN U Interface for ISDN services.

0 The 2B1Q Access Subsystem will not support the following line
0 card types:

0 1. POTS Type B line cards (NT6X18AA/AB)(Coin/ANI function)

0 Ringing Generator CPs are required in the ISDN Line Module
0 Frame and or cabinet when POTS Line Cards are provisioned.

0 2. ISDN AMI U-Interface line cards (NTBX25AA/AB).

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0 LCME Line Capacity

Line Card Type	AMI LCMI	2B1Q LCME
ISDN 2B1Q U-I/F	0	480
ISDN AMI U-I/F	160	0
ISDN S/T I/F	192	240
POTS Type A	384	480
POTS Type B (ANI/COIN)	0	0
POTS Message Waiting	376	472
EBS (P-Phone)	384	480
Datapath Data Line Card	192	240
Datapath AILC Line Card	192	208
Datapath IBERT Line Card	1	1

0 Table 1: Line Capacities for the 2B1Q ISDN LCME

0 Powering for a full frame of 2B1Q U ISDN Line Cards, EBS Line
0 Cards, POTS Line Cards, Data Line Cards, or S/T ISDN Line Cards
0 is provided.

0 Power limits the NT6X76AA Asynchronous Interface Line Card to 26
0 per drawer. The NT6X76AC AILC has no greater current limit than
0 a regular 2-slot line card; therefore, there is no limit to the
0 provisioning of the NT6X76AC (maximum 30 per drawer).

0 LCME Line Card Distribution

0 In BCS-31, the LCME will support only ISDN lines.

0 In BCS-32 (and beyond), any of the line cards supported can be
0 mixed with any other line card at the drawer of logical subgroup
0 level. However, if there are more than eight (8) S/T-Interface
0 line cards in the same row as POTS line cards, then the POTS line
0 cards will NOT stay in-service on PUPS failure. The Data Line
0 Cards cannot be mounted in the five line card position (slots 18
0 to 26) in the top LSG next to the PUPS line card. It is permit-
0 ted to mount the Data Line Card in the lower LSG directly under
0 the PUPS. Refer to the Engineering Manual, section EMA14-03-000,

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0 for more information on the non-ISDN line cards and their provi-
0 sioning rules.

0 The LCME provides flexible Time Division Multiplexing (TDM)
0 groups. This enables an ISDN line to be placed anywhere in a
0 drawer. Any four ISDN lines from the same physical drawer can
0 belong to the same TDM group subject to rule that lines in a par-
0 ticular TDM group must come from the same physical drawer.

0 D-channels from line cards within one physical drawer will be
0 multiplexed together in any manner. D-channels from line cards
0 in different physical drawers will not be multiplexed together.

0 Refer to ECM-497 for more information on how to engineer LCMEs
0 that support ISDN lines only or mixed lines.

0 Terminal Provisioning

0
0 An LTID number is required for each terminal on the switch. The
0 current limit for LTIDs is 32,000 per switch. The limit for
0 packet data devices will remain at 16000 for the packet handler
0 equipment.

0 Up to eight terminals may be assigned to each loop. A maximum of
0 2 B channel devices (voice, circuit switched data or 64K packet
0 data) + 6 D channel devices (16K packet data), 1B + 7D or 8D may
0 be assigned to each loop.

0 MTU for 2B1Q Lines on a LCME.

0
0 For every MTA that has a LCME on the vertical there must be at
0 least one MTU on a horizontal of that MTA. Each MTU (NT2X10BA
0 and NT2X11BA card set) has two test access ports; that is two (2)
0 sets of tip and ring. Thus it can test two 2B1Q lines at the
0 same time. A LTU that has access to an MTA that has a LCME on
0 the vertical will NOT be used to perform any metallic testing on
0 the 2B1Q lines. Any rover test units (ones shared across MTAs)

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0 that has access to the MTA that has a LCME on it must be a MTU
0 for it to be used on the LCME.

0 The physical installation of MTUs in MTMs is no different for
0 2B1Q than for POTS. For more information on MTUs, refer to
0 ECM-389.

0 8.1.4 OFFICE LAYOUT INFORMATION

0
0 The maximum cable length for the DS-30A connections between CLMI
0 Model A cabinet and it associated CPEI/IAC Controller shall not
0 exceed 50 feet.

0

0 8.1.5 TRAFFIC TABLES

0
0 The Traffic Engineering Rules for the ISDN LCME will be based on
0 the provisioning of the DS-30A Links to the LGCI and or the LTCI,
0 refer to ECM-497 (Simplified Traffic Provisioning).

0 Refer to ECM-413 (ISDN Traffic Provisioning. This ECM contains
0 worksheets and tables for engineering the required quantity of
0 DMS100 ISDN peripherals and DPN-PH equipment based on Carried
0 Traffic and Grade Of Service (GOS) considerations.

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0 8.2 PRODUCT/SYSTEM SPECIFICATION

0

0 8.2.1 PHYSICAL CHARACTERISTICS

0

0 Power Requirements

0

0 2B1Q Enhanced Line Drawer

0 MECHANICAL DIMENSIONS

0 Height 12.68"

0 Width 3.83"

0 Depth 17.87" - measured from faceplate

0 18.50" - including handle

0 2B1Q Enhanced Line Drawer CPs

0 The NTB71AA ISDN Enhanced Line Drawer PUPS is a two slot line
0 card.

0 The NTB27AA ISDN 2B1Q Line Card is a one slot line card.

0 8.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

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0 8.2.3 SPARING INFORMATION

0
0 The Mean Time Between Failure (MTBF) of the various CP are as
0 follows:

0 NTBX27AA ISDN 2B1Q U Line Card.....75 years at 40 deg. C.
0 NTBX36BA ISDN LCME Processor BIC.....70 years at 40 deg. C.
0 NTBX71AA ISDN 2B1Q Enh. Line Drawer...80 years at 40 deg. C.

0 8.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 NTBX30AB - LCEI Frame Power Feed And Fusing Chart

0
0 Refer to the chart below Power and Fusing requirements for the
0 NTBX30BA frame are as follows:

NTBX30AB - FUSING REQUIREMENTS CHART				
DESIG	AMP	POTENTIAL	ONE PER	NOTE
CB1	10	-48V(A)	RING 0	Prov.
CB2	10	-48V(A)	SHELF 05	Prov.
CB3	20	-48V(A)	SHELF 05	Prov.
CB4	10	-48V(A)	SHELF 40	Prov.
CB5	20	-48V(A)	SHELF 40	Prov.
CB6	10	-48V(B)	SHELF 19	Prov.
CB7	20	-48V(B)	SHELF 19	Prov.
CB8	10	-48V(B)	SHELF 54	Prov.
CB9	20	-48V(B)	SHELF 54	Prov.
CB10	10	-48V(B)	RING 1	Prov.
F01	1 1/3	-48V	FRAMEFAIL FANFAIL	AP
F02	1 1/3	-48V	ALM CARD	AP

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0 NTRX30BA - Power Feed And Fusing Chart

0 The following fuses and feeds are required:

0 Fusing:

0 The NTRX30BA is fused at the PDC with 4 x 30 Amp feeds for the
0 each LCEI (2A and 2B). All existing LCEI jobs, equipped with 20
0 Amp fusing, will be upgraded to 30 Amp fusing.

0 In existing offices, it is possible that the cables between LCEI
0 and PDC will not support a 30 Amp rating based on their length
0 and gauge. In this case, it will be necessary to provide a
0 larger gauge cable, or re-route the cable to reduce the length,
0 or move the LCEI closer to the PDC.

NTRX30BA - FUSING REQUIREMENTS CHART				
DESIG	AMP	POTENTIAL	ONE PER	NOTE
CB1	20	-48V(A)	SHELF 05	Prov.
CB2	20	-48V(B)	SHELF 19	Prov.
CB3	20	-48V(A)	SHELF 33	Prov.
CB4	20	-48V(B)	SHELF 47	Prov.
CB5	10	-48V(A)	RG-0	Prov.
CB6	10	-48V(B)	RG-1	Prov.
F01	2.0	-48V(A)	UPPER CU	AP
F02	2.0	-48V(B)	UPPER CU	AP
F03	3.0	-48V(A)	LOWER CU	AP
F04	3.0	-48V(B)	LOWER CU	AP
F05		-48V(A)	SPARE	
F06		-48V(B)	SPARE	
F07		-48V(A)	NOT USED	
F08		-48V(B)	NOT USED	
F09	1 1/3	-48V	FRAMEFAIL Upper FAN Fail Lamp	AP
F10	1 1/3	-48V	ALM Cards	AP
F11	1 1/3	-48V	FAN ALARM	AP
F12	1 1/3	-48V ABS	ABS JACKS	AP
F13	1 1/3	-48V ABS	CD01 ALM CARD	AP
F14		-48V ABS	SPARE	

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0	F15		-48V ABS	SPARE	
0	F16	1 1/3	-48V ABS	FRAME	AP
0				Fail Lamp	
0					
0	VOLTAGE LIMITS				
0	POTENTIAL		RANGE		
0	-48V		-42.5V TO -55.8V		
0	REF: ISRX30BA 00 06				
0					

0 8.2.5 CURRENT DRAIN INFORMATION

0
0 LCEI Frame/Cabinet Current Drain is as follows:

0 Current Drain - 33 Amps
0 Heat Dissipation - 1610 Watts

0 8.3 SOFTWARE PROVISIONING

0

0 8.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Not applicable.

0 8.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

0

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0 8.3.3 MEMORY PROVISIONING

0
0 Not applicable.

0 8.4 REAL TIME IMPACT

0 LCME Real-Time Engineering for BRI is as follows:

0 The following chart illustrates the call types which impact Real
0 Time Engineering of the LCME.

CALL TYPE	31	32+
-----	--	---
ISDN Circuit Switched	Y	Y
ISDN Packet Switched	N	N
Non-ISDN Circuit Switched (POTS, MDC,...)	N/A	Y

0 Refer to System Engineering Bulletin (SEB) 90-05-002 for Real
0 Time Engineering Guidelines for the LCME.

0 LCMI Real-Time Engineering

0
0 The following chart illustrates the call types which impact Real
0 Time Engineering of the LCMI.

CALL TYPE	BCS			
	25	26	27	28
-----	--	--	--	--
ISDN Circuit Switched	Y	Y	Y	Y
B Channel Packet Switched	N	N	N	N
D Channel Packet Switched	N	N	N	N
Electronic Business Set	N	N	Y	Y
Datapath	N	N	Y	Y
Other (POTS and MDC)	N	N	N	Y

0 Refer to System Engineering Bulletin (SEB) 88-10-001 for BCS
0 25-27 Abbreviated Real Time Engineering Guidelines for the LCMI.

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0 CHAPTER 3

0 HOST - LINE GROUP CONTROLLER EQUIPMENT

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Host - Line Group Controller Equipment
Chapter 3

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0 1.0 Common Peripheral Controller

0 1.1 Introduction

0 The Common Peripheral Controller modules are microprocessor- con-
0 troller Peripheral Modules which are responsible for:
0 - scanning the lines in the modules for changes of circuit
0 state,
0 - performing timing functions for call processing,
0 - collecting and storing digits,
0 - generating digital tones,
0 - detecting tones (MF, DTMF) through the Universal Tone Re-
0 ceiver (UTR),
0 - sending and receiving signaling and control information
0 to and from the CCC,
0 - providing integrity checking of the network.
0 The message system provides the control interface between the Pe-
0 ripheral Modules and the rest of the system.

0 Tones for subscriber lines (DTMF) and for trunks (MF) are de-
0 tected by the Universal Tone Receiver (UTR) located in associated
0 PMs (LGC, DTC, LTC, SCM and RSC). Use of the UTR removes the re-
0 quirement for a network connection to a pool of receivers at the
0 Trunk Module (TM) and Maintenance Trunk Module (MTM). This
0 functionality offers improvements in CC, LGC, and RSC real time.

0 (i) Line Group Controller Equipment General Description

0 The LGC performs the medium-level processing tasks associ-
0 ated with subscriber line interfaces both for host office
0 and remote units. The LGC has duplicated control on two
0 shelves.

0 It can interface with up to 16 32-channel (30 voice and two
0 signal) speech links to the network, and up to 20
0 32-channel speech links (DS30A protocol) to its associated
0 Line Concentrating Modules (for host lines), or up to 20
0 24-channel DS1-rate lines serving remote equipment (RLCM,
0 OPM, or RSC). The same holds true for the International
0 Line Group Controller Modules, except for the interface to
0 the international remote equipment (IRLCM). Up to 20
0 30-channel PCM 30 lines can interface the remote equipment.

0 (ii) Digital Trunk Controller Equipment General Description

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0 The DTC is indential to the LGC except that it contains
0 hardware to extract or insert A/B bit signaling and is pro-
0 grammed to perform trunk-oriented tasks.

0 The DTC is a two-shelf module and contains up to 10
0 DS1-rate interface cards, each having the capability of
0 interfacing with up to two DS1-rate lines. The 20
0 24-channel DS1-rate lines interface with 16 32-channel (30
0 voice + 2 signal) speech links to the network.

0 For international applications, the International Digital
0 Trunk Controller (IDTC) is the same as the DTC except it
0 interfaces with PCM 30 lines. Up to 20 30-channel PCM 30
0 lines can be interfaced with the IDTC.

0 (iii) Line Trunk Controller Equipment General Description

0 The LTC is a hybrid of the LGC and the DTC and is capable
0 of supporting the LCMS, remotes, and digital trunk inter-
0 faces. The LTC is a two-shelf module and has 20 ports
0 available to be assigned to host lines (DS30A protocol),
0 remote lines (DS1 protocol) and digital trunks (DS1 proto-
0 col). It can interface with up to 16 32-channel (30 voice
0 + 2 signal) speech links to the network. Like the DTC, the
0 LTC provides A/B bit scanning capability.

0 (iv) Subscriber Module Equipment General Description

0 The Subscriber Carrier Module SCM-100 Family of peripheral
0 modules provide interfaces between DMS-100 Family Systems
0 and non DMS-100 remote equipment. There are three versions
0 of the SCMs, Subscriber Module Remote (SMR), Subscriber
0 Carrier Module for SLC-96 (SMS) and Subscriber Carrier Mod-
0 ule - Urban (SMU).

0 a) The Subscriber Module Remote (SMR), also referred to as
0 Subscriber Carrier Module Rural (SCMR), is the first
0 peripheral in the SCM-100 family. It replaces the Con-
0 trol Concentrator Terminal (CCT) of the DMS-1R sub-
0 scriber carrier system and provides direct digital
0 interface between the DMS-1R Remote Concentrator Termi-
0 nal (RCT) and the DMS-100F.

0 The SMR provides all basic tones to a RCT, including
0 dial tone, busy tone, reorder tone, audible ringing
0 (ringback) tone, high tone, receiver offhook tone and

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0 call waiting tone. Additionally, the SMR supports all
0 the currently available ringing schemes: coded, fre-
0 quency selective and superimposed.

0 b) The Subscriber Carrier Module (SMS) will interface on a
0 direct digital basis with the SLC-96 Remote Terminal
0 (RT) via DS-1 transmission facilities.

0 The SMS will replace the Central Office Terminal (COT)
0 currently associated with the RT thus eliminating indi-
0 vidual analog line circuits currently necessary to com-
0 municate on a line by line basis with the SLC-96.

0 The SLC-96 can operate in one of three modes:

0 MODE I - (non-concentrated line mode)

0 Used primarily for single and multiparty lines. Mode I
0 supports up to 96 subscriber lines and connects to the
0 SMS through up to five (5) DS-1 lines. One of these
0 lines is a protection line, active only when any of the
0 remaining four is out of service.

0 MODE II - (concentrated line mode)

0 Used for subscriber lines, special service and coin
0 lines. Mode II supports up to 96 subscriber lines and
0 connects to the SMS through up to three (3) DS-1 lines.
0 One of these lines is used for a protection line. Each
0 shelf group of 48 subscribers (two shelf groups total)
0 at the SLC-96 must compete for 24 channels on the DS-1
0 line.

0 MODE III - (non-concentrated single shelf group)

0 Used for special service and coin circuits. Mode III
0 supports up to 48 lines and connects to the SMS through
0 up to three (3) DS-1 lines. One of these lines is used
0 for a protection line.

0 c) The Urban Subscriber Carrier Module (SMU) (NT6X02EA)
0 will interface on a direct digital basis with a DMS-1
0 Urban Remote Terminal (RCU) via DS-1 transmission fa-
0 cilities.

0 The SMU is designed to replace the Central Control Ter-
0 minal (CCT) now required when the RCU is connected to a

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0 DMS-100 Family switch. This will eliminate the need
0 for duplicated line circuits and will reduce floor
0 space required at the DMS-100 host office.

0 (v) Common Peripheral Controller Equipment Frame

0 The Common Peripheral Controller modules are housed in a
0 standard DMS frame named the Common Peripheral Equipment
0 Frame. Up to two modules can be mounted in this frame.
0 Since it is possible to house two different types of PM
0 within the same frame, the frame name assumes the identity
0 of the PM in the bottom of the frame. Possible frames
0 names are:

- 0 - Line Group Equipment (LGE) frame (for LGCs)
- 0 - Digital Trunk Equipment (DTE) frame (for DTCs)
- 0 - Line Trunk Equipment (LTE) frame (for LTCs)
- 0 - Subscriber Module Equipment (SME) frame (for SMR, SMS
0 or SMU)

0 (vi) Line Concentrating Device Provisioning

0 Prior to BCS28, the maximum number of LCDs allowed in an
0 office was 254 with the maximum number of real LCDs limited
0 to 200. Changes in BCS 28 allow up to 254 real LCDs. The
0 use of virtual LCDs will lower the number of real LCDs al-
0 lowed. For BCS30 and above, the calculation of LCDs per
0 SLC will be changed to 8 SLCs per real LCD.

0 SMS, SMR, SMU are classed as real time modules when consid-
0 ering LCD provisioning. Refer to the Line Concentrating
0 Module section for more information.

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0 1.2 Features

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0 Host - Line Group Controller Equipment
0 Chapter 3

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0 1.3 Equipment Provisioning

0 1.3.1 DS30A Interface Cards

0 (a) General Description

0 To enable the Telco to specify the quantity of interface circuit
0 packs required to interface the DS30A ports from the Line Concen-
0 trating Module (LCM).

0 (b) Reference

0 None

0 (c) Provisioning Considerations

0 (i) NT6X48AA is required to interface with the DS30A ports of
0 the LCM module (domestic and international).

0 (ii) There can be a maximum of two (2) pairs of NT6X48AA cards
0 (four cards in total) per LGC module.

0 (iii) One pair of NT6X48AA cards provides an interface for up
0 to 10 DS30A ports from LCM's.

0 (iv) For each new LGC module that links to LCMs, always pro-
0 vide two (2) pairs of DS30A Interface Cards.

0 (v) When an existing LGC has only one (1) pair of the DS30A
0 Interface Cards, order one more pair if there will be
0 more than 10 DS30A links from the LCMs.

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0 1.3.2 DS1 Interface Cards

0 (a) General Description

0 To enable the Telco to specify the quantity of interface circuit
0 packs required to interface the DS1 digital carrier system and
0 the DS1 links from the Remote Line Concentrating Module (RLCM),
0 the Remote Switching Centre (RSC) and the Outside Plant Module
0 (OPM).

0 (b) Reference

0 NTP 297-1001-451 DMS-100 Family Common Customer
0 Data Schema

0 (c) Provisioning Considerations

0 (i) The DS1 Interface Cards are required to interface with
0 the DS1 digital carrier systems and the DS1 links from
0 the Remote Sites (i.e. Remote Line Concentrating Module
0 (RLCM), Remote Switching Center (RSC), Outside Plant Mod-
0 ule (OPM)).

0 (ii) There can be a maximum of ten (10) DS1 I/F cards per
0 LGC/DTC/LTC module.

0 (iii) One NT6X50AA/AB card provides an interface for up to two
0 (2) DS1 links. The NT6X50AB card will replace the
0 NT6X50AA card as the DS1 I/F card in many but not all ap-
0 plications (- the NT6X50AB will not be used in SMR, RSC,
0 and RLCM).

0 In order to support the enhanced features of the NT6X50AB
0 (i.e. ESF and 64 Kb/s clear channel capability based on
0 B8ZS), the DTC/LGC/LTC modules must be equipped with new
0 messaging (i.e. NT6X69AA/79AA or NT6X69AB) and new memory
0 (i.e. NT6X46AB/BA and NT6X47AB or NT6X47AC) cards. Pick
0 the appropriate DTC/LGC/LTC circuit pack fills.

0 The full support of the NT6X50AB card will not be avail-
0 able in DTC/LGC/LTC modules which have small memories
0 (i.e. NT6X46AA, NT6X47AA) and old messaging (i.e.
0 NT6X43AA). In these modules, the NT6X50AB can be used as
0 replacements for normal NT6X50AA carriers but the en-
0 hanced DS-1 feature set will not be available.

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0 The above is only applicable to DMS host offices and not
0 to remotes such as RSC and RLCM.

0 The Customer cannot use NT6X50AB to substitute for
0 NT6X50AA unless NTX270AA software is loaded and
0 datafilled for the respective XPM's. It is recommended
0 that NT6X50AA cards and NT6X50AB cards not be mixed on a
0 shelf to minimize cases where the Customer forgets that
0 NT6X50AB needs to be explicitly software datafilled. The
0 datafill is via software table CARRMTC.

0 (iv) The DS-1 Interface Circuit Pack provisionable to the SMS
0 is the NT6X85AA or NT6X85AB. If software package
0 NTX299AB is present, the NT6X85AB is required for all
0 modules that require special services features. Other SMS
0 modules may use NT6X85AA packs but will be unable to use
0 the special services features of the software package
0 NTX299AB. (Check availability reports for the proper or-
0 dering PEC.)

0 The SMU DS-1 CP Product Engineering Code (PEC) is
0 NT6X85AB. Each NT6X85AB CP contains two (2) DS-1 cir-
0 cuits. A maximum of ten (10) NT6X85AB CP may be provi-
0 sioned on each SMU.

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0 1.3.3 DS0A Interface Cards

0 (a) General Description

0 The NT6X55AB DS-0A Signaling Interface circuit pack provides a
0 DS-0A channel for the Digital Trunk Controller (DTC). Prior to
0 the introduction of this CP, channel banks were used to convert
0 the DS-1 link to 24 DS-0A channels.

0 The NT6X55AB CP provides one DS-0A channel for the CCS7 signaling
0 link. The CP supports 56 Kb/s and 64 Kb/s links.

0 (b) Reference

0 None

0 (c) Provisioning Considerations

0 (i) The DS-0A Signaling Interface Cards are provided in the
0 DTC for CCS7 signaling links. Provision one (1) DS-0A
0 card for each DS-0A link required.

0 (ii) There can be a maximum of ten (10) DS-0A I/F cards per
0 DTC module. The DS-0A I/F card is not applicable in an
0 LTC. A NT6X55AB can be provisioned in any slot that a
0 NT6X50 is allowed in a DTC. One NT6X55AB consumes two
0 DS-1 links on a DTC. One channel of the first DS-1 link
0 is used for the DS-0A channel. The remaining 47 channels
0 are not used. Therefore, the NT6X55ABs should be dis-
0 tributed evenly across all DTCs to minimize the port im-
0 pact.

0 (iii) The DTC supporting the NT6X55AB must be equipped with Ex-
0 tended Memory (NT6X46) and Enhanced Messaging (NT6X69).

0 (iv) The DS-0A link must not exceed 1500 feet.

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0 1.3.4 DS512 Interface Cards

0 (a) General Description

0 The NT6X40CA DS512 Network Interface circuit pack provides a fi-
0 ber interface to the Enhanced Network (ENET).

0 (b) Reference

0 None

0 (c) Provisioning Considerations

0 (i) If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP and two (2) NT6X40DA, DS512 Paddle Board,
0 for each relevant DTC/LGC/LTC module.

0 (ii) Provide one (1) NT6X02BU, Fiber I/F Hardware Assembly,
0 for each DTC/LGC/LTC module interfacing to the Enhanced
0 Network (ENET). The NT6X02BU Fiber Assembly mounts on
0 the backplane of the lower array in a module and provides
0 the fiber interface for both arrays.

0 (iii) If copper interface to the Network is required, then pro-
0 vide two (2) NT6X40AC, DS30 Network Interface CP, for
0 each relevant DTC/LGC/LTC module.

0 Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

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0 1.3.5 PCM 30 Interface Cards

0 (a) General Description

0 To enable the Telco to specify the quantity of interface circuit
0 packs required to interface the PCM 30 links from the Interna-
0 tional Remote Line Concentrating Module (IRLCM) and the PCM 30
0 Digital Carrier Systems.

0 (b) Reference

0 Chapter 3, Section 3.3 Operator Services
0 NTP 297-1001-451 DMS-100 Family Common Customer
0 Data Schema

0 (c) Provisioning Considerations

- 0 (i) The PCM 30 Interface Cards are required to interface with
0 the PCM 30 digital carrier systems and the PCM 30 links
0 from the Remote Sites (i.e. International Remote Line
0 Concentrating Module (IRLCM)).
- 0 (ii) One NT6X27AA/AB card provides an interface for up to two
0 (2) PCM 30 links.
- 0 (iii) There can be a maximum of eight (8) PCM 30 I/F cards per
0 International DTC (IDTC) module.
- 0 (iv) A DMS-100 host interfaces with an IRLCM over 2-6 PCM 30
0 links. The PCM 30 I/F cards mount on the ILGC.
- 0 (v) There can be a maximum of two (2) NT6X27AB PCM 30 I/F
0 cards per ILGC/IDTC module when the interoffice synchro-
0 nization feature is required.
- 0 (vi) When ITOPS is equipped on a DMS-100/200 configuration,
0 loop around trunks (NT6X27AA) must be provisioned to
0 route traffic between the DMS-100 and the DMS-200 portion
0 of the switch. Refer to Section 3.3 - Operator Services,
0 for more ITOPS provisioning information.
- 0 (vii) Provide one pair of NT6X28AA PCM 30 Signalling CP per
0 IDTC if TS16 signalling is used on the PCM link.
- 0 (viii) Provide one pair of NT6X28AA PCM 30 Signalling CP per
0 ILGC which supports LCM equipped with Metering Tone Con-

0 verter line cards (see the subsection on the Line Draw-
0 ers, found in this chapter, for more information on the
0 Metering Tone Converter line card).

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0 1.3.6 Universal Tone Receivers

0 (a) General Description

0 The Universal Tone Receiver (UTR) is a combined service circuit
0 that can perform the function of a Digitone Receiver for lines
0 and a MF Receiver for trunks.

0 The Universal Tone Receiver (UTR) circuit pack is provisioned for
0 R2 call setup. Each UTR pair has thirty circuits. For more in-
0 formation on the UTR, refer to Section 3.5.

0 (b) Reference

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 (i) The UTR is provisionable in pairs (maximum two (2) pairs)
0 on the DTC, LGC, (IDTC, ILGC) and LTC modules. All lines
0 and trunks connected to the module will be serviced by
0 the UTR within the module. This includes all lines in
0 LCMS, RLCMS, and OPMS.

0 (ii) UTRs will slightly reduce the DTC/LGC/LTC and RSC periph-
0 eral real time capacity. A real time work up should be
0 performed to ensure sufficient capacity. Refer to Sys-
0 tems Engineering Letter, Issue #01, Subject "Guidelines
0 for XPM Real Time Capacity Study - BCS-22" (Date: May 22,
0 1987).

0 (iii) Lines and trunks on a RSC are serviced by UTR cards lo-
0 cated in the RCC module of the RSC. There is no traffic
0 overflow to the host office.

0 (iv) Although the UTR can perform the function of a Digitone
0 Receiver (NT2X48AA) and the function of a MF Receiver
0 (NT2X48AB), there is no traffic overflow from UTRs onto
0 existing Digitone Receivers nor existing MF Receivers.
0 The Digitone Receivers and MF Receivers mounted on MTMs
0 and TMs are still required to service the following:

- 0 - analog trunk groups existing on TM/MTM shelves
- 0 - lines equipped on LM modules
- 0 - trunk groups equipped on DCM modules
- 0 - Mechanized Calling Card Service (MCCS)

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0 | - Subscriber Carrier Modules (SMS, SMR, SMU)
0 | - incoming and the incoming portion of 2 way service
0 | and test circuits (i.e. Remote Office Test Line and
0 | Blue Box Fraud
0 | Prevention). Refer to Section 3.5 (1.3.14) for the
0 | Digitone
0 | Receiver and Section 3.5 (1.3.13) for the MF Re-
0 | ceiver.

0 | (v) The following is a list of trunk types which require a
0 | receiver that are supported by the UTR

TRUNK GROUP	TRUNK NAME/DESCRIPTION
A5	2 WAY AMR5MF
ATC	Access Tandem to Carrier
SC	INCOMING CAMA MF 2 WAY CAMA TOLL MF IN MF OUT 2 WAY CAMA TOLL MF IN DP OUT
IT	INTERTOLL 2 WAY MF IN MF OUT INTERTOLL INCOMING MF INTERTOLL WINK MF IN DP OUT
IT250	IT250 DMS250/TOPS INTERTOLL
IMT	(DMS250 trunk group)
DAL	(DMS250 trunk group)
CAMA(250)	(DMS250 CAMA trunk group)
OC	2 WAY MF CAMA
OI	COLLOCATED OI SWITCHBOARD COLLOCATED SWBD TOLL OFFICE MF VERIFICATION OPERATOR
OP	Outgoing or 2 WAY MF TSPS/TOPS
PX	2 WAY DIGITAL PBX
AOSS	AOSS INCOMING MF
TDDO	TANDEM 2 Stage DDO

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0| TI INCOMING MF
0| T101 101 Communications Test Line
0| T2 LOCAL 2 WAY MF
0| TOPS TOPS TRUNK INCOMING MF
0| TOPS TRUNK 2 WAY MF IN MF OUT
0| TOPS TRUNK 2 WAY MF IN DP OUT
0| ZI 0+/0- Tandem to TOPS/TSPS
0| IBNTI INCOMING IBN
0| INCOMING IBN DT
0| IBNT2 2 WAY IBN
0| 2 WAY IBN DT
0| INT101 INTL 101 Test Line
0| AVINSW 2 WAY Interswitch MF
0| AVOVS 2 WAY OVERSEAS MF TRUNK
0| AVNOS 2 WAY CROSSBAR MF TRUNK
0| AVPBX 2 WAY or INCOMING PBX MF TRUNK
0| AVTNDM 2 WAY Tandem MF Trunk

0| Any incoming or incoming portion of a 2 way trunk group
0| requiring a receiver not listed above will require
0| Digitone or MF receivers.

0| (vi) The number of UTR circuits is obtained by calculating the
0| UTR holding time and multiplying by the average number of
0| calls per hour. In general it is always safe to provide
0| two (2) pairs of UTR cards if unsure of the traffic de-
0| mands.

0| For incoming R2 calls the UTR holding time is as follows:

0| 1. From seizure to final digit collection
0| plus

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- 0 2. From final digit collection to - trunk
0 selection if R1 or N5 outgoing, - seize
0 acknowledgement if R2 outgoing.

0 For outgoing R2 calls the UTR holding time is as follows:

- 0 1. The UTR is held until told to release by
0 the far office or timeout if we are the
0 controlling signal office (i.e. R1 to R2
0 calls).

0 The number of UTRs used on average is given by the fol-
0 lowing formula:

$$\begin{array}{lcl} \# \text{ of UTR} & \text{SI} & \text{S0} \\ \text{Circuits} = \text{NI} \times \frac{\text{-----}}{\text{HI+SI}} \times \text{EI} + \text{NO} \times \frac{\text{-----}}{\text{HO+S0}} \times \text{EO} \\ \text{required} & & \end{array}$$

0 where,

0 NI = Number of incoming R2 trunks (or 2-way
0 used as incoming)

0 SI = Signalling time in seconds of incoming
0 trunks

0 HI = Holding time (talking) of incoming trunks
0 in seconds

0 EI = Erlang occupancy figure of incoming
0 trunks

0 NO = Number of outgoing R2 trunks (or 2-way
0 used as outgoing)

0 S0 = Signalling time in seconds of outgoing
0 trunks

0 HO = Holding time (talking) of outgoing trunks
0 in seconds

0 EO = Erlang occupancy figure of outgoing trunks

- 0 (vii) This circuit pack is only required for CCITT No. 6 Sig-
0 nalling.

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0 1.3.7 Special Tone Receiver/Blue Box Fraud

0 (a) General Description

0 The STR (Special Tone Receiver) is a digital signal tone process-
0 ing tone receiver for applications that are characterized by per
0 call, long holding time (30 + seconds) receiver requirements.
0 Examples of this type of receiver are Reorigination and Blue Box
0 Fraud detection.

0 The NT6X62AB STR/BBF ckt pack is designed for use in the Extended
0 Peripheral Module (XPM) environment. It is capable of monitor-
0 ing all 480 active speech channels in the XPM architecture.

0 The NT6X62AB STR/BBF ckt pack is a single-slot (dual board)
0 provisionable XPM circuit pack which supports Reorigination and
0 Blue Box fraud detection features.

0 (b) Reference

0 None.

0 (c) Provisioning Considerations

0 (i) The technology of the NT6X62AB STR receiver is applicable
0 to the Extended Peripheral Module (XPM) (which mounts on
0 the NT6X01AA/AB frames). The product features of Special
0 Tone Receiver (Reorigination and Blue Box Fraud) are ap-
0 plicable to the DMS-250 only.

0 (ii) One (1) STR/BBF ckt pack pair (1/shelf unit) will provide
0 special tone receiver features of Reorigination and Blue
0 Box Fraud Detection for all 480 channels of the DTC (XPM)
0 in which they are installed. The STR/BBF may only be
0 data filled for slot 16.

0 There may be only one UTR per XPM shelf when the STR/BBF
0 is present.

0 (iii) Only those trunk subgroups which go through an XPM on the
0 incoming side of the switch with STR may be monitored for
0 BBF.

0 Incoming ISUP trunks are not supported.

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0 (iv) As a minimum, the following XPM configurations are re-
0 quired to support Reorigination and Blue Box Fraud fea-
0 tures:

- 0 A. Expanded Memory CPs NT6X47AB or NT6X47AC, NT6X46AB
- 0 B. New Messaging CPs, NT6X69AB
- 0 C. MP/SP CPU, NT6X45AC/AE
- 0 D. Power Converter, NT2X70AE
- 0 E. STR/BBF CP, NT6X62AB

0 (v) TRAFFIC CAPACITY OF REORIGINATION RECEIVERS

- 0 - 480 Erlangs at Busy Hour (monitoring only)
- 0 - Originating CPS are limited by XPM, not the STR

0 The STR is capable of monitoring all 480 active speech
0 channels for star and pound symbols. This does not mean
0 that the XPM is capable of accepting 480 simultaneous
0 requests for reorigination. However, the STR and it's
0 associated XPM code will not cause significant degrada-
0 tion (greater than 1.0%) in call processing capability of
0 the XPM. The actual XPM traffic capacity is determined by
0 the call and trunk mix.

0 TRAFFIC CAPACITY BLUE BOX FRAUD DETECTION

- 0 - 480 Erlangs at Busy Hour (monitoring only)
- 0 - Originating CPS are limited by XPM, not the STR

0 The BBF is capable of monitoring all 480 active speech
0 channels for Blue Box Fraud signals. This does not mean
0 that the XPM is capable of accepting 480 simultaneous
0 requests for call termination. Nor is the STR/BBF capa-
0 ble of generating that many successful BBF detection.
0 However, the STR and it's associated XPM code will not
0 cause significant degradation (greater than 1.0%) in call
0 processing capability of the XPM. The actual XPM traffic
0 capacity is determined by the call and trunk mix.

0 (vi) All required software to support features provided by the
0 NT6X62AB STR/BBF CP are included in the base software for
0 the switch. No special software feature package is re-
0 quired.

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0 1.3.8 Line Group Controller (LGC) Module

0 (a) General Description

0 The LGC provides the interface between the LCM and the DMS net-
0 work. It is also an interface between the Remote Sites and the
0 DMS network.

0 (c) Reference

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations:

0 (i) The LGC module is a two shelf module.

0 (ii) Each LGC module can accommodate up to four (4) DS30A LCM
0 Interface Cards and up to ten (10) DS1 Interface Circuit
0 Packs. Each module can interconnect with the network via
0 up to sixteen (16) speech links.

0 (iii) Each LGC can terminate up to a maximum of twenty (20)
0 ports on the peripheral side, in any combination of DS30A
0 or DS1 ports (i.e. up to a maximum of twenty (20) DS30A
0 ports or up to a maximum of twenty (20) DS1 ports or any
0 combination of DS30A and DS1 ports up to a maximum of
0 twenty (20) ports).

0 (iv) Each LGC can terminate up to sixteen (16) DS30 ports x 30
0 = 480 speech channels on the CPU (network) side.

0 (v) The peripheral ports (DS30A and DS1) in the LGC can be
0 assigned in either a concentrating or a non-concentrating
0 configuration. In the concentrating configuration, up to
0 600 P-side speech channels can be assigned; while in the
0 non-concentrating configuration, a maximum of 480 P-side
0 speech channels can be assigned. Each DS30A link sup-
0 ports 30 speech channels. Each DS1 link supports 24
0 speech channels.

0 (vi) In offices with BCS-22 or earlier, the host LGC/LTC can
0 support up to a maximum of 18 p-side datafilled software
0 nodes, where a node is defined as host LCMs, RSC LCMs,
0 RCC, RLCM, OPM, RMMs, ESA processor (for RLCM/OPMs) and
0 dummy software nodes.

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0 In BCS-23, this node limit is raised to a maximum of 62
0 p-side nodes.

0 (vii) When the RSC trunking option (NTX152AB) is
0 planned/provisioned, a host LTC is required.

0 (viii) It is recommended that the host LGC interface to only one
0 RSC. However, a maximum of two RSCs per LGC is allowed
0 (except for the Dual RCC configuration).

0 (ix) Dual RCC configurations require one LGC per RCC. The host
0 LGC will not interface to a second RCC.

0 (x) Provision RSCs off of the host LGC first. The remaining
0 LGC ports can be used to provision host LCMs, RLCMs or
0 OPMs as host LGC capacity permits. However, consideration
0 should be given to RSC growth.

0 (xi) The maximum number of Remotes (RSC, RLCM, OPM) that a
0 Host LGC can support is defined as follows:

- 0 - Two (2) RSCs from a single configuration.
- 0 - One (1) RSC from a dual configuration and one (1) RSC
0 from a single configuration.
- 0 - Traffic, Real Time and software Nodal requirements do
0 not exceed the recommended engineering limits.

0 In addition, the remaining p-side ports can be configured
0 for two (2) RLCMs and OPMs if the Traffic, Real Time and
0 software Nodal requirements do not exceed the recommended
0 engineering limits.

0 (xii) All ports from an LCM module must terminate onto the same
0 LGC module.

0 (xiii) All ports from an RLCM must terminate onto the same LGC
0 module.

0 (xiv) All ports from an OPM must terminate onto the same LGC
0 module.

0 (xv) There is a fifty (50) foot cabling length restriction be-
0 tween the LGC and the LCM.

0 (xvi) The newly provisioned modules can be linked to existing
0 LGCs. Take this into account when provisioning new LGCs.

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0 (xvii) The following LGC Common Peripheral Controller CPs sup-
0 port the following applications:

0 LGCs
0 NT6X02LC supports RSC, UTRs
0 replaces NT6X02AL/AH (BCS-27)

0 ILGCs
0 NT6X02BD supports SL-100 U.K.
0 NT6X02BK supports Turkey applications
0 NT6X02BW replaces NT6X02BP (BCS-28)
0 NT6X02BP supports International
0 NT6X02HB supports Caribbean (CEP)
0 NT6X02KF supports China

0 (xviii) For each NT6X02LC ordered (BCS-27), provide:

0 - four (4) XPM Processor CP NT6X45AF/BA
0 - two (2) DS30 Network Interface CP NT6X40AC
0 - two (2) SP Memory Plus CP NT6X46BB
0 - two (2) MP Memory Plus CP NT6X47AC

0 - two (2) MSG Protocol & Tone CP NT6X69AC
0 - two (2) Power Converter CP NT2X70AE

0 NT6X02LC is to be ordered instead of NT6X02LA.

0 For each NT6X02BW ordered, provide:

0 - six (6) XPM Processor CP NT6X45BA
0 - two (2) Time Switch CP NT6X44AB/EA
0 - two (2) Power Converter CP NT2X70AE

0 NT6X02BW is to be ordered instead of NT6X02BP.

0 Upon general availability, the NT6X45BA CP will become
0 the standard XPM Processor offering instead of the
0 NT6X45AF/AD CP.

0 If optional software feature NTXA66AA (Enhanced Office
0 Recovery) or NTXA67AA (Extended XPM Diagnostics) are
0 present, then the XPM Processor CP must be the NT6X45BA.
0 Provide four NT6X45BA XPM Processor CP for upgrading ex-
0 isting offices.

0 NT6X44EA adds Even-Bit-Inversion (EBI) to the Time Switch
0 CP (NT6X44AB).

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- 0 (xix) If interface to the Enhanced Network (ENET) is required,
0 then the relevant DTC/LGC/LTC modules must have the
0 NT6X69AC Msg Protocol & Tone CP. NT6X69AC replaces
0 NT6X69AB.

0 Provide 1 NT6X02BQ change kit for each DTC/LGC/LTC module
0 you are upgrading to ENET. This change kit applies only
0 to modules provisioned at NT6X02 AS/IA, AT/LA or AU/MA
0 levels. Modules provisioned at earlier levels must be
0 upgraded to these levels before the NT6X02BQ change kit
0 can be applied.

- 0 (xx) Existing DTC/LGC/LTC modules are equipped with two
0 NT6X46BA in slot 11. Do not order new circuit packs for
0 these slots.

- 0 (xxi) There are two methods available to satisfy 4 MB MP memory
0 requirements in existing DTC/LGC/LTC modules. The first
0 method is to apply one NT6X02EQ product change kit to
0 each DTC/LGC/LTC module to be upgraded as in item (1) be-
0 low. Per customer request, a second pair of office sup-
0 plied NT6X47AB packs may be added to each DTC/LGC/LTC
0 module to be upgraded as in item (2) below. Do not order
0 new NT6X47AB packs for the upgrade of NT6X02IA, LA, MA mod-
0 ules. The NT6X47AB packs that have been removed from up-
0 graded DTC/LGC/LTC modules may then be applied to other
0 relevant DTC/LGC/LTC modules.

- 0 1) Provision NT6X02EQ Product Change Kit to replace the
0 NT6X47AB MP Memory Plus circuit packs in slot 10 with
0 NT6X47AC packs. The NT6X02EQ kit may only be applied
0 to the following modules:

0	DTC (CCS7) :	BCS-27	and later	(NT6X02AS/IA)
0	DTC (other):	BCS-33	and later	(NT6X02AS/IA)
0	LGC (all) :	BCS-31	and later	(NT6X02AT/LA)
0	LTC (all) :	BCS-30	and later	(NT6X02AU/MA)

- 0 2) Existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT0X50AA, Filler Face Plate, in Slot 09.
0 Provide two (2) NT6X47AB, MP Memory Plus CP for the
0 above listed modules.

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0 One NT6X47AC in slot 10 (item 1) has the same memory
0 capacity as two (2) NT6X47AB in slots 9 and 10 (item
0 2).

0 Existing DTC/LGC/LTC module is presently equipped
0 with two NT6X69AB in slot 18. If existing module is
0 not required to interface ENET, new cards are not re-
0 quired for these slots.

0 Provide one (1) NT6X02BQ Product Change kit for each
0 existing DTC/LGC/LTC module to be upgraded to inter-
0 face ENET. The NT6X02BQ contains (2) NT6X69AC circuit
0 packs. The NT6X02BQ will convert the NT6X02IA/AS to
0 NT6X02IC, the NT6X02LA/AT to NT6X02LC, and the
0 NT6X02MA/AU to NT6X02MC.

0 If an existing DTC/LGC/LTC module has ALREADY been
0 upgraded to the NT6X02IC/LC/MC packfill level via the
0 NT6X02EQ KIT, provide two NT6X69AC circuit packs in
0 slot 18 to upgrade the module for ENET interface.

0 (xxii) Provide two (2) NT6X78AA, Class Modem Resource CP, for
0 each LGC module that is handling Custom Local Area Sig-
0 naling Services (CLASS -U.S.) or Call Management Services
0 (CMS -Canada) -Calling Number Display. This rule only
0 applies to the following LGC modules:

0 NT6X02LC/LA, NT6X02AT

0 Upon general availability, the NT6X78AB will replace the
0 NT6X78AA as the standard CLASS Modem Resource CP. When
0 this happens, provide two (2) NT6X78AB CLASS Modem Re-
0 source CP in slot 13 of each LGC/LTC module that is han-
0 dling CLASS-Calling Number Display.

0 (xxiii) Module NT6X02LC is the minimum packfill level for new of-
0 fices at BCS-32 or later.

0 (xxiv) Modules NT6X02LA/AT represent the minimum packfill level
0 for BCS-32 in existing offices.

0 Building Blocks

0 (xxv) Provide one NTZZ04EA Building Block product change kit
0 for each existing NT6X02AA DTC/LGC/LTC module to be up-
0 graded. Do not order the NT6X02ZE PC Kit.

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0 The NTZZ04EA building block contains the following:

0 (1) NT6X02ER XPM PC Kit
0 (1) NT6X02ZL Wiring Kit
0 (2) NT0X50AA Filler Face Plate
0 (2) NT6X47AC Master Proc Memory Plus CP
0 (2) NT6X46BB Signal Processor Memory Plus CP
0 (2) NT6X69AC CPP Msg Protocol & Tone CP
0 (2) NT2X70AE Power Conv +/-5V & 12V CP
0 (2) P0711663 Desig. Label for NT6X47AC
0 (2) P0711664 Desig. Label for NT6X46BB
0 (2) P0710476 Desig. Label for NT6X69AC
0 (2) P0698943 Desig. Label for NT2X70AE

0 (NOTE: The NTZZ04EA includes all circuit packs required
0 to upgrade an NT6X02AA module except the NT6X45 cards.

0 The NTZZ04EA building block kit may be used to upgrade
0 the NT6X02AA module as follows:

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Building Block	From	To
NTZZ04EA	NT6X02AA (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

0 Provide one NTZZ04GA Building Block product change kit
0 for each existing NT6X02AC DTC/LGC/LTC module to be up-
0 graded. Do not order the NT6X02ZE PC Kit.

0 The NTZZ04GA building block contains the following:

0 (1) NT6X02ER XPM PC Kit
0 (1) NT6X02ZL Wiring Kit
0 (2) NT0X50AA Filler Face Plate
0 (2) NT6X47AC Master Proc Memory Plus CP
0 (2) NT6X46BB Signal Processor Memory Plus CP
0 (2) NT6X69AC CPP Msg Protocol & Tone CP
0 (2) P0711663 Desig. Label for NT6X47AC
0 (2) P0711664 Desig. Label for NT6X46BB

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0 (2) P0710476 Desig. Label for NT6X69AC

0 (NOTE: The NTZZ04GA includes all circuit packs required
0 to upgrade a NT6X02AC module except the NT6X45 cards.)0 The NTZZ04GA building block kit may be used to upgrade
0 the NT6X02AC module as follows:0
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Building Block	From	To
NTZZ04GA	NT6X02AC (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

0 | (xxvi) Existing DTC/LGC/LTC module is presently equipped with
0 four (4) NT6X45AA, XPM Processor CP, in Slots 08 & 12.
0 Application of the NTZZ04EA/NTZZ04GA makes these slots
0 provisionable and replacement cards must be ordered as
0 follows:0 For A-stock upgrades provide four (4) NT6X45BA cards in
0 slots 8 and 12 of the upper and lower shelves of the pe-
0 ripheral modules. If B-stock material is required, then
0 four NT6X45BB packs must be merchandise ordered via an
0 88K.0 | The existing NT6X45AA packs must be replaced because they
0 will not work with New Messaging. The only reason NT6X45
0 cards are not included in the NTZZ04EA/GA upgrade kit is
0 because there is an option between NT6X45BA and NT6X45BB
0 packs. Either the NT6X45BA packs or the NT6X45BB packs
0 must be ordered or the upgrade will not have been done
0 correctly.0 (xxvii) The existing DTC/LGC/LTC module is presently equipped
0 with the following DS30 Network Interface CP in Slots 22
0 & 23: four (4) NT6X40AA.0 If copper interface to the Network is required, then DO
0 NOT order new circuit packs for these slots.

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0 If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP in Slot 22, and two (2) NT6X40DA, DS512 Pad-
0 dle Board, in Slot 22R of each relevant DTC/LGC/LTC mod-
0 ule. Also, provide one (1) NT6X02BU, Fiber I/F Hardware
0 Assembly, for each DTC/LGC/LTC module interfacing to the
0 Enhanced Network (ENET). The NT6X02BU Fiber Assembly
0 mounts on the backplane of the lower array in a module
0 and provides the fiber interface for both arrays.

0 Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

0 (xxviii) The existing DTC/LGC/LTC module is presently equipped
0 with four (4) NT6X47AA, MP Memory CP, in Slots 09 & 10.
0 Application of the NTZZ04EA/NTZZ04GA replaces these cir-
0 cuit packs with two NT6X47AC Master Processor Memory cir-
0 cuit packs.

0 (xxix) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X46AA Signal Processor Memory Plus CP in
0 slot 11. Application of the NTZZ04EA/NTZZ04GA replaces
0 these circuit packs with two NT6X46BB circuit packs.

0 (xxx) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X43AA, Msg Interface CP, in Slot 18. Ap-
0 plication of the NTZZ04EA/NTZZ04GA replaces these circuit
0 packs with two NT6X69AC Msg Protocol & Tone circuit
0 packs.

0 (xxxi) If the existing module was a NT6X02AA, then the NTZZ04EA
0 provides two (2) NT2X70AE, Power Converter CP, in Slot 25
0 of each DTC/LGC/LTC module.

0 If the existing module was a NT6X02AC, then two (2)
0 NT2X70AD, Power Converter CP, already exist in Slot 25 of
0 each DTC/LGC/LTC module. DO NOT order new circuit packs
0 for these slots unless requested by the customer. Per
0 Telco request, the existing NT2X70AD CP's in each
0 DTC/LGC/LTC can be replaced by the NT2X70AE, Power Con-
0 verter ESD CP.

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0 1.3.9 Digital Trunk Controller (DTC) Module

0 (a) General Description

0 The Digital Trunk Controller (DTC) Module provides the interface
0 between DS-1 digital systems and the DMS network. (The DTC does
0 not provide the digital interface between a host DMS and a re-
0 mote.)

0 (b) Reference

0 Chapter 3, Section 3.15 Common Channel Signalling

0 (c) Provisioning Considerations

0 (i) The DTC module is a two shelf module (versus the present
0 single shelf or single bay peripheral module).

0 (i) Each DTC module can terminate up to twenty (20) digital
0 carrier systems (i.e. up to ten (10) DS1 Interface cards)
0 and interconnect with the network via up to sixteen (16)
0 DS30 speech links.

0 (iii) Each DTC can terminate up to a maximum of twenty (20) DS1
0 ports on the peripheral side and a maximum of sixteen
0 (16) DS30 ports on the CPU (network) side.

0 (iv) Since each DTC terminates up to $20 \times 24 = 480$ voice chan-
0 nels and the internal speech links can accommodate up to
0 $16 \times 30 = 480$ VF paths, there is no concentration.

0 (v) DTC modules are provisioned for total terminations based
0 on the forecast of digital trunk requirements for the
0 busy season prior to exhaust.

0 (vi) For service protection, it is recommended that trunk cir-
0 cuits of each trunk group be spread over more than one
0 DS1 Interface card. Both of these cards can be mounted
0 on the same DTC module because of the duplicated
0 processor residing in the module.

0 (vii) Existing DTC modules which have spare capacity shall be
0 used to terminate new digital systems.

0 (viii) When a DTC module is handling CCIS/CCS7 voice trunk-
0 ing, two (2) Continuity Tone Detector cards NT6X70AA are

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0 required when analog trunk facilities are employed. The
0 NT6X70AA card is not required if the transmission path is
0 all-digital.

0 (ix) The following DTC Common Peripheral Controller CPs sup-
0 port the following applications:

0 DTCs
0 NT6X02IC supports UTRs
0 replaces NT6X02AQ/AR (BCS-27)

0 IDTCs
0 NT6X02BD supports SL-100 U.K.
0 NT6X02BN supports Mercury UK applications with
0 New Message requirements (eg. DPNSS) *
0 NT6X02GB supports Caribbean (CEP)
0 NT6X02JA supports DMS-300 Turkey
0 NT6X02KE supports China
0 NT6X02QA supports Turkey applications
0 NT6X02BW replaces NT6X02BP (BCS-28)
0 NT6X02BP supports all International

0 * See Section 3.15 Common Channel Signalling for more
0 information on DPNSS.

0 (x) For each NT6X02IC ordered (BCS-27), provide:

0 - four (4) XPM Processor CP NT6X45AF/BA
0 - two (2) DS30 Network Interface CP NT6X40AC
0 - two (2) SP Memory Plus CP NT6X46BB
0 - two (2) MP Memory Plus CP NT6X47AC

0 - two (2) MSG Protocol & Tone CP NT6X69AC
0 - two (2) Power Converter CP NT2X70AE

0 NT6X02IC is to be ordered instead of NT6X02IA.

0 For each NT6X02BW ordered, provide:

0 - six (6) XPM Processor CP NT6X45BA
0 - two (2) Time Switch CP NT6X44AB/EA
0 - two (2) Power Converter CP NT2X70AE

0 NT6X02BW is to be ordered instead of NT6X02BP.

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0 Upon general availability, the NT6X45BA CP will become
0 the standard XPM Processor offering instead of the
0 NT6X45AF/AD CP.

0 If optional software feature NTXA66AA (Enhanced Office
0 Recovery) or NTXA67AA (Extended XPM Diagnostics) are
0 present, then the XPM Processor CP must be the NT6X45BA.
0 Provide four NT6X45BA XPM Processor CP for upgrading ex-
0 isting offices.

0 NT6X44EA adds Even-Bit-Inversion (EBI) to the Time Switch
0 CP (NT6X44AB).

- 0 (xi) If interface to the Enhanced Network (ENET) is required,
0 then the relevant DTC/LGC/LTC modules must have the
0 NT6X69AC Msg Protocol & Tone CP. NT6X69AC replaces
0 NT6X69AB.

0 Provide 1 NT6X02BQ change kit for each DTC/LGC/LTC module
0 you are upgrading to ENET. This change kit applies only
0 to modules provisioned at NT6X02 AS/IA, AT/LA or AU/MA
0 levels. Modules provisioned at earlier levels must be
0 upgraded to these levels before the NT6X02BQ change kit
0 can be applied.

- 0 (xii) If ENET interface is not required, use the product change
0 kit NT6X02EQ to upgrade DTC modules from NT6X02IA/LA/MC
0 to NT6X02IC/LC/MC levels.

- 0 (xiii) There are two methods available to satisfy 4 MB MP memory
0 requirements in existing DTC/LGC/LTC modules. The first
0 method is to apply one NT6X02EQ product change kit to
0 each DTC/LGC/LTC module to be upgraded as in item (1) be-
0 low. Per customer request, a second pair of office sup-
0 plied NT6X47AB packs may be added to each DTC/LGC/LTC
0 module to be upgraded as in item (2) below. Do not order
0 new NT6X47AB packs for the upgrade of NT6X02IA, LA, MA mod-
0 ules. The NT6X47AB packs that have been removed from up-
0 graded DTC/LGC/LTC modules may then be applied to other
0 relevant DTC/LGC/LTC modules.

- 0 1) Provision NT6X02EQ Product Change Kit to replace the
0 NT6X47AB MP Memory Plus circuit packs in slot 10 with
0 NT6X47AC packs. The NT6X02EQ kit may only be applied
0 to the following modules:

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0 DTC (CCS7) : BCS-27 and later (NT6X02AS/IA)
0 DTC (other): BCS-33 and later (NT6X02AS/IA)
0 LGC (all) : BCS-31 and later (NT6X02AT/LA)
0 LTC (all) : BCS-30 and later (NT6X02AU/MA)

0 2) Existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT0X50AA, Filler Face Plate, in Slot 09.
0 Provide two (2) NT6X47AB, MP Memory Plus CP for the
0 above listed modules.

0 One NT6X47AC in slot 10 (item 1) has the same memory
0 capacity as two (2) NT6X47AB in slots 9 and 10 (item 2).

0 | Where an existing DTC/LGC/LTC module is presently
0 equipped with two NT6X69AB in slot 18, if the existing
0 module is not required to interface ENET, new cards are
0 not required for these slots.

0 Provide one (1) NT6X02BQ Product Change kit for each ex-
0 isting DTC/LGC/LTC module to be upgraded to interface
0 ENET. The NT6X02BQ contains (2) NT6X69AC circuit packs.
0 The NT6X02BQ will convert the NT6X02IA/AS to NT6X02IC,
0 the NT6X02LA/AT to NT6X02LC, and the NT6X02MA/AU to
0 NT6X02MC.

0 If an existing DTC/LGC/LTC module has ALREADY been up-
0 graded to the NT6X02IC/LC/MC packfill level via the
0 NT6X02EQ KIT, provide two NT6X69AC circuit packs in slot
0 18 to upgrade the module for ENET interface.

0 | For Canadian applications only, provide the NT6X02ER
0 Product Change Kit for each existing DTC peripheral mod-
0 ule (NT6X02AR/AM) to be upgraded. This change kit makes
0 the appropriate circuit pack positions provisionable, but
0 contains no circuit packs. Refer to the engineering man-
0 ual rules to identify the circuit packs required for up-
0 grade of the NT6X02AR or NT6X02AM.

0 (xiv) The following are the minimum packfill levels required
0 for BCS-32 or later: NT6X02IA/IS, or NT6X02IC (for new
0 offices).

0 **Building Blocks**

0 (xv) Provide one NTZZ04EA Building Block product change kit
0 for each existing NT6X02AA DTC/LGC/LTC module to be up-
0 graded. Do not order the NT6X02ZE PC Kit.

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0 The NTZZ04EA building block contains the following:

0 (1) NT6X02ER XPM PC Kit
0 (1) NT6X02ZL Wiring Kit
0 (2) NT0X50AA Filler Face Plate
0 (2) NT6X47AC Master Proc Memory Plus CP
0 (2) NT6X46BB Signal Processor Memory Plus CP
0 (2) NT6X69AC CPP Msg Protocol & Tone CP
0 (2) NT2X70AE Power Conv +/-5V & 12V CP
0 (2) P0711663 Desig. Label for NT6X47AC
0 (2) P0711664 Desig. Label for NT6X46BB
0 (2) P0710476 Desig. Label for NT6X69AC
0 (2) P0698943 Desig. Label for NT2X70AE

0 (Note: The NTZZ04EA includes all circuit packs required
0 to upgrade an NT6X02AA module except the NT6X45 cards.

0 The NTZZ04EA building block kit may be used to upgrade
0 the NT6X02AA module as follows:

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Building Block	From	To
NTZZ04EA	NT6X02AA (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

Provide one NTZZ04GA Building Block product change kit for each existing NT6X02AC DTC/LGC/LTC module to be upgraded. Do not order the NT6X02ZE PC Kit.

The NTZZ04GA building block contains the following:

(1)	NT6X02ER	XPM PC Kit
(1)	NT6X02ZL	Wiring Kit
(2)	NT0X50AA	Filler Face Plate
(2)	NT6X47AC	Master Proc Memory Plus CP
(2)	NT6X46BB	Signal Processor Memory Plus CP
(2)	NT6X69AC	CPP Msg Protocol & Tone CP
(2)	P0711663	Desig. Label for NT6X47AC
(2)	P0711664	Desig. Label for NT6X46BB
(2)	P0710476	Desig. Label for NT6X69AC

(Note: The NTZZ04GA includes all circuit packs required to upgrade a NT6X02AC module except the NT6X45 cards.

The NTZZ04GA building block kit may be used to upgrade the NT6X02AC module as follows:

Building Block	From	To
NTZZ04GA	NT6X02AC (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

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0 | (xvi) Existing DTC/LGC/LTC module is presently equipped with
0 four (4) NT6X45AA, XPM Processor CP, in Slots 08 & 12.
0 Application of the NTZZ04EA/NTZZ04GA makes these slots
0 provisionable and replacement cards must be ordered as
0 follows:

0 For A-stock upgrades provide four (4) NT6X45BA cards in
0 slots 8 and 12 of the upper and lower shelves of the pe-
0 ripheral modules. If B-stock material is required, then
0 four NT6X45BB packs must be merchandise ordered via an
0 88K.

0 | The existing NT6X45AA packs must be replaced because they
0 will not work with New Messaging. The only reason NT6X45
0 cards are not included in the NTZZ04EA/GA upgrade kit is
0 because there is an option between NT6X45BA and NT6X45BB
0 packs. Either the NT6X45BA packs or the NT6X45BB packs
0 must be ordered or the upgrade will not have been done
0 correctly.

0 (xvii) The existing DTC/LGC/LTC module is presently equipped
0 with the following DS30 Network Interface CP in Slots 22
0 & 23: four (4) NT6X40AA.

0 If copper interface to the Network is required, then DO
0 NOT order new circuit packs for these slots.

0 If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP in Slot 22, and two (2) NT6X40DA, DS512 Pad-
0 dle Board, in Slot 22R of each relevant DTC/LGC/LTC mod-
0 ule. Also, provide one (1) NT6X02BU, Fiber I/F Hardware
0 Assembly, for each DTC/LGC/LTC module interfacing to the
0 Enhanced Network (ENET). The NT6X02BU Fiber Assembly
0 mounts on the backplane of the lower array in a module
0 and provides the fiber interface for both arrays.

0 | Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

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0 (xviii) The existing DTC/LGC/LTC module is presently equipped
0 with four (4) NT6X47AA, MP Memory CP, in Slots 09 & 10.
0 Application of the NTZZ04EA/NTZZ04GA replaces these cir-
0 cuit packs with two NT6X47AC Master Processor Memory cir-
0 cuit packs.

0 (xix) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X46AA Signal Processor Memory Plus CP in
0 slot 11. Application of the NTZZ04EA/NTZZ04GA replaces
0 these circuit packs with two NT6X46BB circuit packs.

0 (xx) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X43AA, Msg Interface CP, in Slot 18. Ap-
0 plication of the NTZZ04EA/NTZZ04GA replaces these circuit
0 packs with two NT6X69AC Msg Protocol & Tone circuit
0 packs.

0 (xxi) If the existing module was a NT6X02AA, then the NTZZ04EA
0 provides two (2) NT2X70AE, Power Converter CP, in Slot 25
0 of each DTC/LGC/LTC module.

0 If the existing module was a NT6X02AC, then two (2)
0 NT2X70AD, Power Converter CP, already exist in Slot 25 of
0 each DTC/LGC/LTC module. DO NOT order new circuit packs
0 for these slots unless requested by the customer. Per
0 Telco request, the existing NT2X70AD CP's in each
0 DTC/LGC/LTC can be replaced by the NT2X70AE, Power Con-
0 verter ESD CP.

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0 1.3.10 Line Trunk Controller (LTC) Module

0 (a) General Description

0 The LTC provides the interface between the LCM and the DMS net-
0 work. It is also an interface between the Remote Sites and the
0 DMS network and an interface between the DS1 digital carrier sys-
0 tem and the DMS network.

0 (b) Reference

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

- 0 (i) The LTC module is a two shelf module.
- 0 (ii) Each LTC module can accommodate up to four (4) DS30A LCM
0 Interface Cards and up to ten (10) DS1 Interface Circuit
0 Packs. Each module can interconnect with the network via
0 up to sixteen (16) speech links.
- 0 (iii) Each LTC can terminate up to a maximum of twenty (20)
0 ports on the peripheral side, in any combination of DS30A
0 or DS1 ports (i.e. up to a maximum of twenty (20) DS30A
0 ports or up to a maximum of twenty (20) DS1 ports or any
0 combination of DS30A and DS1 ports up to a maximum of
0 twenty (20) ports).
- 0 (iv) Each LTC can terminate up to 16 DS30 ports x 30 = 480
0 speech channels on the CPU (network) side.
- 0 (v) The peripheral ports (DS30A and DS1) in the LTC can be
0 assigned in either a concentrating or a non-concentrating
0 configuration. In the concentrating configuration, up to
0 600 P-side speech channels can be assigned; while in the
0 non-concentrating configuration, a maximum of 480 P-side
0 speech channels can be assigned. Each DS30A link sup-
0 ports 30 speech channels. Each DS1 link supports 24
0 speech channels.
- 0 (vi) In offices with BCS-22 or earlier, the host LGC/LTC can
0 support up to a maximum of 18 p-side datafilled software
0 nodes, where a node is defined as host LCMs, RSC LCMs,
0 RCC, RLCM, OPM, RMMs, ESA processor (for RLCM/OPMs) and
0 dummy software nodes.

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0 In BCS-23, this node limit is raised to a maximum of 62
0 p-side nodes.

0 (vii) A host LTC is required, rather than a LGC, when the RSC
0 trunking option (NTX152AB) is planned/provisioned.

0 (viii) It is recommended that the host LTC interface to only one
0 RSC. However, a maximum of two RSCs per LTC is allowed
0 (except for the Dual RCC configuration).

0 (ix) Dual RCC configurations require one LTC per RCC. The host
0 LTC will not interface to a second RCC.

0 (x) Provision RSCs off of the host LTC first. The remaining
0 LTC ports can be used to provision host LCMs, RLCMs,
0 OPMs, or DS1 digital carriers as host LTC capacity per-
0 mits. However, consideration should be given to RSC
0 growth.

0 (xi) The maximum number of Remotes (RSC, RLCM, OPM) that a
0 Host LGC can support is defined as follows:

- 0 - Two (2) RSCs from a single configuration.
- 0 - One (1) RSC from a dual configuration and one (1) RSC
- 0 from a single configuration.
- 0 - Traffic, Real Time and software Nodal requirements do
- 0 not exceed the recommended engineering limits.

0 In addition, the remaining p-side ports can be configured
0 for two (2) RLCMs and OPMs if the Traffic, Real Time and
0 software Nodal requirements do not exceed the recommended
0 engineering limits.

0 (xii) All ports from an LCM module must terminate onto the same
0 LTC module.

0 (xiii) All ports from an RLCM must terminate onto the same LTC
0 module.

0 (xiv) All ports from an OPM must terminate onto the same LTC
0 module.

0 (xv) There is a fifty (50) foot cabling length restriction be-
0 tween the LTC and the LCM.

0 (xvi) The newly provisioned modules can be linked to existing
0 LGC/LTCs. Take this into account when provisioning new
0 LTCs.

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0 (xvii) When a LTC module is handling CCIS voice trunking, two
0 (2) Continuity Tone Detector cards are required.

0 (xviii) The following LTC Common Peripheral Controller CPs sup-
0 port the following applications:
0 NT6X02MC supports RSC, UTRs
0 replaces NT6X02AK/AG (BCS-27)

0 (xix) For each NT6X02MC ordered (BCS-27), provide:

- 0 - four (4) XPM Processor CP NT6X45AF/BA
- 0 - two (2) DS30 Network Interface CP NT6X40AC
- 0 - two (2) SP Memory Plus CP NT6X46BB
- 0 - two (2) MP Memory Plus CP NT6X47AC
- 0 - two (2) MSG Protocol & Tone CP NT6X69AC
- 0 - two (2) Power Converter CP NT2X70AE

0 NT6X02MC is to be ordered instead of NT6X02MA.

0 (xx) NT6X02MC is the minimum packfill level for new offices
0 (for BCS-32 or later). NT6XMA/AU is the minimum packfill
0 level required to support BCS-32 or later in existing of-
0 fices.

0 Upon general availability, the NT6X45BA CP will become
0 the standard XPM Processor offering instead of the
0 NT6X45AF CP.

0 If optional software feature NTXA66AA (Enhanced Office
0 Recovery) or NTXA67AA (Extended XPM Diagnostics) are
0 present, then the XPM Processor CP must be the NT6X45BA.
0 Provide four (4) NT6X45BA XPM Processor CP for upgrading
0 existing offices.

0 (xxi) If interface to the Enhanced Network (ENET) is required,
0 then the relevant DTC/LGC/LTC modules must have the
0 NT6X69AC Msg Protocol & Tone CP. NT6X69AC replaces
0 NT6X69AB.

0 Provide 1 NT6X02BQ change kit for each DTC/LGC/LTC module
0 you are upgrading to ENET. This change kit applies only
0 to modules provisioned at NT6X02 AS/IA, AT/LA or AU/MA
0 levels. Modules provisioned at earlier levels must be
0 upgraded to these levels before the NT6X02BQ change kit
0 can be applied.

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0 (xxii) If ENET interface is not required, use the product change
0 kit NT6X02EQ to upgrade LTC modules from NT6X02IA/LA/MC
0 to NT6X02IC/LC/MC levels.

0 (xxiii) In new offices, at BCS32 or later, the minimum packfill
0 level for DTC modules (to be used for CCS6/CCS7) is
0 NT6X02IC.

0 (xxiii) There are two methods available to satisfy 4 MB MP memory
0 requirements in existing DTC/LGC/LTC modules. The first
0 method is to apply one NT6X02EQ product change kit to
0 each DTC/LGC/LTC module to be upgraded as in item (1) be-
0 low. Per customer request, a second pair of office sup-
0 plied NT6X47AB packs may be added to each DTC/LGC/LTC
0 module to be upgraded as in item (2) below. Do not order
0 new NT6X47AB packs for the upgrade of NT6X02IA, LA, MA mod-
0 ules. The NT6X47AB packs that have been removed from up-
0 graded DTC/LGC/LTC modules may then be applied to other
0 relevant DTC/LGC/LTC modules.

0 1) Provision NT6X02EQ Product Change Kit to replace the
0 NT6X47AB MP Memory Plus circuit packs in slot 10 with
0 NT6X47AC packs. The NT6X02EQ kit may only be applied
0 to the following modules:

0	DTC	(CCS7)	:	BCS-27	and later	(NT6X02AS/IA)
0	DTC	(other)	:	BCS-33	and later	(NT6X02AS/IA)
0	LGC	(all)	:	BCS-31	and later	(NT6X02AT/LA)
0	LTC	(all)	:	BCS-30	and later	(NT6X02AU/MA)

0 2) Existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT0X50AA, Filler Face Plate, in Slot 09.
0 Provide two (2) NT6X47AB, MP Memory Plus CP for the
0 above listed modules.

0 One NT6X47AC in slot 10 (item 1) has the same mem-
0 ory capacity as two (2) NT6X47AB in slots 9 and 10
0 (item 2).

0 Existing DTC/LGC/LTC module is presently equipped
0 with two NT6X69AB in slot 18. If existing module is
0 not required to interface ENET, new cards are not re-
0 quired for these slots.

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0 Provide one (1) NT6X02BQ Product Change kit for each
0 existing DTC/LGC/LTC module to be upgraded to inter-
0 face ENET. The NT6X02BQ contains (2) NT6X69AC circuit
0 packs. The NT6X02BQ will convert the NT6X02IA/AS to
0 NT6X02IC, the NT6X02LA/AT to NT6X02LC, and the
0 NT6X02MA/AU to NT6X02MC.

0 If an existing DTC/LGC/LTC module has ALREADY been
0 upgraded to the NT6X02IC/LC/MC packfill level via the
0 NT6X02EQ KIT, provide two NT6X69AC circuit packs in
0 slot 18 to upgrade the module for ENET interface.

0 (xxiv) Provide two (2) NT6X78AA, Class Modem Resource CP, for
0 each LTC module that is handling Custom Local Area Sig-
0 naling Services (CLASS -U.S.) or Call Management Services
0 (CMS -Canada) -Calling Number Display. This rule only
0 applies to the following LTC modules:

0 NT6X02MC/MA, NT6X02AU

0 Upon general availability, the NT6X78AB will replace the
0 NT6X78AA as the standard CLASS Modem Resource CP. When
0 this happens, provide two (2) NT6X78AB CLASS Modem Re-
0 source CP in slot 13 of each LGC/LTC module that is han-
0 dling CLASS-Calling Number Display.

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0 **Building Blocks**

0 (xxv) Provide one NTZZ04EA Building Block product change kit
0 for each existing NT6X02AA DTC/LGC/LTC module to be up-
0 graded. Do not order the NT6X02ZE PC Kit.

0 The NTZZ04EA building block contains the following:

0	(1)	NT6X02ER	XPM PC Kit
0	(1)	NT6X02ZL	Wiring Kit
0	(2)	NT0X50AA	Filler Face Plate
0	(2)	NT6X47AC	Master Proc Memory Plus CP
0	(2)	NT6X46BB	Signal Processor Memory Plus CP
0	(2)	NT6X69AC	CPP Msg Protocol & Tone CP
0	(2)	NT2X70AE	Power Conv +/-5V & 12V CP
0	(2)	P0711663	Desig. Label for NT6X47AC
0	(2)	P0711664	Desig. Label for NT6X46BB
0	(2)	P0710476	Desig. Label for NT6X69AC
0	(2)	P0698943	Desig. Label for NT2X70AE

0 (NOTE: The NTZZ04EA includes all circuit packs required
0 to upgrade an NT6X02AA module except the NT6X45 cards.

0 The NTZZ04EA building block kit may be used to upgrade
0 the NT6X02AA module as follows:

Building Block	From	To
NTZZ04EA	NT6X02AA (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

0 Provide one NTZZ04GA Building Block product change kit
0 for each existing NT6X02AC DTC/LGC/LTC module to be up-
0 graded. Do not order the NT6X02ZE PC Kit.

0 The NTZZ04GA building block contains the following:

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0 (1) NT6X02ER XPM PC Kit
0 (1) NT6X02ZL Wiring Kit
0 (2) NT0X50AA Filler Face Plate
0 (2) NT6X47AC Master Proc Memory Plus CP
0 (2) NT6X46BB Signal Processor Memory Plus CP
0 (2) NT6X69AC CPP Msg Protocol & Tone CP
0 (2) P0711663 Desig. Label for NT6X47AC
0 (2) P0711664 Desig. Label for NT6X46BB
0 (2) P0710476 Desig. Label for NT6X69AC

0 (NOTE: The NTZZ04GA includes all circuit packs required
0 to upgrade a NT6X02AC module except the NT6X45 cards.

0 The NTZZ04GA building block kit may be used to upgrade
0 the NT6X02AC module as follows:

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Building Block	From	To
NTZZ04GA	NT6X02AC (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

0

0 (xxvi) Existing DTC/LGC/LTC module is presently equipped with
0 four (4) NT6X45AA, XPM Processor CP, in Slots 08 & 12.
0 Application of the NTZZ04EA/NTZZ04GA makes these slots
0 provisionable and replacement cards must be ordered as
0 follows:

0 For A-stock upgrades provide four (4) NT6X45BA cards in
0 slots 8 and 12 of the upper and lower shelves of the pe-
0 ripheral modules. If B-stock material is required, then
0 four NT6X45BB packs must be merchandise ordered via an
0 88K.

0 The existing NT6X45AA packs must be replaced because they
0 will not work with New Messaging. The only reason NT6X45
0 cards are not included in the NTZZ04EA/GA upgrade kit is
0 because there is an option between NT6X45BA and NT6X45BB
0 packs. Either the NT6X45BA packs or the NT6X45BB packs

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0 must be ordered or the upgrade will not have been done
0 correctly.

0 (xxvii) The existing DTC/LGC/LTC module is presently equipped
0 with the following DS30 Network Interface CP in Slots 22
0 & 23: four (4) NT6X40AA.

0 If copper interface to the Network is required, then DO
0 NOT order new circuit packs for these slots.

0 If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP in Slot 22, and two (2) NT6X40DA, DS512 Pad-
0 dle Board, in Slot 22R of each relevant DTC/LGC/LTC mod-
0 ule. Also, provide one (1) NT6X02BU, Fiber I/F Hardware
0 Assembly, for each DTC/LGC/LTC module interfacing to the
0 Enhanced Network (ENET). The NT6X02BU Fiber Assembly
0 mounts on the backplane of the lower array in a module
0 and provides the fiber interface for both arrays.

0 Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

0 (xxviii) The existing DTC/LGC/LTC module is presently equipped
0 with four (4) NT6X47AA, MP Memory CP, in Slots 09 & 10.
0 Application of the NTZZ04EA/NTZZ04GA replaces these cir-
0 cuit packs with two NT6X47AC Master Processor Memory cir-
0 cuit packs.

0 (xxix) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X46AA Signal Processor Memory Plus CP in
0 slot 11. Application of the NTZZ04EA/NTZZ04GA replaces
0 these circuit packs with two NT6X46BB circuit packs.

0 (xxx) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X43AA, Msg Interface CP, in Slot 18. Ap-
0 plication of the NTZZ04EA/NTZZ04GA replaces these circuit
0 packs with two NT6X69AC Msg Protocol & Tone circuit
0 packs.

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0 (xxxi) If the existing module was a NT6X02AA, then the NTZZ04EA
0 provides two (2) NT2X70AE, Power Converter CP, in Slot 25
0 of each DTC/LGC/LTC module.

0 If the existing module was a NT6X02AC, then two (2)
0 NT2X70AD, Power Converter CP, already exist in Slot 25 of
0 each DTC/LGC/LTC module. DO NOT order new circuit packs
0 for these slots unless requested by the customer. Per
0 Telco request, the existing NT2X70AD CP's in each
0 DTC/LGC/LTC can be replaced by the NT2X70AE, Power Con-
0 verter ESD CP.

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0 1.3.11 Subscriber Module Remote (SMR)

0 (a) General Description

0 Subscriber Module-100 Rural (SCM-100R) also referred to as Sub-
0 scriber Module Rural (SMR), is the first peripheral in the
0 SCM-100 family. It replaces the Control Concentrator Terminal
0 (CCT) of the DMS-1R and provides direct digital interface between
0 the DMS-1R Remote Concentrator Terminal (RCT) and the DMS-100F.

0 The SMR provides all basic tones to a RCT, including dial tone,
0 busy tone, reorder tone, audible ringing (ringback) tone, high
0 tone, receiver offhook tone, and call waiting tone. Additionally,
0 the SMR supports all the currently available ringing schemes:
0 coded, frequency selective, and superimposed.

0 (b) Reference

0 Chapter 3, Section 3.7 Office Maintenance
0 NTP 297-1001-103 DMS-100 Family Peripheral Modules

0 (c) Provisioning Considerations:

0 (i) The following list summarizes features supported for the
0 SMR-RCT subsystem.

- 0 - 256 RCT serviced subscriber lines
- 0 - coin functions: semi post pay and post pay
- 0 - custom calling services: speed calling,
0 call waiting, 3-way calling and call forward
- 0 - Dial pulse, Digitone
- 0 - Dial Tone Speed Recording (DTSR)
- 0 - DMS-1R RCT integrated alarms
- 0 - Operational Measurements
- 0 - Operator Verification
- 0 - POTS
- 0 - Protection Switching (External hardware device)
- 0 - Station Ringer Test

0 (ii) Most features supported by the LCM are supported by the
0 SMR except for the following main exceptions:

- 0 - Business Set
- 0 - Circuit Switched Digital Data Service
0 (CSDDS)
- 0 - Four-Party ANI

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- 0 - Integrated Business Network (IBN)
- 0 - PBX Line Features
- 0 - Random Make Busy
- 0 - Remote Register, SD Point
- 0 - Remote Meter (register) Pulsing
- 0 - Remote Message Register
- 0 - Sleeve Lead Control
- 0 - Sleeve Lead Control for Public Fire
- 0 Reporting System
- 0 - Stop Hunt

0 (iii) The SMR supports six (6) DMS-1R RCT with each RCT servicing
0 up to 256 subscriber lines. The RCT is connected to
0 the SMR via one (1), maximum two (2) DS-1 lines with an
0 optional DS-1 line called a protection line.

0 A protection line is a DS-1 line which can connect to up
0 to six (6) RCTs in a daisy chain. A protection line
0 serves as a spare DS-1 which can be rapidly switched in
0 to replace a failed DS-1. The physical connection between
0 the protection line and an RCT is by means of relays which
0 physically substitute the protection line's wires for the
0 wires of a normally working line. When provisioning protection
0 lines, a minimum of one (1) DS-1 line per SMR is required.
0 The maximum is six (6) per SMR, or one (1) per RCT.

0 (iv) Three (3) to sixteen (16) DS-30 speech links connect the
0 SMR to the network ports of the Network Modules. The SMR
0 is compatible with all existing and new Network Modules.
0 The quantity of DS-30 ports to the Network should be engineered
0 on a non-concentration basis due to the concentration already
0 existing at the RCT, therefore, configure DS-30 ports per a
0 channel-in/channel-out ratio of one to one.

0 (v) The NT6X02CS common packfill replaces the NT6X02CC common
0 packfill for use on all new SMR applications at or above
0 BCS-31. This packfill is the minimum packfill required
0 for BCS-31 applications on initial offices. Existing offices
0 require the NT6X02CC or NT6X02CQ packfill for BCS-31.

0 (vi) Provision the NT6X02CS packfill per SMR requirements
0 (Check availability reports for valid ordering dates).
0 The Subscriber Module Equipment frame (SME) can contain
0 up to two (2) dual shelf modules. Upon general avail-

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0 ability, the NT6X02CP will become the standard SMR offer-
0 ing.

0 Provide a maximum of ten (10) NT6X50AA, DS-1 Interface
0 CP, in slots 5-1 of each SMR module. One (1) NT6X50AA
0 provides interface for up to two (2) T-1 span lines.

- 0 (vii) Existing NT6X02CA packfills can be upgraded to the
0 NT6X02CQ level with the application of the NT6X02ZJ prod-
0 uct change kit. The NT6X02ZJ kit replaces the two (2)
0 NT6X46AB CPs in slot 11 of each module with two (2)
0 NT6X46AC CPs. It also allows the provisioning of a sec-
0 ond NT6X47AB CP.

- 0 (viii) For US applications, provide two (2) NT6X47AB, Master
0 Processor Memory CP, in slot 09 of each NT6X02CC and
0 NT6X02CQ module when upgrading to BCS-31. For Canadian ap-
0 plications, replace the NT6X47AB pair with an NT6X47AC
0 pair when upgrading to BCS-31.

- 0 (ix) ENET Interface

0 SMR modules can interface with the Enhanced Network
0 (ENET) using DS-30 copper speech links without modifica-
0 tion.

0 SMR modules can interface with ENET using DS-512 Fiber
0 speech links with the application of the following equip-
0 ment:

0 NT6X40CA - DS-512 XPM Interface CP
0 NT6X40DA - DS-512 Link Paddle Board
0 NT6X02BU - Fiber Interface H/W Assembly

0 Provide two (2) NT6X40CA CPs in slot 22 and two (2)
0 NT6X40DA Paddle Boards in slot 22R of each SMR module.
0 Also, provide one (1) NT6X02BU H/W Assembly per SMR up-
0 graded for fiber interface to ENET.

0 The minimum packfill level required for Fiber Interface
0 to the ENET is NT6X02CC.

- 0 (x) The Universal Tone Receiver (NT6X92BB) is not currently
0 supported in the SMR. Digitone Receivers (NT2X48AB) must
0 be provisioned for lines at the RCT.

- (xii) In Central Offices(CO) where protection switching is a requirement, provision the Alcatel Lynch Automatic Protection Switch (B302MA09).

- (xiii) Effective with BCS33, the old messaging/small memory configuration will no longer be supported on new BCS loads for any XPM.

The NT6X69AC (Msg Protocol & Tone CP) will be provisioned on new and existing DTC and SMR modules to meet new messaging requirements. Existing NT6X69AA & NT6X79AA or NT6X69AB (Msg Protocol & Tone CP) satisfy the new messaging requirements on existing DTC and SMR modules.

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0 1.3.12 Subscriber Carrier Module for SLC-96 (SMS)

0 (a) General Description

0 The SMS will interface on a direct digital basis with the SLC-96
0 Remote Terminal (RT) via DS-1 transmission facilities.

0 SMS will appear to the DMS-100F as a peripheral module. Each
0 module consists of two shelves of equipment with duplicated con-
0 trollers and power converters. The SMS shelf pairs are housed in
0 a standard DMS-100 single bay frame.

0 (b) Reference

0 Chapter 3, Section 3.7 Office Maintenance
0 NTP 297-1001-103 DMS-100 Family Peripheral Modules

0 (c) Provisioning Considerations:

0 (i)jThe SMS will support the following features:

0 - POTS

0 - single party
0 - multi party
0 - two party ANI & ONI
0 - four & eight party ONI

0 - COIN

0 - coin first
0 - dial tone first

0 - PBX

0 - loop start

0 - CUSTOM CALLING

0 - speed calling
0 - call waiting
0 - call forwarding
0 - all current IBN features with the
0 exception of datapath and P-phones

0 - RINGING

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- 0 - bridged ringing
- 0 - single party
- 0 - superimposed ringing
- 0 - multiparty
 - 0 - four party fully selective
 - 0 - eight party semi selective
- 0 - coded ringing
 - 0 - multiparty
 - 0 - four party semi selective
 - 0 - eight party divided code

0 - DIALLING

- 0 - dial pulse
- 0 - dual tone multi frequency (DTMF)

0 - TONES

- 0 - dial tone
- 0 - audible ringback
- 0 - reorder
- 0 - busy

0 (ii) The Universal Tone Receiver (NT6X92BB) is not currently
0 supported in the SMS. Digitone Receivers (NT2X48AB) must
0 be provisioned for lines at the SLC-96.

0 (iii) The SMS will be capable of supporting four (4) Mode I
0 (five (5) DS-1 links) or six (6) Mode II/III (three (3)
0 DS-1 links) SLC-96 units. Mix of Mode I, II or III oper-
0 ations will be supported in a SMS. All DS-1 links from a
0 SLC-96 must terminate on the same SMS (via a DSX or ORB).

0 Effective with Batch Change Supplement (BCS) 22 the mini-
0 mum number DS-30 ports to the Network Module from a SMS
0 will be three (3) and a maximum will be four (4).

0 (iv) The SMS will be connected to the Network Module of the
0 DMS-100F via DS-30 ports which are duplicated to provide
0 connections to each plane of the network.

0 The quantity of DS-30 ports should be engineered based on
0 Mode type of SLC-96 and grade of service requested by the
0 telco.

0 MODE I & III - No concentration at the SLC-96

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0 When testing subscriber loops attached to a SLC-96 Remote
0 Terminal (RT) there are prerequisites/limitations which
0 must be met to complete the ABBT. Refer to Section 3.7,
0 Office Maintenance for more information on the ABBT.

0 (vii) Mechanized line testing is provided for testing sub-
0 scriber loops and line cards of an SLC-96. Refer to Sec-
0 tion 3.7, Office Maintenance for more information.

0 (viii) When Custom Local Area Signaling Services (CLASS-U.S.)
0 or Call Management Services (CMS-Canada) are required,
0 the NT6X78AA circuit pack must be provisioned in the SMS.
0 If NT6X85AA CPs exist in the module, replace the two (2)
0 NT6X40AA/AB/AC circuit packs in slot 22 and 23 with one
0 (1) NT6X40BA circuit pack in slot 22. If NT6X85AB CPs
0 exist, the NT6X40 packs do not have to be replaced. Refer
0 to CLASS/CMS in this section for further information.

0 (ix) SMS modules can interface ENET using either copper or fi-
0 ber speech links . Either case requires the applica-
0 tion of the NT6X69AC, Message Protocol & Tone CP. Mount
0 circuit packs in slot 18 of the upper and lower shelves
0 of the peripheral modules.

0 For the SMS to interface ENET using Fiber speech links,
0 the following equipment is required:

0 NT6X40CA - DS-512 XPM Interface CP
0 NT6X40DA - DS-512 Link Paddle Board
0 NT6X02BU - Fiber Interface H/W Assembly

0 Provide Two (2) NT6X40CA in slot 22 and two (2) NT6X40DA
0 in slot 22R of each SMU module. Also, provide one (1)
0 NT6X02BU per SMU.

0 Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board.

0 (x) Provide two (2) NT6X69AC, CPP Msg Protocol CP, for each
0 new SMS module ordered. The NT6X69AC replaces the
0 NT6X69AB for all applications. Mount circuit packs in
0 slot 18 of the upper and lower shelves of the peripheral

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0 modules. For pre-BCS28 offices, the NT6X43AA Msg Inter-
0 face CP must be provisioned in slot 18.

0 (xi) The distinctive ringing feature requires that the RCS be
0 configured with coded ringing.

0 (xii) For BCS-31, replace the NT6X47AB pair with one NT6X47AC
0 pair. One (1) NT6X47AC circuit pack has the same memory
0 capacity as two (2) NT6X47AB circuit packs.

0 (xiii) The NT6X47AC circuit pack is a provisionable card on new
0 DTC/LGC/LTC modules. It is always provided in new
0 SMS/SMU/SMR packfills.

0 (xiv) The minimum packfill level required for BCS-31 is
0 NT6X02DH for new offices, and NT6X02DJ for upgrades.

0 (xv) The minimum packfill level required for BCS-33 is
0 NT6X02DD for new offices, and NT6X02DC for upgrades.

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0 1.3.13 Subscriber Carrier Module - Urban (SMU)

0 (a) General Description

0 | The SMU will interface on a direct digital basis with a DMS-1 Ur-
0 ban Remote Terminal (RCU) via DS-1 transmission facilities.

0 The SMU will only interface RCUs. The SMU does not offer inter-
0 face support to any other remote system (eg. DMS-1R, SLC-96, RSC,
0 | RLCM, OPM etc.) nor host equipment (eg. LCM).

0 The RCU may be located outside the central office up to a maximum
0 distance of 100 miles.

0 SMU will appear to the DMS-100F as a peripheral module. Each
0 module consists of two shelves of equipment with duplicated con-
0 trollers and power converters. The SMU shelf pairs are housed in
0 a standard DMS-100 single bay frame.

0 (b) Reference

0 Chapter 3, Section 3.7 Office Maintenance
0 NTP 297-1001-103 DMS-100 Family Peripheral Modules

0 (c) Provisioning Considerations:

0 (i) The SMU will support the following features:

0 - POTS

- 0 - single party
- 0 - multi party
 - 0 - two or four party Frequency Selective
 - 0 Ringing (FSR) with
 - 0 - two party Automatic Number
 - 0 Identification (ANI)
 - 0 - four party Operator Number
 - 0 Identification (ONI)
 - 0 - two, four or eight party Coded Ringing
 - 0 with
 - 0 - two party ANI
 - 0 - two, four or eight party ONI
 - 0 - two party Divided Ringing with ANI

0 - COIN

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- 0 - coin first
- 0 - dial tone first
- 0 - semi post pay
- 0 - ground start
- 0 - loop start

0 - CUSTOM CALLING

- 0 - speed calling
- 0 - three way calling
- 0 - call waiting
- 0 - call forwarding
- 0 - all current IBN features with the
- 0 exception of distinctive ringing, datapath
- 0 and Electronic Business Set (EBS)

0 - DIALING

- 0 - dial pulse
- 0 - digitone

0 - TONES

- 0 - dial tone
- 0 - audible ringback
- 0 - reorder
- 0 - busy

0 - MAINTENANCE

- 0 - Automatic Board to Board Test (ABBT)
- 0 - Test Desk (eg. MLT, LRS or #14 LTD)
- 0 - Automatic Line Testing (ALT)
- 0 - Line Card Testing
- 0 - Subscriber Loop Testing

0 (ii) The SMU shelf pairs are housed in a standard DMS-100 sin-
0 gle bay frame. The Subscriber Module Equipment Frame
0 (SME) (PEC NT6X01AA) can contain up to two modules. Each
0 module has a PEC of NT6X02EG.

0 | The NT6X02EG replaces the NT6X02EB Common Circuit
0 Packfill for use on all new SMU applications. Order the
0 NT6X02EG for all new SMU applications.

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0 The minimum packfill for BCS-31 and following is
0 NT6X02EB/AW.

0 Provide one (1) NT6X02EH Product Change Kit and two (2)
0 NT6X47AC MP Memory Plus circuit packs for each NT6X02EB
0 and NT6X02AW module when upgrading to BCS-31. The
0 NT6X02EH PC Kit upgrades the NT6X02EB/AW module to the
0 NT6X02EF module and makes slots 10, 11, 11R and 18
0 provisionable. Mount the NT6X47AC circuit packs in slot
0 10 of the upper and lower shelves of the module.

0 Per customer request, the NT6X47AB packs removed from
0 modules upgraded via a PC Kit may be used to upgrade
0 other relevant modules. Provide two (2) office supplied
0 NT6X47AB CP for each NT6X02EB/AW module to be upgraded to
0 BCS-31. Do not order new NT6X47AB packs for the upgrade
0 of SMU modules.

0 Slots 22-23,25 of the NT6X02EB Common CP Fill are now
0 provisionable. Provide two (2) NT6X40AC, DS30 Network
0 Interface CP, in slot 22. Also, provide two(2) NT0X50AA,
0 Filler Face Plates, in slot 23 of each NT6X02EB Common CP
0 Fill. Provision two(2) NT2X70AE Power Converter CP in
0 slot 25 of each module.

0 The slots mentioned above are being made provisionable in
0 order to ease future design development. The remaining
0 circuit packs in the NT6X02EB Common CP Fill are un-
0 changed.

0 Upgrading Existing NT6X02EA Modules

0 In order to enhance an existing NT6X02EA module with the
0 Expanded Signaling Processor Memory CP required for
0 BCS-27, a product change kit NT6X02ZJ was created for
0 each existing SMU peripheral module. The NT6X02ZJ PC Kit
0 contains two (2) NT6X46AC, Enhanced Signaling Processor
0 CP, and new designation strips for the upgraded modules.

0 The NT6X02ZJ Product Change Kit will upgrade the follow-
0 ing peripheral module:

DESCRIPTION	FROM	TO

0		SMU Common CP	NT6X02EA	NT6X02AW
0				
0				

0 Slots 08,09,12,22-23,25 of the Upgraded SMU module are
0 now provisionable slots. These slots are being made
0 provisionable to ease future design development.

0 Provide four(4) NT6X45BB, XPM Processor CP, for slots
0 08&12 of each upgraded SMU module. New circuit packs DO
0 NOT need to be ordered for slots 09,22-23,25 of the Up-
0 graded SMU module.

0 Refer to availability reports to identify valid ordering
0 dates.

0 The NT6X02AW Common CP Fill are PEC codes used for the
0 field upgrade of existing peripheral modules ONLY. The
0 NT6X02AW Common CP Fills CANNOT be ordered.

0 Upgrading Existing NT6X02EB/AW Modules

0 The NT6X02EH Product Change Kit was created to convert
0 the NT6X02EB/AW module to the NT6X02EF module. This PC
0 Kit makes certain slots provisionable, but does not con-
0 tain any circuit packs.

0 The NT6X02EH Product Change Kit will upgrade the follow-
0 ing peripheral modules:

0	DESCRIPTION	FROM	TO
0	SMU Common CP	NT6X02EB	NT6X02EF
0	SMU Common CP	NT6X02AW	NT6X02EF

0 Slots 10,11,11R and 18 of the Upgraded SMU module are now
0 provisionable slots. These slots are being made provisionable to ease
0 future design development.

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0 Since this PC Kit does not contain any circuit packs, any required up-
0 grade packs (provisionable in slots 10,11,11R or 18) must be ordered
0 in conjunction with the PC Kit. For instance, if a NT6X02EB/AW SMU
0 module is required to meet the BCS-31 extended MP memory requirement,
0 then one NT6X02EH Product Change Kit and two NT6X47AC packs must be
0 ordered to upgrade the module. If a NT6X02EB/AW SMU module is re-
0 quired to interface with ENET, then one NT6X02EH kit and two NT6X69AC
0 packs must be ordered to upgrade the module.

0 The NT6X02EF Common CP Fill is the PEC used for the field upgrade of
0 existing peripheral modules ONLY. The NT6X02EF Common CP Fill CANNOT
0 be ordered.

0 (iii) The SMU will be connected to the Network Module of the
0 DMS-100F via three (3) to sixteen (16) provisionable
0 DS-30 ports which are duplicated to provide connections
0 to each plane of the network. Configure the SMU as non-
0 blocking, that is, configure one DS-30port per each DS-1
0 channel provisioned to the RCUs.

0 The SMU peripheral side (p-side) interfaces to multiple
0 RCUs, and can accommodate up to twenty (20) DS-1 ports.

0 Each RCU will have one (1) to eight (8) DS-1 links to the
0 SMU. All DS-1 links must terminate on the same SMU. The
0 number of RCU that may terminate on a SMU is dependent on
0 the total traffic presented to the SMU and the physical
0 limitation of the twenty ports.

0 The mininum number of DS-1 required to interface a RCU is
0 one (1), however, two (2) DS-1 links are recommended to
0 prevent an outage during a single link failure.

0 A fully equipped RCU supports over 500 subscriber and/or
0 special service lines.

0 The SMU does not support DS-1 protection switching as it
0 will not be offered in the RCU product.

0 The SMU should be configured as non-blocking. The number
0 of DS-30 channels to the Network should be equal to the
0 number of DS-1 channels to the RCUs.

0 The following table represents the CCC capacity of the
0 SMU per DS-30 port to the Network.

0 Capacity of SMU (CCS)

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0 at 4% TML

0 Network Ports 3 4 5 6
0 2780 3806 4841 5883 (CCS)

0 Network Ports 7 8 9 10
0 6929 7979 9032 10087 (CCS)

0 Network Ports 11 12 13 14
0 11144 12203 13264 14325 (CCS)

0 Network Ports 15 16
0 15388 16451 (CCS)

0 (iv) The Universal Tone Receiver (NT6X92BB) is not currently
0 supported in the SMU. Digitone Receivers (NT2X48AB) must
0 be provisioned for lines at the RCU.

0 (v) Provide two (2) NT6X69AC, CPP Msg Protocol CP, for each
0 new SMU module ordered. Mount circuit packs in slot 18
0 of the upper and lower shelves of the module. The NT6x69AC
0 replaces the NT6X69AB circuit pack for use on all SMU ap-
0 plications.

0 (vi) Provide two (2) NT6X78AA, Class Modem Resource CP, for
0 each SMU module that is handling Custom Local Area Sig-
0 naling Services (CLASS -U.S.) or Call Management Services
0 (CMS -Canada) -Calling Number Display.

0 On general availability, the NT6X78AB will replace the
0 NT6X78AA as the standard CLASS Modem Resource CP.

0 (vii) Mechanized line testing is provided for testing sub-
0 scriber loops and line cards of a DMS-1 Urban Remote ter-
0 minal. Refer to Section 3.7, Office Maintenance for more
0 information.

0 SMU modules can interface ENET using either copper or fi-
0 ber speech links. Either case requires the application
0 of the NT6X69AC, CCP Msg Protocol & Tone CP. Existing
0 NT6X02EB and NT6X02AW modules can be field upgraded to a
0 NT6X02EF module with the application of the NT6X02EH
0 Product Change Kit. This change kit allows provisioning
0 of the NT6X69AC CP in slot 18.

0 For the SMU to interface ENET using Fiber speech links,
0 the following equipment is required:

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0
0 NT6X40CA - DS-512 XPM Interface CP
0 NT6X40DA - DS-512 Link Paddle Board
0 NT6X02BU - Fiber Interface H/W Assembly

0 Provide two (2) NT6X40CA in slot 22 and two (2) NT6X02DA
0 in slot 22R of each SMU module. Also, provide one (1)
0 NT6X02BU per SMU.

0| On general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface, and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board.

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0 1.3.14 Common Peripheral Controller Equipment Frame

0 (a) General Description

0 The primary function of this frame is to house Line Group Con-
0 troller (LGC) Modules, Digital Trunk Controller (DTC) Modules or
0 Line Trunk Controller (LTC) Modules. Subject to certain re-
0 strictions, two different kinds of modules can be mounted on the
0 same frame. NTL Customer Engineering is to be consulted regard-
0 ing these configurations.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) This frame can accommodate four (4) shelves of equipment
0 (i.e. two modules). Modules are filled and numbered on
0 the frame from the bottom up.

0 (ii) Normally both modules are the same type. Two (2) modules
0 of different types can also be mounted on the same frame.
0 This situation would only occur in a very small office or
0 for the last frame in an office in order to save one
0 frame.

0 (iii) A LGC/LTC/DTC module cannot mount on the same frame as an
0 ILGC/IDTC module.

0 (iv) When ISG is being applied to an office, the LCE frames
0 and their associated Common Peripheral Controller Equip-
0 ment Frame must be served by the same PDC frame.

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0 1.3.15 Conversion From SMR To DTC Or LGC Module0 (a) General Description

0 These provisioning considerations deal with field conversion of a
0 Subscriber Module Rural (SMR) to a Digital Trunk Controller (DTC)
0 or Line Group Controller (LGC).

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) The NT6X02ZG Product Change Kit will upgrade the follow-
0 ing peripheral module:

DESCRIPTION	FROM	TO
Peripheral Module	NT6X02CA(SMR)	NT6X02AQ(DTC)
Peripheral Module	NT6X02CA(SMR)	NT6X02AH(LGC)

0 Provide one (1) NT6X02ZG PC Kit, for each existing SMR
0 peripheral module to be converted. The NT6X02ZG PC Kit
0 contains circuit packs to convert a SMR module to a DTC
0 or LGC module.

0 (ii) Due to the conversion of an SMR module to a DTC or LTC
0 module, the messaging has changed; therefore, provide one
0 (1) NT6X02ZL PC Kit for Enhanced Messaging per NT6X01AA
0 frame (for U.S. offices only).

0 (iii) For the DTC module (NT6X02AQ) provision a maximum of ten
0 (10) NT6X50AB DS1 Interface Circuit Packs for each SMR
0 module converted per customer requirements. The NT0X50AA
0 Filler Face Plates provided in the NT6X02ZG PC Kit shall
0 be discarded if the NT6X70AA Continuity Tone Detector
0 Cards are provisioned for card slot 13 of both shelves.
0 Provision in pairs up to a maximum of four (4) NT6X92BB
0 Universal Tone Receiver CPs per customer requirements for
0 each SMR module converted.

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0 1.3.16 Conversion From SMS To SMU Module

0 (a) General Description

0 These provisioning considerations deal with field conversion of a
0 Subscriber Module for SLC-96 (SMS) to a Subscriber Module for
0 DMS-1 Urban (SMU).

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) The Product Change Kits will upgrade the peripheral mod-
0 ules as follows:

PRODUCT CHANGE KIT	FROM	TO
NT6X02ZH	NT6X02DA(SMS)	NT6X02EA(SMU)
NT6X02ZD	NT6X02DB(SMS)	NT6X02EA(SMU)
NT6X02ZK	NT6X02DA/DB(SMS)	NT6X02EB(SMU)
NT6X02ZL	NT6X02DC(SMS)	NT6X02EB(SMU)
NT6X02ZM	NT6X02DD(SMS)	NT6X02EB(SMU)

0 Provide one (1) of the above PC Kits for each existing
0 SMS peripheral module to be converted. The PC Kits con-
0 tains circuit packs to convert a SMS module to a SMU mod-
0 ule.

0 (ii) Due to the conversion of an SMS module to a SMU module,
0 the messaging has changed; therefore, provide one (1)
0 NT6X02ZL PC Kit for Enhanced Messaging per NT6X01AA frame
0 (for U.S. offices only).

0 (iii) Provision a maximum of ten (10) NT6X85AB SCM DS1 Inter-
0 face Circuit Packs for each SMS module converted per cus-
0 tomer requirements.

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0 | 1.3.17 Common Peripheral Controller Equipment

0 (a) General Description

0 The Signalling Data Link (SDL) is channel on a T1 Carrier which
0 terminates on a DTC, DCM or LTC. ISDN trunks must terminate on a
0 DTC since they are only supported on DTCs.

0 (b) Reference

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations:

0 (i) The DTC may be used for SDL and ISDN trunks, however, for
0 reliability against failures, it is recommended to dis-
0 tribute the ISDN trunks and SDL across several peripher-
0 als.

0 (ii) CCS7 trunks must terminate on DTCs ONLY. Signalling Links
0 can terminate on DTCs, DCMs or LTCs. Signalling Links
0 and CCS7 trunks can be assigned to the same DTC.

0 (iii) CCS7 trunks can be mixed with PTS trunks on the same DTC,
0 however, both cannot be in the same trunk group.

0 (iv) Provision one (1) NT6X55AB DS0A Signaling Interface CP on
0 the DTC for each DS0A CCS7 signaling link. (Refer to
0 section 3.5 for more information.)

0 (v) DTC modules supporting CCS7 trunks must be equipped with
0 Extended Memory (NT6X46) and Enhanced Messaging (NT6X69).

0 (vi) The maximum number of DTCs utilizing CCS7 is 60 per of-
0 fice based on each DTC requiring 2 IPMLs per MSB7.

0 (vii) Each DTC utilizing CCS7, requires two continuity cards
0 NT6X70AA for continuity checking on ISUP trunks for BCS23
0 and earlier. In BCS24 and later, the software require-
0 ment for Continuity Cards was removed so that customers
0 requesting the cost reduction when testing is not re-
0 quired are not required to order the cards.

0 For U.S. applications only, since the NT6X70-- is re-
0 quired for the COT test, it is recommended that continu-

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0 ity cards continue to be provisioned in most cases.
0 Provisioning Continuity Cards on CCS7 DTCs should be con-
0 sidered standard. Only per customer request can they be
0 omitted.

0 For Canadian applications only, many customers have a
0 high penetration of digital trunk facilities and do not
0 require the Continuity card. Provision these cards only
0 on DTCs whose trunks support analog facilities at some
0 point in the end-to-end connection of the trunk.

0 (viii) Refer to Section 3.5 for more information on the DTC, DCM
0 and LTC.

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0 1.3.18 D-Channel Handler

0 (a) General Description

0 The D-Channel Handler separates call control signalling for the B
0 channels (used for encoded voice, circuit switched, or packet
0 data information) from user packet data. Signalling information
0 is passed to the Central Control, while packet data from several
0 D-Channels is multiplexed and routed to the packet handler.

0 (b) References

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 (i) The D channel handling function is performed by two cir-
0 cuit packs on the CPEI:

0 NTBX01AA - ISDN Signalling Pre-processor (ISP) CP

0 NTBX02AA - D Channel Handler CP

0 The ISDN Signalling Pre-processor CP is provisionable;
0 two (2) are required in the CPCI for all applications.

0 (ii) The D channel handler CP will be assigned to slots cur-
0 rently used by DS-1 interface circuit packs. Assignment
0 of a DCH card makes physically unavailable 2 DS-1 ports.

0 (iii) Each DCH circuit pack takes one peripheral port of the
0 twenty P-side ports available. The total of twenty P-
0 side ports are shared between the DS-1, DS-30A and DCH
0 links.

0 (iv) From BCS-28 onwards, one (1) of the DCH circuit packs
0 will be used as a spare to support N+1 redundancy. There
0 is no DCH sparing in BCS-27.

0 At least two DCH cards must be provided after BCS-28 (ie.
0 one plus one spare).

0 (v) Up to ten (10) DCH Circuit Packs may be provided per
0 CPCI. (Nine plus one spare). Refer to the Traffic Crite-

0 ria and Capacities (Chapter 2) to calculate the number of
0 DCH required to support the anticipated packet traffic.

0 (vi) Each DCH circuit pack has 32 "ports" available. One port
0 is dedicated to the ISP, and the remaining 31 ports are
0 capable of handling 4 multiplexed BRI D channels each, or
0 $31 \times 4 = 124$ BRI D channels maximum.

0 The ISP will occupy a free slot on the speech bus.

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0 1.3.19 ISDN Common Peripheral Controller (CPEI)

0 (a) General Description

0 The ISDN Common Peripheral Controller (CPEI) is the Peripheral
0 Controller for the ISDN. The CPEI frame is named LGEI, LTEI or
0 DTEI depending on the access modes supported (BRI, PRI, etc.)

0 The CPEI has 20 p-side ports that are provisioned as required to
0 support DS-30A links from LCMs, LCMEs, and LCMIs; DS-1 links to
0 the Packet Handler; DS-1 links for PRI or non-ISDN trunks; and
0 D-channel handlers.

0 An offshore version of the CPEI has also been created whose pri-
0 mary difference is the use of PCM-30 interfaces instead of DS-1
0 interfaces.

0 (b) References

0 System Engineering Bulletin (SEB) 88-10-001

0 (c) Provisioning Considerations

0 (i) The CPEI is used to interface the DS-30A links from line
0 modules, the DS-1 links to the Packet Handler, and the
0 non-ISDN and ISDN-PRI DS-1 links.

0 The frame and its modules and shelves are assigned func-
0 tional names depending on the ISDN access modes sup-
0 ported. For BRI access the following names apply:

Access Modes	Equip	Name	Abbr
-----	-----	-----	----
DS-30A links to LCM/LCME/LCMIs, DS-1 links to Packet Handler	Frame	ISDN Line Group Equipment	LGEI
	Module	ISDN Line Group Controller	LGCI
	Shelf	ISDN Line Group Array	LGAI

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Access Modes	Equip	Name	Abbr
-----	-----	-----	-----
DS-30A links to LCM/LCME/LCMIs, DS-1 links to Packet Handler, non-ISDN DS-1 trunks	Frame	ISDN Line Trunk Equipment	LTEI
	Module	ISDN Line Trunk Controller	LTCI
	Shelf	ISDN Line Trunk Array	LTAI

0 Planned availability of these functions is as follows:
0 LGEI in BCS-27, LTEI in BCS-28. In addition, PRI DS-1
0 links are to be supported on LTEI in BCS-30.

0 (ii) Upgrade kits will be available to apply ISDN capability
0 to existing LGE/LTE/DTE/SME frames. The required kits
0 are:

0 NT6X02ZA CPCI ISDN Upgrade Circuit Pack Change Kit
0 NT6X01ZZ CPCE ISDN Upgrade Wiring Change Kit

0 These kits are not to be ordered for U.S. applications
0 until further notice.

0 The above kits will take any NT6X01AA CPCE frame and any
0 common circuit pack fill associated with this frame and
0 convert it to NT6X01AB CPEI frame and NT6X02NA ISDN com-
0 mon CP fill.

0 The NT6X02ZA CPCI ISDN Upgrade Circuit Pack Change Kit
0 can also be used on the NT6X01AB CPCE frame to upgrade a
0 non-ISDN DTC module to handle ISDN applications.

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0 (iii) The Maximum number of each type of link, and the minimum
0 software release that supports it are:

0 LCM/LCME/LCMI - CPEI DS-30A links:
0 - up to 18 (BCS-27 or higher)

0 CPEI - Packet Handler DS-1 links:
0 - up to 16 (BCS-27 or higher)

0 Non-ISDN trunks:
0 - up to 16 (BCS-28 or higher)

0 PRI trunks:
0 - up to 16 (BCS-29 or higher)

0 There are no restrictions on the assignment of Bb or Bd
0 channels to packet handler DS-1 link channels. Note that
0 the CPEI statmux maximum is 64:1 for Bd channels.

0 | (iv) Prior to BCS-31, in an office equipped with both ISDN and
0 non-ISDN peripheral controllers, the CPCI modules could
0 be assigned the same discrimination numbers as existing
0 non-ISDN modules. For example, LGC 01 and LGCI 01 could
0 co-exist in an office. The same is not true for LCME/LCMI
0 versus LCM bays.

0 | For BCS-31 and above, discrimination numbering of ISDN
0 peripherals has been changed, requiring them to be con-
0 secutive with non-ISDN modules. Frame level naming and
0 numbering is unchanged and the frame type is still deter-
0 mined by the bottom module in the frame. At the MAP, ISDN
0 modules are no longer called LGCI/LTCI. Instead, only
0 LGC/LTC are allowed. (Note that DTCI has not been changed
0 to DTC at the MAP). As a result of this change, at
0 BCS-31, existing ISDN peripheral controllers (LGCI/LTCI)
0 will need to be renumbered to be consecutive with
0 non-ISDN controllers. For example, an office with exist-
0 ing LGC 00-05 and LGCI 00-01 will require renumbering the
0 ISDN modules to LGCI 06-07 at BCS-31. New labels for the
0 ISDN controllers will be required.

0 | DTC and DTCI numbering will not be changed due to the
0 complexity of changing in-service trunks and the lack of
0 a software tool for this activity. Numbering for DTC/DTCI
0 modules will be unchanged from pre-BCS31 practices.

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0 | At the MAP, modules can still be identified as ISDN or
0 non-ISDN by referring to the ISP16 table.

0 (v) In an office equipped with both ISDN and non-ISDN periph-
0 eral controllers, the CPCI modules can be assigned the
0 same discrimination numbers as existing non-ISDN modules.
0 For example, LGC 01 and LGCI 01 can co-exist in an of-
0 fice. The same is not true for LCMI versus LCM bays.

0 (vi) The following chart illustrates the call types which im-
0 pact Real Time Engineering of the Master Processor in the
0 LGCI provisioned with Basic Rate Interface (BRI). Cur-
0 rently, the Master Processor is the only processor which
0 requires Real Time Engineering.

CALL TYPE	BCS	
	27	28
ISDN Circuit Switched	Y	Y
B Channel Packet Switched	N	N
D Channel Packet Switched	N	N
Electronic Business Set	Y	Y
Datapath	Y	Y
Other (POTS and MDC)	N	Y

0 Refer to System Engineering Bulletin (SEB) 88-10-001 for
0 BCS 25-27 Abbreviated Real Time Engineering Guidelines
0 for the LGCI.

0 BCS 28 Abbreviated Real Time Engineering Guidelines for
0 the LGCI provisioned with Basic Rate Interface is to be
0 provided in a future issue of this document.

0 (vi) The DTC NT6X02AI can be provided on the CPEI frame for
0 DMS-250 applications. This module will handle non-ISDN
0 trunking (employing A/B bit signaling) required for
0 DMS-250 applications but will not handle ISDN PRI. The
0 DTC can be converted at a later date to a DTCT in order
0 to handle ISDN PRI.

0 The NT6X01WC DTC Wiring Option (NT6X01AB) is provided per
0 each non-ISDN module equipped on the CPEI frame.

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0 Standard DMS-250 DTC circuit packs are provisioned on the
0 DTC module as required.

0 (vii) Optional Software Features

0 Enhanced Office Recovery, NTXA66AA, is an optional soft-
0 ware feature that improves the present office recovery
0 time of extended peripheral modules (XPM). Extended XPM
0 Diagnostics, NTXA67AA, is an optional software feature
0 that enhances the present diagnostics of extended periph-
0 eral modules (XPM). The LTCI is classified as an XPM.

0 These Software features are applicable to any peripheral
0 module (XPM) which contains both enhanced messaging (i.e.
0 the 6X69/79 pair or the 6X69AB CP) and enhanced memory
0 (i.e. the 6X46AC CP or the 6X46BA CP).

0 If optional software feature NTXA66AA (Enhanced Office
0 Recovery) or NTXA67AA (Extended XPM Diagnostics) are
0 present, then the XPM Processor CP must be the NT6X45BA.
0 Provide four (4) NT6X45BB (U.S. applications) or
0 NT6X45BA (Canadian applications) XPM Processor CP for up-
0 grading existing offices.

0 | (viii) Offshore CPEI

0 | NT6X01AC Offshore Peripheral Controller Equipment Frame

0 | The NT6X01AC Offshore Common Peripheral Controller Equip-
0 | ment Frame is based on the domestic NT6X01AB ISDN periph-
0 | eral controller, adapted for applications outside North
0 | America ("Offshore"). It supports PCM30 links, ISDN ser-
0 | vices, and Common Channel Signaling 7 (CCS7) features on
0 | two independent peripheral modules.

0 | The NT6X01AC Offshore Peripheral Controller Equipment
0 | frame supports two peripheral module types: PLGC and
0 | PDTC.

0 | PLGC - Supports ISDN, Centrex, EBS, IBN and POTS services on
0 | standard Line Concentrating Module types

0 | - Has PCM-30 P-side links for PRLCM and Offshore Remote
0 | Switching Center interface

0 | - Operation as a non-ISDN peripheral is not yet imple-
0 | mented in software, meaning that the NTB01AA ISDN

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0 | Pre-Preprocessor CP is required even if no ISDN fea-
0 | tures are used

0 | - Supports AMI interface to the NT1. 2B1Q is not sup-
0 | ported for this interface

0 | PDTC - Supports CCS7 and R1 signaling in Offshore applica-
0 | tions, using PCM-30 links

0 | - ISDN services like Primary Rate Interface are not
0 | supported

0 | Modules of different types may be mixed on the frame if
0 | required.

0 | NTBX02AA D-Channel Handler CP are not required for PDTC
0 | applications, nor where the PLGC supports only non-ISDN
0 | LCMS.

0 | NTBX01AA ISDN Pre-Processor CP are always required on
0 | PLGC (until such time as software supports purely
0 | non-ISDN operation). This CP is not required on PDTC.

0 | (ix) All PCM30 links from a PRCC must terminate on the same
0 | host PLGC. Only the PLGC peripheral type can terminate
0 | PRCC host links.

0 | (x) The Offshore Offshore versions of the Common Peripheral
0 | Controller Equipment Frame and Remote Controller Equip-
0 | ment Frame are provisioned the same as their domestic
0 | counterparts (subject to the usage restrictions). The
0 | primary difference is the use of PCM-30 interfaces in-
0 | stead of DS-1 interfaces. A maximum of sixteen (16)
0 | PCM-30 interfaces may be equipped on the PLGC/PDTC versus
0 | twenty (20) DS-1 interfaces on the North American prod-
0 | uct. Provision one (1) NT6X27AC PCM-30 Interface CP for
0 | every two PCM-30 interfaces required. Certain other cir-
0 | cuit pack vintages are different between domestic and
0 | Offshore products; refer to the Engineering Manual
0 | sections for details.

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0 1.3.20 Digital Packet Network (DPN) Equipment Provisioning

0 (a) General Description

0 Nailed-up B channel and statistically multiplexed D channel
0 packet data are routed to the DMS-100 Integrated Packet Handler
0 (IPH) equipment via DS-1 links from the CPEI frame. The IPH is
0 one of the peripherals needed to add ISDN to a DMS-100. The IPH
0 comes in a cabinet that is configured to support a set number of
0 B-channels and D-channels. Contained in a single cabinet is a
0 Digital Interworking Unit (DIU) and two Resource Modules (RM).

0 The DS-1 links are interfaced to the IPH by means of the DIU. The
0 RM portion of the IPH is a fully redundant module, including two
0 office Processing Elements (PE), two Call Server PEs, two DIU
0 servers, and two Disk Drives. In addition, the RM contains the
0 necessary hardware to support the OAM and subscriber service con-
0 nections. This IPH can be supported with G24 and later software
0 release. G26 is compatible with BCS29, 30, 31, and 32 if I-OAM
0 is not fully utilized. If full I-OAM capabilities are desired,
0 G26 is compatible with BCS31.

0 Prior to G26, the configuration of the PH equipment depended on
0 the software release. Prior to G23 release, the DIU worked in
0 conjunction with a DPN Access Module (AM) and the Network Module
0 (NM). The AM provides interfaces for the DIU, while the NM
0 interfaces the AM to the packet-switched network. A configuration
0 requiring only one AM shelf is called a DPN-10. A two-AM shelf
0 configuration is called DPN-15.

0 As of G23 release, the DPN-100 with the Resource Module (RM) was
0 introduced to provide significantly increased throughput. The NM
0 was still required for applications involving X.75 gateways (un-
0 til G24), and Network Control System (NCS) and data spooling
0 functions (until G26).

0 In G24, the AM and RM can interface to X.75 gateways. Generic G24
0 is the baseline for interfacing with the BCS-27 LGCI.

0 In G26, the IPH does not require an NM. The data spooling and
0 Network Control System functions can be performed by the IPH. The
0 AM is replaced by the RM. Reference Figure 316.6, Packet Handler
0 System Configuration.

0 This section describes the engineering of the ISDN-specific com-
0 ponents of the PH; that is, the DIU and the related RM equipment.

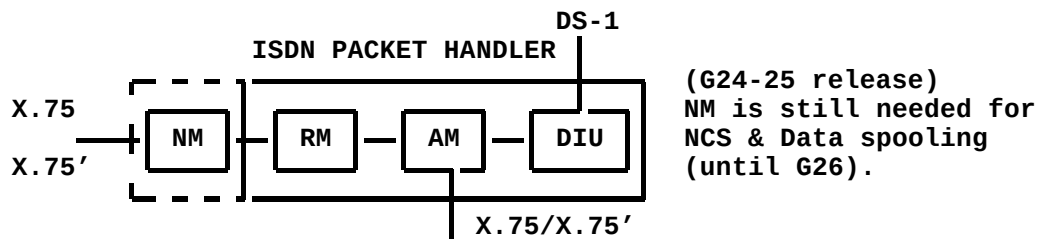
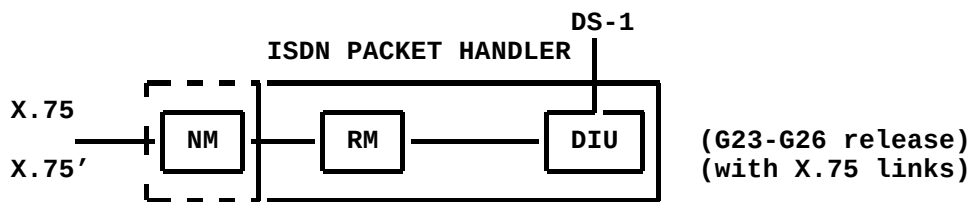
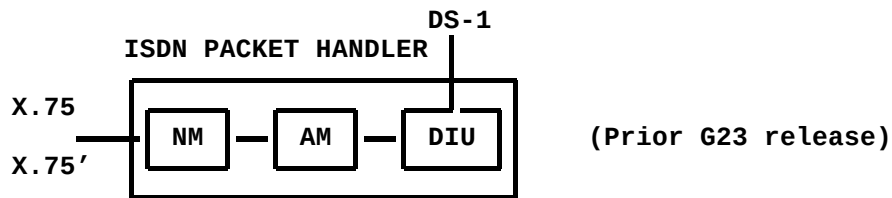
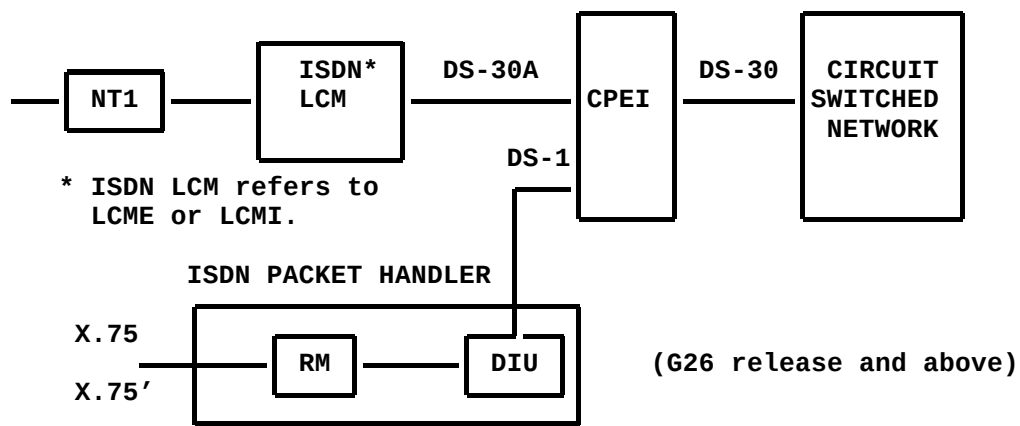


Figure 316.6: Packet Handler System Configuration

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0 (b) References

0 NTP 241-1001-XXX DPN.....

0 (c) Provisioning Considerations

0 (i) The quantity of DS-1 links from the DMS is used to deter-
0 mine the quantity of DIU systems (shelves) and sub-
0 systems required. Each sub-system supports a single DS-1
0 link, and the number of interface cards in the sub-system
0 is determined by the number of Bb and Bd channels provi-
0 sioned on the DS-1 link.

0 On the CPCI, DS-1 links and individual channels within
0 the links may be allocated to Bb or Bd as required. Bb
0 and Bd should be distributed as equally as possible over
0 all the links from the same CPCI.

0 (ii) For more information on the DPN, refer to the NTP
0 241-1001- series of documents.

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0 2.0 Subscriber Module Rural (SMR)

0 Subscriber Module-100 Rural (SCM-100R) also referred to as Sub-
0 scriber Module Rural (SMR), is the first peripheral in the
0 SCM-100 family. It replaces the Control Concentrator Terminal
0 (CCT) of the DMS-1R subscriber carrier system and provides direct
0 digital interface between the DMS-1R Remote Concentrator Terminal
0 (RCT) and the DMS-100F.

0 The SMR provides all basic tones to a RCT, including dial tone,
0 busy tone, reorder tone, audible ringing (ringback) tone, high
0 tone, receiver offhook tone, and call waiting tone. Additionally,
0 the SMR supports all the currently available ringing schemes:
0 coded, frequency selective, and superimposed.

0 The Universal Tone Receiver (NT6X92BB) is not currently supported
0 in the SMR. Digitone Receivers (NT2X48AB) must be provisioned
0 for lines at the RCT.

0 The following list summarizes features supported for the SMR-RCT
0 subsystem.

- 0 - 256 RCT-serviced subscriber lines
- 0 - Coin functions: semi-post pay and post pay.
- 0 - Custom calling services: speed calling, call waiting, 3-way
0 calling, and call forwarding.
- 0 - Dial pulse, Digitone
- 0 - Dial Tone Speed Recording (DTSR)
- 0 - DMS-1R RCT integrated alarms
- 0 - Operational Measurements
- 0 - Operator Verification
- 0 - POTS
- 0 - Protection Switching- Software Feature Deleted-Replaced by a
0 Telco provided Hardware Device.
- 0 - Station Ringer Test

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0 Most features supported by the LCM are supported by the SMR except
0 for the following main exceptions:

- 0 - Business Set
- 0 - Circuit Switched Digital Data Service (CSDDS)
- 0 - Four-Party ANI
- 0 - Integrated Business Network (IBN) Features
- 0 - PBX Line Features
- 0 - Random Make Busy
- 0 - Remote Register, SD Point
- 0 - Remote Meter (register) Pulsing
- 0 - Remote Message Register
- 0 - Sleeve Lead Control
- 0 - Sleeve Lead Control for Public Fire Reporting System
- 0 - Stop Hunt

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0 2.1 HARDWARE PROVISIONING

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0 2.1.1 HARDWARE USAGE RESTRICTIONS

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0 Not Applicable

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0 2.1.2 HARDWARE DEPENDENCIES

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0 Not Applicable

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0 2.1.3 PROVISIONING CONSIDERATIONS

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0 The rating on the SMR module will be changed to A&M. Do not or-
0 der any new SMR modules. The replacement for the SMR/DMS-1R sys-
0 tem is the SMU (Subscriber Module for DMS-1 Urban)/DMS-1U system.
0 Refer to ECM 314 and associated Engineering Manual sections for
0 provisioning information on the SMU.

0 Provide a maximum of ten (10) NT6X50AA, DS-1 Interface CP, in
0 slots 5-1 of each SMR module. One (1) NT6X50AA provides inter-
0 face for up to two (2) T-1 span lines.

0 The minimum packfill required for existing offices at BCS 31 is
0 the NT6X02CC or NT6X02CQ.

0 Existing NT6X02CA packfills can be upgraded to the NT6X02CQ level
0 with the application of the NT6X02ZJ product change kit. The
0 NT6X02ZJ kit replaces the two (2) NT6X46AB CPs in slot 11 of each
0 module with two (2) NT6X46AC CPs. It also allows the provision-
0 ing of a second NT6X47AB CP.

0 Provide two (2) NT6X47AB, Master Processor Memory CP, in slot 09
0 of each NT6X02CC and NT6X02CQ module when upgrading to BCS-31.

0 SLC-96 Interface

0 The SMR supports up to six (6) DMS-1R RCT with each RCT servicing
0 up to 256 subscriber lines. The RCT is connected to the SMR via
0 one (1), maximum two (2) DS-1 lines.

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0 LINE TEST

0 Line testing is provided for RCT subscriber loops. Tests may be
0 performed through the MAP or from remote test desks (e.g. MLT 1
0 or 2, LTC, LTD, (CALRS for Canadian offices), etc.).

0 Loop testing for SMR/RCT lines will interface via the host Metal-
0 lic Test Access (MTA). Up to ten RCT modules can share the same
0 metallic test pair provided they have the same software site and
0 frame designations.

0 Mechanized line testing refers to testing subscriber loops and
0 line cards using non-DMS equipment located at a remote site (e.g.
0 #14 Local Test Desk (LTD), #3 Local Test Cabinet (LTC), Mech-
0 anized Loop Testing (MLT), etc.). The remote test site works
0 with the DMS system to gain metallic access to the subscriber
0 loops. The remote site executes tests on the loop such as meas-
0 uring foreign AC and DC voltage, resistance, etc.

0 All remote loop testing devices will be interfaced to the DMS by
0 a MTM test trunk. A NT2X90AD test trunk will provide all func-
0 tions currently supported by previous vintages of the NT2X90 CP
0 and will support the Subscriber Carrier module loop testing re-
0 quirements.

0 An applique circuit must be provisioned to support line testing
0 results to the Mechanized Loop Testing system (MLT). The applique
0 will provide DC signals required to report channel test results
0 to the MLT system.

0 No other remote site loop test facility (e.g. #14 Local Test Desk
0 (LTD), #3 Local Test Cabinet (LTC), etc.) will require the
0 NT3J00BB applique.

0 The applique circuit pack (NT3J00BB) and card cage (NT3J00BA) in-
0 troduced with the Subscriber Carrier Module for the SLC-96 (SMS)
0 will be utilized for loop testing on the SMR. Offices containing
0 SMS and SMU peripherals may share NT3J00BB and NT3J00BA facili-
0 ties. A summary of the provisioning rules for the NT3J00BA & BB
0 equipment follows.

0 An applique circuit pack (NT3J00BB) contains two (2) circuits.
0 Each circuit will interface one NT2X90AD CP provisioned for line
0 testing to the RCT for loop testing. An applique CP is required
0 for any interface test multiple (NT2X90AD) which utilizes a Mech-
0 anized Loop Test facility (MLT).

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0 The NT3J00BA card cage will house ten (10) NT3J00BB applique cp.

0 A Signal Distribution circuit, seven points, (NT2X57AA) is re-
0 quired for each NT3J00BB circuit provisioned to operate relays on
0 the applique cp.

0 MOUNTING The NT3J00BA applique shelf will be mounted in a stand-
0 ard MIS frame and is seven (7) inches high by twenty six (26)
0 inches wide. The NT3J00BB applique circuit is packaged on a dou-
0 ble wide circuit pack with two (2) circuits per pack. Cards
0 should be located in odd slots 03 through 21. An NT3J00BC power
0 supply is always provided in slot 01 of the shelf.

0 The NT3J00BA applique shelf should be fused at 1 1/3 amps with
0 power terminations at TB1-1 (-48V) and TB1-2 (GRD) using 22 AWG
0 wire.

0 PROTECTION SWITCHING (U.S. Applications Only)

0 In Central Offices(CO) where protection switching is a require-
0 ment, the Telco must provide an external protection switch. Re-
0 commended is the Alcatel (Lynch) Automatic Protection Switch
0 (B302MA09).

0 These Lynch units must be installed and used in accordance with
0 the Lynch instruction manual in order to comply with subpart J of
0 part 15 of FCC Rules for Class A computing devices. Refer to
0 Alcatel for further information on the Lynch Automatic Protection
0 Switch.

0 REPLACED PRODUCT/PACKAGE

0
0 The NT6X81BA circuit pack replaces the NT6X81AA circuit pack for
0 use on all existing SMR applications.

0 The rating on the SMR module will be changed to A&M. No new SMR
0 modules should be ordered. The recommended replacement for the
0 SMR/DMS-1R system is the SMU (Subscriber Module for DMS-1

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0 Urban)/DMS-1U system. Refer to ECM 314 and associated Engineer-
0 ing Manual sections for provisioning information on the SMU.

0 When an office reaches BCS 33 or above the SMR needs to be up-
0 graded to have the new Message Protocol Tone Generator CP. Since
0 the SMR is going to A&Med this is a field upgrade only.

0

0 2.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable

0
0 2.1.5 TRAFFIC TABLES

0
0 Three (3) to sixteen (16) DS-30 speech links connect the SMR to
0 the network ports of the Network Modules. The quantity of DS-30
0 ports to the Network should be engineered on a non-concentration
0 basis due to the concentration already existing at the RCT,
0 therefore, configure DS-30 ports per a channel-in/channel-out ra-
0 tio of one to one.

0

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0 2.1.6 PROVISIONING CONSIDERATIONS (BUILDING BLOCK ENGINEERING)

0

0 CUSTOMER QUESTIONS

0

0

0 (1) Subscriber Module Rural (SMR)

0 a. Total quantity of DMS-1R RCT _____

0

REAL TIME IMPACT

0

(2) Subscriber Module Rural (SMR)

0

a. Total quantity of POTS _____

0

b. Total quantity of POTS Call Attempt/Line (2W HDBH) _____

0

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0 CALCULATIONS

0

0 (2) Subscriber Module Rural (SMR)

0 A. Total quantity of DS-1 CP for SMR = (1a) _____
0 (NTZZ03GA)

0 B. Quantity of SMR = (1a) / 6 _____
0 (NTZZ03CA)

0 Note: A SMR can support a maximum of six (6)
0 DMS-1R RCTs.

0 REAL TIME CALCULATION

0 I. Total POTS MS MP = (2a) x (2b) x 190 _____

0 II. Total POTS MS SP = (2a) x (2b) x 112 _____

0 III. % Utilization MP = (I) / 2304000 _____

0 IV. % Utilization SP = (II) / 972000 _____

0 Utilization higher than 80 percent requires a
0 detailed capacity study using PRTCALC.

0 C. Provide one (1) NTZZ02GA, DS30 Network
0 Interface, per SMR. _____

0 DS512 Network Interface is not available for SMR.

0 D. Total NT0X50AA, Filler Face Plates = _____
0 {(B) x 10} - (A)

0 E. C-Side Ports = (Links per SMR x 24) / 30 _____

0 Calculate requirements for each controller, round up,
0 and sum for Total Ports.
0 (Minimum 3 Ports per controller)

0

0 2.2 PRODUCT/SYSTEM SPECIFICATION

0

0 2.2.1 PHYSICAL CHARACTERISTICS

0

0 POWER/HEAT DISSIPATION

0
0 The SMR heat dissipation is 592 Watts.

0
0 CURRENT DRAIN

0
0 The SMR has a current drain of 13.32 Amps.

0 The maximum current consumption, including provisionable packs,
0 per SMR is 50 Amps.

0
0 FUSING REQUIREMENTS

0
0 Two (2) 20amp fuses per SMR

0

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0 2.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not Applicable

0

0 2.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms shall apply

0 2.3 SOFTWARE PROVISIONING

0

0 2.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 SMR basic software feature package is NTX213AC.
0 Interdependent software feature packages are:

0 NTX001AA - Common Basic
0 NTX270AA - New Peripheral Maintenance Package
0 NTX901AA - Local Features

0
0 2.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 N/A

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0 3.0 Universal Tone Receiver CP NT6X92BB (Domestic Version)

0 The domestic version of the UTR is the NT6X92BB. The international
0 version is the NT6X92AA. For North American (domestic) applications
0 in DMS host offices (equipped with DTC/LGC/LTC modules) the digitone
0 and MF functions of the UTR will be V.O.'ed in BCS-19. General avail-
0 ability will be in BCS-20.

0 In the U.S. and Canada the Change Management/Customer Service Dept.
0 will issue 88,000 orders for the retrofit of NT6X92BA to NT6X92BB in
0 existing offices containing the UTR. The System and Customer Engi-
0 neering Depts. will update office release records upon receipt of the
0 88,000 order.

0 Note that any U.S. office which contains NT6X92AA UTR circuit packs
0 will not be retrofit to the NT6X92BB.

0 3.1 HARDWARE PROVISIONING

0

0 3.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 3.1.2 HARDWARE DEPENDENCIES

0

0 Not applicable.

0 3.1.3 PROVISIONING CONSIDERATIONS

0

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- 0 1. For Canadian offices, UTR's may be provisioned in initials and
0 extensions with D dates of week 30/86 (i.e. RTS = wk 30/86) and
0 later. For U.S. offices refer to the URT0/URTS report for appli-
0 cation dates. Otherwise MF Receivers and/or Digitone Receivers
0 may be provisioned.
- 0 2. The UTR is provisionable in all (initial & extension) DMS-100F
0 offices. MF Receivers (NT2X48AA) and Digitone Receivers
0 (NT2X48AB) mounted on MTM's and TM's are still required to ser-
0 vice the following:
- 0 - "Old Peripherals"
 - 0 analog trunk groups equipped on TM/MTM shelves
 - 0 lines equipped on LME modules
 - 0 trunk groups equipped on DCM modules
 - 0 - MCCS
 - 0 - Subscriber Carrier Modules
 - 0 SMS
 - 0 SMR SMU
 - 0 - incoming and the incoming portion of 2 way service and test
 - 0 circuits (i.e. Remote Office Test Line and Blue Box Fraud Pre-
 - 0 ventions). MF and Digitone circuit pack requirements for these
 - 0 service and test circuits are to be based on Telco traffic re-
 - 0 quirements.
- 0 Provide NT2X48AA MF Receivers for the following;
- 0 - Incoming RONI trunk groups
 - 0 - Super Cama - 2 way Incoming DP outgoing DP trunk groups
- 0 Provide NT2X48AB Digitone Receivers for the following;
- 0 - any FX type trunks (e.g. DS1FX0,FX0GS,FX0LS,FXSGS,FXSLS)
- 0 Provisioning for the above functions can be based on existing
0 DTMF and MF Receiver tables.

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- 0 3. In DMS host offices, the UTR is provisionable on the DTA/LGA/LTA
0 shelves. The first UTR card is to be assigned to slot 15 and the
0 second UTR is to be assigned to slot 16 of the DTA/LGA/LTA shelf.
0 Otherwise, provide filler face plate, NT0X50AA. A filler face
0 plate, NT0X50AA, must always be provided in slot 17.
- 0 4. Provide one Designation Label, P0676183, in each card slot posi-
0 tion equipped with a UTR card, NT6X92BA.
- 0 Provide one Designation Label P0686332 in each card slot position
0 equipped with a UTR card, NT6X92BB.
- 0 5. In the DTC/LGC/LTC modules, UTR cards are provisionable in pairs
0 (i.e. 0, 2 or 4).
- 0 6. In the RCC module of an RSC remote site, one pair of UTR cards is
0 always provided in the Remote Cluster Controller Common CP. A
0 second pair is provisionable, however, a power constraint must be
0 considered. Reference RSC provisioning information for RCC pro-
0 visioning considerations.
- 0 7. In the domestic market, the UTR card will be Plug In
0 Provisionable (PIP).
- 0 8. There is no traffic overflow from UTR's onto MF Receivers
0 (NT2X48AA) and Digitone Receivers (NT2X48AB).
- 0 9. On any extension where an improvement to the CPU real time capac-
0 ity is required, and UTR cards are being added to existing
0 DTC/LGC/LTC modules, surplus MF Receivers and Digitone Receivers
0 in MTM's and TM's may be removed and replaced with other types of
0 service circuits.
- 0 10. UTR cards located in a particular DTC/LGC/LTC module will service
0 all lines and trunks connected to that module. This includes all
0 lines in LCM's, RLCM's, and OPM's.
- 0 11. Lines and trunks on an RSC are serviced by UTR cards located in
0 the RCC module of the RSC. There is no traffic overflow to the
0 host office.

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COMMON CIRCUIT PACK FILL	PERIPHERAL CONTROLLER MODULE
NT6X02AQ or later	DTC
NT6X02AH or later	LGC
NT6X02AG or later	LTC

0 | 13. Reserved for future use.

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0 14. Refer to Engineering Manual Section EMA2-99-000 for up-to-date
0 information on the change kits required to upgrade existing
0 DTC/LGC/LTC modules.

0 15. UTR TRUNK GROUPS

0 The following is a list of trunk types which require a receiver
0 that are supported by the UTR

0	TRUNK GROUP	TRUNK NAME/DESCRIPTION
0	A5	2 WAY AMR5MF
0	ATC	Access Tandem to Carrier
0	SC	INCOMING CAMA MF
0		2 WAY CAMA TOLL MF IN MF OUT
0		2 WAY CAMA TOLL MF IN DP OUT
0	IT	INTERTOLL 2 WAY MF IN MF OUT
0		INTERTOLL INCOMING MF
0		INTERTOLL WINK MF IN DP OUT
0	IT250	IT250 DMS250/TOPS INTERTOLL
0	IMT	(DMS250 trunk group)
0	DAL	(DMS250 trunk group)
0	CAMA (250)	(DMS250 CAMA trunk group)
0	OC	2 WAY MF CAMA
0	OI	COLLOCATED OI SWITCHBOARD
0		COLLOCATED SWBD TOLL OFFICE
0		MF VERIFICATION OPERATOR
0	OP	Outgoing or 2 WAY MF TSPS/TOPS
0	PX (LOOP START ONLY)	2 WAY DIGITAL PBX (LOOP START ONLY)
0	AOSS	AOSS INCOMING MF
0	TDDO	TANDEM 2 Stage DDO
0	TI	INCOMING MF

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0 T101 101 Communications Test Line

0 T2 LOCAL 2 WAY MF

0 TOPS TOPS TRUNK INCOMING MF
0 TOPS TRUNK 2 WAY MF IN MF OUT
0 TOPS TRUNK 2 WAY MF IN DP OUT

0 ZI 0+/0- Tandem to TOPS/TSPS

0 IBNTI INCOMING IBN
0 INCOMING IBN DT

0 IBNT2 2 WAY IBN
0 2 WAY IBN DT

0 INT101 INTL 101 Test Line

0 AVINSW 2 WAY Interswitch MF

0 AVOVS 2 WAY OVERSEAS MF TRUNK

0 AVNOS 2 WAY CROSSBAR MF TRUNK

0 AVPBX 2 WAY or INCOMING PBX MF TRUNK

0 AVTNDM 2 WAY Tandem MF Trunk

0 Any incoming or incoming portion of a 2 way trunk group requiring a
0 receiver not listed above will require Digitone or MF receivers.

0 3.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

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0 93 12 030 3.1.5 TRAFFIC TABLES0
0 1) TRAFFIC CAPACITY (US OFFICES ONLY)0 UTR capacity for line and trunk traffic (i.e. for applica-
0 tions in DTC/LGC/LTC/RCC) are summarized below. CCS values
0 on a per circuit basis are attached.0
0

UTR CIRCUITS	DELAY > 3 SECONDS		DELAY > 0 SECONDS	
	p.001	p.005	p.010	p.050
-----	-----	-----	-----	-----
30	720 (CCS)	774 (CCS)	665 (CCS)	765 (CCS)
60	1680	1780	1560	1700

0

0 2) TRAFFIC CAPACITY (CANADIAN OFFICES ONLY)

0 UTR capacity for line and trunk traffic (i.e. for applica-
0 tions in DTC/LGC/LTC/RCC) are summarized below. CCS values
0 on a per circuit basis are attached.0
0

UTR CIRCUITS	DELAY > 3 SECONDS	
	ABSBH p.002	HDBH p.05
-----	-----	-----
30	739 (CCS)	893 (CCS)
60	1736	1940

00 Capacity figures are based on an average holding time (HT) of
0 10 seconds. For shorter HT these figures would provide some
0 spare capacity.

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0 3.2 PRODUCT/SYSTEM SPECIFICATION

0

0

0 3.2.1 PHYSICAL CHARACTERISTICS

0

0 Not applicable.

0 3.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

0 3.2.3 SPARING INFORMATION

0

0 Not applicable.

0 3.3 SOFTWARE PROVISIONING

0

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0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

- 0
0 1. Software feature package, NTX269AA, Universal Tone Receiver-
0 Domestic, will be available in BCS-19 for V.O. application. Gen-
0 eral availability is with BCS-20. This package is required when
0 UTR's are provided in the host office.
- 0 2. Software feature package, NTX145AA, Remote Switching Centre, will
0 be available in BCS-19 and must be provided for every RSC site.
0 As one of the pre-requisites, NTX269AA must be provided.

0 3.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 3.3.3 MEMORY PROVISIONING

0
0 Not applicable.

0 3.4 REAL TIME IMPACT

0 UTR's will slightly reduce the DTC/LGC/LTC and RSC peripheral
0 real time capacity. A real time work up should be performed to
0 ensure sufficient capacity.

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0 4.0 Subscriber Module for DMS-1 Urban (SMU)

0 The SMU is designed to replace the Central Control Terminal (CCT)
0 now required when the RCU is connected to a DMS-100 Family
0 switch. This will eliminate the need for duplicated line cir-
0 cuits and will reduce floor space required at the DMS-100 host
0 office.

0 The SMU is a partially redundant peripheral module that inter-
0 faces via 3 to 16 DS-30 links to the DMS-100 Network on the Con-
0 trol side (C-side). (Note - partially redundant means that all
0 circuit packs are duplicated with the exception of the DS-1 cir-
0 cuit packs).

0 The SMU interfaces to multiple RCU on the Peripheral side (P-
0 Side) which can accommodate up to 20 DS-1 ports.

0 Each RCU will have one (1) to eight (8) DS-1 links to the SMU.
0 All DS-1 links must terminate on the same SMU. The number of RCU
0 that may terminate on a SMU is dependant on the total traffic
0 presented to the SMU and the physical limitation of the 20 ports.

0 The minimum number of DS-1 required to interface a RCU is one
0 (1), however, two (2) DS-1 links are recommended to prevent an
0 outage during a single link failure. A fully equipped RCU sup-
0 ports over 500 Subscriber and/or Special Service lines.

0 FEATURES

0 The SMU will support the following features;

- 0 -POTS
- 0 -single party
- 0 -multi party
- 0 -two or four party Frequency Selective Ringing (FSR) with
- 0 -two party Automatic Number Identification (ANI)
- 0 -four party Operator Number Identification (ONI)
- 0 -two, four or eight party Coded Ringing with
- 0 -two party ANI
- 0 -two, four or eight party ONI
- 0 -two party Divided Ringing with ANI

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- 0 -COIN
- 0 -coin first
- 0 -dial tone first
- 0 -semi-post pay
- 0 -ground start
- 0 -loop start

- 0 -CUSTOM CALLING
- 0 -speed calling
- 0 -three way calling
- 0 -call waiting
- 0 -call forwarding
- 0 -all current IBN features with the exception of distinctive
- 0 ringing,datapath and Electronic Business Set (EBS)

- 0 -DIALING
- 0 -dial pulse
- 0 -digitone

- 0 -TONES
- 0 -dial tone
- 0 -audible ringback
- 0 -reorder
- 0 -busy

- 0 -MAINTENANCE
- 0 -Automatic Board to Board Test (ABBT)
- 0 -Test Desk (e.g. MLT, LRS or #14 LTD)
- 0 -Automatic Line Testing (ALT)
- 0 -Line Card Testing
- 0 -Subscriber Loop Testing

0 4.1 HARDWARE PROVISIONING

0

0 4.1.1 HARDWARE USAGE RESTRICTIONS

0
0 The RCU may be located outside the central office up to a maximum
0 distance of 100 miles.

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0 The SMU will only interface RCU's. The SMU does not offer inter-
0 face support to any other remote system (e.g. DMS-1R, SLC-96,
0 RSC, RLCM,OPM, etc.) nor host equipment (e.g. LCM).

0 The SMU does not support DS-1 protection switching as it will not
0 be offered in the RCU product.

0 The SMU requires office repeaters located in a separate Span
0 Rack.

0 The Universal Tone Receiver (NT6X92BB) is not currently supported
0 in the SMU. Digitone Receivers (NT2X48AB) must be provisioned
0 for lines at the RCU.

0
0 4.1.2 HARDWARE DEPENDENCIES

0
0 Not Applicable

0
0 4.1.3 PROVISIONING CONSIDERATIONS

0
0 SMU will appear to the DMS-100F as a peripheral module. Each mod-
0 ule consists of two shelves of equipment with duplicated control-
0 lers and power converters.

0 The SMU shelf pairs are housed in a standard DMS-100 single bay
0 frame. The Subscriber Module Equipment Frame (SME) (PEC NT6X01AA)
0 can contain up to two (2) modules. Each module has a PEC of
0 NT6X02EG.

0 The NT6X02EG Common Circuit Packfill should be ordered for all
0 new SMU applications.

0 Slots 08,09,12 of the NT6X02EB Common CP Fill are now
0 provisionable. Provide four (4) NT6X45BA, XPM Processor CP, in
0 slots 08 & 12 of each NT6X02EB Common CP Fill.

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0

0 Provide one (1) NT6X02EH Product Change Kit and two (2) NT6X47AC
0 MP Memory Plus circuit packs for each NT6X02EB and NT6X02AW mod-
0 ule when upgrading to BCS-31. The NT6X02EH PC Kit upgrades the
0 NT6X02EB/AW module to the NT6X02EF module and makes slots 10, 11,
0 11R and 18 provisionable. Mount the NT6X47AC circuit packs in
0 slot 10 of the upper and lower shelves of the module.

0 Per customer request, the NT6X47AB packs removed from modules up-
0 graded via a PC Kit may be used to upgrade other relevant mod-
0 ules. Provide two (2) office supplied NT6X47AB CP for each
0 NT6X02EB/AW module to be upgraded to BCS-31. Do not order new
0 NT6X47AB packs for the upgrade of SMU modules.

0 Slots 22-23,25 of the NT6X02EB Common CP Fill are now
0 provisionable. Provide two (2) NT6X40AC, DS30 Network Interface
0 CP, in slot 22. Also, provide two(2) NT0X50AA, Filler Face
0 Plates, in slot 23 of each NT6X02EB Common CP Fill. Provision
0 two(2) NT2X70AE Power Converter CP in slot 25 of each module.

0 The slots mentioned above are being made provisionable in order
0 to ease future design development. The remaining circuit packs
0 in the NT6X02EB Common CP Fill are unchanged.

0 Provide two (2) NT6X69AC, CPP Msg Protocal CP, for each new SMU
0 module ordered. Mount circuit packs in slot 18 of the upper and
0 lower shelves of the module.

0 A cooling/inverter (NT3X90AC), which will reside at the bottom of
0 the frame, is a provisionable unit to provide forced air cooling.

0 The SMU DS-1 CP Product Engineering Code (PEC) is NT6X85AB. Each
0 NT6X85AB CP contains two (2) DS-1 circuits. A maximum of 10
0 NT6X85AB CP may be provisioned on each SMU.

0 When Custon Local Area Signaling Services(CLASS -U.S.) or Call
0 Management Services(CMS -Canada) are required, the NT6X78AA cir-
0 cuit pack must be provisioned in card slot 16 of the SMU. Refer
0 to ECM-332 for further information on CLASS.

0 Upon general availability, the NT6X78AB will replace the NT6X78AA
0 as the standard CLASS Modem Resource CP.

0

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0 Upgrading Existing Peripheral Modules

0 Upgrading Existing NT6X02EA Modules

0 In order to enhance an existing NT6X02EA module with the Expanded
0 Signaling Processor Memory CP required for BCS-27, a product
0 change kit NT6X02ZJ was created for each existing SMU peripheral
0 module. The NT6X02ZJ PC Kit contains two (2) NT6X46AC, Enhanced
0 Signaling Processor CP, and new designation strips for the up-
0 graded modules.

0 The NT6X02ZJ Product Change Kit will upgrade the following pe-
0 ripheral module:

0
0
0
0
0
0
0

DESCRIPTION	FROM	TO
SMU Common CP	NT6X02EA	NT6X02AW

0 Slots 08,09,12,22-23,25 of the Upgraded SMU module are now
0 provisionable slots. These slots are being made provisionable to
0 ease future design development. Provide four(4) NT6X45BB, XPM
0 Processor CP, for slots 08&12 of each upgraded SMU module. New
0 circuit packs DO NOT need to be ordered for slots 09,22-23,25 of
0 the Upgraded SMU module.

0 Refer to availability reports to identify valid ordering dates.

0 The NT6X02AW Common CP Fill are PEC codes used for the field up-
0 grade of existing peripheral modules ONLY. The NT6X02AW Common
0 CP Fills CANNOT be ordered.

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Upgrading Existing NT6X02EB/AW Modules

The NT6X02EH Product Change Kit was created to convert the NT6X02EB/AW module to the NT6X02EF module. This PC Kit makes certain slots provisionable, but does not contain any circuit packs.

The NT6X02EH Product Change Kit will upgrade the following peripheral modules:

DESCRIPTION	FROM	TO
SMU Common CP	NT6X02EB	NT6X02EF
SMU Common CP	NT6X02AW	NT6X02EF

Slots 10,11,11R and 18 of the Upgraded SMU module are now provisionable slots. These slots are being made provisionable to ease future design development.

Since this PC Kit does not contain any circuit packs, any required upgrade packs (provisionable in slots 10,11,11R or 18) must be ordered in conjunction with the PC Kit. For instance, if a NT6X02EB/AW SMU module is required to meet the BCS-31 extended MP memory requirement, then one NT6X02EH Product Change Kit and two NT6X47AC packs must be ordered to upgrade the module. If a NT6X02EB/AW SMU module is required to interface with ENET, then one NT6X02EH kit and two NT6X69AC packs must be ordered to upgrade the module.

The NT6X02EF Common CP Fill is the PEC used for the field upgrade of existing peripheral modules ONLY. The NT6X02EF Common CP Fill CANNOT be ordered.

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0 ENET INTERFACE

0 SMU modules can interface ENET using either copper or fiber
0 speech links. Either case requires the application of the
0 NT6X69AC, CCP Msg Protocol & Tone CP. Existing NT6X02EB and
0 NT6X02AW modules can be field upgraded to a NT6X02EF module with
0 the application of the NT6X02EH Product Change Kit. This change
0 kit allows provisioning of the NT6X69AC CP in slot 18.

0 For the SMU to interface ENET using Fiber speech links, the fol-
0 lowing equipment is required:

0 NT6X40CA - DS-512 XPM Interface CP
0 NT6X40DA - DS-512 Link Paddle Board
0 NT6X02BU - Fiber Interface H/W Assembly

0 Provide two (2) NT6X40CA in slot 22 and two (2) NT6X40DA in slot
0 22R of each SMU module. Also, provide one (1) NT6X02BU per SMU.

0 Upon general availability, the NT6X40FA will replace the NT6X40CA
0 as the standard DS512 XPM Interface and the NT6X40GA will replace
0 the NT6X40DA as the standard DS512 Link Paddle Board.

0 MAINTENANCE

0 Loop testing is provided for RCU subscriber lines. Tests may be
0 performed through the MAP or from remote test desks (e.g. MLT 1
0 or 2, LTC, LTD, (CALRS for Canadian offices), etc.).

0 When a SMU is provisioned in a DMS-100F office, the following
0 maintenance trunk circuit pack derivations have been updated to
0 include the Subscriber Carrier Modules. Refer to ECM276 for Me-
0 tallic Test Access (MTA) provisioning criteria.

0 NT2X10AB - Line Test Unit (ODD) (LTU)
0 NT2X11AA - Line Test Unit (EVEN)

0 NT2X46AB - METALLIC TEST ACCESS (MTA)
0 NT3X09BA - 8 X 8 METALLIC TEST ACCESS

0 PROVISIONING FORMULA

0 Provisioning of Line Test Unit (LTU) utilizing NT2X46AB MTA.

0

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$$\begin{array}{l} 0 \quad \text{LTU} = \frac{\text{No. SMS s/w sites}}{20} + \frac{\text{No. SMU s/w sites}}{20} + \frac{\text{No. LCM}}{10} + \frac{\text{No. LM}}{10} + 1 \\ 0 \\ 0 \end{array}$$

0 Provisioning of Line Test Unit (LTU) utilizing NT3X09BA 8 X 8
0 Metallic Test Access CP.

$$\begin{array}{l} 0 \quad \text{LTU} = \frac{\text{No. SMS s/w sites}}{16} + \frac{\text{No. SMU s/w sites}}{16} + \frac{\text{No. LCM}}{8} + \frac{\text{No. LM}}{8} + 1 \\ 0 \\ 0 \end{array}$$

0 Provisioning a NT2X46AB MTA.

$$\begin{array}{l} 0 \quad \text{MTA} = \frac{\text{No. SMS s/w sites}}{20} + \frac{\text{No. SMU s/w sites}}{20} + \frac{\text{No. LCM}}{10} + \frac{\text{No. LM}}{10} \\ 0 \\ 0 \end{array}$$

0 Provisioning a NT3X09BA 8 X 8 Metallic Test Access.

$$\begin{array}{l} 0 \quad \text{MTA} = \frac{\text{No. SMS s/w sites}}{8} + \frac{\text{No. SMU s/w sites}}{8} + \frac{\text{No. LCM}}{4} + \frac{\text{No. LM}}{4} \\ 0 \\ 0 \end{array}$$

0 Note : The above formulas have been updated to reflect the
0 Subscriber Carrier additions.

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0 LINE TEST

0 Mechanized line testing refers to testing subscriber loops and
0 line cards using non-DMS equipment located at a remote site (e.g.
0 #14 Local Test Desk (LTD), #3 Local Test Cabinet (LTC), Mech-
0 anized Loop Testing (MLT), etc.). The remote test site works
0 with the DMS system to gain metallic access to the subscriber
0 loops. The remote site executes tests on the loop such as meas-
0 uring foreign AC and DC voltage, resistance, etc.

0 All remote loop testing devices will be interfaced to the DMS by
0 a modified test trunk. A NT2X90AD test multiple will provide all
0 functions currently supported by previous vintages of the NT2X90
0 CP and will support the Subscriber Carrier module loop testing
0 requirements.

0 An applique circuit must be provisioned to support line testing
0 results to the Mechanized Loop Testing system (MLT). The applique
0 will provide DC signals required to report channel test results
0 to the MLT system.

0 No other remote site loop test facility (e.g. #14 Local Test Desk
0 (LTD), #3 Local Test Cabinet (LTC), etc.) will require the
0 NT3J00BB applique.

0 The applique circuit pack (NT3J00BB) and card cage (NT3J00BA) in-
0 troduced with the Subscriber Carrier Module for the SLC-96 will
0 be utilized for loop testing on the SMU. Offices containing SMS
0 and SMU peripherals may share NT3J00BB and NT3J00BA facilities.
0 A summary of the provisioning rules for the NT3J00BA & BB equip-
0 ment follows.

0 An applique circuit pack (NT3J00BB) contains two (2) circuits.
0 Each circuit will interface one NT2X90AD cp provisioned for line
0 testing to the RCU for loop testing. An applique CP is required
0 for any interface test multiple (NT2X90AD) which utilizes a Mech-
0 anized Loop Test facility (MLT).

0 The NT3J00BA card cage will house ten (10) NT3J00BB applique cp.

0 A Signal Distribution circuit, seven points, (NT2X57AA) is re-
0 quired for each NT3J00BB circuit provisioned to operate relays on
0 the applique cp.

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0 MOUNTING

0 The NT3J00BA applique shelf will be mounted in a standard MIS
0 frame and is seven (7) inches high by twenty six (26) inches
0 wide. The NT3J00BB applique circuit is packaged on a double wide
0 circuit pack with two (2) circuits per pack. Cards should be lo-
0 cated in odd slots 03 through 21. An NT3J00BC power supply is
0 always provided in slot 01 of the shelf.

0 The NT3J00BA applique shelf should be fused at 1 1/3 amps with
0 power terminations at TB1-1 (-48V) and TB1-2 (GRD) using 22 AWG
0 wire.

0
0 REPLACED PRODUCT/PACKAGE

0
0 The NT6X02EG replaces the NT6X02EB Common Circuit Packfill for
0 use on all new SMU applications.

0 The NT6X69AC replaces the NT6X69AB Circuit Pack for use on all
0 SMU applications.

0 Upon general availability, the NT6X40FA will replace the NT6X40CA
0 as the standard DS512 XPM Interface and the NT6X40GA will replace
0 the NT6X40DA as the standard DS512 Link Paddle Board.

0 Upon general availability, the NT6X78AB will replace the NT6X78AA
0 as the standard CLASS Modem Resource CP.

0
0 4.1.4 OFFICE LAYOUT INFORMATION

0
0 Not Applicable

0

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0 4.1.5 TRAFFIC TABLES

0
0 The SMU is presently capable of supporting 20 RCU DS-1 ports
0 (each RCU may have up to eight (8) DS-1 links). The total number
0 of DS-1 ports from the RCUs must be less than or equal to 20. All
0 DS-1 links from a RCU must terminate on the same SMU.

0 The SMU will be connected to the Network Module of the DMS-100F
0 via three (3) to 16 provisionable DS-30 ports which are dupli-
0 cated to provide connections to each plane of the network. The
0 SMU should be configured as non-blocking, that is configure DS-30
0 ports per a channel in/channel out ratio to the DS-1 channels
0 provisioned to the RCUs.

0 SMU CAPACITY

0 The SMU should be configured as non-blocking. That is, the num-
0 ber of DS30 channels to the Network should be equal to the number
0 of DS-1 channels to the RCUs.

0 The following table represents the CCS capacity of the SMU per
0 DS30 port to the Network.

		Capacity of SMU (CCS) at 4% TML						
Network ports	3	4	5	6	7	8	9	
	2780	3806	4841	5883	6929	7979	9032	(CCS)
Network ports	10	11	12	13	14	15	16	
	10087	11144	12203	13264	14325	15388	16451	(CCS)

0

0

0

0 | 4.1.6 PROVISIONING CONSIDERATIONS (BUILDING BLOCK ENGINEERING)

0

0 | CUSTOMER QUESTIONS

0

0 (1) Subscriber Module Urban (SMU)

- 0 a. Total number of DMS-1U RCUs _____
- 0 b. Quantity of DS-1 links per RCU (2-8) _____
- 0 c. Type of interface to Network/ENET (copper/fiber) _____
- 0 d. Is CLASS feature required (yes/no) _____
- 0 e. Is Hairpin feature required (yes/no) _____
- 0 (Special Services)

0 REAL TIME IMPACT

0 (2) Subscriber Module Urban (SMU)

- 0 a. Total quantity of POTS _____
- 0 b. Total quantity of POTS Call Attempt/Line (2W HDBH) _____
- 0 c. Total quantity of MDC _____
- 0 d. Total quantity of MDC Call Attempt/Line (2W HDBH) _____

0

0

0

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0 | CALCULATIONS

0

0 (1) Subscriber Module Urban (SMU)

0 A. Total quantity of SCM DS-1 CP for RCUs = _____
0 (1a) x (1b) / 2
0 (NTZZ03FA)

0 If (1e) = yes, provide one (1) NTZZ03FA, SCM DS-1 CP, _____
0 per SMU provisioned below.

0 B. Quantity of SMU = (see algorithm below) _____
0 (NTZZ03DA)

0 Spread RCU Port_Dev until None_Left

0 (1a) = Total Number of Port_Dev
0 (1b) = Quantity of links per Port_Dev

0 SMU = 0

0 If (1e) = no, set Link_Avail = 20
0 If (1e) = yes, set Link_Avail = 18

0 SMU = SMU + 1

0 Do until 8 Port_Dev = 0 or Links_Avail < 8
0 Links_Avail = Links_Avail - 8
0 8 Port_Dev = 8 Port_Dev -1
0 END

0 Do until 7 Port_Dev = 0 or Links_Avail < 7
0 Links_Avail = Links_Avail - 7
0 7 Port_Dev = 7 Port_Dev -1
0 END

0 Do until 6 Port_Dev = 0 or Links_Avail < 6
0 Links_Avail = Links_Avail - 6
0 6 Port_Dev = 6 Port_Dev -1
0 END

0

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0 Do until 5 Port_Dev = 0 or Links_Avail < 5
0 Links_Avail = Links_Avail - 5
0 5 Port_Dev = 5 Port_Dev -1
0 END

0 Do until 4 Port_Dev = 0 or Links_Avail < 4
0 Links_Avail = Links_Avail - 4
0 4 Port_Dev = 4 Port_Dev -1
0 END

0 Do until 3 Port_Dev = 0 or Links_Avail < 3
0 Links_Avail = Links_Avail - 3
0 3 Port_Dev = 3 Port_Dev -1
0 END

0 Do until 2 Port_Dev = 0 or Links_Avail < 2
0 Links_Avail = Links_Avail - 2
0 2 Port_Dev = 2 Port_Dev -1
0 END

0 Note: All DS-1 links from a DMS-1U RCU must
0 terminate on the same SMU.

0 REAL TIME CALCULATION

0 I. Total POTS MS MP = (2a) x (2b) x 175 _____

0 II. Total POTS MS SP = (2a) x (2b) x 102 _____

0 III. Total MDC MS MP = (2c) x (2d) x 225 _____

0 IV. Total MDC MS SP = (2c) x (2d) x 125 _____

0 V. % Utilization MP = {(I) + (III)} / 2412000 _____

0 VI. % Utilization SP = {(II) + (IV)} / 1404000 _____

0 Utilization higher than 80 percent requires a
0 detailed capacity study using PRTCALC.

0 C. If the answer to (1d) is yes, provide one (1) _____
0 NTZZ02EA (Canada) or one (1) NTZZ97AA (U.S.),
0 CLASS Modem Resource CP, per SMU.

0

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0 D. If the answer to (1c) is COPPER, provide one (1) _____
0 NTZZ02GA, DS30 Network Interface, per SMU.

0 If the answer to (1c) is FIBER, provide one (1) _____
0 NTZZ02HA or NTZZ02HB Fiber Network Interface,
0 per SMU.

0 E. Total NT0X50AA, Filler Face Plates = _____
0 $\{(B) \times 12\} - \{(A) + ((C) \times 2)\}$

0 F. C-Side Ports = (Links per SMU) $\times$ 24 / 30 _____

0 Calculate requirements for each controller, round up,
0 and sum for Total Ports.
0 (Minimum 3 Ports per controller)

0 4.2 PRODUCT/SYSTEM SPECIFICATION

0

0 4.2.1 PHYSICAL CHARACTERISTICS

0

0 POWER/HEAT DISSIPATION

0
0 The SMU heat dissipation is 592 Watts.

0 0 CURRENT DRAIN

0
0 The SMU has a current drain of 13.32 Amps. Maximum current con-
0 sumption per SMU, including all provisionable packs, should be

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0 limited to 50 Amps. A module can handle 55 Amps but will only
0 function for 8 hours in power sharing mode.

0 FUSING REQUIREMENTS

0
0 Two (2) 20Amp fuses per SMU

0 4.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not Applicable

0 4.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms shall apply.

0 4.3 SOFTWARE PROVISIONING

0 4.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0

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0 SMU basic software feature package is NTX387AB.

0 Interdependent software feature packages are:

0 NTX000AA - Bilge
0 NTX001AA - Common Basic
0 NTX270AA - New Peripheral Maintenance Package
0 NTX901AA - Local Features

0 SMU Special Services software feature package is NTX621AB
0 Interdependent software feature package is NTX387AB.

0 SMU Bridged Services software feature package is NTX297AA
0 Interdependent software feature package is NTX387AB.

0| For Pre-BCS-34 offices, the Enhanced Office Recovery software
0 feature is NTXA66AA.

0| Effective with BCS 34, the Enhanced Office Recovery feature is
0 included in the NTX001AA (Common Basic) software package. The
0 NTXA66AA package is not to be ordered for offices at BCS 34 and
0 above.

0 Extended XPM Diagnostics software feature is NTXA67AA.

0 Refer to ECM-332 for CLASS software feature package.

0
0 4.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 N/A

0
0 4.3.3 MEMORY PROVISIONING

0
0 Refer to MEMCALC for memory provisioning information.

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0 4.4 REAL TIME IMPACT

0 The Master Processor (MP) will support 2.38 Call Attempts (CA)
0 per second and the Signal Processor (SP) will support 2.20 CA per
0 second. When you achieve 2.8 CA per second the processors are
0 operating above the engineerable capacity level and using buffer
0 space. This buffer space is non-engineerable and provides
0 room for peakedness.

0 CALCULATION
0 -----

0 $(CPOCC/100) \times 1000 = \text{ms per second of call processing available}$

0 $\text{CA per second} = (\text{ms per sec of call processing}) / \text{ms per CA.}$

0 CPOCC for both the MP and the SP are known factors as is the ms
0 per CA. Reference SEB 88-01-001 "BCS 24 New Peripheral Processor
0 Occupancy and per Call Timing Tables", January 5, 1988.

0 RESULTS
0 -----

0 MASTER PROCESSOR (MP)

SIGNAL PROCESSOR (SP)

0 CPOCC = 67%

CPOCC = 41%

0 ms PER CALL ATTEMPT

ms PER CALL ATTEMPT

0 ORIG. TERM.

ORIG. TERM.

0 -----

0 189 92

107 79

0 TOTAL ms/CA = 281

TOTAL ms/CA = 186

0 $(67/100) \times 1000 = 670$

$(41/100) \times 1000 = 410$

0 $670/281 = 2.38 \text{ CA per sec}$

$410/186 = 2.20 \text{ CA per sec}$

0 These values are also accurate for BCS 25.

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0 5.0 DTC/LGC/LTC Modules - DETAIL/BUILDING BLOCK ENGINEERING

0 The current packfills for the DTC/LGC/LTC peripheral controller
0 modules replace the existing NT6X02IA,LA,MA packfills. The cur-
0 rent packfills for the DTC/LGC/LTC modules are the
0 NT6X02IC,LC,MC. These packfills consist of newly-designed cir-
0 cuit packs having a lower power consumption than existing equiv-
0 alent packs. The current packfills also have increased master
0 processor memory from 2Meg to 4Meg.

0 Following are the peripheral packfills to be ordered for new pe-
0 ripheral modules:

DESCRIPTION	NEW-ORDER PACKFILL PEC	REPLACES PEC
DTC Common CP	NT6X02IC	NT6X02IA
LGC Common CP	NT6X02LC	NT6X02LA
LTC Common CP	NT6X02MC	NT6X02MA
NOTE: The NT6X02IC,LC,MC are the standard DTC/LGC/LTC offerings. All initials and extensions ordering new XPM modules will receive the NT6X02IC,LC,MC packfills.		

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0 5.1 HARDWARE PROVISIONING

0

0 5.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The DTC/LGC/LTC modules have a power consumption limitation which
0 affects the provisioning of circuit packs on these modules. This
0 limitation MUST be taken into consideration before any
0 DTC/LGC/LTC module is engineered, new or existing.

0 IN U.S. - Refer to ECM-441, XPM Power Provisioning, for further
0 information on this subject.

0 IN CANADA - Currently the only power consumption limitation oc-
0 curs when the CLASS Modem Resource (CMR) card, NT6X78AA, is pro-
0 visioned into a LGC, LTC, or SMS module. For further
0 information, refer to ECM-332, CLASS - U.S. / CMS - Canada.

0

0 5.1.2 HARDWARE DEPENDENCIES

0

0 N/A

0 P AND C SIDE PORT REQUIREMENTS

0

0 P-Side Ports

0 LGC 2-6 DS-30A
0 2-6 DS-1 When connecting to an RSC that does not have
0 CDO/PBX Trunking. Refer to ECM618 for more
0 details.

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0 LTC 2-20 DS-1
0 2-20 DS-30A
0 DTC 1-20 DS-1

0 C-Side Ports
0 LGC 3-16 DS-30
0 LTC 2-16 DS-30
0 DTC 2-16 DS-30

0 DMS BUS PORT REQUIREMENTS

0
0 N/A

0 CIRCUITS PER CARD

0
0 N/A

0 DISCRIMINATION NUMBERING

0
0 N/A

0 5.1.3 PROVISIONING CONSIDERATIONS

0

0

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0 Ordering New Peripheral Modules

0
0 Information in sections 2.4.1 - 2.4.9 is contained in the Engi-
0 neering manual sections for the NT6X01AA/AD frames and has been
0 removed from this ECM body.

0 o Application of XPM PLUS to LGC, and LTC modules
0 is mandatory (BCS Gating) for BCS-38. Application of
0 XPM PLUS to DTC modules is mandatory for BCS-41.

0 o As of BCS 35 the MP/SP processor will no longer be
0 shipped for new orders of the LGC/LTC/DTC. The Unified
0 process (XPM Plus) will be shipped for all new LGC/DTC/LTC/
0 modules ordered.

0 Refer to ECM 678 for additional information on XPM Plus.

0 5.1.4 OFFICE LAYOUT INFORMATION

0
0 N/A

0 5.1.5 TRAFFIC TABLES

0
0 Refer to ECM-350, The Credit System.

0 The following information supplements the Credit System Assump-
0 tions in ECM350 DMS-100 Traffic Provisioning "The Credit System":

0

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0 In ECM350, it is stated that a maximum of 62 software nodes can
0 be datafilled on an LGC/LTC P-side in BCS23 and onwards. The term
0 "software nodes" is defined fully in the ECM.

0 However, there is an additional restriction due to the limited
0 number of direct messaging channels to the LGC/LTC P-side. A
0 maximum of thirty (30) channels is available for this purpose.
0 Each of the following nodes consumes two (2) direct messaging
0 channels:

- 0 - LCM
- 0 - RCC
- 0 - RLCM/OPM
- 0 - Each RMM shelf on the RLCM/OPMs
- 0 - Each ESA Processor (NT6X75AA CP) on the RLCM/OPMs

0 The total number of nodes provisioned on the LGC/LTC P-side can-
0 not exceed the maximum (30) available.

0 Nodes that do NOT require a direct messaging channel comprise
0 those interfaced to the LGC/LTC via a Remote Switching Center
0 (RSC), ie. any LCMs, RLCM/OPMs, RMM shelves, and ESA Processors
0 off the P-side of the RCC. The TOTAL of these nodes plus those
0 above which require direct messaging channels cannot exceed 62.
0 Refer to Figure A on the following page.

0

0

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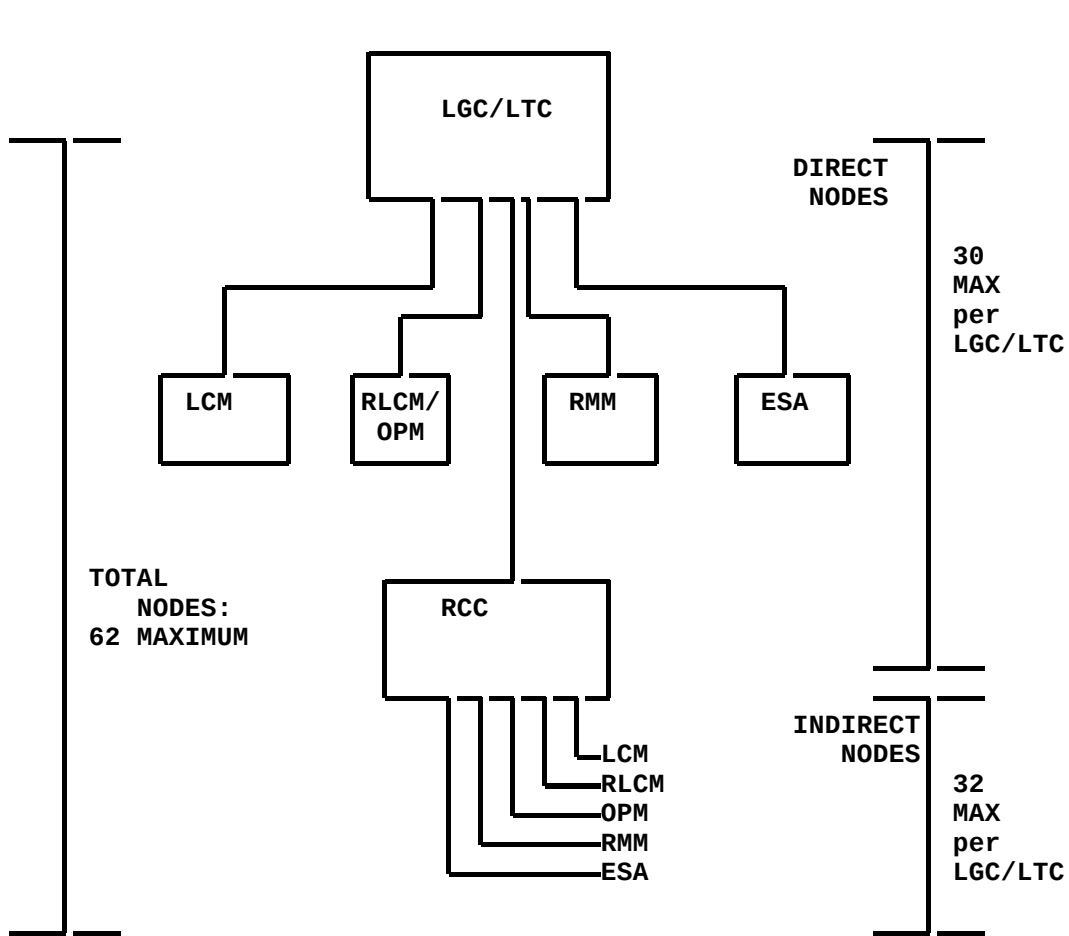


FIGURE A: MAXIMUM LGC/LTC NODES (Direct and Indirect)
(Each element constitutes two nodes.)

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0 5.1.6 PROVISIONING CONSIDERATIONS (BUILDING BLOCK ENGINEERING)

0

0 LGE/LTE/DTE CUSTOMER QUESTIONS

0

0 Assumptions

- 0 1. Capacity figures in this document are based on REAL:QUICK.
- 0 2. 50/50 Orig/Term split provides a worst case scenario.
- 0 3. 4 secondary members per MADN group.
- 0 4. 40 percent Custom Calling Feature assignment to POTS lines.
- 0 5. 100 percent Custom Calling Feature assignment to MDC lines.
- 0 6. 100 percent UTR provisioning.
- 0 7. 100 percent secondary member ringing for MADN groups.
- 0 8. 50 percent secondary member answer.
- 0 9. Trunks are data filled requiring A and B Scanning,
0 CSM and DS-1 maintenance overheads.

0 Considerations

- 0 1. Utilization higher than 80 percent requires a detailed
0 capacity study using PRTCALC.
- 0 2. When MADN penetration is higher than 40 percent, then
0 a detailed study is required using PRTCALC.
- 0 3. Deviation from recommended NTI assignment rules will
0 dictate a detailed capacity study.
- 0 4. Special applications of the LGC will require detailed
0 capacity study using PRTCALC.
- 0 5. Call timings used reflect average work times for the
0 lines types.

0

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0 Q1. DS-1 Link Information

0 a) Complete the following table (for LGC/LTC applications):

	# LINKS PER REMOTE (i)						
	16	15	14	13	12	11	10
No. RCC W/ CDO or PBX Trunks (RW)							
No. RCC W/O CDO or PBX Trunks (R)							
No. RLCM	XX	XX	XX	XX	XX	XX	XX
No. RLCC	XX	XX	XX	XX	XX	XX	XX
No. OPM	XX	XX	XX	XX	XX	XX	XX
(TOTAL) T = RLCM + RLCC + OPM	XX	XX	XX	XX	XX	XX	XX

	# LINKS PER REMOTE (i)							
	9	8	7	6	5	4	3	2
No. RCC W/ CDO or PBX Trunks (RW)								
No. RCC W/O CDO or PBX Trunks (R)								
No. RLCM	XX	XX	XX					
No. RLCC	XX	XX	XX					
No. OPM	XX	XX	XX					
(TOTAL)								

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PRACTICE 297-1001-450

0	T = RLCM + RLCC	XX	XX	XX					
0	+ OPM								
0									

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0 b) Total DS-1 Span Lines (DTC applications) _____

0 (Applications for span lines are detailed as follows:)

0 Standard Span Lines

0 CCS7 Span Lines

0 Span lines req'd for TOPS DA ARU links.

0 Span lines req'd for TOPS VSN voice links.

0 Span lines req'd for TOPS voice links.

0 Span lines req'd for TOPS MPX VSN voice links

0 Span lines req'd for TOPS loop-around
0 trunking.

0 Span lines req'd for E911 loop-around
0 trunking.

0 Span lines req'd for VMX interface.

0 Span lines req'd for VMX loop-around.

0 Spare DTC DS-1 Span Lines.

0

0

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0 Q2. Spread Information (LGC/LTC):

0 a) RSC's assigned to dedicated controller modules (Y/N) _____

0 Q3. Network Interface (select one):

0 a) DS-30 to Network (Y/N) _____

0 b) DS-512 to Enhanced Network (E-NET) (Y/N) _____

0 Q4. Optional Features (LGC/LTC)

0 a) CLASS-Calling Number Display required (Y/N) _____

0 Q5. LGC/LTC Real Time Questions (quantities):

0 a) No. of POTS Lines _____

0 b) No. of MDC Lines W/O MADN _____

0 c) No. of MDC Lines W/ MADN _____

0 d) No. of RES Lines W/O CLASS _____

0 e) No. of RES Lines W/ CLASS _____

0 f) No. of Trunks _____

0 Q6. LGC/LTC Real Time Questions (call attempts):

0 a) POTS 2-Way HDBH Call Attempts per Line _____

0 b) MDC 2-Way HDBH Call Attempts per Line _____

0 c) RES 2-Way HDBH Call Attempts per Line _____

0 d) RSC Call Attempts _____

0 e) HDBH Call Attempts per Trunk _____

0 f) Average DTMF Holding Time in seconds _____

0

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0 Q7. DTC REAL Time Questions (quantities):

0 a) No. of MF Trunks _____

0 b) No. of SS7 Trunks _____

0 Q8. DTC Real Time Questions (call attempts):

0 a) HDBH Call Attempts per Trunk _____

0 b) MF RCVR Holding Time in seconds _____

0 Q9. Quantity of CCS7 DS0A DTC links required ? _____

0

0

0

0

0

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0

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0 LGE/LTE CALCULATIONS

0
0 (NOTE: The values used in these calculations are obtained
0 from section 2. LGE/LTE/DTE CUSTOMER QUESTIONS.)

0 (a) Real Time Calculations

0 Refer to REAL::QUICK program for REALTIME usage of the
0 LGC and LTC.

0 (b) Hardware Provisioning

0 Quantity of LGC = R126, R127 from ECM 497

0 Quantity of LTC = R136 from ECM 497

0 NTZZ02BA = LGC

0 NTZZ02CA = LTC

0

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0 (c) Frame Calculation

0 NTZZ22AA or NTZZ22BA (US) or NTZZ22DA (US)
0 = (NTZZ02BA + NTZZ02CA) / 2 (round-up)

0 If (NTZZ02BA + NTZZ02CA) = odd number,
0 then: provide one (1) NT6X02AB for last frame.

0
0 (d) DS-1 Calculation

0 i = #Links Per LCM

0 Ti = Ti - #LCM

0 # DS-1 Links = (R16 + RW16) * 16 + (R15 + RW15) * 15
0 + (R14 + RW14) * 14 + (R13 + RW13) * 13
0 + (R12 + RW12) * 12 + (R11 + RW11) * 11
0 + (R10 + RW10) * 10 + (R9 + RW9) * 9
0 + (R8 + RW8) * 8 + (R7 + RW7) * 7
0 + (R6 + RW6 + T6) * 6 + (R5 + RW5 + T5) * 5
0 + (R4 + RW4 + T4) * 4 + (R3 + RW3 + T3) * 3
0 + (R2 + RW2 + T2) * 2

0 NTZZ02DA = # DS-1 Links / 2 (round-up)

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0 (e) DS-30A Calculation

0 If Q2a is NO , then: NTZZ02JA = NTZZ02BA + NTZZ02CA

0 If Q2a is YES, then:

0 # DS-30A Links = (T6 * 6) + (T5 * 5) + (T4 * 4)
0 + (T3 * 3) + (T2 * 2)
0 + (#LCM * #Links Per LCM)

0 NTZZ02JA = # DS-30A / 20 (round-up)

0
0 (f) CMR Calculation

0 If Q4a is YES and Q2a is NO , then:

0 NTZZ02EA or NTZZ97AA = NTZZ02BA + NTZZ02CA

0 If Q4a is YES and Q2a is YES, then:

0 # DS-30A Links = (T6 * 6) + (T5 * 5) + (T4 * 4)
0 + (T3 * 3) + (T2 * 2)
0 + (#LCM * #Links Per LCM)

0 NTZZ02EA = # DS-30A / 20 (round-up)

0
0 (g) Network Interface Calculation

0 If Q3a is YES, then: NTZZ02GA = NTZZ02BA + NTZZ02CA
0 NTZZ02HA or NTZZ02HB/HM = 0

0 If Q3b is YES, then: NTZZ02GA = 0
0 NTZZ02HA or NTZZ02HB/HM NTZZ02BA + NTZZ02CA

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0 (h) UTR Calculation

0 POTS ORIG = (Q5a) * (0.5)

0 MDC W/O MADN ORIG = (Q5b) * (0.5)

0 MDC W/ MADN ORIG = (Q5c) * (0.5)

0 RES W/O CLASS ORIG = (Q5d) * (0.5)

0 RES W/ CLASS ORIG = (Q5e) * (0.5)

0 POTS DTMF CCS = (Q6f * Q6a) / 100

0 MDC DTMF CCS = (Q6f * Q6b) / 100

0 RES DTMF CCS = (Q6f * Q6c) / 100

0 UTR CCS POTS = (POTS DTMF CCS) * (POTS ORIG)

0 UTR CCS MDC W/O MADN = (MDC DTMF CCS) * (MDC W/O MADN ORIG)

0 UTR CCS MDC W/ MADN = (MDC DTMF CCS) * (MDC W/ MADN ORIG)

0 UTR CCS RES W/O CLASS = (RES DTMF CCS) * (RES W/O CLASS ORIG)

0 UTR CCS RES W/ CLASS = (RES DTMF CCS) * (RES W/ CLASS ORIG)

0 TOTAL UTR CCS = UTR CCS POTS
0 + UTR CCS MDC W/O MADN
0 + UTR CCS MDC W/ MADN
0 + UTR CCS RES W/O CLASS
0 + UTR CCS RES W/ CLASS

0 If UTR CCS = 0 to 765 , then NTZZ02FA = 1 * NTZZ02JA

0 If UTR CCS = 765 to 1600 , then NTZZ02FA = 2 * NTZZ02JA

0 If UTR CCS > 1600 , then issue following warning:
0 *****
0 * WARNING: UTR CCS is over (1600) *
0 *****

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0 (i) Filler Face Plate Calculation

0 NT0X50AA = 20 * (NTZZ02BA + NTZZ02CA)
0 - 1 * (NTZZ02DA)
0 - 2 * (NTZZ02EA + NTZZ02FA)
0 - 4 * (NTZZ02JA)

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0 DTE CALCULATIONS

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0 (NOTE: The values used in these calculations are obtained
0 from section 2. LGE/LTE/DTE CUSTOMER QUESTIONS.)

0 (a) Real Time Calculations

0 Refer to REAL::QUICK program for REALTIME usage of the DTC.

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0 (b) Hardware Provisioning0 $DTC = (Q1b + (Q9 \times 2)) / 20$ (round-up)0 $NTZZ04BA = DTC$

0 $NTZZ22AA$ or $NTZZ22BA$ (US) or $NTZZ22DA$ (US)
0 $= NTZZ04BA / 2$ (round-up)

0 If $NTZZ04BA =$ odd number,
0 then: provide one (1) $NT6X02AB$ for last frame.

0 $NTZZ02DA = Q1b / 2$ (round-up)0 $NTZZ04CA = NTZZ04BA$

0 If Q3a is YES, then: $NTZZ02GA = NTZZ04BA$
0 $NTZZ02HA$ or $NTZZ02HB = 0$

0 If Q3b is YES, then: $NTZZ02GA = 0$
0 $NTZZ02HA$ or $NTZZ02HB = NTZZ04BA$

0 $TRKI = MF \text{ Trunks Incoming} = (Q7a) * (0.5)$ 0 $MF \text{ RCVR CCS} = (Q8a * Q8b) / 100$ 0 $UTR \text{ CCS} = TRKI * MF \text{ RCVR CCS}$

0 If $UTR \text{ CCS} = 0$ to 765 , then $NTZZ02FA = 1 * NTZZ04BA$
0 If $UTR \text{ CCS} > 765$, then $NTZZ02FA = 2 * NTZZ04BA$

0 $NT0X50AA = (16 * NTZZ04BA) - (NTZZ02DA + 2*NTZZ02FA$
0 $+ 2*NTZZ04CA + NTZZ04AA)$

0

0 C-side Ports DTC = $(Q1b * 24) / 30$ (round-up)

0 NTZZ04AA = Q9

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0 5.2 PRODUCT/SYSTEM SPECIFICATION

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0 5.2.1 PHYSICAL CHARACTERISTICS

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0 5.2.2 EMI/EARTHQUAKE INFORMATION

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0 N/A

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0 5.2.3 SPARING INFORMATION

0

0 Apply standard sparing algorithms.

0 5.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 A DTE/LGE/LTE Frame shall be fused as follows:

0	A-Feed	Two	20 Amp Fuses
0	B-Feed	Two	20 Amp Fuses

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0 Host - Line Group Controller Equipment
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0 5.2.5 CURRENT DRAIN INFORMATION0
0 DTC/LGC/LTC Module: 8.5 Amps0 5.3 SOFTWARE PROVISIONING

0

0 5.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES0
0 Jobs that are ordering XPM Plus(UP Processor) in the NT6X01AD
0 frame at BCS 34 need the BCS 35 PM load and the NTRX42AA CC pack-
0 age.

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0 5.3.2 SOFTWARE USAGE RESTRICTIONS0
0 N/A

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0 5.3.3 MEMORY PROVISIONING

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N/A

0 5.4 REAL TIME IMPACT

0 In the U.S., refer to PRTCALC.

0 In CANADA, for a detailed calculation of Peripheral Processor
0 (PP) realtime, use the XPRT program. Refer to the latest issue
0 of the Systems Engineering Letter (SEL) for details and opera-
0 tional instructions.

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0 6.0 International Frame LGE/DTE/LTE

0 The first application for the NT6X01AC International Frame LGE/DTE/LTE
0 Fiber ISDN is the Australia DMS-100 Intelligent Network.

0 The NT6X01AC International Common Peripheral Controller Equipment
0 Frame was developed for the DMS-100 Intelligent Network product for
0 the international market. The NT6X01AC design is based on the domes-
0 tic NT6X01AB ISDN peripheral controller, adapted for applications out-
0 side North America ("International"). It supports PCM30 links, ISDN
0 services, and Common Channel Signaling 7 (CCS7) features on two inde-
0 pendent peripheral modules.

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0 6.1 HARDWARE PROVISIONING

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0 6.1.1 HARDWARE USAGE RESTRICTIONS

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0 NT6X01AC International Peripheral Controller Equipment Frame

0 The NT6X01AC International Peripheral Controller Equipment frame
0 supports two peripheral module types: PCM-30 LGC and DTC.

0 PCM-30 LGC - Supports ISDN, Centrex, EBS, IBN and POTS services
0 on standard Line Concentrating Module types

0 - Has PCM-30 P-side links for PRLCM and International
0 Remote Switching Center interface

0 - Operation as a non-ISDN peripheral is not yet imple-
0 mented in software, meaning that the NTB01AA ISDN
0 Pre-Preprocessor CP is required even if no ISDN fea-
0 tures are used

0 - Supports AMI interface to the NT1. 2B1Q is not sup-
0 ported for this interface

0 PCM-30 DTC - Supports CCS7 and R1 signaling in International ap-
0 plications, using PCM-30 links.

0 - ISDN services like Primary Rate Interface are not
0 supported

0 Modules of different types may be mixed on the frame if required.

0 NTB02AA D-Channel Handler CP are not required for PCM-30 DTC ap-
0 plications, nor where the PCM-30 LGC supports only non-ISDN LCMs.

0 NTB01AA ISDN Pre-Processor CP are always required on PCM-30 LGC
0 (until such time as software supports purely non-ISDN operation).
0 This CP is not required on PCM-30 DTC.

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0 6.1.2 HARDWARE DEPENDENCIES

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0 All PCM-30 links from a PRCC must terminate on the same host
0 PCM-30 LGC. Only the PCM-30 LGC peripheral type can terminate
0 PRCC host links.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

0

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0 6.1.3 PROVISIONING CONSIDERATIONS

0
0 NT6X01AC International Frame LGE/DTE/LTE ISDN

0 Common Circuit Packfill:

0 NT6X01AC is a general purpose Common Peripheral Controller Equip-
0 ment Frame for applications outside North America ("Internat-
0 tional"). It houses two dual shelf peripheral modules which
0 support PCM30 links, ISDN services, and Common Channel Signaling
0 7 (CCS7) features. Each peripheral module is housed on two adja-
0 cent shelves (ie. a pair of shelves on positions 65 and 51 and a
0 pair of shelves on positions 32 and 18).

0 Each of the two modules in the frame may be configured as:

- 0 - LGCO Line Group Controller Offshore Non-ISDN,
- 0 - LGC0I Line Group Controller Offshore ISDN,
- 0 - DTCO Digital Trunk Controller Offshore Non-ISDN,
- 0 - DTC0I Digital Trunk Controller Offshore ISDN, or
- 0 - TMS (TOPS Message Switch) for
 - 0 - TPC (TOPS Position Controller) interface,
 - 0 - Data base access, and
 - 0 - Inter DCH (D-Channel Handler) for
- 0 ORDB (Operator Reference Database).

0 Cooling Inverter Unit:

0 Provide for each frame,

- 0 - one (1) NT3X90AC Cooling Inverter Unit.

0 Isolated System Grounding:

0 When extending existing offices not equipped with Isolated System
0 Grounding (ISG), provide:

- 0 - one (1) NT0X0009 Logic Return Cable Assembly.

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0 Common Circuit Packfill:

0 Provide per customer requirements:

0 - maximum two (2) NT6X02UB LGC/DTC Common CPs (International).

0 NT6X02UB replaces NT6X02UA.

0 Filler Faceplates for Unequipped Modules:

0 When shelves 18-32 or 51-65 are not equipped with any circuit
0 packs, provide for each module:

0 - one (1) NT6X02AB CPC Filler Faceplates.

0 Filler Faceplates for Unequipped CP Slots:

0 For each unequipped circuit pack position on the module, provide:

0 - one (1) NT0X50AA filler faceplate.

0 ISDN Applications:

0 When ISDN BRA functions are required (ISDN functions on sub-
0 scriber lines) for each equipped LGC module, provide:

0 - up to nine (9) NTB02AA D Channel Handler CPs.

0 In BCS-28 or later, provide for use as a hot spare:

0 - one (1) additional NTB02AA D Channel Handler CP.

0 Note that NTB01AA/AB and NTB02AA ISDN CPs may not be provi-
0 sioned on a DTC which is provisioned with NT6X70AAs to handle
0 CCIS/CCS7 voice trunking.

0 DCH CP are not required on a PCM-30 DTC module nor where a PCM-30
0 LGC module supports only non-ISDN LCMs.

0 For TMS (TOPS Message Switch) applications, provide:

0 - four (4) NTB02AA D Channel Handler CPs.

0 Each NTB02AA supports up to 124 BRI D-Channels. The spare DCH
0 CP should not be counted when determining the number of NTB02AA
0 required to support D-channel traffic.

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0 PCM-30 Interface CPs:

0 Provide for each equipped LGC or DTC module, as per customer re-
0 quirements:

- 0 - maximum eight (8) NT6X27AC/BB PCM-30 Interface CPs.

0 For each TMS module,

- 0 - For TPC (TOPS Position Controller) interface,
0 - for up to 64 operators, provide:
0 - two (2) NT6X27AC/BB PCM-30 Interface CPs
0 in CP slots 5 of both shelves, and
0 - for more than 64 operators and up to 96 operators,
0 provide an additional:
0 - one (1) NT6X27AC/BB PCM-30 Interface CP
0 in CP slot 4 of shelf 0,

0 - For data base access, provide:
0 - two (2) NT6X27AC/BB PCM-30 Interface CPs
0 in CP slot 4 of shelf 1 and
0 in CP slot 3 of shelf 0, and

0 - For inter DCH ORDB, provide:
0 - one (1) NT6X27AC/BB PCM-30 Interface CP
0 in CP slot 3 of shelf 1.

0 Otherwise provide for each unequipped CP slot:

- 0 - one (1) NT0X50AA Filler Faceplate.
- 0
- 0
- 0
- 0
- 0
- 0
- 0

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Provide one (1) NT6X27AC/BB for every two PCM 30 ports required.

Peripheral port/pack location relationship is as follows:

CP POS	5	4	3	2
SHELF POS X+14	PORTS 2, 3	PORTS 6, 7	PORTS 10, 11	PORTS 14, 15
SHELF POS X	PORTS 0, 1	PORTS 4, 5	PORTS 8, 9	PORTS 12, 13

Where:

For the lower module in the frame
shelf position X=18, X+14=32

For the upper module in the frame
shelf position X=51, X+14=65

Assign NT6X27AC/BB to module starting at port 0 and continue in sequential order to port 15.

Each NTB02AA already assigned to CP pos 2 to 5 physically makes the two PCM 30 ports shown above unavailable for assignment to PCM 30.

LCM Interface CPs:

For PCM-30 LGC applications, to interface links from LCMI and/or LCM, provide:

- four (4) NT6X48AA DS30A LCM Interface CPs.

The NT6X48AA CP are assigned in pairs for reliability. One member of the pair interfaces the same DS30A ports as the other member. Each member of the pair occupies the same CP position, with one CP assigned to LGAI/LTAI 0 (lower shelf of the module) and the other assigned to LGAI/LTAI 1 (upper shelf of the module).

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0 The two pairs of NT6X48AA provide interfaces for up to twenty
0 (20) DS30A ports (links) from LCMEs, LCMIs, and/or LCMs.

0 The following is a listing of DS30A ports per DS30A LCM Interface
0 CP, NT6X48AA location:

0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0

	CP POS 6	CP POS 7
PORT	2	0
PORT	3	1
PORT	6	4
PORT	7	5
PORT	10	8
PORT	11	9
PORT	14	12
PORT	15	13
PORT	18	16
PORT	19	17

0 The ports for DS30A must be selected from the those ports that
0 remain after assignment of port circuits.

0 Assign ports to DS30A in the following sequence: 19, 17, 18, 16,
0 15, 13, 14, 12, 11, 9, 10, 8, 7, 5, 6, 4, 3, 1, 2 and 0 (if un-
0 used by DCH or DS-1). In an extension job, when adding new DCH
0 ports, the DS30A ports may have to be reconfigured in accordance
0 with this rule.

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0 Two Processor XPM (MP/SP) or XPM Plus (UP):

0 For offices with the XPM (MP/SP) feature, provide for each
0 equipped LGC or DTC module:

- 0 - four (4) NT6X45BA LGC/DTC Processor CPs,
- 0 - two (2) NT6X47AC 4MB MP Memory CPs,
- 0 - two (2) NT0X50AA Filler Face Plates in slot 10, and
- 0 - two (2) NT6X46BA/BB Signal Processor Memory Plus CPs.

0 Also provide NTB01AAs per 2) below.

0 Alternatively, for offices with the XPM Plus (UP) feature, pro-
0 vide for each equipped LGC or DTC module:

- 0 - two (2) NTMX77AA XPM Plus Processor CPs,
- 0 - two (2) NTMX71AA XPM Plus Paddleboards,
- 0 - one (1) NT6X01WE Wiring List XPM Plus, and
- 0 - eight (8) NT0X50AA Filler Face Plates
- 0 in slots 8, 9, 10, and 11.

0 Also provide NTB01ABs per 2) below.

0 In offices with the XPM (MP/SP) feature, provide:

- 0 - for each equipped LGC module:
 - 0 - two (2) NTB01AA ISDN Sig. Preproc. CPs.
 - 0 (Note that NTB01AAs must be provisioned for LGC
 - 0 even when ISDN services are not required).
- 0 - for each equipped DTC module:
 - 0 - when ISDN services are required,
 - 0 - two (2) NTB01AA ISDN Sig. Preproc. CPs, or
 - 0 - when ISDN services are not required,
 - 0 - two (2) NT0X50AA Filler Face Plates.

0 Note that NTB01AA ISDN CPs may not be provisioned on a DTC which
0 is provisioned with NT6X70AAs to handle CCIS/CCS7 voice trunking.

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0 In offices with the XPM Plus (UP) feature, provide:

- 0 - for each equipped LGC module:
 - 0 - two (2) NTB01AB ISDN Sig. Preproc. CPs.
 - 0 (Note that NTB01ABs must be provisioned for LGC
 - 0 even when ISDN services are not required).
- 0 - for each equipped DTC module:
 - 0 - when ISDN services are required,
 - 0 - two (2) NTB01AB ISDN Sig. Preproc. CPs, or
 - 0 - when ISDN services are not required,
 - 0 - two (2) NT0X50AA Filler Face Plates.

0 Note that NTB01AB ISDN CPs may not be provisioned on a DTC which
0 is provisioned with NT6X70AAs to handle CCIS/CCS7 voice trunking.

0 For existing modules being converted from XPM to XPM Plus pro-
0 vide:

- 0 - for each equipped LGC module:
 - 0 - one (1) NT6X02XB XPM Plus Change Kit and
 - 0 NT0X50AA Filler faceplates per EMS
 - 0 EMA2-99-XPM-9 for NT6X02XB.
- 0 - for each equipped DTC module:
 - 0 - In a Non-ISDN environment,
 - 0 - one (1) NT6X02XA XPM Plus Change Kit and
 - 0 NT0X50AA Filler faceplates per EMS
 - 0 EMA2-99-XPM-6 for NT6X02XA, or
 - 0 - In an ISDN environment,
 - 0 - one (1) NT6X02XB XPM Plus Change Kit and
 - 0 NT0X50AA Filler faceplates per EMS
 - 0 EMA2-99-XPM-9 for NT6X02XB.

0 (NT6X02XB has the same parts as NT6X02XA plus two (2) NTB01ABs)

0 Wiring Option for Non-ISDN:

0 Provide one (1) NT6X01WD Wiring Option when ISDN features are not
0 required on the frame. The option adds a wire strap to the back-
0 panel NT6X0103 Slot XX-12 between pins 7A and 8A to allow for
0 non-ISDN operation.

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0 Continuity Tone Detector CPs:

0 When this module is handling CCIS/CCS7 voice trunking, provision
0 for each PCM-30 DTC module:

0 - two (2) NT6X70AA Continuity Tone Detector CPs.

0 Note that NT6X70AAs for CCIS/CCS7 voice trunking, may not be pro-
0 visioned on a DTC which is provisioned with NTB01AA/AB ISDN CPs.

0 This CP supports a Continuity Test (COT), and is recommended
0 whenever analog facilities are employed in part or all of the
0 transmission path.

0 When the facility is end-to-end digital, this CP is not required
0 since digital facilities employ other means of fault detection.

0 An LGC may not be provisioned with NT6X70AA CPs.

0 Calling Number Display Feature CPs:

0 When the module is handling CMS Calling Number Display feature,
0 provide for each PCM-30 LGC module:

0 - two (2) NT6X78AA/AB CLASS Modem Resource CPs.

0 Universal Time Switch CPs:

0 Provide for each PCM-30 LGC/DTC module:

0 - two (2) NT6X44EA Universal Time Switch (UK) CPs.

0 Universal Tone Receiver CPs:

0 When analog (POTS) lines are to be supported, or when non-ISDN
0 trunks (A/B bit signalling) are interfaced to a PCM-30 DTC mod-
0 ule, provide the following Universal Tone Receiver (UTR) CP for
0 each PCM-30 LGC module:

0 - maximum two (2) NT6X92CA UTR CPs.

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0 Message Protocol and Downloadable Tone CPs:

0 Provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT6X69LB Msg Protcl & Downldbl Tone CPs.

0 The NT6X69LB is recommended for use in all applications in place
0 of the NT6X69LA. However, depending on availability, the
0 NT6X69LA may be used when fiber network interface is not re-
0 quired.

0 Network Interface CPs:

0 When DS30 copper network interface is required in a non-ENET of-
0 fice, provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT6X40AC packs DS30 Network Interface CPs.

0 Otherwise, when fiber network interface is required in an ENET
0 office, provide for each PCM-30 LGC/DTC module:

- 0 - one (1) NT6X02BU Fiber I/F H/W Assembly,
0 - two (2) NT6X40FA DS512 Network Interface CPs,
0 - two (2) NT6X40GA DS512 Paddle Boards, and
0 - two (2) P0736273 Optical Fiber Danger Labels.

0 Depending on availability, NT6X40CA and NT6X40DA functional pair
0 may be used in place of the preferred NT6X40FA and NT6X40GA func-
0 tional pair. The paddleboards and circuit packs cannot be mixed
0 because they do not function in mismatched pairs.

0 Also both pairs in a module must be NT6X40FA and NT6X40GA or both
0 NT6X40CA and NT6X40DA. In other words if one of the pairs in the
0 module is NT6X40FA and NT6X40GA, the other pair in the module may
0 not be NT6X40CA and NT6X40DA.

0 Power Conversion CPs:

0 Provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT2X70AE Power Conv +/-5V & 12V CPs.

0 Designation Labels for CPs:

0 Provide the appropriate designation label for each CP provided.

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0 PCM-30 Signaling CPs:

0 For each equipped LGC/DTC which supports PCM30 links (NT6X27
0 PCM-30 Interface CPs), or for each equipped LGC module which sup-
0 ports links to an LCM (NT6X48 DS30A LCM Interface CPs provided),
0 and the LCM is equipped with a PCM30 line drawer such as the
0 NT6X05CA, provide:

0 - two (2) NT6X28AA PCM-30 Signaling CPs.

0 CPC Coax Panel:

0 When PCM30 feature is required, provide for each PCM-30 LGC/DTC
0 module:

0 - one (1) NT6X01ZA CPC Coax Panel.

0 When this feature is to be field installed, then the NT6X01ZA CPC
0 Coax Panel will require the following supporting documents:
0 PC6X01ZB and SRJ6X01AC.

0 6.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 6.1.5 TRAFFIC TABLES

0
0 Standard traffic provisioning algorithms apply.

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0 6.2 PRODUCT/SYSTEM SPECIFICATION

0

0 6.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 6.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 6.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply.

0 6.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 6.2.5 CURRENT DRAIN INFORMATION

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0 6.3 SOFTWARE PROVISIONING

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0 6.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 XPM Software Planned Introduction:

0 XPM software XPM01 is planned to be introduced in BCS35 time
0 frame.

0 XPM software XPM02 is planned to be introduced in CSP01 (BCS36)
0 time frame.

0 XPM software XPM03 is planned to be introduced in CSP02 (BCS37)
0 time frame.

0 XPM TWO PROCESSOR (MP/SP) LOAD PHASE-OUT:

0 DTC0 (Digital Trunk Controller Offshore Non-ISDN):

0 Current Two Processor (MP/SP) UDT load supporting DTC0 will
0 be:

- 0 - Frozen in BCS34 software, and
0 - Become unavailable in XPM02 software.

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0 DTCOI (Digital Trunk Controller Offshore ISDN):

0 Current Two Processor (MP/SP) UDI load supporting DTCOI will
0 be:

- 0 - Frozen in XPM01 software, and
- 0 - Become unavailable in XPM02 software.

0 LGCOI (Line Group Controller Offshore ISDN):

0 Current Two Processor (MP/SP) OLG load supporting LGCOI will
0 be:

- 0 - Frozen in BCS34 software, and
- 0 - Become unavailable in XPM01 software.

0 XPM PLUS (UP) LOAD PHASE-IN:

0 DTCO (Digital Trunk Controller Offshore Non-ISDN):

0 XPM Plus (UP) ODT load supporting DTCO will be:

- 0 - Introduced in Verification Office BCS34 software
0 (Feature Packages NTXK79AA and NTXR34AA), and
- 0 - Become Generally Available in XPM01 software.

0 DTCOI (Digital Trunk Controller Offshore ISDN):

0 XPM Plus (UP) ODI load supporting DTCOI will be:

- 0 - Introduced in Verification Office XPM02 software
0 (Feature Packages NTXK79AC and NTXR34AB), and
- 0 - Become Generally Available in XPM03 software.

0 LGCO (Line Group Controller Offshore Non-ISDN):

0 XPM Plus (UP) OLG load supporting LGCO will be:

- 0 - Introduced in Verification Office XPM02 software
0 (Feature Packages NTXK79AC and NTXR34AB), and
- 0 - Become Generally Available in XPM03 software.

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0 LGCOI (Line Group Controller Offshore ISDN):

0 XPM Plus (UP) OGI load supporting LGCOI will be:

- 0 - Introduced in Verification Office BCS34 software
0 (Feature Packages NTXK79AA and NTR34AA), and
- 0 - Become Generally Available in XPM01 software.

0 6.3.2 SOFTWARE USAGE RESTRICTIONS

XPM TYPE	TWO PROCESSOR (MP/SP) SOFTWARE			XPM PLUS (UP) SOFTWARE		
	LOAD NAME	LOAD FROZEN	LOAD NOT AVAILABLE	LOAD NAME	VERIF. OFFICE	GENERALLY AVAILABLE
DTCO	UDT	BCS34	XPM02	ODT	BCS34	XPM01
DTCOI	UDI	XPM02	XPM03	ODI	XPM02	XPM03
LGCO	N/A	N/A	N/A	OLG	XPM02	XPM03
LGCOI	OLG	BCS34	XPM01	OGI	BCS34	XPM01

0 6.3.3 MEMORY PROVISIONING

0 There is no program store or data store impact as a result of
0 hardware described in this ECM.

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0 6.4 REAL TIME IMPACT

0 None.

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0 7.0 International Frame LGE/DTE Non-ISDN

0 NT6X01BA is a general purpose Common Peripheral Controller Equip-
0 ment Frame for international applications which houses two inde-
0 pendent dual shelf modules.

0 Each module may be provisioned as a

- 0 - PCM30 Line Group Controllers (PLGC), or
- 0 - PCM30 Digital Trunk Controllers (PDTC),

0 Or, with DMS100I software in the office, each module may be pro-
0 visioned as a

- 0 - International Line Group Controllers (ILGC), or
- 0 - International Digital Trunk Controllers (IDTC).

0 An ILGC/PLGC may be provisioned to support

- 0 - copper interface (DS-30) or
- 0 fiber interface (DS-512) to the network,
- 0 - PCM-30 links to RLCM, RSC or OPM,
- 0 - DS-30A interface to LCM.

0 A IDTC/PDTC may be provisioned to support

- 0 - copper interface (DS-30) or
- 0 fiber interface (DS-512) to the network,
- 0 - PCM-30 links to other offices,
- 0 - Common Channel Signaling 7 (CCS7).

0 7.1 HARDWARE PROVISIONING

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0 7.1.1 HARDWARE USAGE RESTRICTIONS

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0 None.

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0 7.1.2 HARDWARE DEPENDENCIES

0
0 None.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

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0 7.1.3 PROVISIONING CONSIDERATIONS

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0 NT6X01BA International Frame LGE/DTE Non-ISDN:

0 Common Circuit Packfill:

0 A maximum of two (2) PLGC or PDTC, or, in offices with DMS100I
0 software, ILGC or IDTC modules may be equipped per frame.

0 For new applications, provide for each equipped module:

- 0 - one (1) NT6X02GM International LGC/DTC Common CP,
0 which includes
- 0 - two (2) NT6X44EA Time Switch CPs
0 - two (2) NT2X70AE Power Converter +-5V +-12Vs CPs.

0 Otherwise provide for each unequipped CP slot:

- 0 - one (1) NT0X50AA Filler Faceplate.

0 PCM-30 COAXIAL INTERFACE:

0 When 75 ohm coaxial PCM 30 interface cabling is required, a Patch
0 Panel, grounded to the frame, must be provided as follows:

0 Coaxial Interface BNC Connectors, Grounded on Receive:

0 When coaxial interface cabling via 75 Ohm BNC connectors grounded
0 on receive (Brazil, Curacao) is required by the customer, provide
0 for each frame:

- 0 - two (2) NT6X01ZA/ZD Coaxial Panels.

0 NT6X01ZA may not be provisioned when NTCX50AA is provisioned.

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0 Coaxial Interface BT43 Connectors, Grounded on Transmit:

0 When coaxial interface cabling via 75 Ohm BT43 connectors
0 grounded on transmit is required by the customer, and four (4) or
0 more NT6X27s per module are provisioned, provide for each frame:

- 0 - to connect the first four (4) NT6X27s provisioned
0 in CP slots 04 and 03:
 - 0 - two (2) NT6X01ZE Coaxial Panels,
- 0 - to connect the 5th and 6th NT6X27s, when provisioned,
0 in CP slots 02:
 - 0 - two (2) NT6X0126 Coax Cable Kits, and
 - 0 - two (2) NT6X01WH Wiring Lists,
- 0 - to connect the 7th and 8th NT6X27s, when provisioned,
0 in CP slots 01:
 - 0 - two (2) NT6X0127 Coax Cable Kits, and
 - 0 - two (2) NT6X01WJ Wiring Lists.

0 Coaxial Interface BNC Connectors, Grounded on Transmit:

0 When coaxial interface cabling via 75 Ohm BNC connectors grounded
0 on transmit (China, NETAS), is required by the customer provide
0 for each frame:

- 0 - two (2) NT6X01ZF Coaxial Panels.

0 For addition and maintenance in frames equipped with NT6X27AAs
0 or NT6X27ABs, provide for each equipped module:

- 0 - minimum four (4) and
0 maximum eight (8) NT6X27AB PCM 30 Interface CPs.

0 Otherwise provide for each unequipped CP slot:

- 0 - one (1) NT0X50AA Filler Faceplate.

0 Do not provision NT6X27BB in a frame equipped with NT6X27AAs or
0 NT6X27ABs.

0 When the enhancements of the NT6X27BB are required in a frame
0 equipped with NT6X27AAs or NT6X27ABs, each of the NT6X27AA or
0 NT6X27AB in the frame must be replaced with a NT6X27BB, and, when
0 PCM-30 coaxial interface is required, the frame must be equipped
0 with a grounded NT6X01 Coaxial Panel.

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0 For additions and maintenance in frames equipped with NT6X27ACs
0 use NT6X27BBs, and, when PCM-30 coaxial interface is required,
0 the frame must be equipped with a grounded NT6X01 Coaxial Patch
0 Panel.

0 PCM-30 Signaling Interface:

0 For each equipped LGC/DTC which supports PCM-30 links (NT6X27
0 PCM-30 Interface CPs provided), or for each equipped LGC module
0 which supports links to an LCM (NT6X48 DS30A LCM Interface CPs
0 provided), and the LCM is equipped with a PCM-30 line drawer such
0 as the NT6X05CA, provide:

- 0 - two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 PCM-30 Coaxial Interface Panel:

0 For frames equipped with NT6X27AC/BB PCM-30 Interface CPs, a 75
0 ohm coaxial PCM-30 Interface Patch Panel, grounded to the frame,
0 must be provided as follows:

0 When coaxial interface cabling via 75 Ohm BNC connectors grounded
0 on receive (Brazil, Curacao) is required by the customer, provide
0 for each frame:

- 0 - two (2) NT6X01ZA/ZD Coaxial Panels.

0 Coaxial interface cabling with connectors grounded on transmit
0 will become available in the third quarter of 1993.

0 DS-30A Interface:

0 For each ILGC or PLGC module equipped with NT6X02GM Common CP,
0 provide as per customer requirements:

- 0 - maximum four (4) NT6X48AA DS-30A LCM Interface CPs.

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0 Universal Tone Receiver:

0 For each ILGC, IDTC, PLGC, or PDTC module equipped with NT6X02GM
0 Common CP, provide as per customer requirements:

- 0 - zero (0),
0 two (2) or
0 four (4) NT6X92CA Universal Tone Receiver (UTR) CPs.

0 One pair of Universal Tone Receiver CP's contains the equivalent
0 of thirty receivers.

0 Continuity Tone Detector:

0 For Mercury 300 offices, provide for each equipped module, as per
0 customer requirements:

- 0 - two (2) NT6X70AA Continuity Tone Detector CPs, and
0 - one (1) NT6X01WA Continuity Tone Detector Wiring.

0 XPM (MP/SP/FP) or XPM Plus (UP):

0 For each ILGC, IDTC, PLGC, or PDTC module equipped with NT6X02GM
0 Common CP, provide:

- 0 - six (6) NT6X45BA ILGC/IDTC Processor CPs,
0 - two (2) NT6X47AC 4MB MP Memory CPs,
0 - four (4) NT6X46BB Signal Processor Memory Plus CPs.

0 Alternatively, for offices with the XPM Plus (UP) feature,
0 provide for each LGC or DTC module equipped with NT6X02GM
0 Common CP:

- 0 - two (2) NTMX77AA XPM Plus Processor CPs,
0 - two (2) NTMX71AA XPM Plus Paddleboards, and
0 - four (4) NT7X80AA Bus Shorter CPs.

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0 2) To convert one PDTC module equipped for XPM to XPM+ provide:

- 0 - one (1) NT6X01XE XPM+ 3P Upgrade Kit.

0 The NT6X01XE kit includes:

- 0 - two (2) NTMX77AA XPM Plus Processor CPs,
0 - two (2) NTMX71AA XPM Plus Paddleboards,
0 - four (4) NT7X80AA Bus Shorter CPs, and
0 - backplane wiring modifications for XPM+.

0 The XPM CPs NT6X45BA, NT6X47AC, and NT6X46BB must be re-
0 moved before the NT6X01XE XPM+ 3P Upgrade Kit is applied.

0 Channel Supervision:

0 For each ILGC, IDTC, PLGC, or PDTC module equipped with NT6X02GM
0 Common CP, provide, except when CCITT N5 Signaling feature is re-
0 quired:

- 0 - two (2) NT6X42AA Channel Supervision Msg CPs.

0 CCITT N5 Signaling:

0 For each ILGC, IDTC, PLGC, or PDTC module equipped with NT6X02GM
0 Common CP, provide,

- 0 - two (2) NT6X62DA CCITT N5 Tone Receiver CPs, and
0 - two (2) NT6X42CA CSM and CCITT N5 Splitter CPs.

0 Always provide (in case NT6X62DA and NT6X42CA CPs are provided
0 later):

- 0 - one (1) NT6X01WG CCITT N5 Signaling Wiring List.

0 Speech Bus Formatter:

0 For each ILGC, IDTC, PLGC, or PDTC module equipped with NT6X02GM
0 Common CP, provide:

- 0 - two (2) NT6X41AB Speech Bus Formatter CPs.

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0 DS-30 Interface:

0 When DS30 copper network interface is required in a non-ENET of-
0 fice, provide for each ILGC, IDTC, PLGC, or PDTC module equipped
0 with NT6X02GM Common CP:

- 0 - two (2) NT6X40AC packs DS30 Network Interface CPs, and
- 0 - two (2) NT6X69LB Msg Protcl & Downldbl Tone CPs.

0 The NT6X69LB is recommended for use in all applications in place
0 of the NT6X69LA. However, depending on availability, the
0 NT6X69LA may be used when fiber network interface is not re-
0 quired.

0 DS-512 Interface:

0 When fiber network interface is required in an ENET office, pro-
0 vide for each ILGC, IDTC, PLGC, or PDTC module equipped with
0 NT6X02GM Common CP:

- 0 - one (1) NT6X02BU Fiber I/F H/W Assembly,
- 0 - two (2) NT6X40FA DS512 Network Interface CPs,
- 0 - two (2) NT6X40GA DS512 Paddle Boards,
- 0 - two (2) NT6X69LB Msg Protcl & Downldbl Tone CPs, and
- 0 - two (2) P0736273 Optical Fiber Danger Labels.

0 For fiber network interface the NT6X69LB must be used (the
0 NT6X69LA may not be substituted for NT6X69LB when fiber network
0 interface is required).

0 Cooling Unit:

0 For the only ILGE, IDTE, PLGE, or PDTE frame equipped in an of-
0 fice, or for the first of each group of frames served by a dif-
0 ferent PDC, provide:

- 0 - one (1) NT3X90AB Cooling Inverter Unit, or
- 0 one (1) NT3X90AC DC Fan Cooling Unit.

0 Thereafter, for each subsequent frame, provide:

- 0 - one (1) NT3X90AA Cooling Inverter Unit, or
- 0 one (1) NT3X90AC one DC Fan Cooling Unit.

0 NT3X90AC replaces NT3X90AA and NT3X90AB for new jobs.

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0 Enhanced Grounding:

0 When extending existing offices not equipped with enhanced
0 grounding per IS0X00, provide for each frame:

- 0 - one (1) NT0X0009 Logic Return Cable Assembly.

0 Echo Cancellor:

0 When the Echo canceller feature is required, provide:

- 0 - two (2) NTCX50AA Echo Cancellor Control Paddle Boards.

0 The Coax Panel provisioned must be other than NT6X01ZA.

0 As the Echo Cancellor Control interface cable uses the bulkhead
0 connector positions normally used for twisted pair PCM-30, the
0 ECC can only be provisioned when these connectors are not being
0 used.

0 Always provide (in case NTCX50AA CPs are provided later):

- 0 - one (1) NT6X01WF Echo Cancellor Wiring List.

0 7.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 7.1.5 TRAFFIC TABLES

0
0 Standard traffic provisioning algorithms apply.

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0 7.2 PRODUCT/SYSTEM SPECIFICATION

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0 7.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 7.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 7.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply.

0 7.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 7.2.5 CURRENT DRAIN INFORMATION

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0 7.3 SOFTWARE PROVISIONING

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0 7.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 XPM Software Planned Introduction:

0 XPM software XPM01 is planned to be introduced in BCS35 time
0 frame.

0 XPM software XPM02 is planned to be introduced in CSP01 (BCS36)
0 time frame.

0 XPM THREE PROCESSOR (MP/SP/FP) LOAD PHASE-OUT:

0 PDTC (PCM-30 Digital Trunk Controller):

0 Current Three Processor (MP/SP/FP) NPD load supporting PDTC
0 will be:

- 0 - Frozen in XPM02 software, and
- 0 - Become unavailable in XPM03 software.

0 PLGC (PCM-30 Line Group Controller):

0 Current Three Processor (MP/SP/FP) NPL load supporting PLGC
0 will be:

- 0 - Frozen in XPM02 software, and
- 0 - Become unavailable in XPM03 software.

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0 XPM PLUS (UP) LOAD PHASE-IN:

0 PDTC (PCM-30 Digital Trunk Controller):

0 XPM Plus (UP) ODT load supporting PDTC (without NTCX50AA Echo
0 Cancellor) will be:

- 0 - Introduced in Verification Office XPM01 software
0 (Feature Packages NTXK79AB and NTRX34AB), and
- 0 - Become Generally Available in XPM03 software
0 (Feature Packages NTXK79AC and NTRX34AB).

0 PLGC (PCM-30 Line Group Controller):

0 XPM Plus (UP) OLG load supporting PLGC will be:

- 0 - In Verification Office XPM02 software
0 (Feature Packages NTXK79AC and NTRX34AB), and
- 0 - Become Generally Available in XPM03 software.

0 7.3.2 SOFTWARE USAGE RESTRICTIONS

XPM TYPE	TWO PROCESSOR (MP/SP) SOFTWARE			XPM PLUS (UP) SOFTWARE		
	LOAD NAME	LOAD FROZEN	LOAD NOT AVAILABLE	LOAD NAME	VERIF. OFFICE	GENERALLY AVAILABLE
PDTC without NTCX50	NPD	XPM02	XPM03	ODT	XPM01	XPM03
PLGC	NPL	XPM02	XPM03	OLG	XPM02	XPM03

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0 7.3.3 MEMORY PROVISIONING

0
0 There is no program store or data store impact as a result of
0 hardware described in this ECM.

0 7.4 REAL TIME IMPACT

0 None.

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0 8.0 International Cabinet LGE/DTE Fiber

0 NTFX33AA is a general purpose Common Peripheral Controller Equip-
0 ment Frame for international applications which houses two inde-
0 pendent dual shelf modules.

0 Each module may be provisioned as a

- 0 - PCM30 Line Group Controllers (PLGC), or
- 0 - PCM30 Digital Trunk Controllers (PDTC),

0 Or, with DMS100I software in the office, each module may be pro-
0 visioned as a

- 0 - International Line Group Controllers (ILGC), or
- 0 - International Digital Trunk Controllers (IDTC).

0 An ILGC/PLGC may be provisioned to support

- 0 - copper interface (DS-30) or
- 0 fiber interface (DS-512) to the network,
- 0 - PCM-30 links to RLCM, RSC or OPM,
- 0 - DS-30A interface to LCM.

0 A IDTC/PDTC may be provisioned to support

- 0 - copper interface (DS-30) or
- 0 fiber interface (DS-512) to the network,
- 0 - PCM-30 links to other offices,
- 0 - Common Channel Signaling 7 (CCS7).

0 8.1 HARDWARE PROVISIONING

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0 8.1.1 HARDWARE USAGE RESTRICTIONS

0 Not applicable.

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0 8.1.2 HARDWARE DEPENDENCIES

0 Not applicable.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

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0 8.1.3 PROVISIONING CONSIDERATIONS

0
0 NTFX33AA International Cabinet LGE/DTE Fiber

0 Common Circuit Packfill:

0 For each equipped module, provide except for Digital N5 applica-
0 tions:

- 0 - one (1) NTFX33BC International LGC/DTC Common CP.

0 For Digital N5 application, provide for each equipped module:

- 0 - one (1) NTFX33BD International LGC/DTC Common CP.

0 If the second module is not equipped on the FCTM cabinet, pro-
0 vide:

- 0 - one (1) NT6X02AB Common Peripheral Controller Module Filler
0 Faceplate Kit.

0 CCITT N5 Signaling:

0 For Digital N5 application, provide for each module equipped with
0 NTFX33BD per customer requirements:

- 0 - two (2) NT6X42CA CSM and N5 Splitter CPs, and
0 - two (2) NT6X62DA CCITT N5 Version Special Tone Receiver
0 (STR) CPs.
0 - two (2) NTFX33WF wiring lists.

0 PCM-30 Interface:

0 For each equipped module, provide as per customer requirements:

- 0 - minimum four (4) and
0 maximum eight (8) NT6X27AC/BB PCM-30 Interface CPs.

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0 PCM-30 Signaling Interface:

0 For each equipped LGC/DTC which supports PCM-30 links (NT6X27
0 PCM-30 Interface CPs provisioned), or for each equipped LGC mod-
0 ule which supports links to an LCM (NT6X48 DS30A LCM Interface
0 CPs provisioned), and the LCM is equipped with a PCM-30 line
0 drawer such as the NT6X05CA, provide:

- 0 - two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 PCM-30 Coaxial Interface Panel:

0 For PCM-30 interface via coaxial cable, provide for each equipped
0 module:

- 0 - one (1) NTN3366 Coaxial Interface Assembly
0 (NTNX3366 connects shelves 05 and/or 33), and
0 - one (1) NTN3369 Coaxial Interface Cable Assembly
0 (NTNX3369 connects shelves 19 and/or 47).

0 PCM-30 Twisted Pair Interface:

0 For PCM-30 interface via twisted pair wiring, provide for each
0 equipped IDTC module:

- 0 - two (2) NTN3370 PCM-30 Twisted Pair Interface Assemblies, and
0 - two (2) NTN3371 PCM-30 Twisted Pair Interface Assemblies.

0 As the Echo Canceller Control interface cable uses the bulkhead
0 connector positions normally used for twisted pair PCM-30, the
0 ECC can only be provisioned when these connectors are not being
0 used.

0 When twisted pair PCM-30 interface is equipped, provide for each
0 cabinet:

- 0 - one (1) P0711579 Designation Labels Sheet.

0 One sheet contains sufficient cable connector designation labels
0 for both modules in the frame.

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0 Universal Tone Receiver:

0 The NT6X92CA Universal Tone Receiver is a combined service circuit that can perform the function of Digitone Receiver for lines and MF Receiver for trunks. One pair of NT6X92CA provides up to thirty circuits.

0 For each equipped module, provide per customer requirements:

- 0 - zero (0),
- 0 two (2) or
- 0 four (4) NT6X92CA Universal Tone Receiver CPs.

0 The first provisionable UTR (NT6X92CA) pair shall be located in CP slot 8 unless CP slot 8 is equipped with an NT6X62DA. The second provisionable UTR pair shall be located in CP slot 9, unless CP slot 9 is equipped with an NT6X70AA. In this case, the second UTR pair will be located in CP slot 11. Each UTR on the shelf is paired with a UTR in the same circuit pack position on the other shelf in the module.

0 Continuity Tone Detector:

0 When the DTC is handling CCIS/CCS7 voice trunking, provide for each equipped module:

- 0 - two (2) NT6X70AA Continuity Tone Detector CPs, and
- 0 - two (2) NTN33WA Continuity Tone Detector Wiring Assembly.

0 The NT6X70AA supports a Continuity Test (COT), and is recommended whenever analog facilities are employed in part or all of the transmission path.

0 When the facility is end-to-end digital, the NT6X70AA is not required since digital facilities employ other means of fault detection.

0 An LGC may not be provisioned with NT6X70AA CPs.

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0 Echo Cancellor:

0 When the Echo canceller feature is required, provide for each
0 pair of NT6X28AAs provisioned:

- 0 - two (2) NTCX50AA Echo Cancellor Control Paddle Boards.
- 0 - one (1) NTNX3390 Echo Cancellor Control Interconnect
0 Cable Assembly and
- 0 - two (2) NTFX33WE Echo Cancellor Wiring Lists.

0 As the Echo Cancellor Control interface cable uses the bulkhead
0 connector positions normally used for twisted pair PCM-30, the
0 ECC can only be provisioned when these connectors are not being
0 used.

0 For the field application of the Echo Cancelling feature, provide
0 for each equipped module:

- 0 - one (1) NTFX33ZA Echo Cancellor Control Kit.

0 This kit consists of:

- 0 - two (2) NTCX50AA paddle boards and
- 0 - one (1) NTNX3390 interconnect cable assembly.

0 DS-512 Interface:

0 For each module equipped with network interface via fiber cabling
0 in an ENET office, provide:

- 0 - two (2) NT6X40FA DS-512 Interface CP,
- 0 - two (2) NT6X40GA DS-512 Link Paddleboard,
- 0 - one (1) NT6X02BU FXPM Bracket Assembly, and
- 0 - two (2) P0736273 Optical Fiber Danger Labels.

0 Depending on availability, NT6X40CA and NT6X40DA functional pair
0 may be used in place of the preferred NT6X40FA and NT6X40GA func-
0 tional pair. The paddleboards and circuit packs cannot be mixed
0 because they do not function in mismatched pairs.

0 When either module in the FCTM cabinet is equipped with network
0 interface via fiber cabling, provide for each cabinet:

- 0 - one (1) P0713105 Fiber Cover Plate,
- 0 - one (1) P0713256 Fiber Cover Plate, and
- 0 - two (2) P0682727 Bushings

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0 DS-30 Interface:

0 For each upper module (Shelf positions 33 and 47) equipped with
0 network interface via copper cabling, provide:

- 0 - two (2) NT6X40AC DS-30 Interface CP,
- 0 - one (1) P0713257 Connector Cover Plate, and
- 0 - one (1) NTNX3389 DS-30 Interface Cable Assembly.

0 For each lower module (Shelf positions 05 and 19) equipped with
0 network interface via copper cabling, provide:

- 0 - two (2) NT6X40AC DS-30 Interface CP,
- 0 - one (1) P0713258 Connector Cover Plate, and
- 0 - one (1) NTNX3384 DS-30 Interface Cable Assembly.

0 DS-30A Interface:

0 For ILGC applications to interface links from ILCM, provide:

- 0 - four (4) NT6X48AA DS30A LCM Interface CPs.

0 The NT6X48AA CP are assigned in pairs for reliability. One member
0 of the pair interfaces the same DS30A ports as the other member.
0 Each member of the pair occupies the same CP position, with one
0 CP assigned to LGAI 0 (lower shelf of the module) and the other
0 assigned to LGAI 1 (upper shelf of the module).

0 For each DS-30A Interface Cable Assembly ordered, provide:

- 0 - two (2) P0638259 Bushings and
- 0 - two (2) P0423631 Washers.

0 8-port 64Kbit Interface:

0 When an 8-port 64Kbit interface is requested by the customer,
0 provide for each equipped module:

- 0 - one (1) NT6X55CA 8-port 64-Kbit I/F CP, and
- 0 - one (1) NTFX3303 Cable Assembly.

0 When both PCM-30 and 8-port 64-Kbit interface are provisioned in
0 the same cabinet simultaneously, the number of associated ports
0 per module will be fourteen (14) PCM-30 ports and eight (8)
0 64-Kbit ports.

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0 For the field application of the 8-port 64Kbit feature, provide
0 for each equipped module:

0 - one (1) NTFX33ZB 8-port 64Kbit Interface Circuit Kits.

0 Each NTFX33ZB kit consists of:

0 - one (1) NT6X55CA 8-port 64-Kbit I/F CP, and
0 - one (1) NTFX3303 Cable assembly.

0 1-port 64Kbit Interface:

0 For each 1-port 64Kbit interface required, maximum 1 per shelf of
0 an equipped module, provide:

0 - one (1) NT6X55BA 64-Kbit Access CPs,

0 for each shelf in position 19 or 47 provisioned with a NT6X55BA,
0 provide:

0 - one (1) NTFX3305 Cable Assembly, and

0 for each shelf in position 05 or 33 provisioned with a NT6X55BA,
0 provide:

0 - one (1) NTFX3306 Cable Assembly.

0 The NT6X55BA should only be provisioned when DS30A p-side ports
0 (provisioned per RUL16) are not used.

0 Earthquake Anchor Kit:

0 When cabinet is installed in seismic (earthquake) zones

0 - ATC Zones 6 & 7,
0 - NEBS Zone 4, and
0 - UBC Zone 4

0 provision for each cabinet:

0 - for slab-type flooring,
0 - one (1) NTNX2540 Earthquake Anchor Kit, or
0 - for computer-type flooring,
0 - one (1) NTNX2578 Earthquake Anchor Kit.

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0 Non-Earthquake Frame Mounting Kit:

0 When installing cabinet in a non-earthquake zone, provision for
0 each cabinet:

- 0 - for slab-type flooring,
 - 0 - one (1) NTN2579 Frame Mounting Kit, or
- 0 - for computer-type flooring,
 - 0 - one (1) NTN2580 Frame Mounting Kit.

0 Cabinet Color:

0 When specifying a brown cabinet, provision for each cabinet:

- 0 - two (2) NTN2550 Left Door Assemblies (Brown),
- 0 - two (2) P0699464 Left Door Labels (Brown),
- 0 - two (2) NTN2552 Right Door Assemblies (Brown), and
- 0 - two (2) P0695230 Right Door Labels (Brown),
 - 0 one each for front and rear respectively, as well as
- 0 - one (1) P0714720 Cabinet Type Label (Brown).

0 When specifying a grey cabinet, provision for each cabinet:

- 0 - two (2) NTN2515 Left Door Assemblies (Grey),
- 0 - two (2) P0677704 Left Door Labels (Grey),
- 0 - two (2) NTN2513 Right Door Assemblies (Grey), and
- 0 - two (2) P0699158 Right Door Labels (Grey),
 - 0 one each for front and rear respectively, as well as
- 0 - one (1) P0714721 Cabinet Type Label (Grey),

0 CP Designation Labels:

0 Provide the appropriate designation label for each CP provided.

0 Unequipped CP Slots:

0 For each unequipped CP slot 1-6, 8,9,11, and 19, provide:

- 0 - one (1) NT0X50AA Filler Face Plate.

0 8.1.4 OFFICE LAYOUT INFORMATION

0 Please refer to Northern Telecom Practice 555-4001-103 Integrated
0 Services Network Meridian SL-100 Cabinetized General Description.

0 8.1.5 TRAFFIC TABLES

0 Not applicable.

0 8.2 PRODUCT/SYSTEM SPECIFICATION

0

0 8.2.1 PHYSICAL CHARACTERISTICS

0
0 Fusing and current drain information for the four cabinets intro-
0 duced specifically for Australia is not available at this time.

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0 8.2.2 EMI/EARTHQUAKE INFORMATION

EMI COMPLIANT	PEC	ABBREVIATED NAME
YES	NTNX33GA	FCTM-ISDN

0 For resistance to earthquake damage, Anchor Kits are required.
0 When installing cabinet in ATC Zone 6 or 7, NEBS Zone 4 or UBC
0 Zone R, provision NTNX2540 kit for slab-type flooring or NTNX2578
0 for computer flooring.

0 In non-earthquake zones, a Frame Mounting Kit is sufficient.
0 Provision NTNX2579 kit for slab-type flooring or NTNX2580 for
0 computer flooring.

0 8.2.3 SPARING INFORMATION

0 Standard sparing algorithms apply.

0 8.2.4 POWER FEED AND FUSING REQUIREMENTS

0 The following fuses and feeds are required:

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0 8.2.5 CURRENT DRAIN INFORMATION

0
0 Current Drain for the circuit packs are:

0 8.3 SOFTWARE PROVISIONING

0

0 8.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 8.3.2 SOFTWARE USAGE RESTRICTIONS

0 Not applicable.

0 8.3.3 MEMORY PROVISIONING

0 Refer to MEMCALC for memory provisioning.

0 8.4 REAL TIME IMPACT

0 There is no real-time impact as a result of products introduced
0 by this ECM.

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0 9.0 International Cabinet LGE/DTE/LTE ISDN

0 The Australian DMS-300 International Gateway Switch is based on the
0 DMS-300 supplied to Turkey with the following enhancements:

- 0 - Signalling systems necessary to introduce the product
0 into the Australian National Network.
- 0 - Enhancements to the Call Detail Recording, Operational
0 Measurements and Call Progression tone systems.

0 Similarly, the DMS-300 Gateway Switch for Madley-B Digital Interna-
0 tional Switching Centre (DISC) in the United Kingdom is based on ex-
0 isting technology, adapted for that market.

0 The NTFX33CA International Cabinet LGE/DTE/LTE ISDN houses one or two
0 International PCM-30 LGC/DTC/LTC ISDN or not dual shelf modules in a
0 cabinet configuration for applications not requiring fiber network
0 interfaces.

0 9.1 HARDWARE PROVISIONING

0

0 9.1.1 HARDWARE USAGE RESTRICTIONS

0 Not applicable.

0 9.1.2 HARDWARE DEPENDENCIES

0 Not applicable.

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0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable0 9.1.3 PROVISIONING CONSIDERATIONS0
0 The NTFX33CA International Cabinet LGE/DTE/LTE ISDN is provi-
0 sioned as follows:0 The shelves within the LTEM cabinet are provisioned in the same
0 way as the domestic ISDN frame NT6X01AB, except that PCM-30

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0 interfaces are used instead of DS-1 and some circuit pack vin-
0 tages are different for the Offshore market.

0 Refer to the Engineering Manual sections for details on circuit
0 pack vintages and cabinet hardware provisioning.

0 Common Circuit Pack:

0 Provision up to two (2) NT6X02UB PCM-30 LGC/DTC Common Circuit
0 Pack (Offshore) per LTEM.

0 PCM-30 Interface:

0 Provision up to eight (8) NT6X27AC/BB PCM-30 Interface CP per
0 PCM-30 LGC/DTC module, to interface up to sixteen PCM-30 links (2
0 links per CP).

0 The NT6X27BB Enhanced PCM-30 Interface circuit pack is backward
0 compatible with the NT6X27AC/BA circuit packs. It is also a re-
0 placement for the NT6X27AA/AB circuit packs, although it cannot
0 be mixed with the NT6X27AA/AB in the same frame or cabinet.

0 The NT6X27BB includes enhancements over the NT6X27AA/AB such as:

- 0 - Full compliance to CCITT,
0 - Improved alarm handling, and
0 - Support for DCME.

0 The initial application for the NT6X27BB is all the frames and
0 cabinets where the NT6X27AC/BA are provisioned. The manufacture
0 of the NT6X27AC/BA is being discontinued.

0 PCM-30 Signaling Interface:

0 For each equipped LGC/DTC which supports PCM30 links or for each
0 equipped LGC module which supports links to an LCM which is
0 equipped with a PCM30 line drawer such as the NT6X05CA, provide:

0 two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 CND Feature:

0 When the Calling Number Delivery/Calling Number Display (CND)
0 feature is required, provision two (2) NT6X78AB CLASS Modem Re-
0 source CPs for each PCM-30 LGC/DTC module.

0 Network Interface:

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0 In an office with the Enhanced Network (ENET) provide a fiber
0 interface per module as follows:

0 two (2) NT6X40FA DS-512 Link Control CPs,
0 two (2) NT6X40GA DS-512 Link Control Paddleboards,
0 two (2) NT6X69LB DS-512 CPP Protocol & Downld CPs, and
0 one (1) P0736273 Fiber Cable Warning Label.

0 And for each cabinet

0 one (1) NTNX33SD DS-512 Fiber Interface to Network Kit.

0 Depending on availability, NT6X40CA and NT6X40DA functional pair
0 may be used in place of the preferred NT6X40FA and NT6X40GA func-
0 tional pair. The paddleboards and circuit packs cannot be mixed
0 because they do not function in mismatched pairs.

0 In a non-ENET office, provide a copper interface as follows:

0 two (2) NT6X40AC DS30 Network Interface CPs
0 two (2) NT6X69LA/LB CPP Protocol & Downld CPs.

0 The NT6X69LA may be used for non-fiberised peripherals when the
0 preferred NT6X69LB is not available.

0 9.1.4 OFFICE LAYOUT INFORMATION

0 Please refer to Northern Telecom Practice 555-4001-103 Integrated
0 Services Network Meridian SL-100 Cabinetized General Description.

0 9.1.5 TRAFFIC TABLES

0 Not applicable.

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0 9.2 PRODUCT/SYSTEM SPECIFICATION

0

0 9.2.1 PHYSICAL CHARACTERISTICS

0

0 Fusing and current drain information for the four cabinets intro-
0 duced specifically for Australia is not available at this time.

0 9.2.2 EMI/EARTHQUAKE INFORMATION

0

EMI COMPLIANT	PEC	ABBREVIATED NAME
YES	NTNX33GA	FCTM-ISDN

0

0 For resistance to earthquake damage, Anchor Kits are required.
0 When installing cabinet in ATC Zone 6 or 7, NEBS Zone 4 or UBC
0 Zone R, provision NTNX2540 kit for slab-type flooring or NTNX2578
0 for computer flooring.

0 In non-earthquake zones, a Frame Mounting Kit is sufficient.
0 Provision NTNX2579 kit for slab-type flooring or NTNX2580 for
0 computer flooring.

0 9.2.3 SPARING INFORMATION

0 Standard sparing algorithms apply.

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0 9.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 The following fuses and feeds are required:

0 9.2.5 CURRENT DRAIN INFORMATION

0
0 Current Drain for the circuit packs are:

0 9.3 SOFTWARE PROVISIONING

0

0 9.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 9.3.2 SOFTWARE USAGE RESTRICTIONS

0 Not applicable.

0 9.3.3 MEMORY PROVISIONING

0 Refer to MEMCALC for memory provisioning.

0

0 9.4 REAL TIME IMPACT

0 There is no real-time impact as a result of products introduced
0 by this ECM.

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0 10.0 International Cabinet LGE/DTE Fiber ISDN

0 The Australian DMS-300 International Gateway Switch is based on the
0 DMS-300 supplied to Turkey with the following enhancements:

- 0 - Signalling systems necessary to introduce the product
0 into the Australian National Network.
- 0 - Enhancements to the Call Detail Recording, Operational
0 Measurements and Call Progression tone systems.

0 Similarly, the DMS-300 Gateway Switch for Madley-B Digital Interna-
0 tional Switching Centre (DISC) in the United Kingdom is based on ex-
0 isting technology, adapted for that market.

0 The FCTM-ISDN houses one or two International ISDN LGC/DTC dual shelf
0 modules in a cabinet configuration supporting both copper and fiber
0 network interfaces.

0 10.1 HARDWARE PROVISIONING

0

0 10.1.1 HARDWARE USAGE RESTRICTIONS

0 Not applicable.

0 10.1.2 HARDWARE DEPENDENCIES

0 Not applicable.

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0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

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0 10.1.3 PROVISIONING CONSIDERATIONS

0
0 The NTN33GA International Cabinet LGE/DTE Fiber ISDN (FCTM-ISDN)
0 is provisioned as follows:

0 The shelves within the FCTM-ISDN cabinet are provisioned the same
0 as the domestic ISDN frame (NT6X01AB), except that PCM-30 inter-
0 faces are used instead of DS-1, and some circuit pack vintages
0 are different for the International market. Maximum eight (8)
0 PCM-30 Interface CP (supporting 16 PCM-30 links) may be equipped.
0 Refer to the Engineering Manual sections for details on circuit
0 pack vintages and cabinet hardware provisioning.

0 Provision up to two (2) NTN33GB LGCI/DTCI Fiber Common CP
0 (International) per FCTM-ISDN.

0 Provision up to eight (8) NT6X27AC/BB PCM-30 Interface CP per
0 PCM-30 LGC/DTC module, to interface up to sixteen PCM-30 links (2
0 links per CP).

0 The NT6X27BB Enhanced PCM-30 Interface circuit pack is backward
0 compatible with the NT6X27AC/BA circuit packs. It is also a re-
0 placement for the NT6X27AA/AB circuit packs, although it cannot
0 be mixed with the NT6X27AA/AB in the same frame or cabinet.

0 The NT6X27BB includes enhancements over the NT6X27AA/AB such as:

- 0 - Full compliance to CCITT,
0 - Improved alarm handling, and
0 - Support for DCME.

0 The initial application for the NT6X27BB is all the frames and
0 cabinets where the NT6X27AC/BA are provisioned. The manufacture
0 of the NT6X27AC/BA is being discontinued.

0 When the Calling Number Delivery/Calling Number Display (CND)
0 feature is required, provision two (2) NT6X78AB CLASS Modem Re-
0 source CPs for each PCM-30 LGC/DTC module.

0 For each equipped LGC/DTC which supports PCM30 links or for each
0 equipped LGC module which supports links to an LCM which is

0

0| equipped with a PCM30 line drawer such as the NT6X05CA, provide:
0 two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 10.1.4 OFFICE LAYOUT INFORMATION

0 Please refer to Northern Telecom Practice 555-4001-103 Integrated
0 Services Network Meridian SL-100 Cabinetized General Description.

0 10.1.5 TRAFFIC TABLES

0 Not applicable.

0 10.2 PRODUCT/SYSTEM SPECIFICATION

0

0 10.2.1 PHYSICAL CHARACTERISTICS

0
0 Fusing and current drain information for the four cabinets intro-
0 duced specifically for Australia is not available at this time.

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EMI COMPLIANT	PEC	ABBREVIATED NAME
YES	NTNX33GA	FCTM-ISDN

0 For resistance to earthquake damage, Anchor Kits are required.
0 When installing cabinet in ATC Zone 6 or 7, NEBS Zone 4 or UBC
0 Zone R, provision NTNX2540 kit for slab-type flooring or NTNX2578
0 for computer flooring.0 In non-earthquake zones, a Frame Mounting Kit is sufficient.
0 Provision NTNX2579 kit for slab-type flooring or NTNX2580 for
0 computer flooring.0 10.2.3 SPARING INFORMATION

0 Standard sparing algorithms apply.

0 10.2.4 POWER FEED AND FUSING REQUIREMENTS0 10.2.5 CURRENT DRAIN INFORMATION

0 10.3 SOFTWARE PROVISIONING

0

0 10.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 10.3.2 SOFTWARE USAGE RESTRICTIONS

0 Not applicable.

0 10.3.3 MEMORY PROVISIONING

0 Refer to MEMCALC for memory provisioning.

0 10.4 REAL TIME IMPACT

0 There is no real-time impact as a result of products introduced
0 by this ECM.

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0 11.0 XPM PLUS for Base Non-ISDN XPM

0 The XPM PLUS (Product Life Upgrade Strategy) Phase II program ad-
0 dresses the need for memory and processing enhancements by re-
0 placing the separate MP and SP circuit packs in DTC/LGC/LTC/RCC
0 modules with the Unified Processor (UP). The UP increases avail-
0 able memory to 8Mb and increases RealTime processing power, com-
0 pared to the current XPM. All existing functions, interfaces and
0 tools continue to be supported.

0 The XPM PLUS schedule has been pulled in so that all new ship-
0 ments of LTCI/LGCI from BCS-34 forward will utilize the Unified
0 Processor (XPM PLUS). Support for Subscriber Carrier equipment is
0 planned to VO in BCS-36 and to be Generally Available in BCS-37.

0 This ECM describes both upgrades of existing equipment and new
0 shipments of XPM+ peripherals on the combined ISDN/non-ISDN
0 frame. XPM PLUS capability may also be supplied for both new
0 shipments and upgrades to existing RCE frames.

0 11.1 HARDWARE PROVISIONING

0

0 11.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The following usage restrictions apply to the XPM+ Phase II prod-
0 uct:

- 0 o RLCM and MSB7 are not to be upgraded to XPM PLUS
0 with the Unified Processor.
- 0 o In order to use the new software that is available
0 in BCS-35 and above, XPMs currently equipped with
0 enhanced messaging will require upgrade from MP/SP
0 processors to the XPM PLUS processor. Since XPMs
0 must meet minimum BCS packfill requirements before
0 these kits can be applied, the modules will be
0 equipped with one of the following:

0 Base XPMs:
0 -----

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0 DTC Modules - NT6X02AS, NT6X02IA or NT6X02IC
0 LGC Modules - NT6X02AT, NT6X02LA or NT6X02LC
0 LTC Modules - NT6X02AU, NT6X02MA or NT6X02MC

0 The slots that mount the processors and memory are provisionable
0 in packfills NT6X02IC, NT6X02LC and NT6X02MC. Application of the
0 NT6X02XC kit to modules containing one of the other packfills
0 will bring the module to the NT6X02IC/LC/MC level, making these
0 slots provisionable.

0 Remote:
0 -----
0 RCC Modules - NT6X12AD, NT6X12AG and NT6X12CA

0 The processors and memory are Always Provided in these packfills.
0 Application of the NT6X12ZF to a module equipped with NT6X12AG
0 will change the RCC module to the NT6X12AK level. When applying
0 the NTZZ12ZF kit to a module equipped with NT6X12CA or any
0 packfill NT6X12AF or earlier, the NT6X72AA packs must be replaced
0 with NT6X72ABs. Application of the NT6X12ZF and the NT6X72AA re-
0 placement with NT6X72AB, upgrades these modules to the NT6X12AK
0 level. The slots requiring upgrade for XPM PLUS become
0 provisionable upon application of the NT6X12ZF kit. The NT6X12AK
0 is now available for new orders.

0 o Application of XPM PLUS to LGC, LTC and RCC modules
0 is mandatory (BCS Gating) for BCS-38. Application of
0 XPM PLUS to DTC modules is mandatory for BCS-41.

0 o As of BCS 35 the MP/SP processor will no longer be
0 shipped for new orders of the LGC/LTC/DTC/RCC. The Unified
0 Processor (XPM Plus) will be shipped for all new LGC/DTC/
0 LTC/RCC modules ordered.

0 11.1.2 HARDWARE DEPENDENCIES

0
0 The hardware required to implement XPM PLUS capability is the
0 Unified Processor, the terminator card (which mounts in a rear
0 side slot) and backplane strapping. These changes are applied to
0 the existing non-ISDN XPM equipment as described in the Product
0 Change Kit documents and will result in XPM packfills NT6X02IC,
0 NT6X02LC or NT6X02MC or RCC packfill NT6X12AK.

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0 P AND C SIDE PORT REQUIREMENTS

0
0 There are no P or C side ports associated with the Unified
0 Processor (XPM PLUS).

0 DMS BUS PORT REQUIREMENTS

0
0 There are no DMS BUS ports associated with the Unified Processor
0 (XPM PLUS).

0 CIRCUITS PER CARD

0
0 There is one Unified Processor per circuit pack.

0 DISCRIMINATION NUMBERING

0
0 There is no discrimination numbering associated with XPM PLUS.

0 11.1.3 PROVISIONING CONSIDERATIONS

0
0 The following kits are available for application as described be-
0 low:

0

0 Host - Line Group Controller Equipment
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- 0 o Upgrade of host DTC/LGC/LTC to XPM PLUS:
0 Provide one XPM to XPM+ kit to upgrade one existing
0 host XPM module to XPM PLUS capability. All
0 provisionable circuit pack rules are unchanged
0 except for processors/memory, which are replaced
0 as part of kit application. The NT6X02XC kit
0 includes backplane stapping materials and
0 instructions for application on existing NT6X01AA
0 frames. The NTZZ99AN kit provides only the circuit
0 packs required and is used for applications where
0 the necessary wiring is already in place (i.e. the
0 upgrade of an existing module on a NT6X01AD frame).
- 0 o Upgrade of non-ISDN RSC to XPM PLUS:
0 Provide one RCC to XPM+ kit to upgrade one existing
0 RCC module to XPM PLUS capability. All
0 provisionable circuit pack rules are unchanged
0 except for processors/memory, which are replaced
0 as part of kit application.
- 0 o New shipments of XPMs with XPM PLUS:
0 Packfills are now available for application on the
0 combined ISDN/non-ISDN frame (NT6X01AD). New XPM+
0 shipments on the Model A CCPE (NTRX36AB) are NOT
0 supported. The packfills for NT6X01AD are:
- 0 NTZZ02PA for LTC with XPM+
0 NTZZ02QA for LGC with XPM+
0 NTZZ04HB for DTC with XPM+
- 0 o New shipments of RCCs with XPM PLUS:
0 Packfills are now available for application on the
0 RCE frame in either detail or Building Block format.
0 They are:
- 0 NTZZ46EA for RCC with XPM+ (in Building Block)
0 NT6X12AK for RCC with XPM+ (in detail)

0 11.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

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0 11.1.5 TRAFFIC TABLES

0
0 Not applicable.

0 11.2 PRODUCT/SYSTEM SPECIFICATION

0

0 11.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 11.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 11.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply to this product. Both the Uni-
0 fied Processor and Termination Card will need to be spared.

0 11.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 There is no fusing or power feed associated with the Unified
0 Processor.

0 11.2.5 CURRENT DRAIN INFORMATION

0
0 The NTMX77AA Unified Processor requires a maximum of 3.80 Amps
0 and the NTMX71AA Terminator CP requires a maximum of 0.68 Amps.

0 11.3 SOFTWARE PROVISIONING

0

0 11.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software package NTXR34-- is required to support the Unified
0 Processor and will be needed for all XPM PLUS upgrades.

0 Software package NTXR42-- is required to utilize the downloadable
0 firmware feature and is required with NTXR34--. In BCS-35,
0 NTXR34AB replaces NTXR34AA and NTXR34AA is declared Manufacture
0 Discontinued.

0 Refer to SMS/SOLID for software requirements and interdependen-
0 cies.

0 11.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

0

0 11.3.3 MEMORY PROVISIONING0
0 Not applicable.0 11.4 REAL TIME IMPACT0 The Unified Processor provides an improvement in RealTime capac-
0 ity by a factor of approximately 1.6X compared to the existing
0 MP/SP.

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0 CHAPTER 4

0 HOST - DIGITAL TRUNK CONTROLLER EQUIPMENT

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Host - Digital Trunk Controller Equipment
Chapter 4

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0 HOST - DIGITAL TRUNK CONTROLLER EQUIPMENT
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0 1.0 Digital Trunk Controller Equipment

0 1.1 Equipment Provisioning0 1.1.1 DS1 Interface Cards0 (a) General Description

0 To enable the Telco to specify the quantity of interface circuit
0 packs required to interface the DS1 digital carrier system and
0 the DS1 links from the Remote Line Concentrating Module (RLCM),
0 the Remote Switching Centre (RSC) and the Outside Plant Module
0 (OPM).

0 (b) Reference

0 NTP 297-1001-451 DMS-100 Family Common Customer
0 Data Schema

0 (c) Provisioning Considerations

0 (i) The DS1 Interface Cards are required to interface with
0 the DS1 digital carrier systems and the DS1 links from
0 the Remote Sites (i.e. Remote Line Concentrating Module
0 (RLCM), Remote Switching Center (RSC), Outside Plant Mod-
0 ule (OPM)).

0 (ii) There can be a maximum of ten (10) DS1 I/F cards per
0 LGC/DTC/LTC module.

0 (iii) One NT6X50AA/AB card provides an interface for up to two
0 (2) DS1 links. The NT6X50AB card will replace the
0 NT6X50AA card as the DS1 I/F card in many but not all ap-
0 plications (- the NT6X50AB will not be used in SMR, RSC,
0 and RLCM).

0 In order to support the enhanced features of the NT6X50AB
0 (i.e. ESF and 64 Kb/s clear channel capability based on
0 B8ZS), the DTC/LGC/LTC modules must be equipped with new
0 messaging (i.e. NT6X69AA/79AA or NT6X69AB) and new memory
0 (i.e. NT6X46AB/BA and NT6X47AB or NT6X47AC) cards. Pick
0 the appropriate DTC/LGC/LTC circuit pack fills.

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0 The full support of the NT6X50AB card will not be avail-
0 able in DTC/LGC/LTC modules which have small memories
0 (i.e. NT6X46AA, NT6X47AA) and old messaging (i.e.
0 NT6X43AA). In these modules, the NT6X50AB can be used as
0 replacements for normal NT6X50AA carriers but the en-
0 hanced DS-1 feature set will not be available.

0 The above is only applicable to DMS host offices and not
0 to remotes such as RSC and RLCM.

0 The Customer cannot use NT6X50AB to substitute for
0 NT6X50AA unless NTX270AA software is loaded and
0 datafilled for the respective XPM's. It is recommended
0 that NT6X50AA cards and NT6X50AB cards not be mixed on a
0 shelf to minimize cases where the Customer forgets that
0 NT6X50AB needs to be explicitly software datafilled. The
0 datafill is via software table CARRMTC.

- 0 (iv) The DS-1 Interface Circuit Pack provisionable to the SMS
0 is the NT6X85AA or NT6X85AB. If software package
0 NTX299AB is present, the NT6X85AB is required for all
0 modules that require special services features. Other SMS
0 modules may use NT6X85AA packs but will be unable to use
0 the special services features of the software package
0 NTX299AB. (Check availability reports for the proper or-
0 dering PEC.)

0 The SMU DS-1 CP Product Engineering Code (PEC) is
0 NT6X85AB. Each NT6X85AB CP contains two (2) DS-1 cir-
0 cuits. A maximum of ten (10) NT6X85AB CP may be provi-
0 sioned on each SMU.

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0 1.1.2 DS512 Interface Cards

0 (a) General Description

0 The NT6X40CA DS512 Network Interface circuit pack provides a fi-
0 ber interface to the Enhanced Network (ENET).

0 (b) Reference

0 None

0 (c) Provisioning Considerations

0 (i) If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP and two (2) NT6X40DA, DS512 Paddle Board,
0 for each relevant DTC/LGC/LTC module.

0 (ii) Provide one (1) NT6X02BU, Fiber I/F Hardware Assembly,
0 for each DTC/LGC/LTC module interfacing to the Enhanced
0 Network (ENET). The NT6X02BU Fiber Assembly mounts on
0 the backplane of the lower array in a module and provides
0 the fiber interface for both arrays.

0 (iii) If copper interface to the Network is required, then pro-
0 vide two (2) NT6X40AC, DS30 Network Interface CP, for
0 each relevant DTC/LGC/LTC module.

0 Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

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0 1.1.3 PCM 30 Interface Cards

0 (a) General Description

0 To enable the Telco to specify the quantity of interface circuit
0 packs required to interface the PCM 30 links from the Interna-
0 tional Remote Line Concentrating Module (IRLCM) and the PCM 30
0 Digital Carrier Systems.

0 (b) Reference

0 Chapter 3, Section 3.3 Operator Services
0 NTP 297-1001-451 DMS-100 Family Common Customer
0 Data Schema

0 (c) Provisioning Considerations

- 0 (i) The PCM 30 Interface Cards are required to interface with
0 the PCM 30 digital carrier systems and the PCM 30 links
0 from the Remote Sites (i.e. International Remote Line
0 Concentrating Module (IRLCM)).
- 0 (ii) One NT6X27AA/AB card provides an interface for up to two
0 (2) PCM 30 links.
- 0 (iii) There can be a maximum of eight (8) PCM 30 I/F cards per
0 International DTC (IDTC) module.
- 0 (iv) A DMS-100 host interfaces with an IRLCM over 2-6 PCM 30
0 links. The PCM 30 I/F cards mount on the ILGC.
- 0 (v) There can be a maximum of two (2) NT6X27AB PCM 30 I/F
0 cards per ILGC/IDTC module when the interoffice synchro-
0 nization feature is required.
- 0 (vi) When ITOPS is equipped on a DMS-100/200 configuration,
0 loop around trunks (NT6X27AA) must be provisioned to
0 route traffic between the DMS-100 and the DMS-200 portion
0 of the switch. Refer to Section 3.3 - Operator Services,
0 for more ITOPS provisioning information.
- 0 (vii) Provide one pair of NT6X28AA PCM 30 Signalling CP per
0 IDTC if TS16 signalling is used on the PCM link.
- 0 (viii) Provide one pair of NT6X28AA PCM 30 Signalling CP per
0 ILGC which supports LCM equipped with Metering Tone Con-

0 verter line cards (see the subsection on the Line Draw-
0 ers, found in this chapter, for more information on the
0 Metering Tone Converter line card).

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0 1.1.4 Universal Tone Receivers

0 (a) General Description

0 The Universal Tone Receiver (UTR) is a combined service circuit
0 that can perform the function of a Digitone Receiver for lines
0 and a MF Receiver for trunks.

0 The Universal Tone Receiver (UTR) circuit pack is provisioned for
0 R2 call setup. Each UTR pair has thirty circuits. For more in-
0 formation on the UTR, refer to Section 3.5.

0 (b) Reference

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 (i) The UTR is provisionable in pairs (maximum two (2) pairs)
0 on the DTC, LGC, (IDTC, ILGC) and LTC modules. All lines
0 and trunks connected to the module will be serviced by
0 the UTR within the module. This includes all lines in
0 LCMS, RLCMS, and OPMS.

0 (ii) UTRs will slightly reduce the DTC/LGC/LTC and RSC periph-
0 eral real time capacity. A real time work up should be
0 performed to ensure sufficient capacity. Refer to Sys-
0 tems Engineering Letter, Issue #01, Subject "Guidelines
0 for XPM Real Time Capacity Study - BCS-22" (Date: May 22,
0 1987).

0 (iii) Lines and trunks on a RSC are serviced by UTR cards lo-
0 cated in the RCC module of the RSC. There is no traffic
0 overflow to the host office.

0 (iv) Although the UTR can perform the function of a Digitone
0 Receiver (NT2X48AA) and the function of a MF Receiver
0 (NT2X48AB), there is no traffic overflow from UTRs onto
0 existing Digitone Receivers nor existing MF Receivers.
0 The Digitone Receivers and MF Receivers mounted on MTMs
0 and TMs are still required to service the following:

- 0 - analog trunk groups existing on TM/MTM shelves
- 0 - lines equipped on LM modules
- 0 - trunk groups equipped on DCM modules
- 0 - Mechanized Calling Card Service (MCCS)

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- 0 | - Subscriber Carrier Modules (SMS, SMR, SMU)
0 | - incoming and the incoming portion of 2 way service
0 | and test circuits (i.e. Remote Office Test Line and
0 | Blue Box Fraud Prevention). Refer to Section 3.5 (1.3.14) for the
0 | Digitone
0 | Receiver and Section 3.5 (1.3.13) for the MF Re-
0 | ceiver.

- 0 | (v) The following is a list of trunk types which require a
0 | receiver that are supported by the UTR

TRUNK GROUP	TRUNK NAME/DESCRIPTION
A5	2 WAY AMR5MF
ATC	Access Tandem to Carrier
SC	INCOMING CAMA MF 2 WAY CAMA TOLL MF IN MF OUT 2 WAY CAMA TOLL MF IN DP OUT
IT	INTERTOLL 2 WAY MF IN MF OUT INTERTOLL INCOMING MF INTERTOLL WINK MF IN DP OUT
IT250	IT250 DMS250/TOPS INTERTOLL
IMT	(DMS250 trunk group)
DAL	(DMS250 trunk group)
CAMA(250)	(DMS250 CAMA trunk group)
OC	2 WAY MF CAMA
OI	COLLOCATED OI SWITCHBOARD COLLOCATED SWBD TOLL OFFICE MF VERIFICATION OPERATOR
OP	Outgoing or 2 WAY MF TSPS/TOPS
PX	2 WAY DIGITAL PBX
AOSS	AOSS INCOMING MF
TDDO	TANDEM 2 Stage DDO

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0| TI INCOMING MF
0| T101 101 Communications Test Line
0| T2 LOCAL 2 WAY MF
0| TOPS TOPS TRUNK INCOMING MF
0| TOPS TRUNK 2 WAY MF IN MF OUT
0| TOPS TRUNK 2 WAY MF IN DP OUT
0| ZI 0+/0- Tandem to TOPS/TSPS
0| IBNTI INCOMING IBN
0| INCOMING IBN DT
0| IBNT2 2 WAY IBN
0| 2 WAY IBN DT
0| INT101 INTL 101 Test Line
0| AVINSW 2 WAY Interswitch MF
0| AVOVS 2 WAY OVERSEAS MF TRUNK
0| AVNOS 2 WAY CROSSBAR MF TRUNK
0| AVPBX 2 WAY or INCOMING PBX MF TRUNK
0| AVTNDM 2 WAY Tandem MF Trunk

0| Any incoming or incoming portion of a 2 way trunk group
0| requiring a receiver not listed above will require
0| Digitone or MF receivers.

0| (vi) The number of UTR circuits is obtained by calculating the
0| UTR holding time and multiplying by the average number of
0| calls per hour. In general it is always safe to provide
0| two (2) pairs of UTR cards if unsure of the traffic de-
0| mands.

0| For incoming R2 calls the UTR holding time is as follows:

0| 1. From seizure to final digit collection
0| plus

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- 0 2. From final digit collection to - trunk
0 selection if R1 or N5 outgoing, - seize
0 acknowledgement if R2 outgoing.

0 For outgoing R2 calls the UTR holding time is as follows:

- 0 1. The UTR is held until told to release by
0 the far office or timeout if we are the
0 controlling signal office (i.e. R1 to R2
0 calls).

0 The number of UTRs used on average is given by the fol-
0 lowing formula:

$$\begin{array}{lcl} \# \text{ of UTR} & & \text{SI} & & \text{S0} \\ \text{Circuits} = \text{NI} \times \frac{\text{-----}}{\text{HI+SI}} \times \text{EI} + \text{NO} \times \frac{\text{-----}}{\text{HO+S0}} \times \text{EO} \\ \text{required} & & & & \end{array}$$

0 where,

0 NI = Number of incoming R2 trunks (or 2-way
0 used as incoming)

0 SI = Signalling time in seconds of incoming
0 trunks

0 HI = Holding time (talking) of incoming trunks
0 in seconds

0 EI = Erlang occupancy figure of incoming
0 trunks

0 NO = Number of outgoing R2 trunks (or 2-way
0 used as outgoing)

0 S0 = Signalling time in seconds of outgoing
0 trunks

0 HO = Holding time (talking) of outgoing trunks
0 in seconds

0 EO = Erlang occupancy figure of outgoing trunks

- 0 (vii) This circuit pack is only required for CCITT No. 6 Sig-
0 nalling.

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0 1.1.5 Digital Trunk Controller (DTC) Module

0 (a) General Description

0 The Digital Trunk Controller (DTC) Module provides the interface
0 between DS-1 digital systems and the DMS network. (The DTC does
0 not provide the digital interface between a host DMS and a re-
0 mote.)

0 (b) Reference

0 Chapter 3, Section 3.15 Common Channel Signalling

0 (c) Provisioning Considerations

0 (i) The DTC module is a two shelf module (versus the present
0 single shelf or single bay peripheral module).

0 (i) Each DTC module can terminate up to twenty (20) digital
0 carrier systems (i.e. up to ten (10) DS1 Interface cards)
0 and interconnect with the network via up to sixteen (16)
0 DS30 speech links.

0 (iii) Each DTC can terminate up to a maximum of twenty (20) DS1
0 ports on the peripheral side and a maximum of sixteen
0 (16) DS30 ports on the CPU (network) side.

0 (iv) Since each DTC terminates up to $20 \times 24 = 480$ voice chan-
0 nels and the internal speech links can accommodate up to
0 $16 \times 30 = 480$ VF paths, there is no concentration.

0 (v) DTC modules are provisioned for total terminations based
0 on the forecast of digital trunk requirements for the
0 busy season prior to exhaust.

0 (vi) For service protection, it is recommended that trunk cir-
0 cuits of each trunk group be spread over more than one
0 DS1 Interface card. Both of these cards can be mounted
0 on the same DTC module because of the duplicated
0 processor residing in the module.

0 (vii) Existing DTC modules which have spare capacity shall be
0 used to terminate new digital systems.

0 (viii) When a DTC module is handling CCIS/CCS7 voice trunk-
0 ing, two (2) Continuity Tone Detector cards NT6X70AA are

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0 required when analog trunk facilities are employed. The
0 NT6X70AA card is not required if the transmission path is
0 all-digital.

0 (ix) The following DTC Common Peripheral Controller CPs sup-
0 port the following applications:

0 DTCs
0 NT6X02IC supports UTRs
0 replaces NT6X02AQ/AR (BCS-27)

0 IDTCs
0 NT6X02BD supports SL-100 U.K.
0 NT6X02BN supports Mercury UK applications with
0 New Message requirements (eg. DPNSS) *
0 NT6X02GB supports Caribbean (CEP)
0 NT6X02JA supports DMS-300 Turkey
0 NT6X02KE supports China
0 NT6X02QA supports Turkey applications
0 NT6X02BW replaces NT6X02BP (BCS-28)
0 NT6X02BP supports all International

0 * See Section 3.15 Common Channel Signalling for more
0 information on DPNSS.

0 (x) For each NT6X02IC ordered (BCS-27), provide:

0 - four (4) XPM Processor CP NT6X45AF/BA
0 - two (2) DS30 Network Interface CP NT6X40AC
0 - two (2) SP Memory Plus CP NT6X46BB
0 - two (2) MP Memory Plus CP NT6X47AC

0 - two (2) MSG Protocol & Tone CP NT6X69AC
0 - two (2) Power Converter CP NT2X70AE

0 NT6X02IC is to be ordered instead of NT6X02IA.

0 For each NT6X02BW ordered, provide:

0 - six (6) XPM Processor CP NT6X45BA
0 - two (2) Time Switch CP NT6X44AB/EA
0 - two (2) Power Converter CP NT2X70AE

0 NT6X02BW is to be ordered instead of NT6X02BP.

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0 Upon general availability, the NT6X45BA CP will become
0 the standard XPM Processor offering instead of the
0 NT6X45AF/AD CP.

0 If optional software feature NTXA66AA (Enhanced Office
0 Recovery) or NTXA67AA (Extended XPM Diagnostics) are
0 present, then the XPM Processor CP must be the NT6X45BA.
0 Provide four NT6X45BA XPM Processor CP for upgrading ex-
0 isting offices.

0 NT6X44EA adds Even-Bit-Inversion (EBI) to the Time Switch
0 CP (NT6X44AB).

0 (xi) If interface to the Enhanced Network (ENET) is required,
0 then the relevant DTC/LGC/LTC modules must have the
0 NT6X69AC Msg Protocol & Tone CP. NT6X69AC replaces
0 NT6X69AB.

0 Provide 1 NT6X02BQ change kit for each DTC/LGC/LTC module
0 you are upgrading to ENET. This change kit applies only
0 to modules provisioned at NT6X02 AS/IA, AT/LA or AU/MA
0 levels. Modules provisioned at earlier levels must be
0 upgraded to these levels before the NT6X02BQ change kit
0 can be applied.

0 (xii) If ENET interface is not required, use the product change
0 kit NT6X02EQ to upgrade DTC modules from NT6X02IA/LA/MC
0 to NT6X02IC/LC/MC levels.

0 (xiii) There are two methods available to satisfy 4 MB MP memory
0 requirements in existing DTC/LGC/LTC modules. The first
0 method is to apply one NT6X02EQ product change kit to
0 each DTC/LGC/LTC module to be upgraded as in item (1) be-
0 low. Per customer request, a second pair of office sup-
0 plied NT6X47AB packs may be added to each DTC/LGC/LTC
0 module to be upgraded as in item (2) below. Do not order
0 new NT6X47AB packs for the upgrade of NT6X02IA, LA, MA mod-
0 ules. The NT6X47AB packs that have been removed from up-
0 graded DTC/LGC/LTC modules may then be applied to other
0 relevant DTC/LGC/LTC modules.

0 1) Provision NT6X02EQ Product Change Kit to replace the
0 NT6X47AB MP Memory Plus circuit packs in slot 10 with
0 NT6X47AC packs. The NT6X02EQ kit may only be applied
0 to the following modules:

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0 DTC (CCS7) : BCS-27 and later (NT6X02AS/IA)
0 DTC (other): BCS-33 and later (NT6X02AS/IA)
0 LGC (all) : BCS-31 and later (NT6X02AT/LA)
0 LTC (all) : BCS-30 and later (NT6X02AU/MA)

0 2) Existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT0X50AA, Filler Face Plate, in Slot 09.
0 Provide two (2) NT6X47AB, MP Memory Plus CP for the
0 above listed modules.

0 One NT6X47AC in slot 10 (item 1) has the same memory
0 capacity as two (2) NT6X47AB in slots 9 and 10 (item 2).

0 | Where an existing DTC/LGC/LTC module is presently
0 equipped with two NT6X69AB in slot 18, if the existing
0 module is not required to interface ENET, new cards are
0 not required for these slots.

0 Provide one (1) NT6X02BQ Product Change kit for each ex-
0 isting DTC/LGC/LTC module to be upgraded to interface
0 ENET. The NT6X02BQ contains (2) NT6X69AC circuit packs.
0 The NT6X02BQ will convert the NT6X02IA/AS to NT6X02IC,
0 the NT6X02LA/AT to NT6X02LC, and the NT6X02MA/AU to
0 NT6X02MC.

0 If an existing DTC/LGC/LTC module has ALREADY been up-
0 graded to the NT6X02IC/LC/MC packfill level via the
0 NT6X02EQ KIT, provide two NT6X69AC circuit packs in slot
0 18 to upgrade the module for ENET interface.

0 | For Canadian applications only, provide the NT6X02ER
0 Product Change Kit for each existing DTC peripheral mod-
0 ule (NT6X02AR/AM) to be upgraded. This change kit makes
0 the appropriate circuit pack positions provisionable, but
0 contains no circuit packs. Refer to the engineering man-
0 ual rules to identify the circuit packs required for up-
0 grade of the NT6X02AR or NT6X02AM.

0 (xiv) The following are the minimum packfill levels required
0 for BCS-32 or later: NT6X02IA/IS, or NT6X02IC (for new
0 offices).

0 Building Blocks

0 (xv) Provide one NTZZ04EA Building Block product change kit
0 for each existing NT6X02AA DTC/LGC/LTC module to be up-
0 graded. Do not order the NT6X02ZE PC Kit.

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The NTZZ04EA building block contains the following:

0

(1) NT6X02ER XPM PC Kit

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(1) NT6X02ZL Wiring Kit

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(2) NT0X50AA Filler Face Plate

0

(2) NT6X47AC Master Proc Memory Plus CP

0

(2) NT6X46BB Signal Processor Memory Plus CP

0

(2) NT6X69AC CPP Msg Protocol & Tone CP

0

(2) NT2X70AE Power Conv +/-5V & 12V CP

0

(2) P0711663 Desig. Label for NT6X47AC

0

(2) P0711664 Desig. Label for NT6X46BB

0

(2) P0710476 Desig. Label for NT6X69AC

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(2) P0698943 Desig. Label for NT2X70AE

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(Note: The NTZZ04EA includes all circuit packs required to upgrade an NT6X02AA module except the NT6X45 cards.

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The NTZZ04EA building block kit may be used to upgrade the NT6X02AA module as follows:

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Building Block	From	To
NTZZ04EA	NT6X02AA (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

Provide one NTZZ04GA Building Block product change kit for each existing NT6X02AC DTC/LGC/LTC module to be upgraded. Do not order the NT6X02ZE PC Kit.

The NTZZ04GA building block contains the following:

(1)	NT6X02ER	XPM PC Kit
(1)	NT6X02ZL	Wiring Kit
(2)	NT0X50AA	Filler Face Plate
(2)	NT6X47AC	Master Proc Memory Plus CP
(2)	NT6X46BB	Signal Processor Memory Plus CP
(2)	NT6X69AC	CPP Msg Protocol & Tone CP
(2)	P0711663	Desig. Label for NT6X47AC
(2)	P0711664	Desig. Label for NT6X46BB
(2)	P0710476	Desig. Label for NT6X69AC

(Note: The NTZZ04GA includes all circuit packs required to upgrade a NT6X02AC module except the NT6X45 cards.

The NTZZ04GA building block kit may be used to upgrade the NT6X02AC module as follows:

Building Block	From	To
NTZZ04GA	NT6X02AC (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

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0 (xvi) Existing DTC/LGC/LTC module is presently equipped with
0 four (4) NT6X45AA, XPM Processor CP, in Slots 08 & 12.
0 Application of the NTZZ04EA/NTZZ04GA makes these slots
0 provisionable and replacement cards must be ordered as
0 follows:

0 For A-stock upgrades provide four (4) NT6X45BA cards in
0 slots 8 and 12 of the upper and lower shelves of the pe-
0 ripheral modules. If B-stock material is required, then
0 four NT6X45BB packs must be merchandise ordered via an
0 88K.

0 The existing NT6X45AA packs must be replaced because they
0 will not work with New Messaging. The only reason NT6X45
0 cards are not included in the NTZZ04EA/GA upgrade kit is
0 because there is an option between NT6X45BA and NT6X45BB
0 packs. Either the NT6X45BA packs or the NT6X45BB packs
0 must be ordered or the upgrade will not have been done
0 correctly.

0 (xvii) The existing DTC/LGC/LTC module is presently equipped
0 with the following DS30 Network Interface CP in Slots 22
0 & 23: four (4) NT6X40AA.

0 If copper interface to the Network is required, then DO
0 NOT order new circuit packs for these slots.

0 If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP in Slot 22, and two (2) NT6X40DA, DS512 Pad-
0 dle Board, in Slot 22R of each relevant DTC/LGC/LTC mod-
0 ule. Also, provide one (1) NT6X02BU, Fiber I/F Hardware
0 Assembly, for each DTC/LGC/LTC module interfacing to the
0 Enhanced Network (ENET). The NT6X02BU Fiber Assembly
0 mounts on the backplane of the lower array in a module
0 and provides the fiber interface for both arrays.

0 Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

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0 (xviii) The existing DTC/LGC/LTC module is presently equipped
0 with four (4) NT6X47AA, MP Memory CP, in Slots 09 & 10.
0 Application of the NTZZ04EA/NTZZ04GA replaces these cir-
0 cuit packs with two NT6X47AC Master Processor Memory cir-
0 cuit packs.

0 (xix) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X46AA Signal Processor Memory Plus CP in
0 slot 11. Application of the NTZZ04EA/NTZZ04GA replaces
0 these circuit packs with two NT6X46BB circuit packs.

0 (xx) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X43AA, Msg Interface CP, in Slot 18. Ap-
0 plication of the NTZZ04EA/NTZZ04GA replaces these circuit
0 packs with two NT6X69AC Msg Protocol & Tone circuit
0 packs.

0 (xxi) If the existing module was a NT6X02AA, then the NTZZ04EA
0 provides two (2) NT2X70AE, Power Converter CP, in Slot 25
0 of each DTC/LGC/LTC module.

0 If the existing module was a NT6X02AC, then two (2)
0 NT2X70AD, Power Converter CP, already exist in Slot 25 of
0 each DTC/LGC/LTC module. DO NOT order new circuit packs
0 for these slots unless requested by the customer. Per
0 Telco request, the existing NT2X70AD CP's in each
0 DTC/LGC/LTC can be replaced by the NT2X70AE, Power Con-
0 verter ESD CP.

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0 1.1.6 Common Peripheral Controller Equipment Frame

0 (a) General Description

0 The primary function of this frame is to house Line Group Con-
0 troller (LGC) Modules, Digital Trunk Controller (DTC) Modules or
0 Line Trunk Controller (LTC) Modules. Subject to certain re-
0 strictions, two different kinds of modules can be mounted on the
0 same frame. NTL Customer Engineering is to be consulted regard-
0 ing these configurations.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) This frame can accommodate four (4) shelves of equipment
0 (i.e. two modules). Modules are filled and numbered on
0 the frame from the bottom up.

0 (ii) Normally both modules are the same type. Two (2) modules
0 of different types can also be mounted on the same frame.
0 This situation would only occur in a very small office or
0 for the last frame in an office in order to save one
0 frame.

0 (iii) A LGC/LTC/DTC module cannot mount on the same frame as an
0 ILGC/IDTC module.

0 (iv) When ISG is being applied to an office, the LCE frames
0 and their associated Common Peripheral Controller Equip-
0 ment Frame must be served by the same PDC frame.

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0 1.1.7 Common Peripheral Controller Equipment

0 (a) General Description

0 The Signalling Data Link (SDL) is channel on a T1 Carrier which
0 terminates on a DTC, DCM or LTC. ISDN trunks must terminate on a
0 DTC since they are only supported on DTCs.

0 (b) Reference

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations:

0 (i) The DTC may be used for SDL and ISDN trunks, however, for
0 reliability against failures, it is recommended to dis-
0 tribute the ISDN trunks and SDL across several peripher-
0 als.

0 (ii) CCS7 trunks must terminate on DTCs ONLY. Signalling Links
0 can terminate on DTCs, DCMs or LTCs. Signalling Links
0 and CCS7 trunks can be assigned to the same DTC.

0 (iii) CCS7 trunks can be mixed with PTS trunks on the same DTC,
0 however, both cannot be in the same trunk group.

0 (iv) Provision one (1) NT6X55AB DS0A Signaling Interface CP on
0 the DTC for each DS0A CCS7 signaling link. (Refer to
0 section 3.5 for more information.)

0 (v) DTC modules supporting CCS7 trunks must be equipped with
0 Extended Memory (NT6X46) and Enhanced Messaging (NT6X69).

0 (vi) The maximum number of DTCs utilizing CCS7 is 60 per of-
0 fice based on each DTC requiring 2 IPMLs per MSB7.

0 (vii) Each DTC utilizing CCS7, requires two continuity cards
0 NT6X70AA for continuity checking on ISUP trunks for BCS23
0 and earlier. In BCS24 and later, the software require-
0 ment for Continuity Cards was removed so that customers
0 requesting the cost reduction when testing is not re-
0 quired are not required to order the cards.

0 For U.S. applications only, since the NT6X70-- is re-
0 quired for the COT test, it is recommended that continu-

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0 ity cards continue to be provisioned in most cases.
0 Provisioning Continuity Cards on CCS7 DTCs should be con-
0 sidered standard. Only per customer request can they be
0 omitted.

0 For Canadian applications only, many customers have a
0 high penetration of digital trunk facilities and do not
0 require the Continuity card. Provision these cards only
0 on DTCs whose trunks support analog facilities at some
0 point in the end-to-end connection of the trunk.

0 (viii) Refer to Section 3.5 for more information on the DTC, DCM
0 and LTC.

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0 1.1.8 ISDN Common Peripheral Controller (CPEI)

0 (a) General Description

0 The ISDN Common Peripheral Controller (CPEI) is the Peripheral
0 Controller for the ISDN. The CPEI frame is named LGEI, LTEI or
0 DTEI depending on the access modes supported (BRI, PRI, etc.)

0 The CPEI has 20 p-side ports that are provisioned as required to
0 support DS-30A links from LCMs, LCMEs, and LCMIs; DS-1 links to
0 the Packet Handler; DS-1 links for PRI or non-ISDN trunks; and
0 D-channel handlers.

0 An offshore version of the CPEI has also been created whose pri-
0 mary difference is the use of PCM-30 interfaces instead of DS-1
0 interfaces.

0 (b) References

0 System Engineering Bulletin (SEB) 88-10-001

0 (c) Provisioning Considerations

0 (i) The CPEI is used to interface the DS-30A links from line
0 modules, the DS-1 links to the Packet Handler, and the
0 non-ISDN and ISDN-PRI DS-1 links.

0 The frame and its modules and shelves are assigned func-
0 tional names depending on the ISDN access modes sup-
0 ported. For BRI access the following names apply:

Access Modes	Equip	Name	Abbr
-----	-----	-----	----
DS-30A links to LCM/LCME/LCMIs, DS-1 links to Packet Handler	Frame	ISDN Line Group Equipment	LGEI
	Module	ISDN Line Group Controller	LGCI
	Shelf	ISDN Line Group Array	LGAI

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Access Modes	Equip	Name	Abbr
-----	-----	-----	-----
DS-30A links to LCM/LCME/LCMIs,	Frame	ISDN Line Trunk Equipment	LTEI
DS-1 links to Packet Handler, non-ISDN DS-1 trunks	Module	ISDN Line Trunk Controller	LTCI
	Shelf	ISDN Line Trunk Array	LTAI

0 Planned availability of these functions is as follows:
0 LGEI in BCS-27, LTEI in BCS-28. In addition, PRI DS-1
0 links are to be supported on LTEI in BCS-30.

0 (ii) Upgrade kits will be available to apply ISDN capability
0 to existing LGE/LTE/DTE/SME frames. The required kits
0 are:

0 NT6X02ZA CPCI ISDN Upgrade Circuit Pack Change Kit
0 NT6X01ZZ CPCE ISDN Upgrade Wiring Change Kit

0 These kits are not to be ordered for U.S. applications
0 until further notice.

0 The above kits will take any NT6X01AA CPCE frame and any
0 common circuit pack fill associated with this frame and
0 convert it to NT6X01AB CPEI frame and NT6X02NA ISDN com-
0 mon CP fill.

0 The NT6X02ZA CPCI ISDN Upgrade Circuit Pack Change Kit
0 can also be used on the NT6X01AB CPCE frame to upgrade a
0 non-ISDN DTC module to handle ISDN applications.

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0 (iii) The Maximum number of each type of link, and the minimum
0 software release that supports it are:

0 LCM/LCME/LCMI - CPEI DS-30A links:
0 - up to 18 (BCS-27 or higher)

0 CPEI - Packet Handler DS-1 links:
0 - up to 16 (BCS-27 or higher)

0 Non-ISDN trunks:
0 - up to 16 (BCS-28 or higher)

0 PRI trunks:
0 - up to 16 (BCS-29 or higher)

0 There are no restrictions on the assignment of Bb or Bd
0 channels to packet handler DS-1 link channels. Note that
0 the CPEI statmux maximum is 64:1 for Bd channels.

0 | (iv) Prior to BCS-31, in an office equipped with both ISDN and
0 non-ISDN peripheral controllers, the CPCI modules could
0 be assigned the same discrimination numbers as existing
0 non-ISDN modules. For example, LGC 01 and LGCI 01 could
0 co-exist in an office. The same is not true for LCME/LCMI
0 versus LCM bays.

0 | For BCS-31 and above, discrimination numbering of ISDN
0 peripherals has been changed, requiring them to be con-
0 secutive with non-ISDN modules. Frame level naming and
0 numbering is unchanged and the frame type is still deter-
0 mined by the bottom module in the frame. At the MAP, ISDN
0 modules are no longer called LGCI/LTCI. Instead, only
0 LGC/LTC are allowed. (Note that DTCI has not been changed
0 to DTC at the MAP). As a result of this change, at
0 BCS-31, existing ISDN peripheral controllers (LGCI/LTCI)
0 will need to be renumbered to be consecutive with
0 non-ISDN controllers. For example, an office with exist-
0 ing LGC 00-05 and LGCI 00-01 will require renumbering the
0 ISDN modules to LGCI 06-07 at BCS-31. New labels for the
0 ISDN controllers will be required.

0 | DTC and DTCI numbering will not be changed due to the
0 complexity of changing in-service trunks and the lack of
0 a software tool for this activity. Numbering for DTC/DTCI
0 modules will be unchanged from pre-BCS31 practices.

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0 | At the MAP, modules can still be identified as ISDN or
0 non-ISDN by referring to the ISP16 table.

0 (v) In an office equipped with both ISDN and non-ISDN periph-
0 eral controllers, the CPCI modules can be assigned the
0 same discrimination numbers as existing non-ISDN modules.
0 For example, LGC 01 and LGCI 01 can co-exist in an of-
0 fice. The same is not true for LCMI versus LCM bays.

0 (vi) The following chart illustrates the call types which im-
0 pact Real Time Engineering of the Master Processor in the
0 LGCI provisioned with Basic Rate Interface (BRI). Cur-
0 rently, the Master Processor is the only processor which
0 requires Real Time Engineering.

CALL TYPE	BCS	
	27	28
ISDN Circuit Switched	Y	Y
B Channel Packet Switched	N	N
D Channel Packet Switched	N	N
Electronic Business Set	Y	Y
Datapath	Y	Y
Other (POTS and MDC)	N	Y

0 Refer to System Engineering Bulletin (SEB) 88-10-001 for
0 BCS 25-27 Abbreviated Real Time Engineering Guidelines
0 for the LGCI.

0 BCS 28 Abbreviated Real Time Engineering Guidelines for
0 the LGCI provisioned with Basic Rate Interface is to be
0 provided in a future issue of this document.

0 (vi) The DTC NT6X02AI can be provided on the CPEI frame for
0 DMS-250 applications. This module will handle non-ISDN
0 trunking (employing A/B bit signaling) required for
0 DMS-250 applications but will not handle ISDN PRI. The
0 DTC can be converted at a later date to a DTCT in order
0 to handle ISDN PRI.

0 The NT6X01WC DTC Wiring Option (NT6X01AB) is provided per
0 each non-ISDN module equipped on the CPEI frame.

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0 Standard DMS-250 DTC circuit packs are provisioned on the
0 DTC module as required.

0 (vii) Optional Software Features

0 Enhanced Office Recovery, NTXA66AA, is an optional soft-
0 ware feature that improves the present office recovery
0 time of extended peripheral modules (XPM). Extended XPM
0 Diagnostics, NTXA67AA, is an optional software feature
0 that enhances the present diagnostics of extended periph-
0 eral modules (XPM). The LTCI is classified as an XPM.

0 These Software features are applicable to any peripheral
0 module (XPM) which contains both enhanced messaging (i.e.
0 the 6X69/79 pair or the 6X69AB CP) and enhanced memory
0 (i.e. the 6X46AC CP or the 6X46BA CP).

0 If optional software feature NTXA66AA (Enhanced Office
0 Recovery) or NTXA67AA (Extended XPM Diagnostics) are
0 present, then the XPM Processor CP must be the NT6X45BA.
0 Provide four (4) NT6X45BB (U.S. applications) or
0 NT6X45BA (Canadian applications) XPM Processor CP for up-
0 grading existing offices.

0 | (viii) Offshore CPEI

0 | NT6X01AC Offshore Peripheral Controller Equipment Frame

0 | The NT6X01AC Offshore Common Peripheral Controller Equip-
0 | ment Frame is based on the domestic NT6X01AB ISDN periph-
0 | eral controller, adapted for applications outside North
0 | America ("Offshore"). It supports PCM30 links, ISDN ser-
0 | vices, and Common Channel Signaling 7 (CCS7) features on
0 | two independent peripheral modules.

0 | The NT6X01AC Offshore Peripheral Controller Equipment
0 | frame supports two peripheral module types: PLGC and
0 | PDTC.

0 | PLGC - Supports ISDN, Centrex, EBS, IBN and POTS services on
0 | standard Line Concentrating Module types

0 | - Has PCM-30 P-side links for PRLCM and Offshore Remote
0 | Switching Center interface

0 | - Operation as a non-ISDN peripheral is not yet imple-
0 | mented in software, meaning that the NTB01AA ISDN

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0 | Pre-Preprocessor CP is required even if no ISDN fea-
0 | tures are used

0 | - Supports AMI interface to the NT1. 2B1Q is not sup-
0 | ported for this interface

0 | PDTC - Supports CCS7 and R1 signaling in Offshore applica-
0 | tions, using PCM-30 links

0 | - ISDN services like Primary Rate Interface are not
0 | supported

0 | Modules of different types may be mixed on the frame if
0 | required.

0 | NTBX02AA D-Channel Handler CP are not required for PDTC
0 | applications, nor where the PLGC supports only non-ISDN
0 | LCMS.

0 | NTBX01AA ISDN Pre-Processor CP are always required on
0 | PLGC (until such time as software supports purely
0 | non-ISDN operation). This CP is not required on PDTC.

0 | (ix) All PCM30 links from a PRCC must terminate on the same
0 | host PLGC. Only the PLGC peripheral type can terminate
0 | PRCC host links.

0 | (x) The Offshore Offshore versions of the Common Peripheral
0 | Controller Equipment Frame and Remote Controller Equip-
0 | ment Frame are provisioned the same as their domestic
0 | counterparts (subject to the usage restrictions). The
0 | primary difference is the use of PCM-30 interfaces in-
0 | stead of DS-1 interfaces. A maximum of sixteen (16)
0 | PCM-30 interfaces may be equipped on the PLGC/PDTC versus
0 | twenty (20) DS-1 interfaces on the North American prod-
0 | uct. Provision one (1) NT6X27AC PCM-30 Interface CP for
0 | every two PCM-30 interfaces required. Certain other cir-
0 | cuit pack vintages are different between domestic and
0 | Offshore products; refer to the Engineering Manual
0 | sections for details.

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0 1.1.9 Digital Packet Network (DPN) Equipment Provisioning

0 (a) General Description

0 Nailed-up B channel and statistically multiplexed D channel
0 packet data are routed to the DMS-100 Integrated Packet Handler
0 (IPH) equipment via DS-1 links from the CPEI frame. The IPH is
0 one of the peripherals needed to add ISDN to a DMS-100. The IPH
0 comes in a cabinet that is configured to support a set number of
0 B-channels and D-channels. Contained in a single cabinet is a
0 Digital Interworking Unit (DIU) and two Resource Modules (RM).

0 The DS-1 links are interfaced to the IPH by means of the DIU. The
0 RM portion of the IPH is a fully redundant module, including two
0 office Processing Elements (PE), two Call Server PEs, two DIU
0 servers, and two Disk Drives. In addition, the RM contains the
0 necessary hardware to support the OAM and subscriber service con-
0 nections. This IPH can be supported with G24 and later software
0 release. G26 is compatible with BCS29, 30, 31, and 32 if I-OAM
0 is not fully utilized. If full I-OAM capabilities are desired,
0 G26 is compatible with BCS31.

0 Prior to G26, the configuration of the PH equipment depended on
0 the software release. Prior to G23 release, the DIU worked in
0 conjunction with a DPN Access Module (AM) and the Network Module
0 (NM). The AM provides interfaces for the DIU, while the NM
0 interfaces the AM to the packet-switched network. A configuration
0 requiring only one AM shelf is called a DPN-10. A two-AM shelf
0 configuration is called DPN-15.

0 As of G23 release, the DPN-100 with the Resource Module (RM) was
0 introduced to provide significantly increased throughput. The NM
0 was still required for applications involving X.75 gateways (un-
0 til G24), and Network Control System (NCS) and data spooling
0 functions (until G26).

0 In G24, the AM and RM can interface to X.75 gateways. Generic G24
0 is the baseline for interfacing with the BCS-27 LGCI.

0 In G26, the IPH does not require an NM. The data spooling and
0 Network Control System functions can be performed by the IPH. The
0 AM is replaced by the RM. Reference Figure 316.6, Packet Handler
0 System Configuration.

0 This section describes the engineering of the ISDN-specific com-
0 ponents of the PH; that is, the DIU and the related RM equipment.

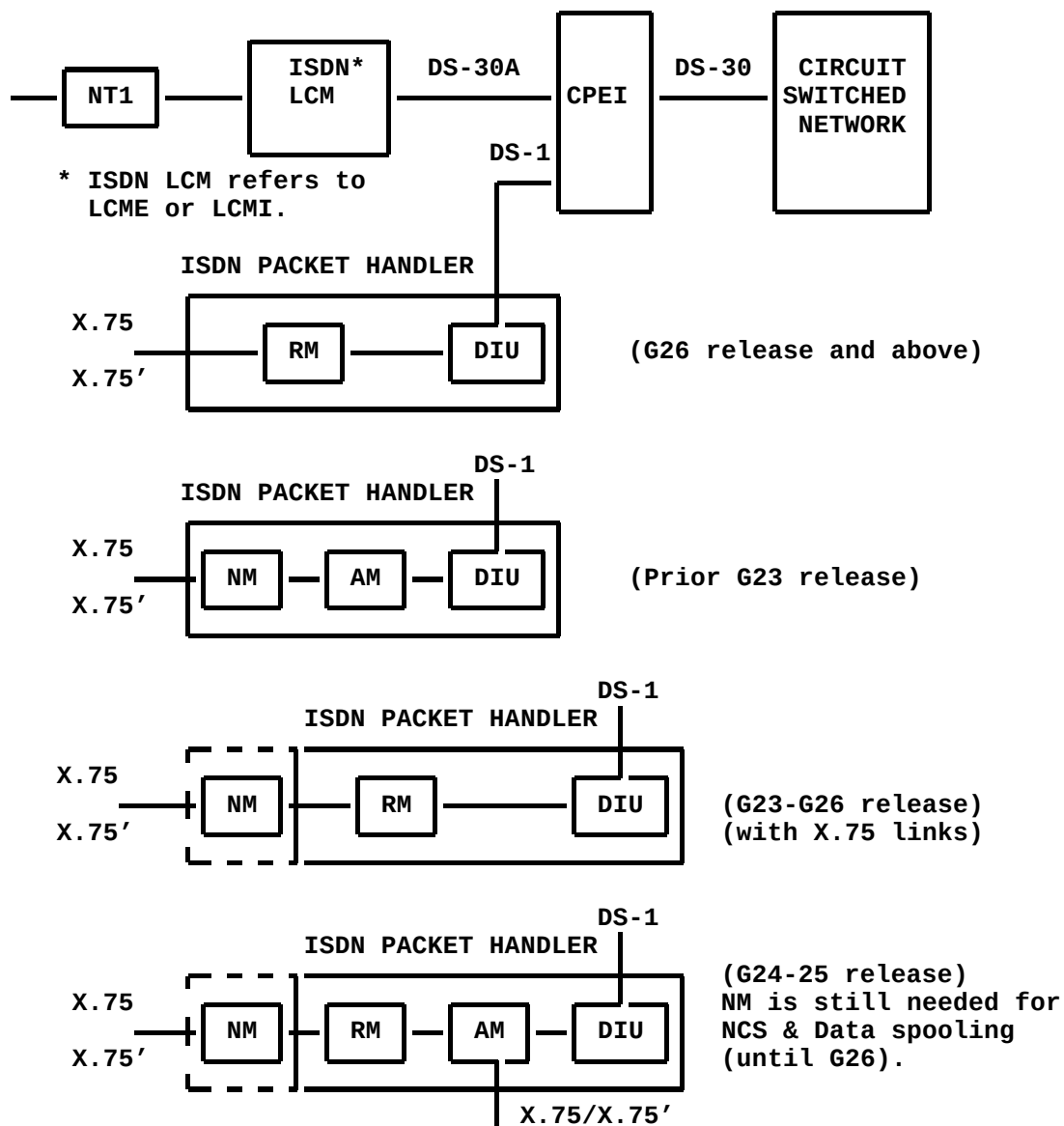


Figure 316.6: Packet Handler System Configuration

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0 (b) References

0 NTP 241-1001-XXX DPN.....

0 (c) Provisioning Considerations

0 (i) The quantity of DS-1 links from the DMS is used to deter-
0 mine the quantity of DIU systems (shelves) and sub-
0 systems required. Each sub-system supports a single DS-1
0 link, and the number of interface cards in the sub-system
0 is determined by the number of Bb and Bd channels provi-
0 sioned on the DS-1 link.

0 On the CPCI, DS-1 links and individual channels within
0 the links may be allocated to Bb or Bd as required. Bb
0 and Bd should be distributed as equally as possible over
0 all the links from the same CPCI.

0 (ii) For more information on the DPN, refer to the NTP
0 241-1001- series of documents.

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0 Following are the peripheral packfills to be ordered for new pe-
0 ripheral modules:

DESCRIPTION	NEW-ORDER PACKFILL PEC	REPLACES PEC
DTC Common CP	NT6X02IC	NT6X02IA
LGC Common CP	NT6X02LC	NT6X02LA
LTC Common CP	NT6X02MC	NT6X02MA

NOTE: The NT6X02IC,LC,MC are the standard DTC/LGC/LTC offerings. All initials and extensions ordering new XPM modules will receive the NT6X02IC,LC,MC packfills.

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0 2.1 HARDWARE PROVISIONING

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0 2.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The DTC/LGC/LTC modules have a power consumption limitation which
0 affects the provisioning of circuit packs on these modules. This
0 limitation MUST be taken into consideration before any
0 DTC/LGC/LTC module is engineered, new or existing.

0 IN U.S. - Refer to ECM-441, XPM Power Provisioning, for further
0 information on this subject.

0 IN CANADA - Currently the only power consumption limitation oc-
0 curs when the CLASS Modem Resource (CMR) card, NT6X78AA, is pro-
0 visioned into a LGC, LTC, or SMS module. For further
0 information, refer to ECM-332, CLASS - U.S. / CMS - Canada.

0

0 2.1.2 HARDWARE DEPENDENCIES

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0 N/A

0 P AND C SIDE PORT REQUIREMENTS

0

0 P-Side Ports

0 LGC 2-6 DS-30A
0 2-6 DS-1 When connecting to an RSC that does not have
0 CDO/PBX Trunking. Refer to ECM618 for more
0 details.

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0 LTC 2-20 DS-1
0 2-20 DS-30A
0 DTC 1-20 DS-1

0 C-Side Ports
0 LGC 3-16 DS-30
0 LTC 2-16 DS-30
0 DTC 2-16 DS-30

0 DMS BUS PORT REQUIREMENTS

0
0 N/A

0 CIRCUITS PER CARD

0
0 N/A

0 DISCRIMINATION NUMBERING

0
0 N/A

0 2.1.3 PROVISIONING CONSIDERATIONS

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0 Ordering New Peripheral Modules

0
0 Information in sections 2.4.1 - 2.4.9 is contained in the Engi-
0 neering manual sections for the NT6X01AA/AD frames and has been
0 removed from this ECM body.

0 o Application of XPM PLUS to LGC, and LTC modules
0 is mandatory (BCS Gating) for BCS-38. Application of
0 XPM PLUS to DTC modules is mandatory for BCS-41.

0 o As of BCS 35 the MP/SP processor will no longer be
0 shipped for new orders of the LGC/LTC/DTC. The Unified
0 process (XPM Plus) will be shipped for all new LGC/DTC/LTC/
0 modules ordered.

0 Refer to ECM 678 for additional information on XPM Plus.

0 2.1.4 OFFICE LAYOUT INFORMATION

0
0 N/A

0
0 2.1.5 TRAFFIC TABLES

0
0 Refer to ECM-350, The Credit System.

0 The following information supplements the Credit System Assump-
0 tions in ECM350 DMS-100 Traffic Provisioning "The Credit System":

0

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0 In ECM350, it is stated that a maximum of 62 software nodes can
0 be datafilled on an LGC/LTC P-side in BCS23 and onwards. The term
0 "software nodes" is defined fully in the ECM.

0 However, there is an additional restriction due to the limited
0 number of direct messaging channels to the LGC/LTC P-side. A
0 maximum of thirty (30) channels is available for this purpose.
0 Each of the following nodes consumes two (2) direct messaging
0 channels:

- 0 - LCM
- 0 - RCC
- 0 - RLCM/OPM
- 0 - Each RMM shelf on the RLCM/OPMs
- 0 - Each ESA Processor (NT6X75AA CP) on the RLCM/OPMs

0 The total number of nodes provisioned on the LGC/LTC P-side can-
0 not exceed the maximum (30) available.

0 Nodes that do NOT require a direct messaging channel comprise
0 those interfaced to the LGC/LTC via a Remote Switching Center
0 (RSC), ie. any LCMs, RLCM/OPMs, RMM shelves, and ESA Processors
0 off the P-side of the RCC. The TOTAL of these nodes plus those
0 above which require direct messaging channels cannot exceed 62.
0 Refer to Figure A on the following page.

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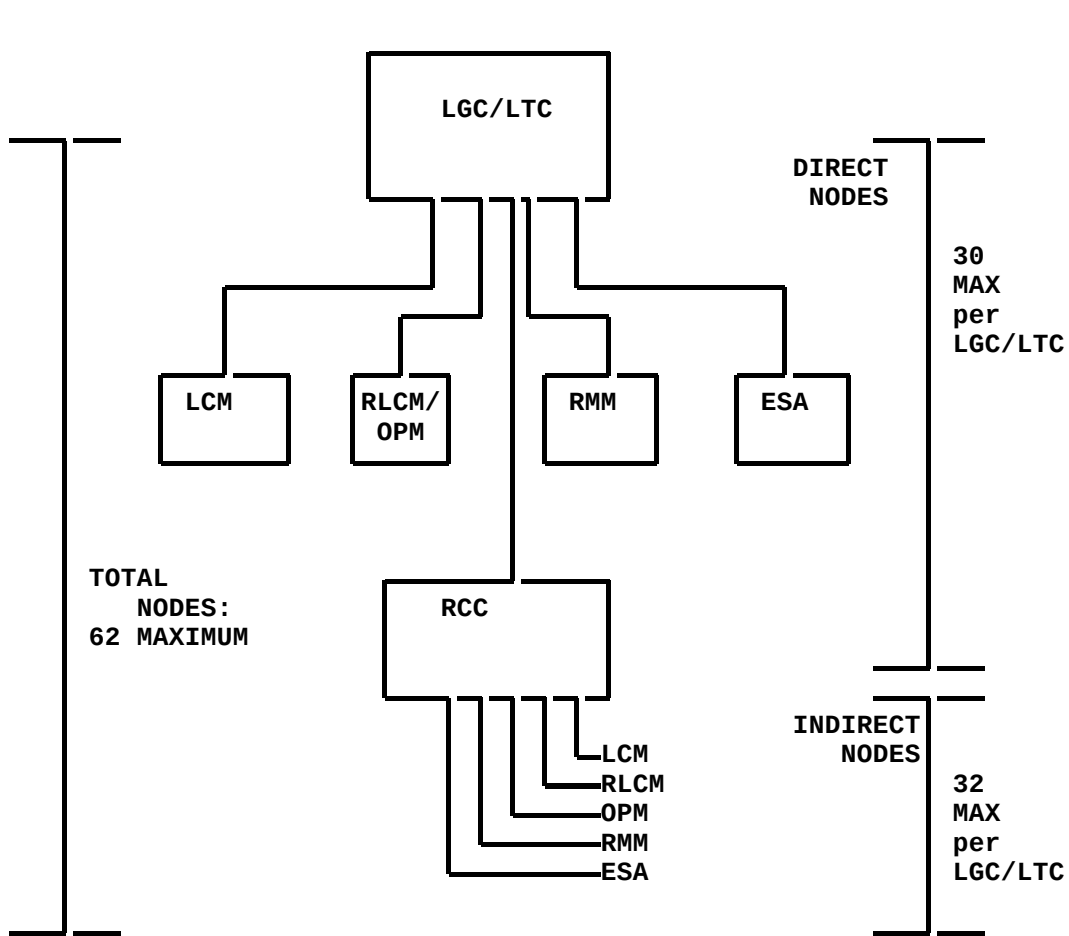


FIGURE A: MAXIMUM LGC/LTC NODES (Direct and Indirect)
(Each element constitutes two nodes.)

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0 2.1.6 PROVISIONING CONSIDERATIONS (BUILDING BLOCK ENGINEERING)

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0 LGE/LTE/DTE CUSTOMER QUESTIONS

0

0 Assumptions

- 0 1. Capacity figures in this document are based on REAL:QUICK.
0 2. 50/50 Orig/Term split provides a worst case scenario.
0 3. 4 secondary members per MADN group.
0 4. 40 percent Custom Calling Feature assignment to POTS lines.
0 5. 100 percent Custom Calling Feature assignment to MDC lines.
0 6. 100 percent UTR provisioning.
0 7. 100 percent secondary member ringing for MADN groups.
0 8. 50 percent secondary member answer.
0 9. Trunks are data filled requiring A and B Scanning,
0 CSM and DS-1 maintenance overheads.

0 Considerations

- 0 1. Utilization higher than 80 percent requires a detailed
0 capacity study using PRTCALC.
0 2. When MADN penetration is higher than 40 percent, then
0 a detailed study is required using PRTCALC.
0 3. Deviation from recommended NTI assignment rules will
0 dictate a detailed capacity study.
0 4. Special applications of the LGC will require detailed
0 capacity study using PRTCALC.
0 5. Call timings used reflect average work times for the
0 lines types.

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0 Q1. DS-1 Link Information

0 a) Complete the following table (for LGC/LTC applications):

	# LINKS PER REMOTE (i)						
	16	15	14	13	12	11	10
No. RCC W/ CDO or PBX Trunks (RW)							
No. RCC W/O CDO or PBX Trunks (R)							
No. RLCM	XX	XX	XX	XX	XX	XX	XX
No. RLCC	XX	XX	XX	XX	XX	XX	XX
No. OPM	XX	XX	XX	XX	XX	XX	XX
(TOTAL) T = RLCM + RLCC + OPM	XX	XX	XX	XX	XX	XX	XX

	# LINKS PER REMOTE (i)							
	9	8	7	6	5	4	3	2
No. RCC W/ CDO or PBX Trunks (RW)								
No. RCC W/O CDO or PBX Trunks (R)								
No. RLCM	XX	XX	XX					
No. RLCC	XX	XX	XX					
No. OPM	XX	XX	XX					
(TOTAL)								

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0	T = RLCM + RLCC	XX	XX	XX					
0	+ OPM								
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0 b) Total DS-1 Span Lines (DTC applications) _____

0 (Applications for span lines are detailed as follows:)

0 Standard Span Lines

0 CCS7 Span Lines

0 Span lines req'd for TOPS DA ARU links.

0 Span lines req'd for TOPS VSN voice links.

0 Span lines req'd for TOPS voice links.

0 Span lines req'd for TOPS MPX VSN voice links

0 Span lines req'd for TOPS loop-around
0 trunking.

0 Span lines req'd for E911 loop-around
0 trunking.

0 Span lines req'd for VMX interface.

0 Span lines req'd for VMX loop-around.

0 Spare DTC DS-1 Span Lines.

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0 Q2. Spread Information (LGC/LTC):

0 a) RSC's assigned to dedicated controller modules (Y/N) _____

0 Q3. Network Interface (select one):

0 a) DS-30 to Network (Y/N) _____

0 b) DS-512 to Enhanced Network (E-NET) (Y/N) _____

0 Q4. Optional Features (LGC/LTC)

0 a) CLASS-Calling Number Display required (Y/N) _____

0 Q5. LGC/LTC Real Time Questions (quantities):

0 a) No. of POTS Lines _____

0 b) No. of MDC Lines W/O MADN _____

0 c) No. of MDC Lines W/ MADN _____

0 d) No. of RES Lines W/O CLASS _____

0 e) No. of RES Lines W/ CLASS _____

0 f) No. of Trunks _____

0 Q6. LGC/LTC Real Time Questions (call attempts):

0 a) POTS 2-Way HDBH Call Attempts per Line _____

0 b) MDC 2-Way HDBH Call Attempts per Line _____

0 c) RES 2-Way HDBH Call Attempts per Line _____

0 d) RSC Call Attempts _____

0 e) HDBH Call Attempts per Trunk _____

0 f) Average DTMF Holding Time in seconds _____

0

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0 Q7. DTC REAL Time Questions (quantities):

0 a) No. of MF Trunks _____

0 b) No. of SS7 Trunks _____

0 Q8. DTC Real Time Questions (call attempts):

0 a) HDBH Call Attempts per Trunk _____

0 b) MF RCVR Holding Time in seconds _____

0 Q9. Quantity of CCS7 DS0A DTC links required ? _____

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0 LGE/LTE CALCULATIONS

0
0 (NOTE: The values used in these calculations are obtained
0 from section 2. LGE/LTE/DTE CUSTOMER QUESTIONS.)

0 (a) Real Time Calculations

0 Refer to REAL::QUICK program for REALTIME usage of the
0 LGC and LTC.

0 (b) Hardware Provisioning

0 Quantity of LGC = R126, R127 from ECM 497

0 Quantity of LTC = R136 from ECM 497

0 NTZZ02BA = LGC

0 NTZZ02CA = LTC

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0 (c) Frame Calculation

0 NTZZ22AA or NTZZ22BA (US) or NTZZ22DA (US)
0 = (NTZZ02BA + NTZZ02CA) / 2 (round-up)

0 If (NTZZ02BA + NTZZ02CA) = odd number,
0 then: provide one (1) NT6X02AB for last frame.

0
0 (d) DS-1 Calculation

0 i = #Links Per LCM

0 Ti = Ti - #LCM

0 # DS-1 Links = (R16 + RW16) * 16 + (R15 + RW15) * 15
0 + (R14 + RW14) * 14 + (R13 + RW13) * 13
0 + (R12 + RW12) * 12 + (R11 + RW11) * 11
0 + (R10 + RW10) * 10 + (R9 + RW9) * 9
0 + (R8 + RW8) * 8 + (R7 + RW7) * 7
0 + (R6 + RW6 + T6) * 6 + (R5 + RW5 + T5) * 5
0 + (R4 + RW4 + T4) * 4 + (R3 + RW3 + T3) * 3
0 + (R2 + RW2 + T2) * 2

0 NTZZ02DA = # DS-1 Links / 2 (round-up)

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0 (e) DS-30A Calculation

0 If Q2a is NO , then: NTZZ02JA = NTZZ02BA + NTZZ02CA

0 If Q2a is YES, then:

0 # DS-30A Links = (T6 * 6) + (T5 * 5) + (T4 * 4)
0 + (T3 * 3) + (T2 * 2)
0 + (#LCM * #Links Per LCM)

0 NTZZ02JA = # DS-30A / 20 (round-up)

0
0 (f) CMR Calculation

0 If Q4a is YES and Q2a is NO , then:

0 NTZZ02EA or NTZZ97AA = NTZZ02BA + NTZZ02CA

0 If Q4a is YES and Q2a is YES, then:

0 # DS-30A Links = (T6 * 6) + (T5 * 5) + (T4 * 4)
0 + (T3 * 3) + (T2 * 2)
0 + (#LCM * #Links Per LCM)

0 NTZZ02EA = # DS-30A / 20 (round-up)

0
0 (g) Network Interface Calculation

0 If Q3a is YES, then: NTZZ02GA = NTZZ02BA + NTZZ02CA
0 NTZZ02HA or NTZZ02HB/HM = 0

0 If Q3b is YES, then: NTZZ02GA = 0
0 NTZZ02HA or NTZZ02HB/HM NTZZ02BA + NTZZ02CA

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0 (h) UTR Calculation

0 POTS ORIG = (Q5a) * (0.5)

0 MDC W/O MADN ORIG = (Q5b) * (0.5)

0 MDC W/ MADN ORIG = (Q5c) * (0.5)

0 RES W/O CLASS ORIG = (Q5d) * (0.5)

0 RES W/ CLASS ORIG = (Q5e) * (0.5)

0 POTS DTMF CCS = (Q6f * Q6a) / 100

0 MDC DTMF CCS = (Q6f * Q6b) / 100

0 RES DTMF CCS = (Q6f * Q6c) / 100

0 UTR CCS POTS = (POTS DTMF CCS) * (POTS ORIG)

0 UTR CCS MDC W/O MADN = (MDC DTMF CCS) * (MDC W/O MADN ORIG)

0 UTR CCS MDC W/ MADN = (MDC DTMF CCS) * (MDC W/ MADN ORIG)

0 UTR CCS RES W/O CLASS = (RES DTMF CCS) * (RES W/O CLASS ORIG)

0 UTR CCS RES W/ CLASS = (RES DTMF CCS) * (RES W/ CLASS ORIG)

0 TOTAL UTR CCS = UTR CCS POTS
0 + UTR CCS MDC W/O MADN
0 + UTR CCS MDC W/ MADN
0 + UTR CCS RES W/O CLASS
0 + UTR CCS RES W/ CLASS

0 If UTR CCS = 0 to 765 , then NTZZ02FA = 1 * NTZZ02JA

0 If UTR CCS = 765 to 1600 , then NTZZ02FA = 2 * NTZZ02JA

0 If UTR CCS > 1600 , then issue following warning:
0 *****
0 * WARNING: UTR CCS is over (1600) *
0 *****

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0 (i) Filler Face Plate Calculation

0 NT0X50AA = 20 * (NTZZ02BA + NTZZ02CA)
0 - 1 * (NTZZ02DA)
0 - 2 * (NTZZ02EA + NTZZ02FA)
0 - 4 * (NTZZ02JA)

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0 DTE CALCULATIONS

0
0 (NOTE: The values used in these calculations are obtained
0 from section 2. LGE/LTE/DTE CUSTOMER QUESTIONS.)

0 (a) Real Time Calculations

0 Refer to REAL::QUICK program for REALTIME usage of the DTC.

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0 (b) Hardware Provisioning0 $DTC = (Q1b + (Q9 \times 2)) / 20$ (round-up)0 $NTZZ04BA = DTC$

0 $NTZZ22AA$ or $NTZZ22BA$ (US) or $NTZZ22DA$ (US)
0 $= NTZZ04BA / 2$ (round-up)

0 If $NTZZ04BA =$ odd number,
0 then: provide one (1) $NT6X02AB$ for last frame.

0 $NTZZ02DA = Q1b / 2$ (round-up)0 $NTZZ04CA = NTZZ04BA$

0 If $Q3a$ is YES, then: $NTZZ02GA = NTZZ04BA$
0 $NTZZ02HA$ or $NTZZ02HB = 0$

0 If $Q3b$ is YES, then: $NTZZ02GA = 0$
0 $NTZZ02HA$ or $NTZZ02HB = NTZZ04BA$

0 $TRKI = MF \text{ Trunks Incoming} = (Q7a) * (0.5)$ 0 $MF \text{ RCVR CCS} = (Q8a * Q8b) / 100$ 0 $UTR \text{ CCS} = TRKI * MF \text{ RCVR CCS}$

0 If $UTR \text{ CCS} = 0$ to 765 , then $NTZZ02FA = 1 * NTZZ04BA$
0 If $UTR \text{ CCS} > 765$, then $NTZZ02FA = 2 * NTZZ04BA$

0 $NT0X50AA = (16 * NTZZ04BA) - (NTZZ02DA + 2 * NTZZ02FA$
0 $+ 2 * NTZZ04CA + NTZZ04AA)$

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0 C-side Ports DTC = $(Q1b * 24) / 30$ (round-up)

0 NTZZ04AA = Q9

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0 2.2 PRODUCT/SYSTEM SPECIFICATION

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0 2.2.1 PHYSICAL CHARACTERISTICS

0

0 2.2.2 EMI/EARTHQUAKE INFORMATION

0

0 N/A

0

0 2.2.3 SPARING INFORMATION

0

0 Apply standard sparing algorithms.

0 2.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 A DTE/LGE/LTE Frame shall be fused as follows:

0	A-Feed	Two	20 Amp Fuses
0	B-Feed	Two	20 Amp Fuses

0

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0 Host - Digital Trunk Controller Equipment
0 Chapter 4

0 2.2.5 CURRENT DRAIN INFORMATION0
0 DTC/LGC/LTC Module: 8.5 Amps0 2.3 SOFTWARE PROVISIONING

0

0 2.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES0
0 Jobs that are ordering XPM Plus(UP Processor) in the NT6X01AD
0 frame at BCS 34 need the BCS 35 PM load and the NTRX42AA CC pack-
0 age.

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0 2.3.2 SOFTWARE USAGE RESTRICTIONS0
0 N/A

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0 2.3.3 MEMORY PROVISIONING

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0

N/A

0 2.4 REAL TIME IMPACT

0 In the U.S., refer to PRTCALC.

0 In CANADA, for a detailed calculation of Peripheral Processor
0 (PP) realtime, use the XPRT program. Refer to the latest issue
0 of the Systems Engineering Letter (SEL) for details and opera-
0 tional instructions.

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0 3.0 International Frame LGE/DTE/LTE

0 The first application for the NT6X01AC International Frame LGE/DTE/LTE
0 Fiber ISDN is the Australia DMS-100 Intelligent Network.

0 The NT6X01AC International Common Peripheral Controller Equipment
0 Frame was developed for the DMS-100 Intelligent Network product for
0 the international market. The NT6X01AC design is based on the domes-
0 tic NT6X01AB ISDN peripheral controller, adapted for applications out-
0 side North America ("International"). It supports PCM30 links, ISDN
0 services, and Common Channel Signaling 7 (CCS7) features on two inde-
0 pendent peripheral modules.

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0 3.1 HARDWARE PROVISIONING

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0 3.1.1 HARDWARE USAGE RESTRICTIONS

0

0 NT6X01AC International Peripheral Controller Equipment Frame

0 The NT6X01AC International Peripheral Controller Equipment frame
0 supports two peripheral module types: PCM-30 LGC and DTC.

0 PCM-30 LGC - Supports ISDN, Centrex, EBS, IBN and POTS services
0 on standard Line Concentrating Module types

0 - Has PCM-30 P-side links for PRLCM and International
0 Remote Switching Center interface

0 - Operation as a non-ISDN peripheral is not yet imple-
0 mented in software, meaning that the NTB01AA ISDN
0 Pre-Preprocessor CP is required even if no ISDN fea-
0 tures are used

0 - Supports AMI interface to the NT1. 2B1Q is not sup-
0 ported for this interface

0 PCM-30 DTC - Supports CCS7 and R1 signaling in International ap-
0 plications, using PCM-30 links.

0 - ISDN services like Primary Rate Interface are not
0 supported

0 Modules of different types may be mixed on the frame if required.

0 NTB02AA D-Channel Handler CP are not required for PCM-30 DTC ap-
0 plications, nor where the PCM-30 LGC supports only non-ISDN LCMs.

0 NTB01AA ISDN Pre-Processor CP are always required on PCM-30 LGC
0 (until such time as software supports purely non-ISDN operation).
0 This CP is not required on PCM-30 DTC.

0

0 3.1.2 HARDWARE DEPENDENCIES

0
0 All PCM-30 links from a PRCC must terminate on the same host
0 PCM-30 LGC. Only the PCM-30 LGC peripheral type can terminate
0 PRCC host links.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

0

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0 3.1.3 PROVISIONING CONSIDERATIONS

0
0 NT6X01AC International Frame LGE/DTE/LTE ISDN

0 Common Circuit Packfill:

0 NT6X01AC is a general purpose Common Peripheral Controller Equip-
0 ment Frame for applications outside North America ("Internat-
0 ional"). It houses two dual shelf peripheral modules which
0 support PCM30 links, ISDN services, and Common Channel Signaling
0 7 (CCS7) features. Each peripheral module is housed on two adja-
0 cent shelves (ie. a pair of shelves on positions 65 and 51 and a
0 pair of shelves on positions 32 and 18).

0 Each of the two modules in the frame may be configured as:

- 0 - LGCO Line Group Controller Offshore Non-ISDN,
- 0 - LGC0I Line Group Controller Offshore ISDN,
- 0 - DTCO Digital Trunk Controller Offshore Non-ISDN,
- 0 - DTC0I Digital Trunk Controller Offshore ISDN, or
- 0 - TMS (TOPS Message Switch) for
 - 0 - TPC (TOPS Position Controller) interface,
 - 0 - Data base access, and
 - 0 - Inter DCH (D-Channel Handler) for
- 0 ORDB (Operator Reference Database).

0 Cooling Inverter Unit:

0 Provide for each frame,

- 0 - one (1) NT3X90AC Cooling Inverter Unit.

0 Isolated System Grounding:

0 When extending existing offices not equipped with Isolated System
0 Grounding (ISG), provide:

- 0 - one (1) NT0X0009 Logic Return Cable Assembly.

0

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0 Common Circuit Packfill:

0 Provide per customer requirements:

0 - maximum two (2) NT6X02UB LGC/DTC Common CPs (International).

0 NT6X02UB replaces NT6X02UA.

0 Filler Faceplates for Unequipped Modules:

0 When shelves 18-32 or 51-65 are not equipped with any circuit
0 packs, provide for each module:

0 - one (1) NT6X02AB CPC Filler Faceplates.

0 Filler Faceplates for Unequipped CP Slots:

0 For each unequipped circuit pack position on the module, provide:

0 - one (1) NT0X50AA filler faceplate.

0 ISDN Applications:

0 When ISDN BRA functions are required (ISDN functions on sub-
0 scriber lines) for each equipped LGC module, provide:

0 - up to nine (9) NTB02AA D Channel Handler CPs.

0 In BCS-28 or later, provide for use as a hot spare:

0 - one (1) additional NTB02AA D Channel Handler CP.

0 Note that NTB01AA/AB and NTB02AA ISDN CPs may not be provi-
0 sioned on a DTC which is provisioned with NT6X70AAs to handle
0 CCIS/CCS7 voice trunking.

0 DCH CP are not required on a PCM-30 DTC module nor where a PCM-30
0 LGC module supports only non-ISDN LCMs.

0 For TMS (TOPS Message Switch) applications, provide:

0 - four (4) NTB02AA D Channel Handler CPs.

0 Each NTB02AA supports up to 124 BRI D-Channels. The spare DCH
0 CP should not be counted when determining the number of NTB02AA
0 required to support D-channel traffic.

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0 PCM-30 Interface CPs:

0 Provide for each equipped LGC or DTC module, as per customer re-
0 quirements:

- 0 - maximum eight (8) NT6X27AC/BB PCM-30 Interface CPs.

0 For each TMS module,

- 0 - For TPC (TOPS Position Controller) interface,
0 - for up to 64 operators, provide:
0 - two (2) NT6X27AC/BB PCM-30 Interface CPs
0 in CP slots 5 of both shelves, and
0 - for more than 64 operators and up to 96 operators,
0 provide an additional:
0 - one (1) NT6X27AC/BB PCM-30 Interface CP
0 in CP slot 4 of shelf 0,

0 - For data base access, provide:
0 - two (2) NT6X27AC/BB PCM-30 Interface CPs
0 in CP slot 4 of shelf 1 and
0 in CP slot 3 of shelf 0, and

0 - For inter DCH ORDB, provide:
0 - one (1) NT6X27AC/BB PCM-30 Interface CP
0 in CP slot 3 of shelf 1.

0 Otherwise provide for each unequipped CP slot:

- 0 - one (1) NT0X50AA Filler Faceplate.
- 0
- 0
- 0
- 0
- 0
- 0
- 0

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Provide one (1) NT6X27AC/BB for every two PCM 30 ports required.

Peripheral port/pack location relationship is as follows:

CP POS	5	4	3	2
SHELF POS X+14	PORTS 2, 3	PORTS 6, 7	PORTS 10, 11	PORTS 14, 15
SHELF POS X	PORTS 0, 1	PORTS 4, 5	PORTS 8, 9	PORTS 12, 13

Where:

For the lower module in the frame
shelf position X=18, X+14=32

For the upper module in the frame
shelf position X=51, X+14=65

Assign NT6X27AC/BB to module starting at port 0 and continue in sequential order to port 15.

Each NTB02AA already assigned to CP pos 2 to 5 physically makes the two PCM 30 ports shown above unavailable for assignment to PCM 30.

LCM Interface CPs:

For PCM-30 LGC applications, to interface links from LCMI and/or LCM, provide:

- four (4) NT6X48AA DS30A LCM Interface CPs.

The NT6X48AA CP are assigned in pairs for reliability. One member of the pair interfaces the same DS30A ports as the other member. Each member of the pair occupies the same CP position, with one CP assigned to LGAI/LTAI 0 (lower shelf of the module) and the other assigned to LGAI/LTAI 1 (upper shelf of the module).

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0 The two pairs of NT6X48AA provide interfaces for up to twenty
0 (20) DS30A ports (links) from LCMEs, LCMIs, and/or LCMs.

0 The following is a listing of DS30A ports per DS30A LCM Interface
0 CP, NT6X48AA location:

	CP POS 6	CP POS 7
PORT	2	0
PORT	3	1
PORT	6	4
PORT	7	5
PORT	10	8
PORT	11	9
PORT	14	12
PORT	15	13
PORT	18	16
PORT	19	17

0 The ports for DS30A must be selected from the those ports that
0 remain after assignment of port circuits.

0 Assign ports to DS30A in the following sequence: 19, 17, 18, 16,
0 15, 13, 14, 12, 11, 9, 10, 8, 7, 5, 6, 4, 3, 1, 2 and 0 (if un-
0 used by DCH or DS-1). In an extension job, when adding new DCH
0 ports, the DS30A ports may have to be reconfigured in accordance
0 with this rule.

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0 Two Processor XPM (MP/SP) or XPM Plus (UP):

0 For offices with the XPM (MP/SP) feature, provide for each
0 equipped LGC or DTC module:

- 0 - four (4) NT6X45BA LGC/DTC Processor CPs,
- 0 - two (2) NT6X47AC 4MB MP Memory CPs,
- 0 - two (2) NT0X50AA Filler Face Plates in slot 10, and
- 0 - two (2) NT6X46BA/BB Signal Processor Memory Plus CPs.

0 Also provide NTB01AAs per 2) below.

0 Alternatively, for offices with the XPM Plus (UP) feature, pro-
0 vide for each equipped LGC or DTC module:

- 0 - two (2) NTMX77AA XPM Plus Processor CPs,
- 0 - two (2) NTMX71AA XPM Plus Paddleboards,
- 0 - one (1) NT6X01WE Wiring List XPM Plus, and
- 0 - eight (8) NT0X50AA Filler Face Plates
- 0 in slots 8, 9, 10, and 11.

0 Also provide NTB01ABs per 2) below.

0 In offices with the XPM (MP/SP) feature, provide:

- 0 - for each equipped LGC module:
 - 0 - two (2) NTB01AA ISDN Sig. Preproc. CPs.
 - 0 (Note that NTB01AAs must be provisioned for LGC
 - 0 even when ISDN services are not required).
- 0 - for each equipped DTC module:
 - 0 - when ISDN services are required,
 - 0 - two (2) NTB01AA ISDN Sig. Preproc. CPs, or
 - 0 - when ISDN services are not required,
 - 0 - two (2) NT0X50AA Filler Face Plates.

0 Note that NTB01AA ISDN CPs may not be provisioned on a DTC which
0 is provisioned with NT6X70AAs to handle CCIS/CCS7 voice trunking.

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0 In offices with the XPM Plus (UP) feature, provide:

- 0 - for each equipped LGC module:
 - 0 - two (2) NTB01AB ISDN Sig. Preproc. CPs.
 - 0 (Note that NTB01ABs must be provisioned for LGC
 - 0 even when ISDN services are not required).
- 0 - for each equipped DTC module:
 - 0 - when ISDN services are required,
 - 0 - two (2) NTB01AB ISDN Sig. Preproc. CPs, or
 - 0 - when ISDN services are not required,
 - 0 - two (2) NT0X50AA Filler Face Plates.

0 Note that NTB01AB ISDN CPs may not be provisioned on a DTC which
0 is provisioned with NT6X70AAs to handle CCIS/CCS7 voice trunking.

0 For existing modules being converted from XPM to XPM Plus pro-
0 vide:

- 0 - for each equipped LGC module:
 - 0 - one (1) NT6X02XB XPM Plus Change Kit and
 - 0 NT0X50AA Filler faceplates per EMS
 - 0 EMA2-99-XPM-9 for NT6X02XB.
- 0 - for each equipped DTC module:
 - 0 - In a Non-ISDN environment,
 - 0 - one (1) NT6X02XA XPM Plus Change Kit and
 - 0 NT0X50AA Filler faceplates per EMS
 - 0 EMA2-99-XPM-6 for NT6X02XA, or
 - 0 - In an ISDN environment,
 - 0 - one (1) NT6X02XB XPM Plus Change Kit and
 - 0 NT0X50AA Filler faceplates per EMS
 - 0 EMA2-99-XPM-9 for NT6X02XB.

0 (NT6X02XB has the same parts as NT6X02XA plus two (2) NTB01ABs)

0 Wiring Option for Non-ISDN:

0 Provide one (1) NT6X01WD Wiring Option when ISDN features are not
0 required on the frame. The option adds a wire strap to the back-
0 panel NT6X0103 Slot XX-12 between pins 7A and 8A to allow for
0 non-ISDN operation.

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0 Continuity Tone Detector CPs:

0 When this module is handling CCIS/CCS7 voice trunking, provision
0 for each PCM-30 DTC module:

- 0 - two (2) NT6X70AA Continuity Tone Detector CPs.

0 Note that NT6X70AAs for CCIS/CCS7 voice trunking, may not be pro-
0 visioned on a DTC which is provisioned with NTB01AA/AB ISDN CPs.

0 This CP supports a Continuity Test (COT), and is recommended
0 whenever analog facilities are employed in part or all of the
0 transmission path.

0 When the facility is end-to-end digital, this CP is not required
0 since digital facilities employ other means of fault detection.

0 An LGC may not be provisioned with NT6X70AA CPs.

0 Calling Number Display Feature CPs:

0 When the module is handling CMS Calling Number Display feature,
0 provide for each PCM-30 LGC module:

- 0 - two (2) NT6X78AA/AB CLASS Modem Resource CPs.

0 Universal Time Switch CPs:

0 Provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT6X44EA Universal Time Switch (UK) CPs.

0 Universal Tone Receiver CPs:

0 When analog (POTS) lines are to be supported, or when non-ISDN
0 trunks (A/B bit signalling) are interfaced to a PCM-30 DTC mod-
0 ule, provide the following Universal Tone Receiver (UTR) CP for
0 each PCM-30 LGC module:

- 0 - maximum two (2) NT6X92CA UTR CPs.

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0 Message Protocol and Downloadable Tone CPs:

0 Provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT6X69LB Msg Protcl & Downldbl Tone CPs.

0 The NT6X69LB is recommended for use in all applications in place
0 of the NT6X69LA. However, depending on availability, the
0 NT6X69LA may be used when fiber network interface is not re-
0 quired.

0 Network Interface CPs:

0 When DS30 copper network interface is required in a non-ENET of-
0 fice, provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT6X40AC packs DS30 Network Interface CPs.

0 Otherwise, when fiber network interface is required in an ENET
0 office, provide for each PCM-30 LGC/DTC module:

- 0 - one (1) NT6X02BU Fiber I/F H/W Assembly,
0 - two (2) NT6X40FA DS512 Network Interface CPs,
0 - two (2) NT6X40GA DS512 Paddle Boards, and
0 - two (2) P0736273 Optical Fiber Danger Labels.

0 Depending on availability, NT6X40CA and NT6X40DA functional pair
0 may be used in place of the preferred NT6X40FA and NT6X40GA func-
0 tional pair. The paddleboards and circuit packs cannot be mixed
0 because they do not function in mismatched pairs.

0 Also both pairs in a module must be NT6X40FA and NT6X40GA or both
0 NT6X40CA and NT6X40DA. In other words if one of the pairs in the
0 module is NT6X40FA and NT6X40GA, the other pair in the module may
0 not be NT6X40CA and NT6X40DA.

0 Power Conversion CPs:

0 Provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT2X70AE Power Conv +/-5V & 12V CPs.

0 Designation Labels for CPs:

0 Provide the appropriate designation label for each CP provided.

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0 PCM-30 Signaling CPs:

0 For each equipped LGC/DTC which supports PCM30 links (NT6X27
0 PCM-30 Interface CPs), or for each equipped LGC module which sup-
0 ports links to an LCM (NT6X48 DS30A LCM Interface CPs provided),
0 and the LCM is equipped with a PCM30 line drawer such as the
0 NT6X05CA, provide:

0 - two (2) NT6X28AA PCM-30 Signaling CPs.

0 CPC Coax Panel:

0 When PCM30 feature is required, provide for each PCM-30 LGC/DTC
0 module:

0 - one (1) NT6X01ZA CPC Coax Panel.

0 When this feature is to be field installed, then the NT6X01ZA CPC
0 Coax Panel will require the following supporting documents:
0 PC6X01ZB and SRJ6X01AC.

0 3.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 3.1.5 TRAFFIC TABLES

0
0 Standard traffic provisioning algorithms apply.

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0 3.2 PRODUCT/SYSTEM SPECIFICATION

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0 3.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 3.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 3.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply.

0 3.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 3.2.5 CURRENT DRAIN INFORMATION

0
0 3.3 SOFTWARE PROVISIONING

0
0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 XPM Software Planned Introduction:

0 XPM software XPM01 is planned to be introduced in BCS35 time
0 frame.

0 XPM software XPM02 is planned to be introduced in CSP01 (BCS36)
0 time frame.

0 XPM software XPM03 is planned to be introduced in CSP02 (BCS37)
0 time frame.

0 XPM TWO PROCESSOR (MP/SP) LOAD PHASE-OUT:

0 DTC0 (Digital Trunk Controller Offshore Non-ISDN):

0 Current Two Processor (MP/SP) UDT load supporting DTC0 will
0 be:

- 0 - Frozen in BCS34 software, and
0 - Become unavailable in XPM02 software.

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0 DTCOI (Digital Trunk Controller Offshore ISDN):

0 Current Two Processor (MP/SP) UDI load supporting DTCOI will
0 be:

- 0 - Frozen in XPM01 software, and
- 0 - Become unavailable in XPM02 software.

0 LGCOI (Line Group Controller Offshore ISDN):

0 Current Two Processor (MP/SP) OLG load supporting LGCOI will
0 be:

- 0 - Frozen in BCS34 software, and
- 0 - Become unavailable in XPM01 software.

0 XPM PLUS (UP) LOAD PHASE-IN:

0 DTCO (Digital Trunk Controller Offshore Non-ISDN):

0 XPM Plus (UP) ODT load supporting DTCO will be:

- 0 - Introduced in Verification Office BCS34 software
0 (Feature Packages NTXK79AA and NTXR34AA), and
- 0 - Become Generally Available in XPM01 software.

0 DTCOI (Digital Trunk Controller Offshore ISDN):

0 XPM Plus (UP) ODI load supporting DTCOI will be:

- 0 - Introduced in Verification Office XPM02 software
0 (Feature Packages NTXK79AC and NTXR34AB), and
- 0 - Become Generally Available in XPM03 software.

0 LGCO (Line Group Controller Offshore Non-ISDN):

0 XPM Plus (UP) OLG load supporting LGCO will be:

- 0 - Introduced in Verification Office XMP02 software
0 (Feature Packages NTXK79AC and NTXR34AB), and
- 0 - Become Generally Available in XPM03 software.

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LGCOI (Line Group Controller Offshore ISDN):

XPM Plus (UP) OGI load supporting LGCOI will be:

- Introduced in Verification Office BCS34 software (Feature Packages NTXK79AA and NTR34AA), and
- Become Generally Available in XPM01 software.

3.3.2 SOFTWARE USAGE RESTRICTIONS

XPM TYPE	TWO PROCESSOR (MP/SP) SOFTWARE			XPM PLUS (UP) SOFTWARE		
	LOAD NAME	LOAD FROZEN	LOAD NOT AVAILABLE	LOAD NAME	VERIF. OFFICE	GENERALLY AVAILABLE
DTCO	UDT	BCS34	XPM02	ODT	BCS34	XPM01
DTCOI	UDI	XPM02	XPM03	ODI	XPM02	XPM03
LGCO	N/A	N/A	N/A	OLG	XPM02	XPM03
LGCOI	OLG	BCS34	XPM01	OGI	BCS34	XPM01

3.3.3 MEMORY PROVISIONING

There is no program store or data store impact as a result of hardware described in this ECM.

0 3.4 REAL TIME IMPACT

0 None.

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0 4.0 International Frame LGE/DTE Non-ISDN

0 NT6X01BA is a general purpose Common Peripheral Controller Equip-
0 ment Frame for international applications which houses two inde-
0 pendent dual shelf modules.

0 Each module may be provisioned as a

- 0 - PCM30 Line Group Controllers (PLGC), or
- 0 - PCM30 Digital Trunk Controllers (PDTC),

0 Or, with DMS100I software in the office, each module may be pro-
0 visioned as a

- 0 - International Line Group Controllers (ILGC), or
- 0 - International Digital Trunk Controllers (IDTC).

0 An ILGC/PLGC may be provisioned to support

- 0 - copper interface (DS-30) or
- 0 fiber interface (DS-512) to the network,
- 0 - PCM-30 links to RLCM, RSC or OPM,
- 0 - DS-30A interface to LCM.

0 A IDTC/PDTC may be provisioned to support

- 0 - copper interface (DS-30) or
- 0 fiber interface (DS-512) to the network,
- 0 - PCM-30 links to other offices,
- 0 - Common Channel Signaling 7 (CCS7).

0 4.1 HARDWARE PROVISIONING

0

0 4.1.1 HARDWARE USAGE RESTRICTIONS

0
0 None.

0

0 4.1.2 HARDWARE DEPENDENCIES

0
0 None.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

0

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0 4.1.3 PROVISIONING CONSIDERATIONS

0
0 NT6X01BA International Frame LGE/DTE Non-ISDN:

0 Common Circuit Packfill:

0 A maximum of two (2) PLGC or PDTC, or, in offices with DMS100I
0 software, ILGC or IDTC modules may be equipped per frame.

0 For new applications, provide for each equipped module:

- 0 - one (1) NT6X02GM International LGC/DTC Common CP,
0 which includes
- 0 - two (2) NT6X44EA Time Switch CPs
0 - two (2) NT2X70AE Power Converter +-5V +-12Vs CPs.

0 Otherwise provide for each unequipped CP slot:

- 0 - one (1) NT0X50AA Filler Faceplate.

0 PCM-30 COAXIAL INTERFACE:

0 When 75 ohm coaxial PCM 30 interface cabling is required, a Patch
0 Panel, grounded to the frame, must be provided as follows:

0 Coaxial Interface BNC Connectors, Grounded on Receive:

0 When coaxial interface cabling via 75 Ohm BNC connectors grounded
0 on receive (Brazil, Curacao) is required by the customer, provide
0 for each frame:

- 0 - two (2) NT6X01ZA/ZD Coaxial Panels.

0 NT6X01ZA may not be provisioned when NTCX50AA is provisioned.

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0 Coaxial Interface BT43 Connectors, Grounded on Transmit:

0 When coaxial interface cabling via 75 Ohm BT43 connectors
0 grounded on transmit is required by the customer, and four (4) or
0 more NT6X27s per module are provisioned, provide for each frame:

- 0 - to connect the first four (4) NT6X27s provisioned
0 in CP slots 04 and 03:
 - 0 - two (2) NT6X01ZE Coaxial Panels,
- 0 - to connect the 5th and 6th NT6X27s, when provisioned,
0 in CP slots 02:
 - 0 - two (2) NT6X0126 Coax Cable Kits, and
 - 0 - two (2) NT6X01WH Wiring Lists,
- 0 - to connect the 7th and 8th NT6X27s, when provisioned,
0 in CP slots 01:
 - 0 - two (2) NT6X0127 Coax Cable Kits, and
 - 0 - two (2) NT6X01WJ Wiring Lists.

0 Coaxial Interface BNC Connectors, Grounded on Transmit:

0 When coaxial interface cabling via 75 Ohm BNC connectors grounded
0 on transmit (China, NETAS), is required by the customer provide
0 for each frame:

- 0 - two (2) NT6X01ZF Coaxial Panels.

0 For addition and maintenance in frames equipped with NT6X27AAs
0 or NT6X27ABs, provide for each equipped module:

- 0 - minimum four (4) and
0 maximum eight (8) NT6X27AB PCM 30 Interface CPs.

0 Otherwise provide for each unequipped CP slot:

- 0 - one (1) NT0X50AA Filler Faceplate.

0 Do not provision NT6X27BB in a frame equipped with NT6X27AAs or
0 NT6X27ABs.

0 When the enhancements of the NT6X27BB are required in a frame
0 equipped with NT6X27AAs or NT6X27ABs, each of the NT6X27AA or
0 NT6X27AB in the frame must be replaced with a NT6X27BB, and, when
0 PCM-30 coaxial interface is required, the frame must be equipped
0 with a grounded NT6X01 Coaxial Panel.

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0 For additions and maintenance in frames equipped with NT6X27ACs
0 use NT6X27BBs, and, when PCM-30 coaxial interface is required,
0 the frame must be equipped with a grounded NT6X01 Coaxial Patch
0 Panel.

0 PCM-30 Signaling Interface:

0 For each equipped LGC/DTC which supports PCM-30 links (NT6X27
0 PCM-30 Interface CPs provided), or for each equipped LGC module
0 which supports links to an LCM (NT6X48 DS30A LCM Interface CPs
0 provided), and the LCM is equipped with a PCM-30 line drawer such
0 as the NT6X05CA, provide:

0 - two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 PCM-30 Coaxial Interface Panel:

0 For frames equipped with NT6X27AC/BB PCM-30 Interface CPs, a 75
0 ohm coaxial PCM-30 Interface Patch Panel, grounded to the frame,
0 must be provided as follows:

0 When coaxial interface cabling via 75 Ohm BNC connectors grounded
0 on receive (Brazil, Curacao) is required by the customer, provide
0 for each frame:

0 - two (2) NT6X01ZA/ZD Coaxial Panels.

0 Coaxial interface cabling with connectors grounded on transmit
0 will become available in the third quarter of 1993.

0 DS-30A Interface:

0 For each ILGC or PLGC module equipped with NT6X02GM Common CP,
0 provide as per customer requirements:

0 - maximum four (4) NT6X48AA DS-30A LCM Interface CPs.

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0 2) To convert one PDTC module equipped for XPM to XPM+ provide:

- 0 - one (1) NT6X01XE XPM+ 3P Upgrade Kit.

0 The NT6X01XE kit includes:

- 0 - two (2) NTMX77AA XPM Plus Processor CPs,
0 - two (2) NTMX71AA XPM Plus Paddleboards,
0 - four (4) NT7X80AA Bus Shorter CPs, and
0 - backplane wiring modifications for XPM+.

0 The XPM CPs NT6X45BA, NT6X47AC, and NT6X46BB must be re-
0 moved before the NT6X01XE XPM+ 3P Upgrade Kit is applied.

0 Channel Supervision:

0 For each ILGC, IDTC, PLGC, or PDTC module equipped with NT6X02GM
0 Common CP, provide, except when CCITT N5 Signaling feature is re-
0 quired:

- 0 - two (2) NT6X42AA Channel Supervision Msg CPs.

0 CCITT N5 Signaling:

0 For each ILGC, IDTC, PLGC, or PDTC module equipped with NT6X02GM
0 Common CP, provide,

- 0 - two (2) NT6X62DA CCITT N5 Tone Receiver CPs, and
0 - two (2) NT6X42CA CSM and CCITT N5 Splitter CPs.

0 Always provide (in case NT6X62DA and NT6X42CA CPs are provided
0 later):

- 0 - one (1) NT6X01WG CCITT N5 Signaling Wiring List.

0 Speech Bus Formatter:

0 For each ILGC, IDTC, PLGC, or PDTC module equipped with NT6X02GM
0 Common CP, provide:

- 0 - two (2) NT6X41AB Speech Bus Formatter CPs.

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0 DS-30 Interface:

0 When DS30 copper network interface is required in a non-ENET of-
0 fice, provide for each ILGC, IDTC, PLGC, or PDTC module equipped
0 with NT6X02GM Common CP:

- 0 - two (2) NT6X40AC packs DS30 Network Interface CPs, and
- 0 - two (2) NT6X69LB Msg Protcl & Downldbl Tone CPs.

0 The NT6X69LB is recommended for use in all applications in place
0 of the NT6X69LA. However, depending on availability, the
0 NT6X69LA may be used when fiber network interface is not re-
0 quired.

0 DS-512 Interface:

0 When fiber network interface is required in an ENET office, pro-
0 vide for each ILGC, IDTC, PLGC, or PDTC module equipped with
0 NT6X02GM Common CP:

- 0 - one (1) NT6X02BU Fiber I/F H/W Assembly,
- 0 - two (2) NT6X40FA DS512 Network Interface CPs,
- 0 - two (2) NT6X40GA DS512 Paddle Boards,
- 0 - two (2) NT6X69LB Msg Protcl & Downldbl Tone CPs, and
- 0 - two (2) P0736273 Optical Fiber Danger Labels.

0 For fiber network interface the NT6X69LB must be used (the
0 NT6X69LA may not be substituted for NT6X69LB when fiber network
0 interface is required).

0 Cooling Unit:

0 For the only ILGE, IDTE, PLGE, or PDTE frame equipped in an of-
0 fice, or for the first of each group of frames served by a dif-
0 ferent PDC, provide:

- 0 - one (1) NT3X90AB Cooling Inverter Unit, or
- 0 one (1) NT3X90AC DC Fan Cooling Unit.

0 Thereafter, for each subsequent frame, provide:

- 0 - one (1) NT3X90AA Cooling Inverter Unit, or
- 0 one (1) NT3X90AC one DC Fan Cooling Unit.

0 NT3X90AC replaces NT3X90AA and NT3X90AB for new jobs.

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0 Enhanced Grounding:

0 When extending existing offices not equipped with enhanced
0 grounding per IS0X00, provide for each frame:

- 0 - one (1) NT0X0009 Logic Return Cable Assembly.

0 Echo Cancellor:

0 When the Echo canceller feature is required, provide:

- 0 - two (2) NTCX50AA Echo Cancellor Control Paddle Boards.

0 The Coax Panel provisioned must be other than NT6X01ZA.

0 As the Echo Cancellor Control interface cable uses the bulkhead
0 connector positions normally used for twisted pair PCM-30, the
0 ECC can only be provisioned when these connectors are not being
0 used.

0 Always provide (in case NTCX50AA CPs are provided later):

- 0 - one (1) NT6X01WF Echo Cancellor Wiring List.

0 4.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 4.1.5 TRAFFIC TABLES

0
0 Standard traffic provisioning algorithms apply.

0

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0 4.2 PRODUCT/SYSTEM SPECIFICATION

0

0 4.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 4.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 4.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply.

0 4.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 4.2.5 CURRENT DRAIN INFORMATION

0
0 4.3 SOFTWARE PROVISIONING

0
0 4.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 XPM Software Planned Introduction:

0 XPM software XPM01 is planned to be introduced in BCS35 time
0 frame.

0 XPM software XPM02 is planned to be introduced in CSP01 (BCS36)
0 time frame.

0 XPM THREE PROCESSOR (MP/SP/FP) LOAD PHASE-OUT:

0 PDTC (PCM-30 Digital Trunk Controller):

0 Current Three Processor (MP/SP/FP) NPD load supporting PDTC
0 will be:

- 0 - Frozen in XPM02 software, and
- 0 - Become unavailable in XPM03 software.

0 PLGC (PCM-30 Line Group Controller):

0 Current Three Processor (MP/SP/FP) NPL load supporting PLGC
0 will be:

- 0 - Frozen in XPM02 software, and
- 0 - Become unavailable in XPM03 software.

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0 XPM PLUS (UP) LOAD PHASE-IN:

0 PDTC (PCM-30 Digital Trunk Controller):

0 XPM Plus (UP) ODT load supporting PDTC (without NTCX50AA Echo
0 Cancellor) will be:

- 0 - Introduced in Verification Office XPM01 software
0 (Feature Packages NTXK79AB and NTXR34AB), and
- 0 - Become Generally Available in XPM03 software
0 (Feature Packages NTXK79AC and NTXR34AB).

0 PLGC (PCM-30 Line Group Controller):

0 XPM Plus (UP) OLG load supporting PLGC will be:

- 0 - In Verification Office XPM02 software
0 (Feature Packages NTXK79AC and NTXR34AB), and
- 0 - Become Generally Available in XPM03 software.

0 4.3.2 SOFTWARE USAGE RESTRICTIONS

XPM TYPE	TWO PROCESSOR (MP/SP) SOFTWARE			XPM PLUS (UP) SOFTWARE		
	LOAD NAME	LOAD FROZEN	LOAD NOT AVAILABLE	LOAD NAME	VERIF. OFFICE	GENERALLY AVAILABLE
PDTC without NTCX50	NPD	XPM02	XPM03	ODT	XPM01	XPM03
PLGC	NPL	XPM02	XPM03	OLG	XPM02	XPM03

0 4.3.3 MEMORY PROVISIONING

0
0 There is no program store or data store impact as a result of
0 hardware described in this ECM.

0 4.4 REAL TIME IMPACT

0 None.

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0 5.0 International Cabinet LGE/DTE Fiber

0 NTFX33AA is a general purpose Common Peripheral Controller Equip-
0 ment Frame for international applications which houses two inde-
0 pendent dual shelf modules.

0 Each module may be provisioned as a

- 0 - PCM30 Line Group Controllers (PLGC), or
- 0 - PCM30 Digital Trunk Controllers (PDTC),

0 Or, with DMS100I software in the office, each module may be pro-
0 visioned as a

- 0 - International Line Group Controllers (ILGC), or
- 0 - International Digital Trunk Controllers (IDTC).

0 An ILGC/PLGC may be provisioned to support

- 0 - copper interface (DS-30) or
- 0 fiber interface (DS-512) to the network,
- 0 - PCM-30 links to RLCM, RSC or OPM,
- 0 - DS-30A interface to LCM.

0 A IDTC/PDTC may be provisioned to support

- 0 - copper interface (DS-30) or
- 0 fiber interface (DS-512) to the network,
- 0 - PCM-30 links to other offices,
- 0 - Common Channel Signaling 7 (CCS7).

0 5.1 HARDWARE PROVISIONING

0

0 5.1.1 HARDWARE USAGE RESTRICTIONS

0 Not applicable.

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0 5.1.2 HARDWARE DEPENDENCIES

0 Not applicable.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

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0 5.1.3 PROVISIONING CONSIDERATIONS

0
0 NTFX33AA International Cabinet LGE/DTE Fiber

0 Common Circuit Packfill:

0 For each equipped module, provide except for Digital N5 applica-
0 tions:

- 0 - one (1) NTFX33BC International LGC/DTC Common CP.

0 For Digital N5 application, provide for each equipped module:

- 0 - one (1) NTFX33BD International LGC/DTC Common CP.

0 If the second module is not equipped on the FCTM cabinet, pro-
0 vide:

- 0 - one (1) NT6X02AB Common Peripheral Controller Module Filler
0 Faceplate Kit.

0 CCITT N5 Signaling:

0 For Digital N5 application, provide for each module equipped with
0 NTFX33BD per customer requirements:

- 0 - two (2) NT6X42CA CSM and N5 Splitter CPs, and
0 - two (2) NT6X62DA CCITT N5 Version Special Tone Receiver
0 (STR) CPs.
0 - two (2) NTFX33WF wiring lists.

0 PCM-30 Interface:

0 For each equipped module, provide as per customer requirements:

- 0 - minimum four (4) and
0 maximum eight (8) NT6X27AC/BB PCM-30 Interface CPs.

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0 PCM-30 Signaling Interface:

0 For each equipped LGC/DTC which supports PCM-30 links (NT6X27
0 PCM-30 Interface CPs provisioned), or for each equipped LGC mod-
0 ule which supports links to an LCM (NT6X48 DS30A LCM Interface
0 CPs provisioned), and the LCM is equipped with a PCM-30 line
0 drawer such as the NT6X05CA, provide:

- 0 - two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 PCM-30 Coaxial Interface Panel:

0 For PCM-30 interface via coaxial cable, provide for each equipped
0 module:

- 0 - one (1) NTN3366 Coaxial Interface Assembly
0 (NTNX3366 connects shelves 05 and/or 33), and
0 - one (1) NTN3369 Coaxial Interface Cable Assembly
0 (NTNX3369 connects shelves 19 and/or 47).

0 PCM-30 Twisted Pair Interface:

0 For PCM-30 interface via twisted pair wiring, provide for each
0 equipped IDTC module:

- 0 - two (2) NTN3370 PCM-30 Twisted Pair Interface Assemblies, and
0 - two (2) NTN3371 PCM-30 Twisted Pair Interface Assemblies.

0 As the Echo Canceller Control interface cable uses the bulkhead
0 connector positions normally used for twisted pair PCM-30, the
0 ECC can only be provisioned when these connectors are not being
0 used.

0 When twisted pair PCM-30 interface is equipped, provide for each
0 cabinet:

- 0 - one (1) P0711579 Designation Labels Sheet.

0 One sheet contains sufficient cable connector designation labels
0 for both modules in the frame.

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0 Universal Tone Receiver:

0 The NT6X92CA Universal Tone Receiver is a combined service circuit that can perform the function of Digitone Receiver for lines and MF Receiver for trunks. One pair of NT6X92CA provides up to thirty circuits.

0 For each equipped module, provide per customer requirements:

- 0 - zero (0),
- 0 two (2) or
- 0 four (4) NT6X92CA Universal Tone Receiver CPs.

0 The first provisionable UTR (NT6X92CA) pair shall be located in CP slot 8 unless CP slot 8 is equipped with an NT6X62DA. The second provisionable UTR pair shall be located in CP slot 9, unless CP slot 9 is equipped with an NT6X70AA. In this case, the second UTR pair will be located in CP slot 11. Each UTR on the shelf is paired with a UTR in the same circuit pack position on the other shelf in the module.

0 Continuity Tone Detector:

0 When the DTC is handling CCIS/CCS7 voice trunking, provide for each equipped module:

- 0 - two (2) NT6X70AA Continuity Tone Detector CPs, and
- 0 - two (2) NTN33WA Continuity Tone Detector Wiring Assembly.

0 The NT6X70AA supports a Continuity Test (COT), and is recommended whenever analog facilities are employed in part or all of the transmission path.

0 When the facility is end-to-end digital, the NT6X70AA is not required since digital facilities employ other means of fault detection.

0 An LGC may not be provisioned with NT6X70AA CPs.

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0 Echo Cancellor:

0 When the Echo canceller feature is required, provide for each
0 pair of NT6X28AAs provisioned:

- 0 - two (2) NTCX50AA Echo Cancellor Control Paddle Boards.
- 0 - one (1) NTNX3390 Echo Cancellor Control Interconnect
0 Cable Assembly and
- 0 - two (2) NTFX33WE Echo Cancellor Wiring Lists.

0 As the Echo Cancellor Control interface cable uses the bulkhead
0 connector positions normally used for twisted pair PCM-30, the
0 ECC can only be provisioned when these connectors are not being
0 used.

0 For the field application of the Echo Cancelling feature, provide
0 for each equipped module:

- 0 - one (1) NTFX33ZA Echo Cancellor Control Kit.

0 This kit consists of:

- 0 - two (2) NTCX50AA paddle boards and
- 0 - one (1) NTNX3390 interconnect cable assembly.

0 DS-512 Interface:

0 For each module equipped with network interface via fiber cabling
0 in an ENET office, provide:

- 0 - two (2) NT6X40FA DS-512 Interface CP,
- 0 - two (2) NT6X40GA DS-512 Link Paddleboard,
- 0 - one (1) NT6X02BU FXPM Bracket Assembly, and
- 0 - two (2) P0736273 Optical Fiber Danger Labels.

0 Depending on availability, NT6X40CA and NT6X40DA functional pair
0 may be used in place of the preferred NT6X40FA and NT6X40GA func-
0 tional pair. The paddleboards and circuit packs cannot be mixed
0 because they do not function in mismatched pairs.

0 When either module in the FCTM cabinet is equipped with network
0 interface via fiber cabling, provide for each cabinet:

- 0 - one (1) P0713105 Fiber Cover Plate,
- 0 - one (1) P0713256 Fiber Cover Plate, and
- 0 - two (2) P0682727 Bushings

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0 DS-30 Interface:

0 For each upper module (Shelf positions 33 and 47) equipped with
0 network interface via copper cabling, provide:

- 0 - two (2) NT6X40AC DS-30 Interface CP,
0 - one (1) P0713257 Connector Cover Plate, and
0 - one (1) NTNX3389 DS-30 Interface Cable Assembly.

0 For each lower module (Shelf positions 05 and 19) equipped with
0 network interface via copper cabling, provide:

- 0 - two (2) NT6X40AC DS-30 Interface CP,
0 - one (1) P0713258 Connector Cover Plate, and
0 - one (1) NTNX3384 DS-30 Interface Cable Assembly.

0 DS-30A Interface:

0 For ILGC applications to interface links from ILCM, provide:

- 0 - four (4) NT6X48AA DS30A LCM Interface CPs.

0 The NT6X48AA CP are assigned in pairs for reliability. One member
0 of the pair interfaces the same DS30A ports as the other member.
0 Each member of the pair occupies the same CP position, with one
0 CP assigned to LGAI 0 (lower shelf of the module) and the other
0 assigned to LGAI 1 (upper shelf of the module).

0 For each DS-30A Interface Cable Assembly ordered, provide:

- 0 - two (2) P0638259 Bushings and
0 - two (2) P0423631 Washers.

0 8-port 64Kbit Interface:

0 When an 8-port 64Kbit interface is requested by the customer,
0 provide for each equipped module:

- 0 - one (1) NT6X55CA 8-port 64-Kbit I/F CP, and
0 - one (1) NTFX3303 Cable Assembly.

0 When both PCM-30 and 8-port 64-Kbit interface are provisioned in
0 the same cabinet simultaneously, the number of associated ports
0 per module will be fourteen (14) PCM-30 ports and eight (8)
0 64-Kbit ports.

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0 For the field application of the 8-port 64Kbit feature, provide
0 for each equipped module:

0 - one (1) NTFX33ZB 8-port 64Kbit Interface Circuit Kits.

0 Each NTFX33ZB kit consists of:

0 - one (1) NT6X55CA 8-port 64-Kbit I/F CP, and
0 - one (1) NTFX3303 Cable assembly.

0 1-port 64Kbit Interface:

0 For each 1-port 64Kbit interface required, maximum 1 per shelf of
0 an equipped module, provide:

0 - one (1) NT6X55BA 64-Kbit Access CPs,

0 for each shelf in position 19 or 47 provisioned with a NT6X55BA,
0 provide:

0 - one (1) NTFX3305 Cable Assembly, and

0 for each shelf in position 05 or 33 provisioned with a NT6X55BA,
0 provide:

0 - one (1) NTFX3306 Cable Assembly.

0 The NT6X55BA should only be provisioned when DS30A p-side ports
0 (provisioned per RUL16) are not used.

0 Earthquake Anchor Kit:

0 When cabinet is installed in seismic (earthquake) zones

0 - ATC Zones 6 & 7,
0 - NEBS Zone 4, and
0 - UBC Zone 4

0 provision for each cabinet:

0 - for slab-type flooring,
0 - one (1) NTNX2540 Earthquake Anchor Kit, or
0 - for computer-type flooring,
0 - one (1) NTNX2578 Earthquake Anchor Kit.

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0 Non-Earthquake Frame Mounting Kit:

0 When installing cabinet in a non-earthquake zone, provision for
0 each cabinet:

- 0 - for slab-type flooring,
 - 0 - one (1) NTNX2579 Frame Mounting Kit, or
- 0 - for computer-type flooring,
 - 0 - one (1) NTNX2580 Frame Mounting Kit.

0 Cabinet Color:

0 When specifying a brown cabinet, provision for each cabinet:

- 0 - two (2) NTNX2550 Left Door Assemblies (Brown),
- 0 - two (2) P0699464 Left Door Labels (Brown),
- 0 - two (2) NTNX2552 Right Door Assemblies (Brown), and
- 0 - two (2) P0695230 Right Door Labels (Brown),
 - 0 one each for front and rear respectively, as well as
- 0 - one (1) P0714720 Cabinet Type Label (Brown).

0 When specifying a grey cabinet, provision for each cabinet:

- 0 - two (2) NTNX2515 Left Door Assemblies (Grey),
- 0 - two (2) P0677704 Left Door Labels (Grey),
- 0 - two (2) NTNX2513 Right Door Assemblies (Grey), and
- 0 - two (2) P0699158 Right Door Labels (Grey),
 - 0 one each for front and rear respectively, as well as
- 0 - one (1) P0714721 Cabinet Type Label (Grey),

0 CP Designation Labels:

0 Provide the appropriate designation label for each CP provided.

0 Unequipped CP Slots:

0 For each unequipped CP slot 1-6, 8,9,11, and 19, provide:

- 0 - one (1) NT0X50AA Filler Face Plate.

0 5.1.4 OFFICE LAYOUT INFORMATION

0 Please refer to Northern Telecom Practice 555-4001-103 Integrated
0 Services Network Meridian SL-100 Cabinetized General Description.

0 5.1.5 TRAFFIC TABLES

0 Not applicable.

0 5.2 PRODUCT/SYSTEM SPECIFICATION

0

0 5.2.1 PHYSICAL CHARACTERISTICS

0
0 Fusing and current drain information for the four cabinets intro-
0 duced specifically for Australia is not available at this time.

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0 5.2.2 EMI/EARTHQUAKE INFORMATION

EMI COMPLIANT	PEC	ABBREVIATED NAME
YES	NTNX33GA	FCTM-ISDN

0 For resistance to earthquake damage, Anchor Kits are required.
0 When installing cabinet in ATC Zone 6 or 7, NEBS Zone 4 or UBC
0 Zone R, provision NTNX2540 kit for slab-type flooring or NTNX2578
0 for computer flooring.

0 In non-earthquake zones, a Frame Mounting Kit is sufficient.
0 Provision NTNX2579 kit for slab-type flooring or NTNX2580 for
0 computer flooring.

0 5.2.3 SPARING INFORMATION

0 Standard sparing algorithms apply.

0 5.2.4 POWER FEED AND FUSING REQUIREMENTS

0 The following fuses and feeds are required:

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0 5.2.5 CURRENT DRAIN INFORMATION

0
0 Current Drain for the circuit packs are:

0 5.3 SOFTWARE PROVISIONING

0

0 5.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 5.3.2 SOFTWARE USAGE RESTRICTIONS

0 Not applicable.

0 5.3.3 MEMORY PROVISIONING

0 Refer to MEMCALC for memory provisioning.

0 5.4 REAL TIME IMPACT

0 There is no real-time impact as a result of products introduced
0 by this ECM.

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0 6.0 International Cabinet LGE/DTE/LTE ISDN

0 The Australian DMS-300 International Gateway Switch is based on the
0 DMS-300 supplied to Turkey with the following enhancements:

- 0 - Signalling systems necessary to introduce the product
0 into the Australian National Network.
- 0 - Enhancements to the Call Detail Recording, Operational
0 Measurements and Call Progression tone systems.

0 Similarly, the DMS-300 Gateway Switch for Madley-B Digital Interna-
0 tional Switching Centre (DISC) in the United Kingdom is based on ex-
0 isting technology, adapted for that market.

0 The NTFX33CA International Cabinet LGE/DTE/LTE ISDN houses one or two
0 International PCM-30 LGC/DTC/LTC ISDN or not dual shelf modules in a
0 cabinet configuration for applications not requiring fiber network
0 interfaces.

0 6.1 HARDWARE PROVISIONING

0

0 6.1.1 HARDWARE USAGE RESTRICTIONS

0 Not applicable.

0 6.1.2 HARDWARE DEPENDENCIES

0 Not applicable.

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0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable0 6.1.3 PROVISIONING CONSIDERATIONS0
0 The NTFX33CA International Cabinet LGE/DTE/LTE ISDN is provi-
0 sioned as follows:0 The shelves within the LTEM cabinet are provisioned in the same
0 way as the domestic ISDN frame NT6X01AB, except that PCM-30

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0 interfaces are used instead of DS-1 and some circuit pack vin-
0 tages are different for the Offshore market.

0 Refer to the Engineering Manual sections for details on circuit
0 pack vintages and cabinet hardware provisioning.

0 Common Circuit Pack:

0 Provision up to two (2) NT6X02UB PCM-30 LGC/DTC Common Circuit
0 Pack (Offshore) per LTEM.

0 PCM-30 Interface:

0 Provision up to eight (8) NT6X27AC/BB PCM-30 Interface CP per
0 PCM-30 LGC/DTC module, to interface up to sixteen PCM-30 links (2
0 links per CP).

0 The NT6X27BB Enhanced PCM-30 Interface circuit pack is backward
0 compatible with the NT6X27AC/BA circuit packs. It is also a re-
0 placement for the NT6X27AA/AB circuit packs, although it cannot
0 be mixed with the NT6X27AA/AB in the same frame or cabinet.

0 The NT6X27BB includes enhancements over the NT6X27AA/AB such as:

- 0 - Full compliance to CCITT,
0 - Improved alarm handling, and
0 - Support for DCME.

0 The initial application for the NT6X27BB is all the frames and
0 cabinets where the NT6X27AC/BA are provisioned. The manufacture
0 of the NT6X27AC/BA is being discontinued.

0 PCM-30 Signaling Interface:

0 For each equipped LGC/DTC which supports PCM30 links or for each
0 equipped LGC module which supports links to an LCM which is
0 equipped with a PCM30 line drawer such as the NT6X05CA, provide:

0 two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 CND Feature:

0 When the Calling Number Delivery/Calling Number Display (CND)
0 feature is required, provision two (2) NT6X78AB CLASS Modem Re-
0 source CPs for each PCM-30 LGC/DTC module.

0 Network Interface:

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0 In an office with the Enhanced Network (ENET) provide a fiber
0 interface per module as follows:

0 two (2) NT6X40FA DS-512 Link Control CPs,
0 two (2) NT6X40GA DS-512 Link Control Paddleboards,
0 two (2) NT6X69LB DS-512 CPP Protocol & Downld CPs, and
0 one (1) P0736273 Fiber Cable Warning Label.

0 And for each cabinet

0 one (1) NTNX33SD DS-512 Fiber Interface to Network Kit.

0 Depending on availability, NT6X40CA and NT6X40DA functional pair
0 may be used in place of the preferred NT6X40FA and NT6X40GA func-
0 tional pair. The paddleboards and circuit packs cannot be mixed
0 because they do not function in mismatched pairs.

0 In a non-ENET office, provide a copper interface as follows:

0 two (2) NT6X40AC DS30 Network Interface CPs
0 two (2) NT6X69LA/LB CPP Protocol & Downld CPs.

0 The NT6X69LA may be used for non-fiberised peripherals when the
0 preferred NT6X69LB is not available.

0 6.1.4 OFFICE LAYOUT INFORMATION

0 Please refer to Northern Telecom Practice 555-4001-103 Integrated
0 Services Network Meridian SL-100 Cabinetized General Description.

0 6.1.5 TRAFFIC TABLES

0 Not applicable.

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0 6.2 PRODUCT/SYSTEM SPECIFICATION

0

0 6.2.1 PHYSICAL CHARACTERISTICS

0

0 Fusing and current drain information for the four cabinets intro-
0 duced specifically for Australia is not available at this time.

0 6.2.2 EMI/EARTHQUAKE INFORMATION

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EMI COMPLIANT	PEC	ABBREVIATED NAME
YES	NTNX33GA	FCTM-ISDN

0 For resistance to earthquake damage, Anchor Kits are required.
0 When installing cabinet in ATC Zone 6 or 7, NEBS Zone 4 or UBC
0 Zone R, provision NTNX2540 kit for slab-type flooring or NTNX2578
0 for computer flooring.

0 In non-earthquake zones, a Frame Mounting Kit is sufficient.
0 Provision NTNX2579 kit for slab-type flooring or NTNX2580 for
0 computer flooring.

0 6.2.3 SPARING INFORMATION

0 Standard sparing algorithms apply.

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0 6.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 The following fuses and feeds are required:

0 6.2.5 CURRENT DRAIN INFORMATION

0
0 Current Drain for the circuit packs are:

0 6.3 SOFTWARE PROVISIONING

0

0 6.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 6.3.2 SOFTWARE USAGE RESTRICTIONS

0 Not applicable.

0 6.3.3 MEMORY PROVISIONING

0 Refer to MEMCALC for memory provisioning.

0

0 6.4 REAL TIME IMPACT

0 There is no real-time impact as a result of products introduced
0 by this ECM.

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0 7.0 International Cabinet LGE/DTE Fiber ISDN

0 The Australian DMS-300 International Gateway Switch is based on the
0 DMS-300 supplied to Turkey with the following enhancements:

- 0 - Signalling systems necessary to introduce the product
0 into the Australian National Network.
- 0 - Enhancements to the Call Detail Recording, Operational
0 Measurements and Call Progression tone systems.

0 Similarly, the DMS-300 Gateway Switch for Madley-B Digital Interna-
0 tional Switching Centre (DISC) in the United Kingdom is based on ex-
0 isting technology, adapted for that market.

0 The FCTM-ISDN houses one or two International ISDN LGC/DTC dual shelf
0 modules in a cabinet configuration supporting both copper and fiber
0 network interfaces.

0 7.1 HARDWARE PROVISIONING

0

0 7.1.1 HARDWARE USAGE RESTRICTIONS

0 Not applicable.

0 7.1.2 HARDWARE DEPENDENCIES

0 Not applicable.

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0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

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0 7.1.3 PROVISIONING CONSIDERATIONS

0
0 The NTNX33GA International Cabinet LGE/DTE Fiber ISDN (FCTM-ISDN)
0 is provisioned as follows:

0 The shelves within the FCTM-ISDN cabinet are provisioned the same
0 as the domestic ISDN frame (NT6X01AB), except that PCM-30 inter-
0 faces are used instead of DS-1, and some circuit pack vintages
0 are different for the International market. Maximum eight (8)
0 PCM-30 Interface CP (supporting 16 PCM-30 links) may be equipped.
0 Refer to the Engineering Manual sections for details on circuit
0 pack vintages and cabinet hardware provisioning.

0 Provision up to two (2) NTNX33GB LGCI/DTCI Fiber Common CP
0 (International) per FCTM-ISDN.

0 Provision up to eight (8) NT6X27AC/BB PCM-30 Interface CP per
0 PCM-30 LGC/DTC module, to interface up to sixteen PCM-30 links (2
0 links per CP).

0 The NT6X27BB Enhanced PCM-30 Interface circuit pack is backward
0 compatible with the NT6X27AC/BA circuit packs. It is also a re-
0 placement for the NT6X27AA/AB circuit packs, although it cannot
0 be mixed with the NT6X27AA/AB in the same frame or cabinet.

0 The NT6X27BB includes enhancements over the NT6X27AA/AB such as:

- 0 - Full compliance to CCITT,
- 0 - Improved alarm handling, and
- 0 - Support for DCME.

0 The initial application for the NT6X27BB is all the frames and
0 cabinets where the NT6X27AC/BA are provisioned. The manufacture
0 of the NT6X27AC/BA is being discontinued.

0 When the Calling Number Delivery/Calling Number Display (CND)
0 feature is required, provision two (2) NT6X78AB CLASS Modem Re-
0 source CPs for each PCM-30 LGC/DTC module.

0 For each equipped LGC/DTC which supports PCM30 links or for each
0 equipped LGC module which supports links to an LCM which is

0

0| equipped with a PCM30 line drawer such as the NT6X05CA, provide:
0 two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 7.1.4 OFFICE LAYOUT INFORMATION

0 Please refer to Northern Telecom Practice 555-4001-103 Integrated
0 Services Network Meridian SL-100 Cabinetized General Description.

0 7.1.5 TRAFFIC TABLES

0 Not applicable.

0 7.2 PRODUCT/SYSTEM SPECIFICATION

0

0 7.2.1 PHYSICAL CHARACTERISTICS

0
0 Fusing and current drain information for the four cabinets intro-
0 duced specifically for Australia is not available at this time.

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0 7.2.2 EMI/EARTHQUAKE INFORMATION

EMI COMPLIANT	PEC	ABBREVIATED NAME
YES	NTNX33GA	FCTM-ISDN

0 For resistance to earthquake damage, Anchor Kits are required.
0 When installing cabinet in ATC Zone 6 or 7, NEBS Zone 4 or UBC
0 Zone R, provision NTNX2540 kit for slab-type flooring or NTNX2578
0 for computer flooring.

0 In non-earthquake zones, a Frame Mounting Kit is sufficient.
0 Provision NTNX2579 kit for slab-type flooring or NTNX2580 for
0 computer flooring.

0 7.2.3 SPARING INFORMATION

0 Standard sparing algorithms apply.

0 7.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 7.2.5 CURRENT DRAIN INFORMATION

0

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0

0 7.3 SOFTWARE PROVISIONING

0

0 7.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 7.3.2 SOFTWARE USAGE RESTRICTIONS

0 Not applicable.

0 7.3.3 MEMORY PROVISIONING

0 Refer to MEMCALC for memory provisioning.

0 7.4 REAL TIME IMPACT

0 There is no real-time impact as a result of products introduced
0 by this ECM.

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0 8.0 XPM PLUS for Base Non-ISDN XPM

0 The XPM PLUS (Product Life Upgrade Strategy) Phase II program ad-
0 dresses the need for memory and processing enhancements by re-
0 placing the separate MP and SP circuit packs in DTC/LGC/LTC/RCC
0 modules with the Unified Processor (UP). The UP increases avail-
0 able memory to 8Mb and increases RealTime processing power, com-
0 pared to the current XPM. All existing functions, interfaces and
0 tools continue to be supported.

0 The XPM PLUS schedule has been pulled in so that all new ship-
0 ments of LTCI/LGCI from BCS-34 forward will utilize the Unified
0 Processor (XPM PLUS). Support for Subscriber Carrier equipment is
0 planned to VO in BCS-36 and to be Generally Available in BCS-37.

0 This ECM describes both upgrades of existing equipment and new
0 shipments of XPM+ peripherals on the combined ISDN/non-ISDN
0 frame. XPM PLUS capability may also be supplied for both new
0 shipments and upgrades to existing RCE frames.

0 8.1 HARDWARE PROVISIONING

0

0 8.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The following usage restrictions apply to the XPM+ Phase II prod-
0 uct:

- 0 o RLCM and MSB7 are not to be upgraded to XPM PLUS
0 with the Unified Processor.
- 0 o In order to use the new software that is available
0 in BCS-35 and above, XPMs currently equipped with
0 enhanced messaging will require upgrade from MP/SP
0 processors to the XPM PLUS processor. Since XPMs
0 must meet minimum BCS packfill requirements before
0 these kits can be applied, the modules will be
0 equipped with one of the following:

0 Base XPMs:
0 -----

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0 DTC Modules - NT6X02AS, NT6X02IA or NT6X02IC
0 LGC Modules - NT6X02AT, NT6X02LA or NT6X02LC
0 LTC Modules - NT6X02AU, NT6X02MA or NT6X02MC

0 The slots that mount the processors and memory are provisionable
0 in packfills NT6X02IC, NT6X02LC and NT6X02MC. Application of the
0 NT6X02XC kit to modules containing one of the other packfills
0 will bring the module to the NT6X02IC/LC/MC level, making these
0 slots provisionable.

0 Remote:

0 -----

0 RCC Modules - NT6X12AD, NT6X12AG and NT6X12CA

0 The processors and memory are Always Provided in these packfills.
0 Application of the NT6X12ZF to a module equipped with NT6X12AG
0 will change the RCC module to the NT6X12AK level. When applying
0 the NTZZ12ZF kit to a module equipped with NT6X12CA or any
0 packfill NT6X12AF or earlier, the NT6X72AA packs must be replaced
0 with NT6X72ABs. Application of the NT6X12ZF and the NT6X72AA re-
0 placement with NT6X72AB, upgrades these modules to the NT6X12AK
0 level. The slots requiring upgrade for XPM PLUS become
0 provisionable upon application of the NT6X12ZF kit. The NT6X12AK
0 is now available for new orders.

0 o Application of XPM PLUS to LGC, LTC and RCC modules
0 is mandatory (BCS Gating) for BCS-38. Application of
0 XPM PLUS to DTC modules is mandatory for BCS-41.

0 o As of BCS 35 the MP/SP processor will no longer be
0 shipped for new orders of the LGC/LTC/DTC/RCC. The Unified
0 Processor (XPM Plus) will be shipped for all new LGC/DTC/
0 LTC/RCC modules ordered.

0 8.1.2 HARDWARE DEPENDENCIES

0 The hardware required to implement XPM PLUS capability is the
0 Unified Processor, the terminator card (which mounts in a rear
0 side slot) and backplane strapping. These changes are applied to
0 the existing non-ISDN XPM equipment as described in the Product
0 Change Kit documents and will result in XPM packfills NT6X02IC,
0 NT6X02LC or NT6X02MC or RCC packfill NT6X12AK.

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0 P AND C SIDE PORT REQUIREMENTS

0
0 There are no P or C side ports associated with the Unified
0 Processor (XPM PLUS).

0 DMS BUS PORT REQUIREMENTS

0
0 There are no DMS BUS ports associated with the Unified Processor
0 (XPM PLUS).

0 CIRCUITS PER CARD

0
0 There is one Unified Processor per circuit pack.

0 DISCRIMINATION NUMBERING

0
0 There is no discrimination numbering associated with XPM PLUS.

0 8.1.3 PROVISIONING CONSIDERATIONS

0
0 The following kits are available for application as described be-
0 low:

0

0 Host - Digital Trunk Controller Equipment
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- 0 o Upgrade of host DTC/LGC/LTC to XPM PLUS:
0 Provide one XPM to XPM+ kit to upgrade one existing
0 host XPM module to XPM PLUS capability. All
0 provisionable circuit pack rules are unchanged
0 except for processors/memory, which are replaced
0 as part of kit application. The NT6X02XC kit
0 includes backplane stapping materials and
0 instructions for application on existing NT6X01AA
0 frames. The NTZZ99AN kit provides only the circuit
0 packs required and is used for applications where
0 the necessary wiring is already in place (i.e. the
0 upgrade of an existing module on a NT6X01AD frame).
- 0 o Upgrade of non-ISDN RSC to XPM PLUS:
0 Provide one RCC to XPM+ kit to upgrade one existing
0 RCC module to XPM PLUS capability. All
0 provisionable circuit pack rules are unchanged
0 except for processors/memory, which are replaced
0 as part of kit application.
- 0 o New shipments of XPMs with XPM PLUS:
0 Packfills are now available for application on the
0 combined ISDN/non-ISDN frame (NT6X01AD). New XPM+
0 shipments on the Model A CCPE (NTRX36AB) are NOT
0 supported. The packfills for NT6X01AD are:

0 NTZZ02PA for LTC with XPM+
0 NTZZ02QA for LGC with XPM+
0 NTZZ04HB for DTC with XPM+
- 0 o New shipments of RCCs with XPM PLUS:
0 Packfills are now available for application on the
0 RCE frame in either detail or Building Block format.
0 They are:

0 NTZZ46EA for RCC with XPM+ (in Building Block)
0 NT6X12AK for RCC with XPM+ (in detail)

0 8.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

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0 8.1.5 TRAFFIC TABLES

0
0 Not applicable.

0 8.2 PRODUCT/SYSTEM SPECIFICATION

0

0 8.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 8.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 8.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply to this product. Both the Uni-
0 fied Processor and Termination Card will need to be spared.

0 8.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 There is no fusing or power feed associated with the Unified
0 Processor.

0 8.2.5 CURRENT DRAIN INFORMATION

0
0 The NTMX77AA Unified Processor requires a maximum of 3.80 Amps
0 and the NTMX71AA Terminator CP requires a maximum of 0.68 Amps.

0 8.3 SOFTWARE PROVISIONING

0

0 8.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software package NTXR34-- is required to support the Unified
0 Processor and will be needed for all XPM PLUS upgrades.

0 Software package NTXR42-- is required to utilize the downloadable
0 firmware feature and is required with NTXR34--. In BCS-35,
0 NTXR34AB replaces NTXR34AA and NTXR34AA is declared Manufacture
0 Discontinued.

0 Refer to SMS/SOLID for software requirements and interdependen-
0 cies.

0 8.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

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0 8.3.3 MEMORY PROVISIONING

0
0 Not applicable.

0 8.4 REAL TIME IMPACT

0 The Unified Processor provides an improvement in RealTime capac-
0 ity by a factor of approximately 1.6X compared to the existing
0 MP/SP.

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0 CHAPTER 5

0 HOST - SUBSCRIBER MODULE EQUIPMENT

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Host - Subscriber Module Equipment
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0 HOST - SUBSCRIBER MODULE EQUIPMENT

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0 1.0 Host Subscriber Module Equipment

0 1.1 Equipment Provisioning0 1.1.1 DS1 Interface Cards0 (a) General Description

0 To enable the Telco to specify the quantity of interface circuit
0 packs required to interface the DS1 digital carrier system and
0 the DS1 links from the Remote Line Concentrating Module (RLCM),
0 the Remote Switching Centre (RSC) and the Outside Plant Module
0 (OPM).

0 (b) Reference

0 NTP 297-1001-451 DMS-100 Family Common Customer
0 Data Schema

0 (c) Provisioning Considerations

0 (i) The DS1 Interface Cards are required to interface with
0 the DS1 digital carrier systems and the DS1 links from
0 the Remote Sites (i.e. Remote Line Concentrating Module
0 (RLCM), Remote Switching Center (RSC), Outside Plant Mod-
0 ule (OPM)).

0 (ii) There can be a maximum of ten (10) DS1 I/F cards per
0 LGC/DTC/LTC module.

0 (iii) One NT6X50AA/AB card provides an interface for up to two
0 (2) DS1 links. The NT6X50AB card will replace the
0 NT6X50AA card as the DS1 I/F card in many but not all ap-
0 plications (- the NT6X50AB will not be used in SMR, RSC,
0 and RLCM).

0 In order to support the enhanced features of the NT6X50AB
0 (i.e. ESF and 64 Kb/s clear channel capability based on
0 B8ZS), the DTC/LGC/LTC modules must be equipped with new
0 messaging (i.e. NT6X69AA/79AA or NT6X69AB) and new memory
0 (i.e. NT6X46AB/BA and NT6X47AB or NT6X47AC) cards. Pick
0 the appropriate DTC/LGC/LTC circuit pack fills.

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0 The full support of the NT6X50AB card will not be avail-
0 able in DTC/LGC/LTC modules which have small memories
0 (i.e. NT6X46AA, NT6X47AA) and old messaging (i.e.
0 NT6X43AA). In these modules, the NT6X50AB can be used as
0 replacements for normal NT6X50AA carriers but the en-
0 hanced DS-1 feature set will not be available.

0 The above is only applicable to DMS host offices and not
0 to remotes such as RSC and RLCM.

0 The Customer cannot use NT6X50AB to substitute for
0 NT6X50AA unless NTX270AA software is loaded and
0 datafilled for the respective XPM's. It is recommended
0 that NT6X50AA cards and NT6X50AB cards not be mixed on a
0 shelf to minimize cases where the Customer forgets that
0 NT6X50AB needs to be explicitly software datafilled. The
0 datafill is via software table CARRMTC.

- 0 (iv) The DS-1 Interface Circuit Pack provisionable to the SMS
0 is the NT6X85AA or NT6X85AB. If software package
0 NTX299AB is present, the NT6X85AB is required for all
0 modules that require special services features. Other SMS
0 modules may use NT6X85AA packs but will be unable to use
0 the special services features of the software package
0 NTX299AB. (Check availability reports for the proper or-
0 dering PEC.)

0 The SMU DS-1 CP Product Engineering Code (PEC) is
0 NT6X85AB. Each NT6X85AB CP contains two (2) DS-1 cir-
0 cuits. A maximum of ten (10) NT6X85AB CP may be provi-
0 sioned on each SMU.

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0 1.1.2 DS512 Interface Cards

0 (a) General Description

0 The NT6X40CA DS512 Network Interface circuit pack provides a fi-
0 ber interface to the Enhanced Network (ENET).

0 (b) Reference

0 None

0 (c) Provisioning Considerations

0 (i) If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP and two (2) NT6X40DA, DS512 Paddle Board,
0 for each relevant DTC/LGC/LTC module.

0 (ii) Provide one (1) NT6X02BU, Fiber I/F Hardware Assembly,
0 for each DTC/LGC/LTC module interfacing to the Enhanced
0 Network (ENET). The NT6X02BU Fiber Assembly mounts on
0 the backplane of the lower array in a module and provides
0 the fiber interface for both arrays.

0 (iii) If copper interface to the Network is required, then pro-
0 vide two (2) NT6X40AC, DS30 Network Interface CP, for
0 each relevant DTC/LGC/LTC module.

0 Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

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0 1.1.3 Universal Tone Receivers

0 (a) General Description

0 The Universal Tone Receiver (UTR) is a combined service circuit
0 that can perform the function of a Digitone Receiver for lines
0 and a MF Receiver for trunks.

0 The Universal Tone Receiver (UTR) circuit pack is provisioned for
0 R2 call setup. Each UTR pair has thirty circuits. For more in-
0 formation on the UTR, refer to Section 3.5.

0 (b) Reference

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 (i) The UTR is provisionable in pairs (maximum two (2) pairs)
0 on the DTC, LGC, (IDTC, ILGC) and LTC modules. All lines
0 and trunks connected to the module will be serviced by
0 the UTR within the module. This includes all lines in
0 LCMS, RLCMS, and OPMS.

0 (ii) UTRs will slightly reduce the DTC/LGC/LTC and RSC periph-
0 eral real time capacity. A real time work up should be
0 performed to ensure sufficient capacity. Refer to Sys-
0 tems Engineering Letter, Issue #01, Subject "Guidelines
0 for XPM Real Time Capacity Study - BCS-22" (Date: May 22,
0 1987).

0 (iii) Lines and trunks on a RSC are serviced by UTR cards lo-
0 cated in the RCC module of the RSC. There is no traffic
0 overflow to the host office.

0 (iv) Although the UTR can perform the function of a Digitone
0 Receiver (NT2X48AA) and the function of a MF Receiver
0 (NT2X48AB), there is no traffic overflow from UTRs onto
0 existing Digitone Receivers nor existing MF Receivers.
0 The Digitone Receivers and MF Receivers mounted on MTMs
0 and TMs are still required to service the following:

- 0 - analog trunk groups existing on TM/MTM shelves
0 - lines equipped on LM modules
0 - trunk groups equipped on DCM modules
0 - Mechanized Calling Card Service (MCCS)

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- 0 | - Subscriber Carrier Modules (SMS, SMR, SMU)
0 | - incoming and the incoming portion of 2 way service
0 | and test circuits (i.e. Remote Office Test Line and
0 | Blue Box Fraud
0 | Prevention). Refer to Section 3.5 (1.3.14) for the
0 | Digitone
0 | Receiver and Section 3.5 (1.3.13) for the MF Re-
0 | ceiver.

- 0 | (v) The following is a list of trunk types which require a
0 | receiver that are supported by the UTR

TRUNK GROUP	TRUNK NAME/DESCRIPTION
A5	2 WAY AMR5MF
ATC	Access Tandem to Carrier
SC	INCOMING CAMA MF 2 WAY CAMA TOLL MF IN MF OUT 2 WAY CAMA TOLL MF IN DP OUT
IT	INTERTOLL 2 WAY MF IN MF OUT INTERTOLL INCOMING MF INTERTOLL WINK MF IN DP OUT
IT250	IT250 DMS250/TOPS INTERTOLL
IMT	(DMS250 trunk group)
DAL	(DMS250 trunk group)
CAMA(250)	(DMS250 CAMA trunk group)
OC	2 WAY MF CAMA
OI	COLLOCATED OI SWITCHBOARD COLLOCATED SWBD TOLL OFFICE MF VERIFICATION OPERATOR
OP	Outgoing or 2 WAY MF TSPS/TOPS
PX	2 WAY DIGITAL PBX
AOSS	AOSS INCOMING MF
TDDO	TANDEM 2 Stage DDO

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0| TI INCOMING MF
0| T101 101 Communications Test Line
0| T2 LOCAL 2 WAY MF
0| TOPS TOPS TRUNK INCOMING MF
0| TOPS TRUNK 2 WAY MF IN MF OUT
0| TOPS TRUNK 2 WAY MF IN DP OUT
0| ZI 0+/0- Tandem to TOPS/TSPS
0| IBNTI INCOMING IBN
0| INCOMING IBN DT
0| IBNT2 2 WAY IBN
0| 2 WAY IBN DT
0| INT101 INTL 101 Test Line
0| AVINSW 2 WAY Interswitch MF
0| AVOVS 2 WAY OVERSEAS MF TRUNK
0| AVNOS 2 WAY CROSSBAR MF TRUNK
0| AVPBX 2 WAY or INCOMING PBX MF TRUNK
0| AVTNDM 2 WAY Tandem MF Trunk

0| Any incoming or incoming portion of a 2 way trunk group
0| requiring a receiver not listed above will require
0| Digitone or MF receivers.

0| (vi) The number of UTR circuits is obtained by calculating the
0| UTR holding time and multiplying by the average number of
0| calls per hour. In general it is always safe to provide
0| two (2) pairs of UTR cards if unsure of the traffic de-
0| mands.

0| For incoming R2 calls the UTR holding time is as follows:

0| 1. From seizure to final digit collection
0| plus

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- 0 2. From final digit collection to - trunk
0 selection if R1 or N5 outgoing, - seize
0 acknowledgement if R2 outgoing.

0 For outgoing R2 calls the UTR holding time is as follows:

- 0 1. The UTR is held until told to release by
0 the far office or timeout if we are the
0 controlling signal office (i.e. R1 to R2
0 calls).

0 The number of UTRs used on average is given by the fol-
0 lowing formula:

$$\begin{array}{lcl} \# \text{ of UTR} & & \text{SI} \qquad \qquad \text{S0} \\ \text{Circuits} = \text{NI} \times \frac{\text{-----}}{\text{HI+SI}} \times \text{EI} + \text{NO} \times \frac{\text{-----}}{\text{HO+S0}} \times \text{EO} \\ \text{required} & & \end{array}$$

0 where,

0 NI = Number of incoming R2 trunks (or 2-way
0 used as incoming)

0 SI = Signalling time in seconds of incoming
0 trunks

0 HI = Holding time (talking) of incoming trunks
0 in seconds

0 EI = Erlang occupancy figure of incoming
0 trunks

0 NO = Number of outgoing R2 trunks (or 2-way
0 used as outgoing)

0 S0 = Signalling time in seconds of outgoing
0 trunks

0 HO = Holding time (talking) of outgoing trunks
0 in seconds

0 EO = Erlang occupancy figure of outgoing trunks

- 0 (vii) This circuit pack is only required for CCITT No. 6 Sig-
0 nalling.

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0 1.1.4 Digital Trunk Controller (DTC) Module

0 (a) General Description

0 The Digital Trunk Controller (DTC) Module provides the interface
0 between DS-1 digital systems and the DMS network. (The DTC does
0 not provide the digital interface between a host DMS and a re-
0 mote.)

0 (b) Reference

0 Chapter 3, Section 3.15 Common Channel Signalling

0 (c) Provisioning Considerations

0 (i) The DTC module is a two shelf module (versus the present
0 single shelf or single bay peripheral module).

0 (i) Each DTC module can terminate up to twenty (20) digital
0 carrier systems (i.e. up to ten (10) DS1 Interface cards)
0 and interconnect with the network via up to sixteen (16)
0 DS30 speech links.

0 (iii) Each DTC can terminate up to a maximum of twenty (20) DS1
0 ports on the peripheral side and a maximum of sixteen
0 (16) DS30 ports on the CPU (network) side.

0 (iv) Since each DTC terminates up to $20 \times 24 = 480$ voice chan-
0 nels and the internal speech links can accommodate up to
0 $16 \times 30 = 480$ VF paths, there is no concentration.

0 (v) DTC modules are provisioned for total terminations based
0 on the forecast of digital trunk requirements for the
0 busy season prior to exhaust.

0 (vi) For service protection, it is recommended that trunk cir-
0 cuits of each trunk group be spread over more than one
0 DS1 Interface card. Both of these cards can be mounted
0 on the same DTC module because of the duplicated
0 processor residing in the module.

0 (vii) Existing DTC modules which have spare capacity shall be
0 used to terminate new digital systems.

0 (viii) When a DTC module is handling CCIS/CCS7 voice trunk-
0 ing, two (2) Continuity Tone Detector cards NT6X70AA are

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0 required when analog trunk facilities are employed. The
0 NT6X70AA card is not required if the transmission path is
0 all-digital.

0 (ix) The following DTC Common Peripheral Controller CPs sup-
0 port the following applications:

0 DTCs
0 NT6X02IC supports UTRs
0 replaces NT6X02AQ/AR (BCS-27)

0 IDTCs
0 NT6X02BD supports SL-100 U.K.
0 NT6X02BN supports Mercury UK applications with
0 New Message requirements (eg. DPNSS) *
0 NT6X02GB supports Caribbean (CEP)
0 NT6X02JA supports DMS-300 Turkey
0 NT6X02KE supports China
0 NT6X02QA supports Turkey applications
0 NT6X02BW replaces NT6X02BP (BCS-28)
0 NT6X02BP supports all International

0 * See Section 3.15 Common Channel Signalling for more
0 information on DPNSS.

0 (x) For each NT6X02IC ordered (BCS-27), provide:

- 0 - four (4) XPM Processor CP NT6X45AF/BA
0 - two (2) DS30 Network Interface CP NT6X40AC
0 - two (2) SP Memory Plus CP NT6X46BB
0 - two (2) MP Memory Plus CP NT6X47AC

0 - two (2) MSG Protocol & Tone CP NT6X69AC
0 - two (2) Power Converter CP NT2X70AE

0 NT6X02IC is to be ordered instead of NT6X02IA.

0 For each NT6X02BW ordered, provide:

- 0 - six (6) XPM Processor CP NT6X45BA
0 - two (2) Time Switch CP NT6X44AB/EA
0 - two (2) Power Converter CP NT2X70AE

0 NT6X02BW is to be ordered instead of NT6X02BP.

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0 Upon general availability, the NT6X45BA CP will become
0 the standard XPM Processor offering instead of the
0 NT6X45AF/AD CP.

0 If optional software feature NTXA66AA (Enhanced Office
0 Recovery) or NTXA67AA (Extended XPM Diagnostics) are
0 present, then the XPM Processor CP must be the NT6X45BA.
0 Provide four NT6X45BA XPM Processor CP for upgrading ex-
0 isting offices.

0 NT6X44EA adds Even-Bit-Inversion (EBI) to the Time Switch
0 CP (NT6X44AB).

0 (xi) If interface to the Enhanced Network (ENET) is required,
0 then the relevant DTC/LGC/LTC modules must have the
0 NT6X69AC Msg Protocol & Tone CP. NT6X69AC replaces
0 NT6X69AB.

0 Provide 1 NT6X02BQ change kit for each DTC/LGC/LTC module
0 you are upgrading to ENET. This change kit applies only
0 to modules provisioned at NT6X02 AS/IA, AT/LA or AU/MA
0 levels. Modules provisioned at earlier levels must be
0 upgraded to these levels before the NT6X02BQ change kit
0 can be applied.

0 (xii) If ENET interface is not required, use the product change
0 kit NT6X02EQ to upgrade DTC modules from NT6X02IA/LA/MC
0 to NT6X02IC/LC/MC levels.

0 (xiii) There are two methods available to satisfy 4 MB MP memory
0 requirements in existing DTC/LGC/LTC modules. The first
0 method is to apply one NT6X02EQ product change kit to
0 each DTC/LGC/LTC module to be upgraded as in item (1) be-
0 low. Per customer request, a second pair of office sup-
0 plied NT6X47AB packs may be added to each DTC/LGC/LTC
0 module to be upgraded as in item (2) below. Do not order
0 new NT6X47AB packs for the upgrade of NT6X02IA, LA, MA mod-
0 ules. The NT6X47AB packs that have been removed from up-
0 graded DTC/LGC/LTC modules may then be applied to other
0 relevant DTC/LGC/LTC modules.

0 1) Provision NT6X02EQ Product Change Kit to replace the
0 NT6X47AB MP Memory Plus circuit packs in slot 10 with
0 NT6X47AC packs. The NT6X02EQ kit may only be applied
0 to the following modules:

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0 DTC (CCS7) : BCS-27 and later (NT6X02AS/IA)
0 DTC (other): BCS-33 and later (NT6X02AS/IA)
0 LGC (all) : BCS-31 and later (NT6X02AT/LA)
0 LTC (all) : BCS-30 and later (NT6X02AU/MA)

0 2) Existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT0X50AA, Filler Face Plate, in Slot 09.
0 Provide two (2) NT6X47AB, MP Memory Plus CP for the
0 above listed modules.

0 One NT6X47AC in slot 10 (item 1) has the same memory
0 capacity as two (2) NT6X47AB in slots 9 and 10 (item 2).

0 | Where an existing DTC/LGC/LTC module is presently
0 equipped with two NT6X69AB in slot 18, if the existing
0 module is not required to interface ENET, new cards are
0 not required for these slots.

0 Provide one (1) NT6X02BQ Product Change kit for each ex-
0 isting DTC/LGC/LTC module to be upgraded to interface
0 ENET. The NT6X02BQ contains (2) NT6X69AC circuit packs.
0 The NT6X02BQ will convert the NT6X02IA/AS to NT6X02IC,
0 the NT6X02LA/AT to NT6X02LC, and the NT6X02MA/AU to
0 NT6X02MC.

0 If an existing DTC/LGC/LTC module has ALREADY been up-
0 graded to the NT6X02IC/LC/MC packfill level via the
0 NT6X02EQ KIT, provide two NT6X69AC circuit packs in slot
0 18 to upgrade the module for ENET interface.

0 | For Canadian applications only, provide the NT6X02ER
0 Product Change Kit for each existing DTC peripheral mod-
0 ule (NT6X02AR/AM) to be upgraded. This change kit makes
0 the appropriate circuit pack positions provisionable, but
0 contains no circuit packs. Refer to the engineering man-
0 ual rules to identify the circuit packs required for up-
0 grade of the NT6X02AR or NT6X02AM.

0 (xiv) The following are the minimum packfill levels required
0 for BCS-32 or later: NT6X02IA/IS, or NT6X02IC (for new
0 offices).

0 Building Blocks

0 (xv) Provide one NTZZ04EA Building Block product change kit
0 for each existing NT6X02AA DTC/LGC/LTC module to be up-
0 graded. Do not order the NT6X02ZE PC Kit.

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0 The NTZZ04EA building block contains the following:

0 (1) NT6X02ER XPM PC Kit
0 (1) NT6X02ZL Wiring Kit
0 (2) NT0X50AA Filler Face Plate
0 (2) NT6X47AC Master Proc Memory Plus CP
0 (2) NT6X46BB Signal Processor Memory Plus CP
0 (2) NT6X69AC CPP Msg Protocol & Tone CP
0 (2) NT2X70AE Power Conv +/-5V & 12V CP
0 (2) P0711663 Desig. Label for NT6X47AC
0 (2) P0711664 Desig. Label for NT6X46BB
0 (2) P0710476 Desig. Label for NT6X69AC
0 (2) P0698943 Desig. Label for NT2X70AE

0 (Note: The NTZZ04EA includes all circuit packs required
0 to upgrade an NT6X02AA module except the NT6X45 cards.

0 The NTZZ04EA building block kit may be used to upgrade
0 the NT6X02AA module as follows:

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Building Block	From	To
NTZZ04EA	NT6X02AA (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

Provide one NTZZ04GA Building Block product change kit for each existing NT6X02AC DTC/LGC/LTC module to be upgraded. Do not order the NT6X02ZE PC Kit.

The NTZZ04GA building block contains the following:

(1)	NT6X02ER	XPM PC Kit
(1)	NT6X02ZL	Wiring Kit
(2)	NT0X50AA	Filler Face Plate
(2)	NT6X47AC	Master Proc Memory Plus CP
(2)	NT6X46BB	Signal Processor Memory Plus CP
(2)	NT6X69AC	CPP Msg Protocol & Tone CP
(2)	P0711663	Desig. Label for NT6X47AC
(2)	P0711664	Desig. Label for NT6X46BB
(2)	P0710476	Desig. Label for NT6X69AC

(Note: The NTZZ04GA includes all circuit packs required to upgrade a NT6X02AC module except the NT6X45 cards.

The NTZZ04GA building block kit may be used to upgrade the NT6X02AC module as follows:

Building Block	From	To
NTZZ04GA	NT6X02AC (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

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0 | (xvi) Existing DTC/LGC/LTC module is presently equipped with
0 four (4) NT6X45AA, XPM Processor CP, in Slots 08 & 12.
0 Application of the NTZZ04EA/NTZZ04GA makes these slots
0 provisionable and replacement cards must be ordered as
0 follows:

0 For A-stock upgrades provide four (4) NT6X45BA cards in
0 slots 8 and 12 of the upper and lower shelves of the pe-
0 ripheral modules. If B-stock material is required, then
0 four NT6X45BB packs must be merchandise ordered via an
0 88K.

0 | The existing NT6X45AA packs must be replaced because they
0 will not work with New Messaging. The only reason NT6X45
0 cards are not included in the NTZZ04EA/GA upgrade kit is
0 because there is an option between NT6X45BA and NT6X45BB
0 packs. Either the NT6X45BA packs or the NT6X45BB packs
0 must be ordered or the upgrade will not have been done
0 correctly.

0 (xvii) The existing DTC/LGC/LTC module is presently equipped
0 with the following DS30 Network Interface CP in Slots 22
0 & 23: four (4) NT6X40AA.

0 If copper interface to the Network is required, then DO
0 NOT order new circuit packs for these slots.

0 If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP in Slot 22, and two (2) NT6X40DA, DS512 Pad-
0 dle Board, in Slot 22R of each relevant DTC/LGC/LTC mod-
0 ule. Also, provide one (1) NT6X02BU, Fiber I/F Hardware
0 Assembly, for each DTC/LGC/LTC module interfacing to the
0 Enhanced Network (ENET). The NT6X02BU Fiber Assembly
0 mounts on the backplane of the lower array in a module
0 and provides the fiber interface for both arrays.

0 | Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

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0 (xviii) The existing DTC/LGC/LTC module is presently equipped
0 with four (4) NT6X47AA, MP Memory CP, in Slots 09 & 10.
0 Application of the NTZZ04EA/NTZZ04GA replaces these cir-
0 cuit packs with two NT6X47AC Master Processor Memory cir-
0 cuit packs.

0 (xix) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X46AA Signal Processor Memory Plus CP in
0 slot 11. Application of the NTZZ04EA/NTZZ04GA replaces
0 these circuit packs with two NT6X46BB circuit packs.

0 (xx) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X43AA, Msg Interface CP, in Slot 18. Ap-
0 plication of the NTZZ04EA/NTZZ04GA replaces these circuit
0 packs with two NT6X69AC Msg Protocol & Tone circuit
0 packs.

0 (xxi) If the existing module was a NT6X02AA, then the NTZZ04EA
0 provides two (2) NT2X70AE, Power Converter CP, in Slot 25
0 of each DTC/LGC/LTC module.

0 If the existing module was a NT6X02AC, then two (2)
0 NT2X70AD, Power Converter CP, already exist in Slot 25 of
0 each DTC/LGC/LTC module. DO NOT order new circuit packs
0 for these slots unless requested by the customer. Per
0 Telco request, the existing NT2X70AD CP's in each
0 DTC/LGC/LTC can be replaced by the NT2X70AE, Power Con-
0 verter ESD CP.

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0 1.1.5 Subscriber Carrier Module - Urban (SMU)

0 (a) General Description

0 | The SMU will interface on a direct digital basis with a DMS-1 Ur-
0 ban Remote Terminal (RCU) via DS-1 transmission facilities.

0 The SMU will only interface RCUs. The SMU does not offer inter-
0 face support to any other remote system (eg. DMS-1R, SLC-96, RSC,
0 | RLCM, OPM etc.) nor host equipment (eg. LCM).

0 The RCU may be located outside the central office up to a maximum
0 distance of 100 miles.

0 SMU will appear to the DMS-100F as a peripheral module. Each
0 module consists of two shelves of equipment with duplicated con-
0 trollers and power converters. The SMU shelf pairs are housed in
0 a standard DMS-100 single bay frame.

0 (b) Reference

0 Chapter 3, Section 3.7 Office Maintenance
0 NTP 297-1001-103 DMS-100 Family Peripheral Modules

0 (c) Provisioning Considerations:

0 (i) The SMU will support the following features:

0 - POTS

- 0 - single party
- 0 - multi party
 - 0 - two or four party Frequency Selective
 - 0 Ringing (FSR) with
 - 0 - two party Automatic Number
 - 0 Identification (ANI)
 - 0 - four party Operator Number
 - 0 Identification (ONI)
 - 0 - two, four or eight party Coded Ringing
 - 0 with
 - 0 - two party ANI
 - 0 - two, four or eight party ONI
 - 0 - two party Divided Ringing with ANI

0 - COIN

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- 0 - coin first
- 0 - dial tone first
- 0 - semi post pay
- 0 - ground start
- 0 - loop start

0 - CUSTOM CALLING

- 0 - speed calling
- 0 - three way calling
- 0 - call waiting
- 0 - call forwarding
- 0 - all current IBN features with the
- 0 exception of distinctive ringing, datapath
- 0 and Electronic Business Set (EBS)

0 - DIALING

- 0 - dial pulse
- 0 - digitone

0 - TONES

- 0 - dial tone
- 0 - audible ringback
- 0 - reorder
- 0 - busy

0 - MAINTENANCE

- 0 - Automatic Board to Board Test (ABBT)
- 0 - Test Desk (eg. MLT, LRS or #14 LTD)
- 0 - Automatic Line Testing (ALT)
- 0 - Line Card Testing
- 0 - Subscriber Loop Testing

0 (ii) The SMU shelf pairs are housed in a standard DMS-100 sin-
0 gle bay frame. The Subscriber Module Equipment Frame
0 (SME) (PEC NT6X01AA) can contain up to two modules. Each
0 module has a PEC of NT6X02EG.

0 | The NT6X02EG replaces the NT6X02EB Common Circuit
0 Packfill for use on all new SMU applications. Order the
0 NT6X02EG for all new SMU applications.

0 |

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0 The minimum packfill for BCS-31 and following is
0 NT6X02EB/AW.

0 Provide one (1) NT6X02EH Product Change Kit and two (2)
0 NT6X47AC MP Memory Plus circuit packs for each NT6X02EB
0 and NT6X02AW module when upgrading to BCS-31. The
0 NT6X02EH PC Kit upgrades the NT6X02EB/AW module to the
0 NT6X02EF module and makes slots 10, 11, 11R and 18
0 provisionable. Mount the NT6X47AC circuit packs in slot
0 10 of the upper and lower shelves of the module.

0 Per customer request, the NT6X47AB packs removed from
0 modules upgraded via a PC Kit may be used to upgrade
0 other relevant modules. Provide two (2) office supplied
0 NT6X47AB CP for each NT6X02EB/AW module to be upgraded to
0 BCS-31. Do not order new NT6X47AB packs for the upgrade
0 of SMU modules.

0 Slots 22-23,25 of the NT6X02EB Common CP Fill are now
0 provisionable. Provide two (2) NT6X40AC, DS30 Network
0 Interface CP, in slot 22. Also, provide two(2) NT0X50AA,
0 Filler Face Plates, in slot 23 of each NT6X02EB Common CP
0 Fill. Provision two(2) NT2X70AE Power Converter CP in
0 slot 25 of each module.

0 The slots mentioned above are being made provisionable in
0 order to ease future design development. The remaining
0 circuit packs in the NT6X02EB Common CP Fill are un-
0 changed.

0 Upgrading Existing NT6X02EA Modules

0 In order to enhance an existing NT6X02EA module with the
0 Expanded Signaling Processor Memory CP required for
0 BCS-27, a product change kit NT6X02ZJ was created for
0 each existing SMU peripheral module. The NT6X02ZJ PC Kit
0 contains two (2) NT6X46AC, Enhanced Signaling Processor
0 CP, and new designation strips for the upgraded modules.

0 The NT6X02ZJ Product Change Kit will upgrade the follow-
0 ing peripheral module:

DESCRIPTION	FROM	TO

0		SMU Common CP	NT6X02EA	NT6X02AW
0				
0				

0 Slots 08,09,12,22-23,25 of the Upgraded SMU module are
0 now provisionable slots. These slots are being made
0 provisionable to ease future design development.

0 Provide four(4) NT6X45BB, XPM Processor CP, for slots
0 08&12 of each upgraded SMU module. New circuit packs DO
0 NOT need to be ordered for slots 09,22-23,25 of the Up-
0 graded SMU module.

0 Refer to availability reports to identify valid ordering
0 dates.

0 The NT6X02AW Common CP Fill are PEC codes used for the
0 field upgrade of existing peripheral modules ONLY. The
0 NT6X02AW Common CP Fills CANNOT be ordered.

0 Upgrading Existing NT6X02EB/AW Modules

0 The NT6X02EH Product Change Kit was created to convert
0 the NT6X02EB/AW module to the NT6X02EF module. This PC
0 Kit makes certain slots provisionable, but does not con-
0 tain any circuit packs.

0 The NT6X02EH Product Change Kit will upgrade the follow-
0 ing peripheral modules:

0	DESCRIPTION	FROM	TO
0			
0	SMU Common CP	NT6X02EB	NT6X02EF
0			
0	SMU Common CP	NT6X02AW	NT6X02EF
0			
0			
0			

0 Slots 10,11,11R and 18 of the Upgraded SMU module are now
0 provisionable slots. These slots are being made provisionable to ease
0 future design development.

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0 Since this PC Kit does not contain any circuit packs, any required up-
0 grade packs (provisionable in slots 10,11,11R or 18) must be ordered
0 in conjunction with the PC Kit. For instance, if a NT6X02EB/AW SMU
0 module is required to meet the BCS-31 extended MP memory requirement,
0 then one NT6X02EH Product Change Kit and two NT6X47AC packs must be
0 ordered to upgrade the module. If a NT6X02EB/AW SMU module is re-
0 quired to interface with ENET, then one NT6X02EH kit and two NT6X69AC
0 packs must be ordered to upgrade the module.

0 The NT6X02EF Common CP Fill is the PEC used for the field upgrade of
0 existing peripheral modules ONLY. The NT6X02EF Common CP Fill CANNOT
0 be ordered.

0 (iii) The SMU will be connected to the Network Module of the
0 DMS-100F via three (3) to sixteen (16) provisionable
0 DS-30 ports which are duplicated to provide connections
0 to each plane of the network. Configure the SMU as non-
0 blocking, that is, configure one DS-30port per each DS-1
0 channel provisioned to the RCUs.

0 The SMU peripheral side (p-side) interfaces to multiple
0 RCUs, and can accommodate up to twenty (20) DS-1 ports.

0 Each RCU will have one (1) to eight (8) DS-1 links to the
0 SMU. All DS-1 links must terminate on the same SMU. The
0 number of RCU that may terminate on a SMU is dependent on
0 the total traffic presented to the SMU and the physical
0 limitation of the twenty ports.

0 The mininum number of DS-1 required to interface a RCU is
0 one (1), however, two (2) DS-1 links are recommended to
0 prevent an outage during a single link failure.

0 A fully equipped RCU supports over 500 subscriber and/or
0 special service lines.

0 The SMU does not support DS-1 protection switching as it
0 will not be offered in the RCU product.

0 The SMU should be configured as non-blocking. The number
0 of DS-30 channels to the Network should be equal to the
0 number of DS-1 channels to the RCUs.

0 The following table represents the CCC capacity of the
0 SMU per DS-30 port to the Network.

0 Capacity of SMU (CCS)

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0 at 4% TML

0 Network Ports 3 4 5 6
0 2780 3806 4841 5883 (CCS)

0 Network Ports 7 8 9 10
0 6929 7979 9032 10087 (CCS)

0 Network Ports 11 12 13 14
0 11144 12203 13264 14325 (CCS)

0 Network Ports 15 16
0 15388 16451 (CCS)

0 (iv) The Universal Tone Receiver (NT6X92BB) is not currently
0 supported in the SMU. Digitone Receivers (NT2X48AB) must
0 be provisioned for lines at the RCU.

0 (v) Provide two (2) NT6X69AC, CPP Msg Protocol CP, for each
0 new SMU module ordered. Mount circuit packs in slot 18
0 of the upper and lower shelves of the module. The NT6X69AC
0 replaces the NT6X69AB circuit pack for use on all SMU ap-
0 plications.

0 (vi) Provide two (2) NT6X78AA, Class Modem Resource CP, for
0 each SMU module that is handling Custom Local Area Sig-
0 naling Services (CLASS -U.S.) or Call Management Services
0 (CMS -Canada) -Calling Number Display.

0 On general availability, the NT6X78AB will replace the
0 NT6X78AA as the standard CLASS Modem Resource CP.

0 (vii) Mechanized line testing is provided for testing sub-
0 scriber loops and line cards of a DMS-1 Urban Remote ter-
0 minal. Refer to Section 3.7, Office Maintenance for more
0 information.

0 SMU modules can interface ENET using either copper or fi-
0 ber speech links. Either case requires the application
0 of the NT6X69AC, CCP Msg Protocol & Tone CP. Existing
0 NT6X02EB and NT6X02AW modules can be field upgraded to a
0 NT6X02EF module with the application of the NT6X02EH
0 Product Change Kit. This change kit allows provisioning
0 of the NT6X69AC CP in slot 18.

0 For the SMU to interface ENET using Fiber speech links,
0 the following equipment is required:

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0 NT6X40CA - DS-512 XPM Interface CP
0 NT6X40DA - DS-512 Link Paddle Board
0 NT6X02BU - Fiber Interface H/W Assembly

0 Provide two (2) NT6X40CA in slot 22 and two (2) NT6X02DA
0 in slot 22R of each SMU module. Also, provide one (1)
0 NT6X02BU per SMU.

0| On general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface, and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board.

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0 1.1.6 Common Peripheral Controller Equipment Frame

0 (a) General Description

0 The primary function of this frame is to house Line Group Con-
0 troller (LGC) Modules, Digital Trunk Controller (DTC) Modules or
0 Line Trunk Controller (LTC) Modules. Subject to certain re-
0 strictions, two different kinds of modules can be mounted on the
0 same frame. NTL Customer Engineering is to be consulted regard-
0 ing these configurations.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) This frame can accommodate four (4) shelves of equipment
0 (i.e. two modules). Modules are filled and numbered on
0 the frame from the bottom up.

0 (ii) Normally both modules are the same type. Two (2) modules
0 of different types can also be mounted on the same frame.
0 This situation would only occur in a very small office or
0 for the last frame in an office in order to save one
0 frame.

0 (iii) A LGC/LTC/DTC module cannot mount on the same frame as an
0 ILGC/IDTC module.

0 (iv) When ISG is being applied to an office, the LCE frames
0 and their associated Common Peripheral Controller Equip-
0 ment Frame must be served by the same PDC frame.

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0 1.1.7 Conversion From SMS To SMU Module0 (a) General Description

0 These provisioning considerations deal with field conversion of a
0 Subscriber Module for SLC-96 (SMS) to a Subscriber Module for
0 DMS-1 Urban (SMU).

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) The Product Change Kits will upgrade the peripheral mod-
0 ules as follows:

PRODUCT CHANGE KIT	FROM	TO
NT6X02ZH	NT6X02DA(SMS)	NT6X02EA(SMU)
NT6X02ZD	NT6X02DB(SMS)	NT6X02EA(SMU)
NT6X02ZK	NT6X02DA/DB(SMS)	NT6X02EB(SMU)
NT6X02ZL	NT6X02DC(SMS)	NT6X02EB(SMU)
NT6X02ZM	NT6X02DD(SMS)	NT6X02EB(SMU)

0 Provide one (1) of the above PC Kits for each existing
0 SMS peripheral module to be converted. The PC Kits con-
0 tains circuit packs to convert a SMS module to a SMU mod-
0 ule.

0 (ii) Due to the conversion of an SMS module to a SMU module,
0 the messaging has changed; therefore, provide one (1)
0 NT6X02ZL PC Kit for Enhanced Messaging per NT6X01AA frame
0 (for U.S. offices only).

0 (iii) Provision a maximum of ten (10) NT6X85AB SCM DS1 Inter-
0 face Circuit Packs for each SMS module converted per cus-
0 tomer requirements.

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0 | 2.0 Peripheral Modules Features

0 2.1 Introduction

0 This section describes the line-oriented software features that
0 require special hardware provisioning to make the feature work.

0 2.2 Features

0 The line-oriented software features included in the Peripheral
0 Modules Features that require special hardware provisioning con-
0 siderations are listed below:

0 Custom Local Area Signalling Services (CLASS) or Call Man-
0 agement Services (CMS)

0 Residential Enhancement Services

0 Enhanced Coin Services

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0 2.3 Equipment Provisioning

0 2.3.1 CLASS/CMS Feature

0 (a) General Description

0 Custom Local Area Signalling Services or CLASS Features are a set
0 of line-oriented features which the telephone company can deploy
0 in their residential or Centrex customer environment to generate
0 additional revenue. These features operate within a single
0 switch or transparently between users on different end-office
0 switches by means of CCS7-based signalling in a multi-node switch
0 configuration. In the U.S., this feature is called CLASS and in
0 Canada, the feature is called CMS. In this document, the feature
0 will be referred to as CLASS.

0 CLASS Features are separated into Phase I and Phase II features.
0 Phase I features include

- 0 - Automatic Callback (ACB) - allows a calling party to automat-
0 ically call again the number most recently dialed, whether
0 that call was answered, unanswered, or busy. If the station
0 is busy, the user may queue against that station and be re-
0 called when it becomes idle. The Automatic Callback feature
0 is very similar to the Ring Again (RAG) feature, but will be
0 deployed in the Public Network.
- 0 - Automatic Recall (AR) - enables the end user to return his
0 latest incoming call automatically, regardless of whether the
0 incoming call was answered, and regardless of whether the end
0 user knows the identity of the calling party. If the station
0 is busy, the user may queue against that station and be re-
0 called when it becomes idle. With two (2) level activation,
0 the directory number of the last call is voiced back prior to
0 completing the call.
- 0 - Calling Number Delivery or Calling Number Display (CND) - en-
0 ables receipt and display of the calling party's directory
0 number and Date/Time during the ringing cycle. This allows
0 the end user with a display set to make an informed decision
0 about answering the call.
- 0 - Calling Number Delivery Blocking (CNDB) - permits the origi-
0 nating customer, by designating his calling identity as "pri-

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0 vate", to prevent his directory number from being transmitted
0 for Calling Number Delivery. The calling party may change
0 his DN Suppression default - Suppress DN or not Suppress DN -
0 to the opposite status.

0 - Customer Originated Trace (COT) - enables the called party to
0 request an automatic trace of the last call received. The
0 trace record identifies the calling party and other call-
0 related information. The results of the trace are not pro-
0 vided directly to the end user, but are made available only
0 to an authorized agency, such as the telephone company or law
0 enforcement agency.

0 Note that CLASS features are available only to lines with a line
0 class code of RES (Residential Enhanced Services). Note that
0 this does not include ISDN RES lines.

0 Automatic Recall Date and Time Feature (ARDT)

0 This feature provides the date and time voiceback capability for
0 the Automatic Recall (AR) two-level activation sequence.

0 CLASS Configuration

0 Figure 35.2 illustrates a typical configuration with a CLASS ter-
0 minal on the DMS. This terminal is equipped with an enhanced
0 Man-Machine Interface (MMI), such as a Liquid-Crystal Display
0 (LCD) panel. The terminal could also consist of a standard tele-
0 phone with a CLASS add-on unit. An integrated telephone set,
0 such as NTL's MAESTRO, can also be used. The telephone section
0 of the Customer Premises Equipment (CPE) is loop powered, whereas
0 the CPE section providing CLASS features is powered by local AC.

0

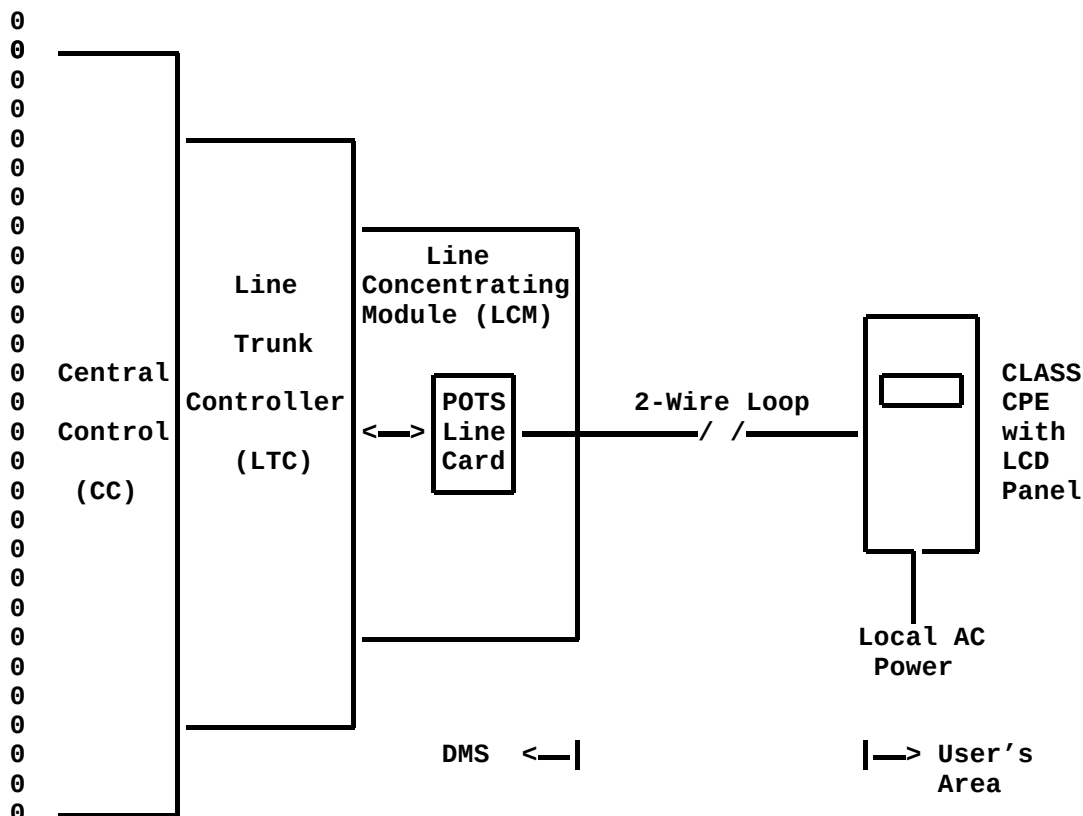
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0 Figure 35.2 Typical Configuration with a CLASS CPE

0 The transmission of the calling party number to the Customer Premises
0 Equipment (CPE) is accomplished via asynchronous FSK simplex-mode
0 transmission at 1200 bits/sec over the 2-wire loop, in accordance with
0 the Bell 202A standard. A burst of data is transmitted to the CPE
0 during the silent interval between the first and second ring of the
0 telephone set, before the incoming call is answered. The data link
0 terminates at a 202A modem in the CPE, which outputs the calling party
0 number to the LCD panel.

0 (b) Reference

0 Chapter 3, Section 3.4 Meridian Business Services

0 Section 3.15 Common Channel Signaling Systems

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0 (c) Provisioning Considerations

0 (i) CCS7 Signalling is required when CLASS features are ac-
0 cessed between nodes. Within the same node, CCS7 Signal-
0 ling is NOT required. Refer to Section 3.15 for more
0 information on CCS7 Signalling.

0 (ii) An optional feature exists called Automatic Recall Date
0 and Time (ARDT). This feature requires announcements
0 provided on a pair of CPs; NT1X76JA and NT1X76JB. The
0 NT1X76AJ and the NT1X76AK cards are required when the
0 NT1X76JA and NT1X76JB cards are ordered. The NT1X76AJ,
0 NT1X76AK, NT1X76JA, and NT1X76JB should be assigned to
0 the same DRA module. In a Class Phase 1 English office,
0 the NT1X76JA/JB can be assigned to a DRA where the
0 NT1X76AJ/AK cards are existing and there is room. Other-
0 wise, in other offices or where the DRAs with NT1X76AJ/AK
0 cards are filled, an additional set of NT1X76AJ/AK cards
0 must be ordered.

0 (iii) LCM Processor Cards, NT6X51AB, are required to support
0 CND in LCMS. LCM Common CP, NT6X04AB, contains NT6X51AB
0 and hence can support CND. Only LCMS which contain lines
0 utilizing the CND feature must be upgraded to use the
0 NT6X51AB.

0 (iv) In addition to the LCM Processor Card NT6X51AB, the CLASS
0 Modem Resource (CMR) card NT6X78AA has been developed to
0 support the introduction of CND.

0 The CMR card will support software to provide SP
0 processor - CMR messaging and thus provide CMR sanity
0 supervision, software downloading,
0 maintenance/diagnostics, operational measurements and
0 swact activity.

0 When the CND feature is required, provide two (2) CMR
0 cards per LGC/LTC/RCC/SMS/SMU module (i.e. one (1) card
0 per shelf). It is not necessary to equip all the
0 LGC/LTC/RCC/SMS/SMU in the office with the CMR card. Only
0 LGC/LTC/RCC/SMS/SMUs that will provide CND to the sub-
0 scribers that home on these peripherals will require the
0 CMR card. Any number of LGC/LTC/RCC/SMS/SMUs of a given
0 DMS may be equipped with CMR cards.

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0 (v) For Canadian Applications when the NT6X78AA cards are
0 provisioned into an LGC, LTC, or SMS module,

0 EITHER:

0 1. Retrofit the NT6X69AA/NT6X79AA card combination (if
0 existing) to an NT6X69AB card via the application of
0 the NT6X12ZY PC Kit.

0 This upgrade kit allows card slot 18 to be provi-
0 sioned with the CLASS Modem Resource (CMR) card
0 NT6X78AA which is used for the CND feature. The
0 power-reduced NT6X78AB replaces NT6X78AA and does not
0 require this upgrade.

0 OR

0 2. Limit the number of NT6X50AA DS-1 cards to four per
0 shelf (i.e. eight per module).

0 This is required to limit the shelf's overall +5 volt
0 power requirements to below 55 amps.

0 (vi) There are optional announcements available for CLASS fea-
0 tures to indicate successful or denied operation.

0 For BCS-27, the NT1X75BA DRAM Controller must be provi-
0 sioned for all CLASS applications.

0 There are two groups of announcements, Phase 1 CLASS DRA
0 Announcements and Phase 2 CLASS DRA Announcements. If the
0 CLASS/CMS feature is required, at least one group of an-
0 nouncements (i.e. Phase 1 or Phase 2) must be provided.
0 The Customer can either have Phase 1 announcements or
0 Phase 2 announcements or both.

0 (vii) Phase 1 CLASS DRA Announcements

0 For the optional Phase 1 CLASS DRA Announcements, the
0 Customer can either make up his own announcements or he
0 can order the pre-recorded ones from NT.

0 For provisioning the Digital Recorded Announcement Re-
0 cordable Memory cards (NT1X77AA/79AA), divide the total
0 length of the announcements (in seconds) by 31. This de-
0 termines the number of circuits required for these an-
0 nouncements. These are the announcements that the
0 Customer can make up himself.

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0 If the Customer chooses to create his own announcements,
0 and if he wants the Automatic Recall (AR) feature with
0 the Voice Back Option within NTXA00AA activated, then the
0 CLASS Phase 1 English Announcements (2) of (2) CP card,
0 NT1X76AK, and/or the CLASS Phase 1 French Announcements
0 (2) of (2) CP card, NT1X76BK, must be provided. Other-
0 wise, if the Voice Back Option is not to be activated,
0 then NT1X76AK and/or NT1X76BK are optional.

0 If the Customer wants our pre-recorded announcements, the
0 following DRA cards are available:

0	PEC	DESCRIPTION
0	NT1X76AJ	CLASS Phase 1 English Announcements
0		(1) of (2) CP
0	NT1X76AK	CLASS Phase 1 English Announcements
0		(2) of (2) CP
0	NT1X76BJ	CLASS Phase 1 French Announcements
0		(1) of (2) CP
0	NT1X76BK	CLASS Phase 1 French Announcements
0		(2) of (2) CP

0 The above cards are the approved Telecom Canada Phase 1
0 CLASS DRA Announcements.

0 If bilingual announcements are required (e.g. French fol-
0 lowed by English on the same announcement), then the
0 Phase 1 CLASS DRA Announcement cards must be provisioned
0 on the same DRA shelf (i.e. NT1X76AJ/AK/BJ/BK).

0 The Phase 1 CLASS DRA Announcement cards are only avail-
0 able in sets (e.g. NT1X76AJ/AK or NT1X76BJ/BK) and cannot
0 be provisioned separately. However, the NT1X76AK and
0 NT1X76BK cards can be ordered separately for the Auto-
0 matic Recall feature (noted above). The NT1X76AK card
0 can be ordered separately for the Call Forward Remote Ac-
0 tivation (CFRA) feature. (See Meridian Business Ser-
0 vices, Section 3.4, for more information on Residential
0 Enhanced Services.)

0 If the optional announcements are not selected, confirma-
0 tion tone can be used for successful feature operation
0 and fast busy (120 ipm) can be used for denial of feature
0 operation. This is only applicable to Calling Number De-
0 livery Blocking (CNDB) and Customer Originated Trace
0 (COT).

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0 (viii) Phase 2 CLASS DRA Announcements

0 For Phase 2 CLASS DRA Announcements, the Digital Recorded
0 Announcement Recordable Memory cards (NT1X77AA/79AA) can-
0 not be used.

0 For provisioning, two groups of Phase 2 CLASS DRA An-
0 nouncements are available:

0 1) Phase 2 CLASS DRA Announcements (List 1-12)

0 2) Phase 2 CLASS DRA Announcements (List 13-31)

0 The following are the Phase 2 CLASS DRA Announcement
0 (List 1-12) cards:

0	PEC	DESCRIPTION
0	NT1X76AP	CLASS Phase 2 English Announcements
0		(1) of (8) CP
0	NT1X76AQ	CLASS Phase 2 English Announcements
0		(2) of (8) CP
0	NT1X76AR	CLASS Phase 2 English Announcements
0		(3) of (8) CP
0	NT1X76AS	CLASS Phase 2 English Announcements
0		(4) of (8) CP
0	NT1X76AT	CLASS Phase 2 English Announcements
0		(5) of (8) CP
0	NT1X76AU	CLASS Phase 2 English Announcements
0		(6) of (8) CP
0	NT1X76AV	CLASS Phase 2 English Announcements
0		(7) of (8) CP
0	NT1X76__*	English "Personality" card
0	NT1X76BP	CLASS Phase 2 French Announcements
0		(1) of (8) CP
0	NT1X76BQ	CLASS Phase 2 French Announcements
0		(2) of (8) CP
0	NT1X76BR	CLASS Phase 2 French Announcements
0		(3) of (8) CP
0	NT1X76BS	CLASS Phase 2 French Announcements
0		(4) of (8) CP
0	NT1X76BT	CLASS Phase 2 French Announcements
0		(5) of (8) CP
0	NT1X76BU	CLASS Phase 2 French Announcements
0		(6) of (8) CP
0	NT1X76BV	CLASS Phase 2 French Announcements
0		(7) of (8) CP

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0 NT1X76__* French "Personality" card

0 The following are the Phase 2 CLASS DRA Announcement
0 (List 13-31) cards:

0	PEC	DESCRIPTION
0	NT1X76GA	CLASS Phase 2 English Announcements
0		(1) of (4) CP
0	NT1X76GB	CLASS Phase 2 English Announcements
0		(2) of (4) CP
0	NT1X76GC	CLASS Phase 2 English Announcements
0		(3) of (4) CP
0	NT1X76__	English "Personality" card

0 If Customers want Phase 2 CLASS DRA Announcements, the
0 group of List 13-31 cards are optional.

0 If either group or both groups of Phase 2 CLASS DRA An-
0 nouncements are required, provide a "Personality" card
0 for each group. Note that if both groups are required,
0 two "Personality" cards of the same type (i.e. one for
0 each group) must be provided.

0 The following are the Phase 2 CLASS DRA "Personality"
0 cards:

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0	PEC	CPC
0	NT1X76AW	CLASS Phase 2 English Announcements
0		(8) of (8) CP
0	NT1X76BW	CLASS Phase 2 French Announcements
0		(8) of (8) CP
0	NT1X76GE	CLASS Phase 2 U.S. Custom Feature
0		Names Announcements
0		- Type I CP For Bell South
0	NT1X76GF	CLASS Phase 2 U.S. Custom Feature
0		Names Announcements
0		- Type II CP For Bell Atlantic
0	NT1X76GG	CLASS Phase 2 U.S. Custom Feature
0		Names Announcements
0		- Type III CP For United Tel
0	NT1X76GH	CLASS Phase 2 U.S. Custom Feature
0		Names Announcements
0		- Type IV CP For GTE
0	NT1X76GJ	CLASS Phase 2 U.S. Custom Feature
0		Names Announcements
0		- Type V CP For Pacific Bell
0	NT1X76GK	CLASS Phase 2 U.S. Custom Feature
0		Names Announcements
0		- Type VI CP For Ameritech
0	NT1X76GL	CLASS Phase 2 U.S. Custom Feature
0		Names Announcements
0		- Type VII CP For Southwest Bell

0 * The "Personality" card, NT1X76AW, contains only Bell
0 Canada names and Bell South BCS-29 V0 information. The
0 "Personality" card, NT1X76BW, contains only Bell Canada
0 names. It must be determined up front which "Personal-
0 ity" cards are required by which Customer. When engi-
0 neering a DMS job (initial or extension) which will
0 require Phase 2 CLASS DRA Announcements, the onus will be
0 on the Customer to determine which "Personality" card is
0 required.

0 The Phase 2 CLASS DRA Announcement cards are only avail-
0 able in sets (e.g. NT1X76AP/AQ/AR/AS/AT/AU/AV/AW or
0 NT1X76BP/BQ/BR/BS/BT/BU/BV/BW or NT1X76GA/GB/GC) and can-
0 not be provisioned separately. Note that the only excep-
0 tion to this is the "Personality" card (e.g. NT1X76AW)
0 which will be provisionable with other Customer specific
0 packs (as highlighted above).

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- 0 (ix) Automatic Recall Date and Time (ARDT) CLASS DRA Announce-
0 ments

0 The customized announcements require a DRAM with a
0 NT1X75BA controller card. A set of AR Date and Time
0 Phrase List PROM Cards NT1X76JA and NT1X76JB are required
0 for ARDT (English) announcements. Each CP contain two
0 (2) virtual card credits because they are double density
0 cards.

0 The following are the AR Date and Time Phrase List PROM
0 cards:

0	PEC	CPC	
0	NT1X76JA	B0231819	Automatic Recall Date/Time
0			Announcements (1) of (2) CP
0	NT1X76JB	B0231820	Automatic Recall Date/Time
0			Announcements (2) of (2) CP

0 The NT1X76AJ and the NT1X76AK cards are required and
0 should be assigned to the same DRA module as the NT1X76JA
0 and NT1X76JB cards. In a Class Phase 1 English office,
0 the NT1X76JA/JB can be assigned to a DRA where the
0 NT1X76AJ/AK cards are existing and there is room. Other-
0 wise, in other offices or where the DRAs with NT1X76AJ/AK
0 cards are filled, an additional set of NT1X76AJ/AK cards
0 must be ordered.

- 0 (x) The DRA cards (either recordable or pre-recorded) can
0 mount on DRA modules (i.e. NT2X58AM, NT2X58CB, NT2X58AK,
0 NT2X58AG).

0 The DRA module can accommodate one (1) NT1X75BA DRAM Con-
0 troller card and up to a maximum of eight (8) virtual
0 card credits (i.e. the addressing range of the NT1X75BA).

0 The DRA Recordable Memory cards (NT1X77AA and NT1X79AA)
0 each contain one (1) virtual card credit because they are
0 single density cards.

0 The existing DRA pre-recorded announcement card NT1X76AA
0 contains one (1) virtual card credit. Currently, this is
0 the only NT1X76__ card which contains one (1) virtual
0 card credit. All other NT1X76__ cards contain two (2)
0 virtual card credits because they are double density
0 cards.

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0 All Phase 1 and Phase 2 CLASS DRA pre-recorded announce-
0 ment cards (i.e. NT1X76AJ/AK/BJ/BK, NT1X76AP-AW,
0 NT1X76BP-BW, NT1X76GA-GC, NT1X76GE-GL) each contain two
0 (2) virtual card credits because they are double density
0 cards. Hence, a DRA module can accommodate a maximum of
0 eight (8) single density cards or a maximum of four (4)
0 double density cards.

0 The two (2) Phase 1 CLASS DRA Announcement cards (Eng-
0 lish) can be mounted on half of a DRA module. The two
0 (2) Phase 1 CLASS DRA Announcement cards (French) can be
0 mounted on half of a DRA module. If both English and
0 French are required, then the four (4) Phase 1 CLASS DRA
0 Announcement cards (English and French) can be mounted on
0 one (1) DRA module.

0 The eight (8) Phase 2 CLASS DRA Announcement (List 1-12)
0 cards (English) can be mounted on two (2) DRA modules.
0 The eight (8) Phase 2 CLASS DRA Announcement (List 1-12)
0 cards (French) can be mounted on two (2) DRA modules.

0 A quantity of five (5) DRA modules may be provisioned on
0 a TME frame, NT0X46AB, if and only if double density DRA
0 cards are provisioned on these modules. Any double den-
0 sity DRA cards (i.e. all NT1X76__ cards with the excep-
0 tion of NT1X76AA which is a single density card), up to a
0 maximum of four (4) per module, may be provisioned. Oth-
0 erwise, only four (4) DRA modules may be provisioned on a
0 TME frame.

0 Hence, a DMS office requiring both Phase 1 and Phase 2
0 (List 1-12) pre-recorded CLASS DRA Announcements in Eng-
0 lish and French can have all twenty (20) double density
0 DRA cards mounted on five (5) DRA modules and these five
0 (5) modules could be mounted onto one (1) TME frame.

0 Redundancy of announcements is available as an option in
0 the U.S. only. If redundancy is provided, ensure that
0 the announcement MTMs are on different power feeds.

0 The assignment rules for mounting Phase 1 and Phase 2
0 CLASS DRA Announcement cards onto DRA modules are the
0 same as the rules pertaining to the existing NT1X76__ DRA
0 Announcement cards. Cards NT1X76AP/AQ/AR/AS must be
0 mounted together onto the same DRA module. Cards
0 NT1X76AT/AU/AV/AW must be mounted together onto the same
0 DRA module. Similarly, cards NT1X76BP/BQ/BR/BS must be

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0 mounted together onto the same DRA module and cards
0 NT1X76BT/BU/BV/BW must be mounted together onto the same
0 DRA module. Cards NT1X76GA/GB/GC/+"Personality" Card
0 must be mounted together onto the same DRA module. The
0 previous cards within each DRA module can be in any or-
0 der. (See DRA System Provisioning in this section for
0 further information on the DRA.)

0 (xi) Log messages are produced when a subscriber activates the
0 Customer Originated Trace (COT) feature. If the
0 customer/telco wants these log messages to be routed to a
0 dedicated TTY, then a separate I/O port (i.e. one port
0 off of a NT1X67BC card) is required. Otherwise, these
0 log messages will be routed along with other log messages
0 to the customer specified TTY.

0 (xii) Canadian customers will be able to obtain CLASS Terminals
0 from NTCL or from outside suppliers. To obtain CLASS
0 terminals (i.e. an integrated telephone set, such as
0 MAESTRO) from NTCL, Canadian customers will contact
0 London Terminal Division.

0 U.S. customers will obtain CLASS terminals from outside
0 suppliers.

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0 2.3.2 D-Channel Handler

0 (a) General Description

0 The D-Channel Handler separates call control signalling for the B
0 channels (used for encoded voice, circuit switched, or packet
0 data information) from user packet data. Signalling information
0 is passed to the Central Control, while packet data from several
0 D-Channels is multiplexed and routed to the packet handler.

0 (b) References

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 (i) The D channel handling function is performed by two cir-
0 cuit packs on the CPEI:

0 NTBX01AA - ISDN Signalling Pre-processor (ISP) CP

0 NTBX02AA - D Channel Handler CP

0 The ISDN Signalling Pre-processor CP is provisionable;
0 two (2) are required in the CPCI for all applications.

0 (ii) The D channel handler CP will be assigned to slots cur-
0 rently used by DS-1 interface circuit packs. Assignment
0 of a DCH card makes physically unavailable 2 DS-1 ports.

0 (iii) Each DCH circuit pack takes one peripheral port of the
0 twenty P-side ports available. The total of twenty P-
0 side ports are shared between the DS-1, DS-30A and DCH
0 links.

0 (iv) From BCS-28 onwards, one (1) of the DCH circuit packs
0 will be used as a spare to support N+1 redundancy. There
0 is no DCH sparing in BCS-27.

0 At least two DCH cards must be provided after BCS-28 (ie.
0 one plus one spare).

0 (v) Up to ten (10) DCH Circuit Packs may be provided per
0 CPCI. (Nine plus one spare). Refer to the Traffic Crite-

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0 ria and Capacities (Chapter 2) to calculate the number of
0 DCH required to support the anticipated packet traffic.

0 (vi) Each DCH circuit pack has 32 "ports" available. One port
0 is dedicated to the ISP, and the remaining 31 ports are
0 capable of handling 4 multiplexed BRI D channels each, or
0 $31 \times 4 = 124$ BRI D channels maximum.

0 The ISP will occupy a free slot on the speech bus.

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0 2.3.3 ISDN Common Peripheral Controller (CPEI)

0 (a) General Description

0 The ISDN Common Peripheral Controller (CPEI) is the Peripheral
0 Controller for the ISDN. The CPEI frame is named LGEI, LTEI or
0 DTEI depending on the access modes supported (BRI, PRI, etc.)

0 The CPEI has 20 p-side ports that are provisioned as required to
0 support DS-30A links from LCMs, LCMEs, and LCMIs; DS-1 links to
0 the Packet Handler; DS-1 links for PRI or non-ISDN trunks; and
0 D-channel handlers.

0 An offshore version of the CPEI has also been created whose pri-
0 mary difference is the use of PCM-30 interfaces instead of DS-1
0 interfaces.

0 (b) References

0 System Engineering Bulletin (SEB) 88-10-001

0 (c) Provisioning Considerations

0 (i) The CPEI is used to interface the DS-30A links from line
0 modules, the DS-1 links to the Packet Handler, and the
0 non-ISDN and ISDN-PRI DS-1 links.

0 The frame and its modules and shelves are assigned func-
0 tional names depending on the ISDN access modes sup-
0 ported. For BRI access the following names apply:

Access Modes	Equip	Name	Abbr
-----	-----	-----	----
DS-30A links to LCM/LCME/LCMIs, DS-1 links to Packet Handler	Frame	ISDN Line Group Equipment	LGEI
	Module	ISDN Line Group Controller	LGCI
	Shelf	ISDN Line Group Array	LGAI

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Access Modes	Equip	Name	Abbr
-----	-----	-----	-----
DS-30A links to LCM/LCME/LCMIs,	Frame	ISDN Line Trunk Equipment	LTEI
DS-1 links to Packet Handler, non-ISDN DS-1 trunks	Module	ISDN Line Trunk Controller	LTCI
	Shelf	ISDN Line Trunk Array	LTAI

0 Planned availability of these functions is as follows:
0 LGEI in BCS-27, LTEI in BCS-28. In addition, PRI DS-1
0 links are to be supported on LTEI in BCS-30.

0 (ii) Upgrade kits will be available to apply ISDN capability
0 to existing LGE/LTE/DTE/SME frames. The required kits
0 are:

0 NT6X02ZA CPCI ISDN Upgrade Circuit Pack Change Kit
0 NT6X01ZZ CPCE ISDN Upgrade Wiring Change Kit

0 These kits are not to be ordered for U.S. applications
0 until further notice.

0 The above kits will take any NT6X01AA CPCE frame and any
0 common circuit pack fill associated with this frame and
0 convert it to NT6X01AB CPEI frame and NT6X02NA ISDN com-
0 mon CP fill.

0 The NT6X02ZA CPCI ISDN Upgrade Circuit Pack Change Kit
0 can also be used on the NT6X01AB CPCE frame to upgrade a
0 non-ISDN DTC module to handle ISDN applications.

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0 (iii) The Maximum number of each type of link, and the minimum
0 software release that supports it are:

0 LCM/LCME/LCMI - CPEI DS-30A links:
0 - up to 18 (BCS-27 or higher)

0 CPEI - Packet Handler DS-1 links:
0 - up to 16 (BCS-27 or higher)

0 Non-ISDN trunks:
0 - up to 16 (BCS-28 or higher)

0 PRI trunks:
0 - up to 16 (BCS-29 or higher)

0 There are no restrictions on the assignment of Bb or Bd
0 channels to packet handler DS-1 link channels. Note that
0 the CPEI statmux maximum is 64:1 for Bd channels.

0 | (iv) Prior to BCS-31, in an office equipped with both ISDN and
0 non-ISDN peripheral controllers, the CPCI modules could
0 be assigned the same discrimination numbers as existing
0 non-ISDN modules. For example, LGC 01 and LGCI 01 could
0 co-exist in an office. The same is not true for LCME/LCMI
0 versus LCM bays.

0 | For BCS-31 and above, discrimination numbering of ISDN
0 peripherals has been changed, requiring them to be con-
0 secutive with non-ISDN modules. Frame level naming and
0 numbering is unchanged and the frame type is still deter-
0 mined by the bottom module in the frame. At the MAP, ISDN
0 modules are no longer called LGCI/LTCI. Instead, only
0 LGC/LTC are allowed. (Note that DTCI has not been changed
0 to DTC at the MAP). As a result of this change, at
0 BCS-31, existing ISDN peripheral controllers (LGCI/LTCI)
0 will need to be renumbered to be consecutive with
0 non-ISDN controllers. For example, an office with exist-
0 ing LGC 00-05 and LGCI 00-01 will require renumbering the
0 ISDN modules to LGCI 06-07 at BCS-31. New labels for the
0 ISDN controllers will be required.

0 | DTC and DTCI numbering will not be changed due to the
0 complexity of changing in-service trunks and the lack of
0 a software tool for this activity. Numbering for DTC/DTCI
0 modules will be unchanged from pre-BCS31 practices.

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0 | At the MAP, modules can still be identified as ISDN or
0 non-ISDN by referring to the ISP16 table.

0 (v) In an office equipped with both ISDN and non-ISDN periph-
0 eral controllers, the CPCI modules can be assigned the
0 same discrimination numbers as existing non-ISDN modules.
0 For example, LGC 01 and LGCI 01 can co-exist in an of-
0 fice. The same is not true for LCMI versus LCM bays.

0 (vi) The following chart illustrates the call types which im-
0 pact Real Time Engineering of the Master Processor in the
0 LGCI provisioned with Basic Rate Interface (BRI). Cur-
0 rently, the Master Processor is the only processor which
0 requires Real Time Engineering.

CALL TYPE	BCS	
	27	28
ISDN Circuit Switched	Y	Y
B Channel Packet Switched	N	N
D Channel Packet Switched	N	N
Electronic Business Set	Y	Y
Datapath	Y	Y
Other (POTS and MDC)	N	Y

0 Refer to System Engineering Bulletin (SEB) 88-10-001 for
0 BCS 25-27 Abbreviated Real Time Engineering Guidelines
0 for the LGCI.

0 BCS 28 Abbreviated Real Time Engineering Guidelines for
0 the LGCI provisioned with Basic Rate Interface is to be
0 provided in a future issue of this document.

0 (vi) The DTC NT6X02AI can be provided on the CPEI frame for
0 DMS-250 applications. This module will handle non-ISDN
0 trunking (employing A/B bit signaling) required for
0 DMS-250 applications but will not handle ISDN PRI. The
0 DTC can be converted at a later date to a DTCT in order
0 to handle ISDN PRI.

0 The NT6X01WC DTC Wiring Option (NT6X01AB) is provided per
0 each non-ISDN module equipped on the CPEI frame.

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0 Standard DMS-250 DTC circuit packs are provisioned on the
0 DTC module as required.

0 (vii) Optional Software Features

0 Enhanced Office Recovery, NTXA66AA, is an optional soft-
0 ware feature that improves the present office recovery
0 time of extended peripheral modules (XPM). Extended XPM
0 Diagnostics, NTXA67AA, is an optional software feature
0 that enhances the present diagnostics of extended periph-
0 eral modules (XPM). The LTCI is classified as an XPM.

0 These Software features are applicable to any peripheral
0 module (XPM) which contains both enhanced messaging (i.e.
0 the 6X69/79 pair or the 6X69AB CP) and enhanced memory
0 (i.e. the 6X46AC CP or the 6X46BA CP).

0 If optional software feature NTXA66AA (Enhanced Office
0 Recovery) or NTXA67AA (Extended XPM Diagnostics) are
0 present, then the XPM Processor CP must be the NT6X45BA.
0 Provide four (4) NT6X45BB (U.S. applications) or
0 NT6X45BA (Canadian applications) XPM Processor CP for up-
0 grading existing offices.

0 | (viii) Offshore CPEI

0 | NT6X01AC Offshore Peripheral Controller Equipment Frame

0 | The NT6X01AC Offshore Common Peripheral Controller Equip-
0 | ment Frame is based on the domestic NT6X01AB ISDN periph-
0 | eral controller, adapted for applications outside North
0 | America ("Offshore"). It supports PCM30 links, ISDN ser-
0 | vices, and Common Channel Signaling 7 (CCS7) features on
0 | two independent peripheral modules.

0 | The NT6X01AC Offshore Peripheral Controller Equipment
0 | frame supports two peripheral module types: PLGC and
0 | PDTC.

0 | PLGC - Supports ISDN, Centrex, EBS, IBN and POTS services on
0 | standard Line Concentrating Module types

0 | - Has PCM-30 P-side links for PRLCM and Offshore Remote
0 | Switching Center interface

0 | - Operation as a non-ISDN peripheral is not yet imple-
0 | mented in software, meaning that the NTB01AA ISDN

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0 | Pre-Preprocessor CP is required even if no ISDN fea-
0 | tures are used

0 | - Supports AMI interface to the NT1. 2B1Q is not sup-
0 | ported for this interface

0 | PDTC - Supports CCS7 and R1 signaling in Offshore applica-
0 | tions, using PCM-30 links

0 | - ISDN services like Primary Rate Interface are not
0 | supported

0 | Modules of different types may be mixed on the frame if
0 | required.

0 | NTBX02AA D-Channel Handler CP are not required for PDTC
0 | applications, nor where the PLGC supports only non-ISDN
0 | LCMS.

0 | NTBX01AA ISDN Pre-Processor CP are always required on
0 | PLGC (until such time as software supports purely
0 | non-ISDN operation). This CP is not required on PDTC.

0 | (ix) All PCM30 links from a PRCC must terminate on the same
0 | host PLGC. Only the PLGC peripheral type can terminate
0 | PRCC host links.

0 | (x) The Offshore Offshore versions of the Common Peripheral
0 | Controller Equipment Frame and Remote Controller Equip-
0 | ment Frame are provisioned the same as their domestic
0 | counterparts (subject to the usage restrictions). The
0 | primary difference is the use of PCM-30 interfaces in-
0 | stead of DS-1 interfaces. A maximum of sixteen (16)
0 | PCM-30 interfaces may be equipped on the PLGC/PDTC versus
0 | twenty (20) DS-1 interfaces on the North American prod-
0 | uct. Provision one (1) NT6X27AC PCM-30 Interface CP for
0 | every two PCM-30 interfaces required. Certain other cir-
0 | cuit pack vintages are different between domestic and
0 | Offshore products; refer to the Engineering Manual
0 | sections for details.

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0 2.3.4 Digital Packet Network (DPN) Equipment Provisioning

0 (a) General Description

0 Nailed-up B channel and statistically multiplexed D channel
0 packet data are routed to the DMS-100 Integrated Packet Handler
0 (IPH) equipment via DS-1 links from the CPEI frame. The IPH is
0 one of the peripherals needed to add ISDN to a DMS-100. The IPH
0 comes in a cabinet that is configured to support a set number of
0 B-channels and D-channels. Contained in a single cabinet is a
0 Digital Interworking Unit (DIU) and two Resource Modules (RM).

0 The DS-1 links are interfaced to the IPH by means of the DIU. The
0 RM portion of the IPH is a fully redundant module, including two
0 office Processing Elements (PE), two Call Server PEs, two DIU
0 servers, and two Disk Drives. In addition, the RM contains the
0 necessary hardware to support the OAM and subscriber service con-
0 nections. This IPH can be supported with G24 and later software
0 release. G26 is compatible with BCS29, 30, 31, and 32 if I-OAM
0 is not fully utilized. If full I-OAM capabilities are desired,
0 G26 is compatible with BCS31.

0 Prior to G26, the configuration of the PH equipment depended on
0 the software release. Prior to G23 release, the DIU worked in
0 conjunction with a DPN Access Module (AM) and the Network Module
0 (NM). The AM provides interfaces for the DIU, while the NM
0 interfaces the AM to the packet-switched network. A configuration
0 requiring only one AM shelf is called a DPN-10. A two-AM shelf
0 configuration is called DPN-15.

0 As of G23 release, the DPN-100 with the Resource Module (RM) was
0 introduced to provide significantly increased throughput. The NM
0 was still required for applications involving X.75 gateways (un-
0 til G24), and Network Control System (NCS) and data spooling
0 functions (until G26).

0 In G24, the AM and RM can interface to X.75 gateways. Generic G24
0 is the baseline for interfacing with the BCS-27 LGCI.

0 In G26, the IPH does not require an NM. The data spooling and
0 Network Control System functions can be performed by the IPH. The
0 AM is replaced by the RM. Reference Figure 316.6, Packet Handler
0 System Configuration.

0 This section describes the engineering of the ISDN-specific com-
0 ponents of the PH; that is, the DIU and the related RM equipment.

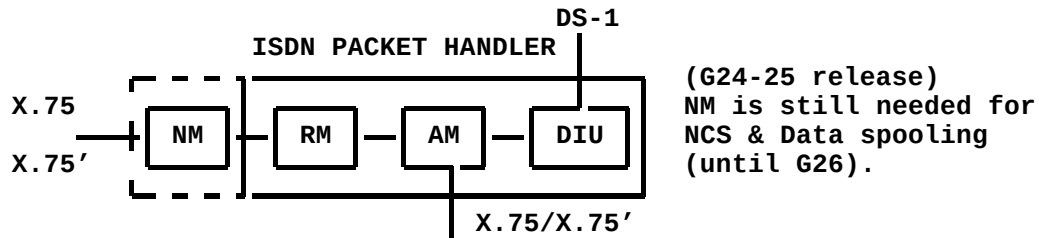
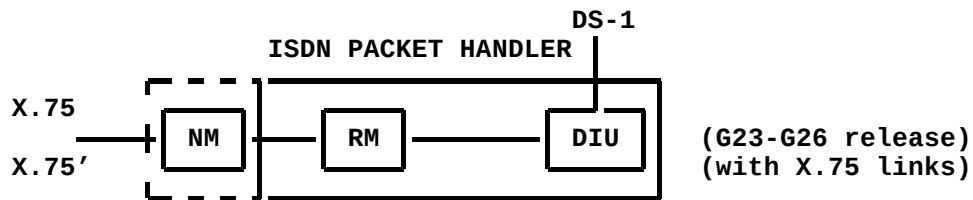
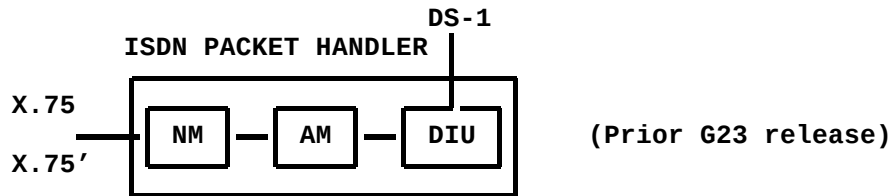
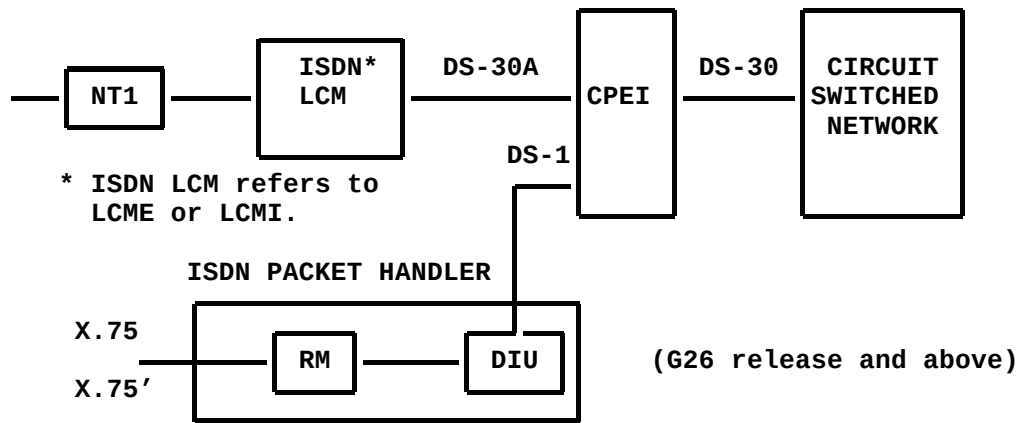


Figure 316.6: Packet Handler System Configuration

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0 (b) References

0 NTP 241-1001-XXX DPN.....

0 (c) Provisioning Considerations

0 (i) The quantity of DS-1 links from the DMS is used to deter-
0 mine the quantity of DIU systems (shelves) and sub-
0 systems required. Each sub-system supports a single DS-1
0 link, and the number of interface cards in the sub-system
0 is determined by the number of Bb and Bd channels provi-
0 sioned on the DS-1 link.

0 On the CPCI, DS-1 links and individual channels within
0 the links may be allocated to Bb or Bd as required. Bb
0 and Bd should be distributed as equally as possible over
0 all the links from the same CPCI.

0 (ii) For more information on the DPN, refer to the NTP
0 241-1001- series of documents.

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0 CHAPTER 6

0 HOST - SUBSCRIBER ACCESS EQUIPMENT

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Host - Subscriber Access Equipment
Chapter 6

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0 1.0 Host Office - Subscriber Access Equipment

0 1.1 Equipment Provisioning

0 1.1.1 Time Switch Broadcasting

0 Time Switch Broadcasing (TSB) is a process employed in DMS to
0 distribute certain tones and recorded messages via the network
0 simultaneously to many users from a single source. The speech
0 channel incoming to the network from each source can be connected
0 in a broadcast mode to all outgoing speech channels within the
0 same network incoming time switch. A number of service circuits
0 utilize this process.

0 Old Network

0 It is necessary to limit the number of simultaneous connections
0 in order to reduce the possibility of Network Subgroup (NSG)
0 blocking. This maximum is normally specified in translations and
0 should not exceed 16 per NSG in the network without deloading.
0 These additional 16 channels are the signalling channels which
0 are available for speech connections within the network module.

0 With NSG deloading, the maximum number of simultaneous con-
0 nections can be up to a maximum of 256.

0 New Network

0 Same criteria as above except that the maximum number of simul-
0 taneous connections should not exceed 32 per NSG in the network
0 without deloading.

0 With NSG deloading, the maximum number of simultaneous con-
0 nections can be up to a maximum of 512.

0 From a traffic standpoint each TSB source can be viewed as being
0 a trunk group in which the number of servers equals the above
0 specified maximum number of connections.

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0 1.1.2 DS512 Interface Cards

0 (a) General Description

0 The NT6X40CA DS512 Network Interface circuit pack provides a fi-
0 ber interface to the Enhanced Network (ENET).

0 (b) Reference

0 None

0 (c) Provisioning Considerations

0 (i) If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP and two (2) NT6X40DA, DS512 Paddle Board,
0 for each relevant DTC/LGC/LTC module.

0 (ii) Provide one (1) NT6X02BU, Fiber I/F Hardware Assembly,
0 for each DTC/LGC/LTC module interfacing to the Enhanced
0 Network (ENET). The NT6X02BU Fiber Assembly mounts on
0 the backplane of the lower array in a module and provides
0 the fiber interface for both arrays.

0 (iii) If copper interface to the Network is required, then pro-
0 vide two (2) NT6X40AC, DS30 Network Interface CP, for
0 each relevant DTC/LGC/LTC module.

0 Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

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0 1.1.3 Universal Tone Receivers

0 (a) General Description

0 The Universal Tone Receiver (UTR) is a combined service circuit
0 that can perform the function of a Digitone Receiver for lines
0 and a MF Receiver for trunks.

0 The Universal Tone Receiver (UTR) circuit pack is provisioned for
0 R2 call setup. Each UTR pair has thirty circuits. For more in-
0 formation on the UTR, refer to Section 3.5.

0 (b) Reference

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 (i) The UTR is provisionable in pairs (maximum two (2) pairs)
0 on the DTC, LGC, (IDTC, ILGC) and LTC modules. All lines
0 and trunks connected to the module will be serviced by
0 the UTR within the module. This includes all lines in
0 LCMS, RLCMS, and OPMS.

0 (ii) UTRs will slightly reduce the DTC/LGC/LTC and RSC periph-
0 eral real time capacity. A real time work up should be
0 performed to ensure sufficient capacity. Refer to Sys-
0 tems Engineering Letter, Issue #01, Subject "Guidelines
0 for XPM Real Time Capacity Study - BCS-22" (Date: May 22,
0 1987).

0 (iii) Lines and trunks on a RSC are serviced by UTR cards lo-
0 cated in the RCC module of the RSC. There is no traffic
0 overflow to the host office.

0 (iv) Although the UTR can perform the function of a Digitone
0 Receiver (NT2X48AA) and the function of a MF Receiver
0 (NT2X48AB), there is no traffic overflow from UTRs onto
0 existing Digitone Receivers nor existing MF Receivers.
0 The Digitone Receivers and MF Receivers mounted on MTMs
0 and TMs are still required to service the following:

- 0 - analog trunk groups existing on TM/MTM shelves
- 0 - lines equipped on LM modules
- 0 - trunk groups equipped on DCM modules
- 0 - Mechanized Calling Card Service (MCCS)

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0 - Subscriber Carrier Modules (SMS, SMR, SMU)
0 - incoming and the incoming portion of 2 way service
0 and test circuits (i.e. Remote Office Test Line and
0 Blue Box Fraud
0 Prevention). Refer to Section 3.5 (1.3.14) for the
0 Digitone
0 Receiver and Section 3.5 (1.3.13) for the MF Re-
0 ceiver.

0 (v) The following is a list of trunk types which require a
0 receiver that are supported by the UTR

TRUNK GROUP	TRUNK NAME/DESCRIPTION
A5	2 WAY AMR5MF
ATC	Access Tandem to Carrier
SC	INCOMING CAMA MF 2 WAY CAMA TOLL MF IN MF OUT 2 WAY CAMA TOLL MF IN DP OUT
IT	INTERTOLL 2 WAY MF IN MF OUT INTERTOLL INCOMING MF INTERTOLL WINK MF IN DP OUT
IT250	IT250 DMS250/TOPS INTERTOLL
IMT	(DMS250 trunk group)
DAL	(DMS250 trunk group)
CAMA(250)	(DMS250 CAMA trunk group)
OC	2 WAY MF CAMA
OI	COLLOCATED OI SWITCHBOARD COLLOCATED SWBD TOLL OFFICE MF VERIFICATION OPERATOR
OP	Outgoing or 2 WAY MF TSPS/TOPS
PX	2 WAY DIGITAL PBX
AOSS	AOSS INCOMING MF
TDDO	TANDEM 2 Stage DDO

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0| TI INCOMING MF
0| T101 101 Communications Test Line
0| T2 LOCAL 2 WAY MF
0| TOPS TOPS TRUNK INCOMING MF
0| TOPS TRUNK 2 WAY MF IN MF OUT
0| TOPS TRUNK 2 WAY MF IN DP OUT
0| ZI 0+/0- Tandem to TOPS/TSPS
0| IBNTI INCOMING IBN
0| INCOMING IBN DT
0| IBNT2 2 WAY IBN
0| 2 WAY IBN DT
0| INT101 INTL 101 Test Line
0| AVINSW 2 WAY Interswitch MF
0| AVOVS 2 WAY OVERSEAS MF TRUNK
0| AVNOS 2 WAY CROSSBAR MF TRUNK
0| AVPBX 2 WAY or INCOMING PBX MF TRUNK
0| AVTNDM 2 WAY Tandem MF Trunk

0| Any incoming or incoming portion of a 2 way trunk group
0| requiring a receiver not listed above will require
0| Digitone or MF receivers.

0| (vi) The number of UTR circuits is obtained by calculating the
0| UTR holding time and multiplying by the average number of
0| calls per hour. In general it is always safe to provide
0| two (2) pairs of UTR cards if unsure of the traffic de-
0| mands.

0| For incoming R2 calls the UTR holding time is as follows:

0| 1. From seizure to final digit collection
0| plus

0 | 2. From final digit collection to - trunk
0 | selection if R1 or N5 outgoing, - seize
0 | acknowledgement if R2 outgoing.

0 | For outgoing R2 calls the UTR holding time is as follows:

0 | 1. The UTR is held until told to release by
0 | the far office or timeout if we are the
0 | controlling signal office (i.e. R1 to R2
0 | calls).

0 | The number of UTRs used on average is given by the fol-
0 | lowing formula:

0 | # of UTR SI S0
0 | Circuits = NI x ----- x EI + NO x ----- x EO
0 | required HI+SI HO+S0

0 | where,

0 | NI = Number of incoming R2 trunks (or 2-way
0 | used as incoming)

0 | SI = Signalling time in seconds of incoming
0 | trunks

0 | HI = Holding time (talking) of incoming trunks
0 | in seconds

0 | EI = Erlang occupancy figure of incoming
0 | trunks

0 | NO = Number of outgoing R2 trunks (or 2-way
0 | used as outgoing)

0 | S0 = Signalling time in seconds of outgoing
0 | trunks

0 | HO = Holding time (talking) of outgoing trunks
0 | in seconds

0 | EO = Erlang occupancy figure of outgoing trunks

0 | (vii) This circuit pack is only required for CCITT No. 6 Sig-
0 | nalling.

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0 1.1.4 Digital Trunk Controller (DTC) Module

0 (a) General Description

0 The Digital Trunk Controller (DTC) Module provides the interface
0 between DS-1 digital systems and the DMS network. (The DTC does
0 not provide the digital interface between a host DMS and a re-
0 mote.)

0 (b) Reference

0 Chapter 3, Section 3.15 Common Channel Signalling

0 (c) Provisioning Considerations

0 (i) The DTC module is a two shelf module (versus the present
0 single shelf or single bay peripheral module).

0 (i) Each DTC module can terminate up to twenty (20) digital
0 carrier systems (i.e. up to ten (10) DS1 Interface cards)
0 and interconnect with the network via up to sixteen (16)
0 DS30 speech links.

0 (iii) Each DTC can terminate up to a maximum of twenty (20) DS1
0 ports on the peripheral side and a maximum of sixteen
0 (16) DS30 ports on the CPU (network) side.

0 (iv) Since each DTC terminates up to $20 \times 24 = 480$ voice chan-
0 nels and the internal speech links can accommodate up to
0 $16 \times 30 = 480$ VF paths, there is no concentration.

0 (v) DTC modules are provisioned for total terminations based
0 on the forecast of digital trunk requirements for the
0 busy season prior to exhaust.

0 (vi) For service protection, it is recommended that trunk cir-
0 cuits of each trunk group be spread over more than one
0 DS1 Interface card. Both of these cards can be mounted
0 on the same DTC module because of the duplicated
0 processor residing in the module.

0 (vii) Existing DTC modules which have spare capacity shall be
0 used to terminate new digital systems.

0 (viii) When a DTC module is handling CCIS/CCS7 voice trunk-
0 ing, two (2) Continuity Tone Detector cards NT6X70AA are

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0 required when analog trunk facilities are employed. The
0 NT6X70AA card is not required if the transmission path is
0 all-digital.

0 (ix) The following DTC Common Peripheral Controller CPs sup-
0 port the following applications:

0 DTCs
0 NT6X02IC supports UTRs
0 replaces NT6X02AQ/AR (BCS-27)

0 IDTCs
0 NT6X02BD supports SL-100 U.K.
0 NT6X02BN supports Mercury UK applications with
0 New Message requirements (eg. DPNSS) *
0 NT6X02GB supports Caribbean (CEP)
0 NT6X02JA supports DMS-300 Turkey
0 NT6X02KE supports China
0 NT6X02QA supports Turkey applications
0 NT6X02BW replaces NT6X02BP (BCS-28)
0 NT6X02BP supports all International

0 * See Section 3.15 Common Channel Signalling for more
0 information on DPNSS.

0 (x) For each NT6X02IC ordered (BCS-27), provide:

0 - four (4) XPM Processor CP NT6X45AF/BA
0 - two (2) DS30 Network Interface CP NT6X40AC
0 - two (2) SP Memory Plus CP NT6X46BB
0 - two (2) MP Memory Plus CP NT6X47AC

0 - two (2) MSG Protocol & Tone CP NT6X69AC
0 - two (2) Power Converter CP NT2X70AE

0 NT6X02IC is to be ordered instead of NT6X02IA.

0 For each NT6X02BW ordered, provide:

0 - six (6) XPM Processor CP NT6X45BA
0 - two (2) Time Switch CP NT6X44AB/EA
0 - two (2) Power Converter CP NT2X70AE

0 NT6X02BW is to be ordered instead of NT6X02BP.

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0 Upon general availability, the NT6X45BA CP will become
0 the standard XPM Processor offering instead of the
0 NT6X45AF/AD CP.

0 If optional software feature NTXA66AA (Enhanced Office
0 Recovery) or NTXA67AA (Extended XPM Diagnostics) are
0 present, then the XPM Processor CP must be the NT6X45BA.
0 Provide four NT6X45BA XPM Processor CP for upgrading ex-
0 isting offices.

0 NT6X44EA adds Even-Bit-Inversion (EBI) to the Time Switch
0 CP (NT6X44AB).

0 (xi) If interface to the Enhanced Network (ENET) is required,
0 then the relevant DTC/LGC/LTC modules must have the
0 NT6X69AC Msg Protocol & Tone CP. NT6X69AC replaces
0 NT6X69AB.

0 Provide 1 NT6X02BQ change kit for each DTC/LGC/LTC module
0 you are upgrading to ENET. This change kit applies only
0 to modules provisioned at NT6X02 AS/IA, AT/LA or AU/MA
0 levels. Modules provisioned at earlier levels must be
0 upgraded to these levels before the NT6X02BQ change kit
0 can be applied.

0 (xii) If ENET interface is not required, use the product change
0 kit NT6X02EQ to upgrade DTC modules from NT6X02IA/LA/MC
0 to NT6X02IC/LC/MC levels.

0 (xiii) There are two methods available to satisfy 4 MB MP memory
0 requirements in existing DTC/LGC/LTC modules. The first
0 method is to apply one NT6X02EQ product change kit to
0 each DTC/LGC/LTC module to be upgraded as in item (1) be-
0 low. Per customer request, a second pair of office sup-
0 plied NT6X47AB packs may be added to each DTC/LGC/LTC
0 module to be upgraded as in item (2) below. Do not order
0 new NT6X47AB packs for the upgrade of NT6X02IA, LA, MA mod-
0 ules. The NT6X47AB packs that have been removed from up-
0 graded DTC/LGC/LTC modules may then be applied to other
0 relevant DTC/LGC/LTC modules.

0 1) Provision NT6X02EQ Product Change Kit to replace the
0 NT6X47AB MP Memory Plus circuit packs in slot 10 with
0 NT6X47AC packs. The NT6X02EQ kit may only be applied
0 to the following modules:

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0 DTC (CCS7) : BCS-27 and later (NT6X02AS/IA)
0 DTC (other): BCS-33 and later (NT6X02AS/IA)
0 LGC (all) : BCS-31 and later (NT6X02AT/LA)
0 LTC (all) : BCS-30 and later (NT6X02AU/MA)

0 2) Existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT0X50AA, Filler Face Plate, in Slot 09.
0 Provide two (2) NT6X47AB, MP Memory Plus CP for the
0 above listed modules.

0 One NT6X47AC in slot 10 (item 1) has the same memory
0 capacity as two (2) NT6X47AB in slots 9 and 10 (item 2).

0 | Where an existing DTC/LGC/LTC module is presently
0 equipped with two NT6X69AB in slot 18, if the existing
0 module is not required to interface ENET, new cards are
0 not required for these slots.

0 Provide one (1) NT6X02BQ Product Change kit for each ex-
0 isting DTC/LGC/LTC module to be upgraded to interface
0 ENET. The NT6X02BQ contains (2) NT6X69AC circuit packs.
0 The NT6X02BQ will convert the NT6X02IA/AS to NT6X02IC,
0 the NT6X02LA/AT to NT6X02LC, and the NT6X02MA/AU to
0 NT6X02MC.

0 If an existing DTC/LGC/LTC module has ALREADY been up-
0 graded to the NT6X02IC/LC/MC packfill level via the
0 NT6X02EQ KIT, provide two NT6X69AC circuit packs in slot
0 18 to upgrade the module for ENET interface.

0 | For Canadian applications only, provide the NT6X02ER
0 Product Change Kit for each existing DTC peripheral mod-
0 ule (NT6X02AR/AM) to be upgraded. This change kit makes
0 the appropriate circuit pack positions provisionable, but
0 contains no circuit packs. Refer to the engineering man-
0 ual rules to identify the circuit packs required for up-
0 grade of the NT6X02AR or NT6X02AM.

0 (xiv) The following are the minimum packfill levels required
0 for BCS-32 or later: NT6X02IA/IS, or NT6X02IC (for new
0 offices).

0 **Building Blocks**

0 (xv) Provide one NTZZ04EA Building Block product change kit
0 for each existing NT6X02AA DTC/LGC/LTC module to be up-
0 graded. Do not order the NT6X02ZE PC Kit.

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0 The NTZZ04EA building block contains the following:

0 (1) NT6X02ER XPM PC Kit
0 (1) NT6X02ZL Wiring Kit
0 (2) NT0X50AA Filler Face Plate
0 (2) NT6X47AC Master Proc Memory Plus CP
0 (2) NT6X46BB Signal Processor Memory Plus CP
0 (2) NT6X69AC CPP Msg Protocol & Tone CP
0 (2) NT2X70AE Power Conv +/-5V & 12V CP
0 (2) P0711663 Desig. Label for NT6X47AC
0 (2) P0711664 Desig. Label for NT6X46BB
0 (2) P0710476 Desig. Label for NT6X69AC
0 (2) P0698943 Desig. Label for NT2X70AE

0 (Note: The NTZZ04EA includes all circuit packs required
0 to upgrade an NT6X02AA module except the NT6X45 cards.

0 The NTZZ04EA building block kit may be used to upgrade
0 the NT6X02AA module as follows:

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Building Block	From	To
NTZZ04EA	NT6X02AA (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

Provide one NTZZ04GA Building Block product change kit for each existing NT6X02AC DTC/LGC/LTC module to be upgraded. Do not order the NT6X02ZE PC Kit.

The NTZZ04GA building block contains the following:

(1)	NT6X02ER	XPM PC Kit
(1)	NT6X02ZL	Wiring Kit
(2)	NT0X50AA	Filler Face Plate
(2)	NT6X47AC	Master Proc Memory Plus CP
(2)	NT6X46BB	Signal Processor Memory Plus CP
(2)	NT6X69AC	CPP Msg Protocol & Tone CP
(2)	P0711663	Desig. Label for NT6X47AC
(2)	P0711664	Desig. Label for NT6X46BB
(2)	P0710476	Desig. Label for NT6X69AC

(Note: The NTZZ04GA includes all circuit packs required to upgrade a NT6X02AC module except the NT6X45 cards.

The NTZZ04GA building block kit may be used to upgrade the NT6X02AC module as follows:

Building Block	From	To
NTZZ04GA	NT6X02AC (DTC) (LGC) (LTC)	NT6X02IC (DTC) NT6X02LC (LGC) NT6X02MC (LTC)

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0 | (xvi) Existing DTC/LGC/LTC module is presently equipped with
0 four (4) NT6X45AA, XPM Processor CP, in Slots 08 & 12.
0 Application of the NTZZ04EA/NTZZ04GA makes these slots
0 provisionable and replacement cards must be ordered as
0 follows:

0 For A-stock upgrades provide four (4) NT6X45BA cards in
0 slots 8 and 12 of the upper and lower shelves of the pe-
0 ripheral modules. If B-stock material is required, then
0 four NT6X45BB packs must be merchandise ordered via an
0 88K.

0 | The existing NT6X45AA packs must be replaced because they
0 will not work with New Messaging. The only reason NT6X45
0 cards are not included in the NTZZ04EA/GA upgrade kit is
0 because there is an option between NT6X45BA and NT6X45BB
0 packs. Either the NT6X45BA packs or the NT6X45BB packs
0 must be ordered or the upgrade will not have been done
0 correctly.

0 (xvii) The existing DTC/LGC/LTC module is presently equipped
0 with the following DS30 Network Interface CP in Slots 22
0 & 23: four (4) NT6X40AA.

0 If copper interface to the Network is required, then DO
0 NOT order new circuit packs for these slots.

0 If fiber interface to the Enhanced Network (ENET) is re-
0 quired, then provide two (2) NT6X40CA, DS512 Network
0 Interface CP in Slot 22, and two (2) NT6X40DA, DS512 Pad-
0 dle Board, in Slot 22R of each relevant DTC/LGC/LTC mod-
0 ule. Also, provide one (1) NT6X02BU, Fiber I/F Hardware
0 Assembly, for each DTC/LGC/LTC module interfacing to the
0 Enhanced Network (ENET). The NT6X02BU Fiber Assembly
0 mounts on the backplane of the lower array in a module
0 and provides the fiber interface for both arrays.

0 | Upon general availability, the NT6X40FA will replace the
0 NT6X40CA as the standard DS512 XPM Interface and the
0 NT6X40GA will replace the NT6X40DA as the standard DS512
0 Link Paddle Board. Mount the NT6X40FA and NT6X40GA cir-
0 cuit packs in slot 22 and 22R, respectively, of the upper
0 and lower shelves of the peripheral modules requiring fi-
0 ber interface to ENET. Also, provide one (1) NT6X02BU,
0 H/W Assembly, per module for fiber interface to ENET.

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0 (xviii) The existing DTC/LGC/LTC module is presently equipped
0 with four (4) NT6X47AA, MP Memory CP, in Slots 09 & 10.
0 Application of the NTZZ04EA/NTZZ04GA replaces these cir-
0 cuit packs with two NT6X47AC Master Processor Memory cir-
0 cuit packs.

0 (xix) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X46AA Signal Processor Memory Plus CP in
0 slot 11. Application of the NTZZ04EA/NTZZ04GA replaces
0 these circuit packs with two NT6X46BB circuit packs.

0 (xx) The existing DTC/LGC/LTC module is presently equipped
0 with two (2) NT6X43AA, Msg Interface CP, in Slot 18. Ap-
0 plication of the NTZZ04EA/NTZZ04GA replaces these circuit
0 packs with two NT6X69AC Msg Protocol & Tone circuit
0 packs.

0 (xxi) If the existing module was a NT6X02AA, then the NTZZ04EA
0 provides two (2) NT2X70AE, Power Converter CP, in Slot 25
0 of each DTC/LGC/LTC module.

0 If the existing module was a NT6X02AC, then two (2)
0 NT2X70AD, Power Converter CP, already exist in Slot 25 of
0 each DTC/LGC/LTC module. DO NOT order new circuit packs
0 for these slots unless requested by the customer. Per
0 Telco request, the existing NT2X70AD CP's in each
0 DTC/LGC/LTC can be replaced by the NT2X70AE, Power Con-
0 verter ESD CP.

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0 2.0 Peripheral Modules Features

0 2.1 Introduction

0 This section describes the line-oriented software features that
0 require special hardware provisioning to make the feature work.

0 2.2 Features

0 The line-oriented software features included in the Peripheral
0 Modules Features that require special hardware provisioning con-
0 siderations are listed below:

0 Custom Local Area Signalling Services (CLASS) or Call Man-
0 agement Services (CMS)

0 Residential Enhancement Services

0 Enhanced Coin Services

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0 2.3 Equipment Provisioning

0 2.3.1 CLASS/CMS Feature

0 (a) General Description

0 Custom Local Area Signalling Services or CLASS Features are a set
0 of line-oriented features which the telephone company can deploy
0 in their residential or Centrex customer environment to generate
0 additional revenue. These features operate within a single
0 switch or transparently between users on different end-office
0 switches by means of CCS7-based signalling in a multi-node switch
0 configuration. In the U.S., this feature is called CLASS and in
0 Canada, the feature is called CMS. In this document, the feature
0 will be referred to as CLASS.

0 CLASS Features are separated into Phase I and Phase II features.
0 Phase I features include

- 0 - Automatic Callback (ACB) - allows a calling party to automat-
0 ically call again the number most recently dialed, whether
0 that call was answered, unanswered, or busy. If the station
0 is busy, the user may queue against that station and be re-
0 called when it becomes idle. The Automatic Callback feature
0 is very similar to the Ring Again (RAG) feature, but will be
0 deployed in the Public Network.
- 0 - Automatic Recall (AR) - enables the end user to return his
0 latest incoming call automatically, regardless of whether the
0 incoming call was answered, and regardless of whether the end
0 user knows the identity of the calling party. If the station
0 is busy, the user may queue against that station and be re-
0 called when it becomes idle. With two (2) level activation,
0 the directory number of the last call is voiced back prior to
0 completing the call.
- 0 - Calling Number Delivery or Calling Number Display (CND) - en-
0 ables receipt and display of the calling party's directory
0 number and Date/Time during the ringing cycle. This allows
0 the end user with a display set to make an informed decision
0 about answering the call.
- 0 - Calling Number Delivery Blocking (CNDB) - permits the origi-
0 nating customer, by designating his calling identity as "pri-

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0 vate", to prevent his directory number from being transmitted
0 for Calling Number Delivery. The calling party may change
0 his DN Suppression default - Suppress DN or not Suppress DN -
0 to the opposite status.

0 - Customer Originated Trace (COT) - enables the called party to
0 request an automatic trace of the last call received. The
0 trace record identifies the calling party and other call-
0 related information. The results of the trace are not pro-
0 vided directly to the end user, but are made available only
0 to an authorized agency, such as the telephone company or law
0 enforcement agency.

0 Note that CLASS features are available only to lines with a line
0 class code of RES (Residential Enhanced Services). Note that
0 this does not include ISDN RES lines.

0 Automatic Recall Date and Time Feature (ARDT)

0 This feature provides the date and time voiceback capability for
0 the Automatic Recall (AR) two-level activation sequence.

0 CLASS Configuration

0 Figure 35.2 illustrates a typical configuration with a CLASS ter-
0 minal on the DMS. This terminal is equipped with an enhanced
0 Man-Machine Interface (MMI), such as a Liquid-Crystal Display
0 (LCD) panel. The terminal could also consist of a standard tele-
0 phone with a CLASS add-on unit. An integrated telephone set,
0 such as NTL's MAESTRO, can also be used. The telephone section
0 of the Customer Premises Equipment (CPE) is loop powered, whereas
0 the CPE section providing CLASS features is powered by local AC.

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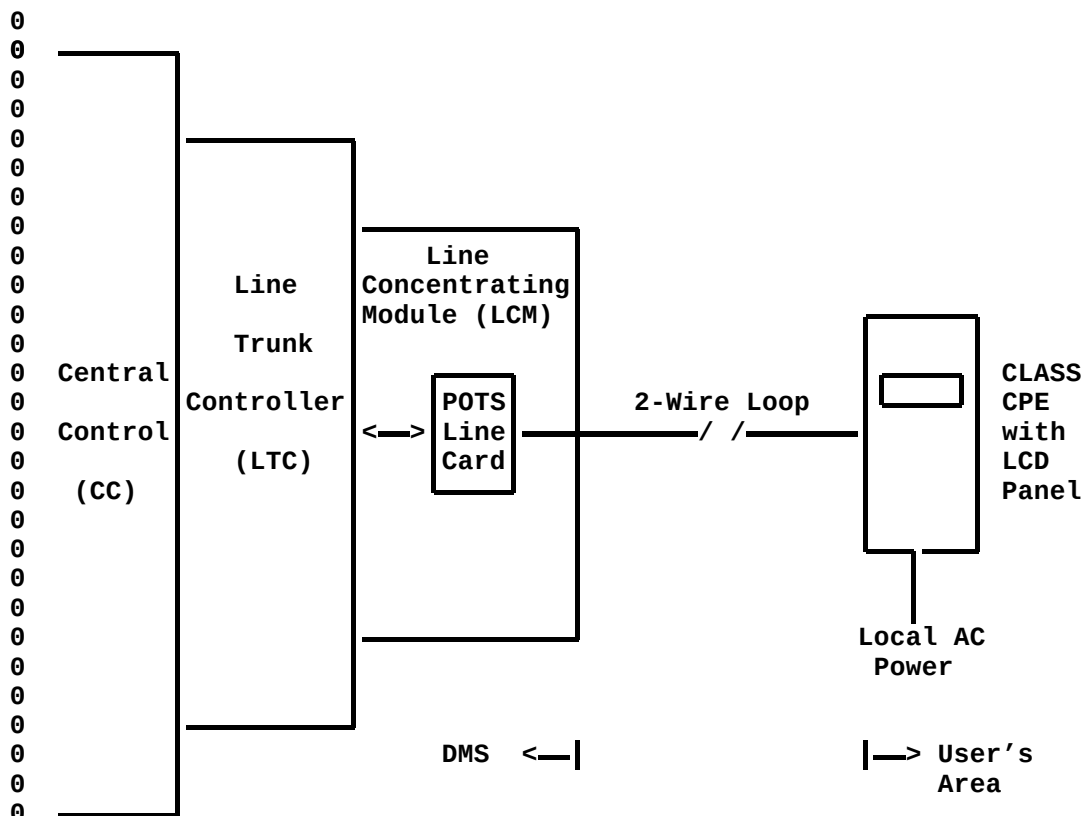
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0 Figure 35.2 Typical Configuration with a CLASS CPE

0 The transmission of the calling party number to the Customer Premises
0 Equipment (CPE) is accomplished via asynchronous FSK simplex-mode
0 transmission at 1200 bits/sec over the 2-wire loop, in accordance with
0 the Bell 202A standard. A burst of data is transmitted to the CPE
0 during the silent interval between the first and second ring of the
0 telephone set, before the incoming call is answered. The data link
0 terminates at a 202A modem in the CPE, which outputs the calling party
0 number to the LCD panel.

0 (b) Reference

0 Chapter 3, Section 3.4 Meridian Business Services

0 Section 3.15 Common Channel Signaling Systems

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0 (c) Provisioning Considerations

0 (i) CCS7 Signalling is required when CLASS features are ac-
0 cessed between nodes. Within the same node, CCS7 Signal-
0 ling is NOT required. Refer to Section 3.15 for more
0 information on CCS7 Signalling.

0 (ii) An optional feature exists called Automatic Recall Date
0 and Time (ARDT). This feature requires announcements
0 provided on a pair of CPs; NT1X76JA and NT1X76JB. The
0 NT1X76AJ and the NT1X76AK cards are required when the
0 NT1X76JA and NT1X76JB cards are ordered. The NT1X76AJ,
0 NT1X76AK, NT1X76JA, and NT1X76JB should be assigned to
0 the same DRA module. In a Class Phase 1 English office,
0 the NT1X76JA/JB can be assigned to a DRA where the
0 NT1X76AJ/AK cards are existing and there is room. Other-
0 wise, in other offices or where the DRAs with NT1X76AJ/AK
0 cards are filled, an additional set of NT1X76AJ/AK cards
0 must be ordered.

0 (iii) LCM Processor Cards, NT6X51AB, are required to support
0 CND in LCMs. LCM Common CP, NT6X04AB, contains NT6X51AB
0 and hence can support CND. Only LCMs which contain lines
0 utilizing the CND feature must be upgraded to use the
0 NT6X51AB.

0 (iv) In addition to the LCM Processor Card NT6X51AB, the CLASS
0 Modem Resource (CMR) card NT6X78AA has been developed to
0 support the introduction of CND.

0 The CMR card will support software to provide SP
0 processor - CMR messaging and thus provide CMR sanity
0 supervision, software downloading,
0 maintenance/diagnostics, operational measurements and
0 swact activity.

0 When the CND feature is required, provide two (2) CMR
0 cards per LGC/LTC/RCC/SMS/SMU module (i.e. one (1) card
0 per shelf). It is not necessary to equip all the
0 LGC/LTC/RCC/SMS/SMU in the office with the CMR card. Only
0 LGC/LTC/RCC/SMS/SMUs that will provide CND to the sub-
0 scribers that home on these peripherals will require the
0 CMR card. Any number of LGC/LTC/RCC/SMS/SMUs of a given
0 DMS may be equipped with CMR cards.

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0 (v) For Canadian Applications when the NT6X78AA cards are
0 provisioned into an LGC, LTC, or SMS module,

0 EITHER:

0 1. Retrofit the NT6X69AA/NT6X79AA card combination (if
0 existing) to an NT6X69AB card via the application of
0 the NT6X12ZY PC Kit.

0 This upgrade kit allows card slot 18 to be provi-
0 sioned with the CLASS Modem Resource (CMR) card
0 NT6X78AA which is used for the CND feature. The
0 power-reduced NT6X78AB replaces NT6X78AA and does not
0 require this upgrade.

0 OR

0 2. Limit the number of NT6X50AA DS-1 cards to four per
0 shelf (i.e. eight per module).

0 This is required to limit the shelf's overall +5 volt
0 power requirements to below 55 amps.

0 (vi) There are optional announcements available for CLASS fea-
0 tures to indicate successful or denied operation.

0 For BCS-27, the NT1X75BA DRAM Controller must be provi-
0 sioned for all CLASS applications.

0 There are two groups of announcements, Phase 1 CLASS DRA
0 Announcements and Phase 2 CLASS DRA Announcements. If the
0 CLASS/CMS feature is required, at least one group of an-
0 nouncements (i.e. Phase 1 or Phase 2) must be provided.
0 The Customer can either have Phase 1 announcements or
0 Phase 2 announcements or both.

0 (vii) Phase 1 CLASS DRA Announcements

0 For the optional Phase 1 CLASS DRA Announcements, the
0 Customer can either make up his own announcements or he
0 can order the pre-recorded ones from NT.

0 For provisioning the Digital Recorded Announcement Re-
0 cordable Memory cards (NT1X77AA/79AA), divide the total
0 length of the announcements (in seconds) by 31. This de-
0 termines the number of circuits required for these an-
0 nouncements. These are the announcements that the
0 Customer can make up himself.

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If the Customer chooses to create his own announcements, and if he wants the Automatic Recall (AR) feature with the Voice Back Option within NTXA00AA activated, then the CLASS Phase 1 English Announcements (2) of (2) CP card, NT1X76AK, and/or the CLASS Phase 1 French Announcements (2) of (2) CP card, NT1X76BK, must be provided. Otherwise, if the Voice Back Option is not to be activated, then NT1X76AK and/or NT1X76BK are optional.

If the Customer wants our pre-recorded announcements, the following DRA cards are available:

PEC	DESCRIPTION
NT1X76AJ	CLASS Phase 1 English Announcements (1) of (2) CP
NT1X76AK	CLASS Phase 1 English Announcements (2) of (2) CP
NT1X76BJ	CLASS Phase 1 French Announcements (1) of (2) CP
NT1X76BK	CLASS Phase 1 French Announcements (2) of (2) CP

The above cards are the approved Telecom Canada Phase 1 CLASS DRA Announcements.

If bilingual announcements are required (e.g. French followed by English on the same announcement), then the Phase 1 CLASS DRA Announcement cards must be provisioned on the same DRA shelf (i.e. NT1X76AJ/AK/BJ/BK).

The Phase 1 CLASS DRA Announcement cards are only available in sets (e.g. NT1X76AJ/AK or NT1X76BJ/BK) and cannot be provisioned separately. However, the NT1X76AK and NT1X76BK cards can be ordered separately for the Automatic Recall feature (noted above). The NT1X76AK card can be ordered separately for the Call Forward Remote Activation (CFRA) feature. (See Meridian Business Services, Section 3.4, for more information on Residential Enhanced Services.)

If the optional announcements are not selected, confirmation tone can be used for successful feature operation and fast busy (120 ipm) can be used for denial of feature operation. This is only applicable to Calling Number Delivery Blocking (CNDB) and Customer Originated Trace (COT).

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0 (viii) Phase 2 CLASS DRA Announcements

0 For Phase 2 CLASS DRA Announcements, the Digital Recorded
0 Announcement Recordable Memory cards (NT1X77AA/79AA) can-
0 not be used.

0 For provisioning, two groups of Phase 2 CLASS DRA An-
0 nouncements are available:

0 1) Phase 2 CLASS DRA Announcements (List 1-12)

0 2) Phase 2 CLASS DRA Announcements (List 13-31)

0 The following are the Phase 2 CLASS DRA Announcement
0 (List 1-12) cards:

0	PEC	DESCRIPTION
0	NT1X76AP	CLASS Phase 2 English Announcements
0		(1) of (8) CP
0	NT1X76AQ	CLASS Phase 2 English Announcements
0		(2) of (8) CP
0	NT1X76AR	CLASS Phase 2 English Announcements
0		(3) of (8) CP
0	NT1X76AS	CLASS Phase 2 English Announcements
0		(4) of (8) CP
0	NT1X76AT	CLASS Phase 2 English Announcements
0		(5) of (8) CP
0	NT1X76AU	CLASS Phase 2 English Announcements
0		(6) of (8) CP
0	NT1X76AV	CLASS Phase 2 English Announcements
0		(7) of (8) CP
0	NT1X76__*	English "Personality" card
0	NT1X76BP	CLASS Phase 2 French Announcements
0		(1) of (8) CP
0	NT1X76BQ	CLASS Phase 2 French Announcements
0		(2) of (8) CP
0	NT1X76BR	CLASS Phase 2 French Announcements
0		(3) of (8) CP
0	NT1X76BS	CLASS Phase 2 French Announcements
0		(4) of (8) CP
0	NT1X76BT	CLASS Phase 2 French Announcements
0		(5) of (8) CP
0	NT1X76BU	CLASS Phase 2 French Announcements
0		(6) of (8) CP
0	NT1X76BV	CLASS Phase 2 French Announcements
0		(7) of (8) CP

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0 NT1X76__* French "Personality" card

0 The following are the Phase 2 CLASS DRA Announcement
0 (List 13-31) cards:

0	PEC	DESCRIPTION
0	NT1X76GA	CLASS Phase 2 English Announcements
0		(1) of (4) CP
0	NT1X76GB	CLASS Phase 2 English Announcements
0		(2) of (4) CP
0	NT1X76GC	CLASS Phase 2 English Announcements
0		(3) of (4) CP
0	NT1X76__	English "Personality" card

0 If Customers want Phase 2 CLASS DRA Announcements, the
0 group of List 13-31 cards are optional.

0 If either group or both groups of Phase 2 CLASS DRA An-
0 nouncements are required, provide a "Personality" card
0 for each group. Note that if both groups are required,
0 two "Personality" cards of the same type (i.e. one for
0 each group) must be provided.

0 The following are the Phase 2 CLASS DRA "Personality"
0 cards:

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0	PEC	CPC
0	NT1X76AW	CLASS Phase 2 English Announcements (8) of (8) CP
0	NT1X76BW	CLASS Phase 2 French Announcements (8) of (8) CP
0	NT1X76GE	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type I CP For Bell South
0	NT1X76GF	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type II CP For Bell Atlantic
0	NT1X76GG	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type III CP For United Tel
0	NT1X76GH	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type IV CP For GTE
0	NT1X76GJ	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type V CP For Pacific Bell
0	NT1X76GK	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type VI CP For Ameritech
0	NT1X76GL	CLASS Phase 2 U.S. Custom Feature Names Announcements - Type VII CP For Southwest Bell

0 * The "Personality" card, NT1X76AW, contains only Bell
0 Canada names and Bell South BCS-29 VO information. The
0 "Personality" card, NT1X76BW, contains only Bell Canada
0 names. It must be determined up front which "Personal-
0 ity" cards are required by which Customer. When engi-
0 neering a DMS job (initial or extension) which will
0 require Phase 2 CLASS DRA Announcements, the onus will be
0 on the Customer to determine which "Personality" card is
0 required.

0 The Phase 2 CLASS DRA Announcement cards are only avail-
0 able in sets (e.g. NT1X76AP/AQ/AR/AS/AT/AU/AV/AW or
0 NT1X76BP/BQ/BR/BS/BT/BU/BV/BW or NT1X76GA/GB/GC) and can-
0 not be provisioned separately. Note that the only excep-
0 tion to this is the "Personality" card (e.g. NT1X76AW)
0 which will be provisionable with other Customer specific
0 packs (as highlighted above).

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- 0 (ix) Automatic Recall Date and Time (ARDT) CLASS DRA Announce-
0 ments

0 The customized announcements require a DRAM with a
0 NT1X75BA controller card. A set of AR Date and Time
0 Phrase List PROM Cards NT1X76JA and NT1X76JB are required
0 for ARDT (English) announcements. Each CP contain two
0 (2) virtual card credits because they are double density
0 cards.

0 The following are the AR Date and Time Phrase List PROM
0 cards:

0	PEC	CPC	
0	NT1X76JA	B0231819	Automatic Recall Date/Time
0			Announcements (1) of (2) CP
0	NT1X76JB	B0231820	Automatic Recall Date/Time
0			Announcements (2) of (2) CP

0 The NT1X76AJ and the NT1X76AK cards are required and
0 should be assigned to the same DRA module as the NT1X76JA
0 and NT1X76JB cards. In a Class Phase 1 English office,
0 the NT1X76JA/JB can be assigned to a DRA where the
0 NT1X76AJ/AK cards are existing and there is room. Other-
0 wise, in other offices or where the DRAs with NT1X76AJ/AK
0 cards are filled, an additional set of NT1X76AJ/AK cards
0 must be ordered.

- 0 (x) The DRA cards (either recordable or pre-recorded) can
0 mount on DRA modules (i.e. NT2X58AM, NT2X58CB, NT2X58AK,
0 NT2X58AG).

0 The DRA module can accommodate one (1) NT1X75BA DRAM Con-
0 troller card and up to a maximum of eight (8) virtual
0 card credits (i.e. the addressing range of the NT1X75BA).

0 The DRA Recordable Memory cards (NT1X77AA and NT1X79AA)
0 each contain one (1) virtual card credit because they are
0 single density cards.

0 The existing DRA pre-recorded announcement card NT1X76AA
0 contains one (1) virtual card credit. Currently, this is
0 the only NT1X76__ card which contains one (1) virtual
0 card credit. All other NT1X76__ cards contain two (2)
0 virtual card credits because they are double density
0 cards.

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0 All Phase 1 and Phase 2 CLASS DRA pre-recorded announce-
0 ment cards (i.e. NT1X76AJ/AK/BJ/BK, NT1X76AP-AW,
0 NT1X76BP-BW, NT1X76GA-GC, NT1X76GE-GL) each contain two
0 (2) virtual card credits because they are double density
0 cards. Hence, a DRA module can accommodate a maximum of
0 eight (8) single density cards or a maximum of four (4)
0 double density cards.

0 The two (2) Phase 1 CLASS DRA Announcement cards (Eng-
0 lish) can be mounted on half of a DRA module. The two
0 (2) Phase 1 CLASS DRA Announcement cards (French) can be
0 mounted on half of a DRA module. If both English and
0 French are required, then the four (4) Phase 1 CLASS DRA
0 Announcement cards (English and French) can be mounted on
0 one (1) DRA module.

0 The eight (8) Phase 2 CLASS DRA Announcement (List 1-12)
0 cards (English) can be mounted on two (2) DRA modules.
0 The eight (8) Phase 2 CLASS DRA Announcement (List 1-12)
0 cards (French) can be mounted on two (2) DRA modules.

0 A quantity of five (5) DRA modules may be provisioned on
0 a TME frame, NT0X46AB, if and only if double density DRA
0 cards are provisioned on these modules. Any double den-
0 sity DRA cards (i.e. all NT1X76__ cards with the excep-
0 tion of NT1X76AA which is a single density card), up to a
0 maximum of four (4) per module, may be provisioned. Oth-
0 erwise, only four (4) DRA modules may be provisioned on a
0 TME frame.

0 Hence, a DMS office requiring both Phase 1 and Phase 2
0 (List 1-12) pre-recorded CLASS DRA Announcements in Eng-
0 lish and French can have all twenty (20) double density
0 DRA cards mounted on five (5) DRA modules and these five
0 (5) modules could be mounted onto one (1) TME frame.

0 Redundancy of announcements is available as an option in
0 the U.S. only. If redundancy is provided, ensure that
0 the announcement MTMs are on different power feeds.

0 The assignment rules for mounting Phase 1 and Phase 2
0 CLASS DRA Announcement cards onto DRA modules are the
0 same as the rules pertaining to the existing NT1X76__ DRA
0 Announcement cards. Cards NT1X76AP/AQ/AR/AS must be
0 mounted together onto the same DRA module. Cards
0 NT1X76AT/AU/AV/AW must be mounted together onto the same
0 DRA module. Similarly, cards NT1X76BP/BQ/BR/BS must be

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0 mounted together onto the same DRA module and cards
0 NT1X76BT/BU/BV/BW must be mounted together onto the same
0 DRA module. Cards NT1X76GA/GB/GC/+"Personality" Card
0 must be mounted together onto the same DRA module. The
0 previous cards within each DRA module can be in any or-
0 der. (See DRA System Provisioning in this section for
0 further information on the DRA.)

0 (xi) Log messages are produced when a subscriber activates the
0 Customer Originated Trace (COT) feature. If the
0 customer/telco wants these log messages to be routed to a
0 dedicated TTY, then a separate I/O port (i.e. one port
0 off of a NT1X67BC card) is required. Otherwise, these
0 log messages will be routed along with other log messages
0 to the customer specified TTY.

0 (xii) Canadian customers will be able to obtain CLASS Terminals
0 from NTCL or from outside suppliers. To obtain CLASS
0 terminals (i.e. an integrated telephone set, such as
0 MAESTRO) from NTCL, Canadian customers will contact
0 London Terminal Division.

0 U.S. customers will obtain CLASS terminals from outside
0 suppliers.

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0 2.3.2 Residential Enhancement Services

0 (a) General Description

0 The Residential Enhanced Services (RES) packages will provide
0 residential and small business customers with the opportunity to
0 upgrade their class of service from single line flat rate (1FR)
0 to RES by subscribing to a specific set of features which in-
0 cludes some IBN station features as well as other features avail-
0 able only through RES.

0 (b) Reference

0 None

0 (c) Provisioning Considerations

0 (i) An optional feature exists called Call Forward Remote Ac-
0 tivation. This feature requires announcements which the
0 Operating Company can record on their own or can provide
0 by ordering the NT1X76AM card. The NT1X76AK card is re-
0 quired when the NT1X76AM card is ordered and is recom-
0 mended to provide the numerical phrasing when a telco
0 records their own announcements. The NT1X76AM and
0 NT1X76AK should be assigned to the same DRA module. In a
0 Class Phase 1 English office, the NT1X76AM can be as-
0 signed to a DRA where the NT1X76AK card is existing and
0 there is room. Otherwise, in other offices or where the
0 DRAs with NT1X76AK cards are filled, an additional
0 NT1X76AK must be ordered. For CFRA, the requirement to
0 order the NT1X76AJ with the NT1X76AK does not apply.

0 Refer to the Digital Recorded Announcement (DRA) System
0 Provisioning in this section for more information on the
0 DRA.

0 (ii) To work properly, when the Call Forward Remote Activation
0 capability is required, software package NTXA43AA is re-
0 quired. The NT1X76AM card is required unless the telco
0 is recording their own announcements. The NT1X76AK card
0 is required when the NT1X76AM card is ordered and is re-
0 commended to provide the numerical phrasing when a telco
0 records their own announcements. Additional digitone re-
0 ceivers may be required to support CFRA in older periph-
0 eral modules (LMES or DCMS). The ideal number of

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0 digitone receivers should equal the number of CFRA an-
0 nouncement members.

0 (iii) Looparound trunks must be provisioned to connect Call
0 Forward Remote Access announcements.

0 Loopback trunks are provisioned based on the Call Forward
0 Remote Access traffic. The loopback load (in CCS) is de-
0 termined by multiplying the call attempt rate (calls/sec)
0 by the average holding time for each CFRA call. Loopback
0 trunks are then provisioned for this level of traffic us-
0 ing standard loopback trunk provisioning procedures.

0 (iv) The required software packages are as follows:

0 For a POTS office:

0 Master package NTXD00AA - MASTER POTS TO RES CONVERTER
0 OR

0 Master package NTXD00AB - MASTER POTS TO RES CONVERTER
0 OR

0 Master package NTXD01AA - RES OFFICE CONVERSION (U.S.
0 MARKET)

0 Within the POTS to RES CONVERTER master package, the RES
0 BASE package - NTXA64AA, provides equivalent IBN features
0 for existing POTS features.

0 For an IBN office:

0 NTXA64AA - RES BASE

0 In addition to the above required packaging, the follow-
0 ing packages may be ordered:

0 NTX734AA - EAE0 - IBN PIC USING SERVORD

0 The EAE0 - IBN PIC USING SERVORD package is contained in
0 the Master Package NTXD01AA (US market). Because the RES
0 design is based on IBN, changing a line from POTS to RES
0 results in a change to the mode of PIC (Primary InterLATA
0 Carrier) editing for the line when using SERVORD or the
0 Table Editor. The POTS to RES conversion results in PIC
0 editing of RES lines being done by line group rather than
0 line-by-line, as it is with POTS lines. The feature pack-
0 age NTX734AA makes the change from POTS to RES transpar-

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0 ent with respect to PIC editing. That is, it enables
0 SERVORD and the Table Editor to be used for changing PICs
0 on RES lines on a per line basis.

0 NTXA81AA - EXTENSION BRIDGED SERVICES

0 The EXTENSION BRIDGED SERVICES package enhances the Mul-
0 tiple Appearance Directory Number (MADN) feature so that
0 it may be used to allow a group of lines to more closely
0 simulate being extensions of a single line.

0 NTXA43AA - CALL FORWARD REMOTE ACTIVATION

0 The CALL FORWARD REMOTE ACTIVATION (CFRA) package allows
0 an MDC or RES subscriber with Call Forward Intragroup
0 (CFI), Call Forwarding Universal (CFU) or Call Forwarding
0 Fixed (CFF) to activate or deactivate these features from
0 a digitone line other than his own. This functionality
0 is applied on a per line basis.

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0 2.3.3 Enhanced Coin Services

0 (a) General Description

0 This feature provides per call records of the revenue collected
0 on coin originated toll calls. The LAMA records required for
0 this purpose, include information concerning the revenue col-
0 lected on the call. This is reported as the number of five cent
0 deposits collected on each call. Records also store the number
0 of Operator Attached Intervals (OAI) during which the local
0 switching system was unable to monitor and record collected de-
0 posits because of circuit blockage or insufficient memory capac-
0 ity. If tone detection errors are detected within a particular
0 coin call, this information is also indicated within the LAMA re-
0 cord. Call code 136 has been assigned by Bellcore for these pur-
0 poses.

0 Trunk groups that carry the ACTS compatible calls are identified
0 through Table AMATKOPT. All coin calls going out over the trunks
0 datafilled in this table with the REVALL option will have LAMA
0 records generated if coins are collected during the call.

0 A separate pool of CDCs (Coin Detection Circuit) is required to
0 determine the number of 5¢ deposits collected on each call. A CDC
0 is connected in a one way speech path during each OAI. Upon com-
0 pletion of the OAI, the CDCs report on the deposits detected. At
0 termination of the call, a LAMA billing record is produced indi-
0 cating the total amount collected.

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A pictorial representation looks like this:

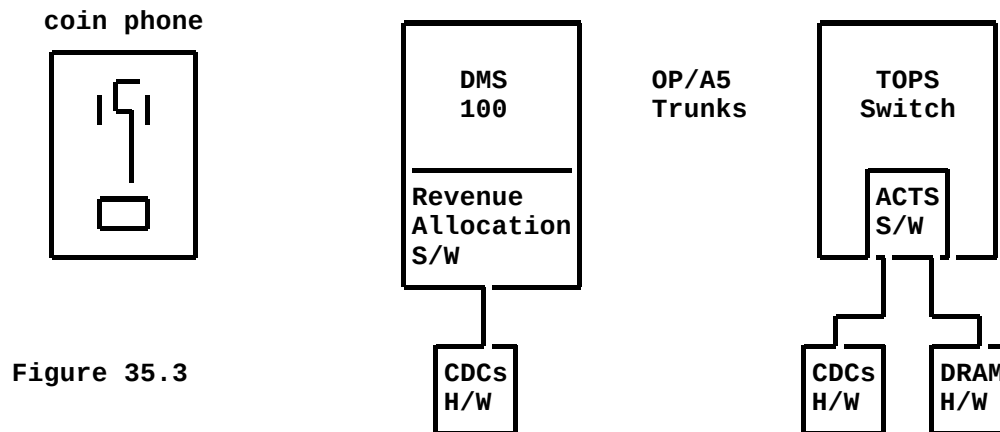


Figure 35.3

(b) Reference

Chapter 2 Traffic Criteria and Capacities

(c) Provisioning Considerations

- (i) This feature requires Coin Detection Circuits (CDC), NT3X08AA. Provision the NT3X08AA circuits based on the following:

$$\text{CCS} = \frac{\text{Total ABSBH toll}}{\text{coin attempts}} \times \frac{\text{average receiver}}{\text{holding time}}$$

Required Look up CCS in the CCS Per Hour
trunk = Trunk Capacity Table - (Poisson Table)
circuits

$$\frac{\# \text{ of NT3X08AA}}{\text{circuits}} = \frac{\text{Required trunk circuits}}{8 \text{ trunk circuits per card}}$$

NOTE: The standard default value for the receiver holding time is 38 seconds.

NOTE: Assignment rules for the NT3X08AA are unaffected.

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0 2.3.4 Common Peripheral Controller Equipment

0 (a) General Description

0 The Signalling Data Link (SDL) is channel on a T1 Carrier which
0 terminates on a DTC, DCM or LTC. ISDN trunks must terminate on a
0 DTC since they are only supported on DTCs.

0 (b) Reference

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations:

0 (i) The DTC may be used for SDL and ISDN trunks, however, for
0 reliability against failures, it is recommended to dis-
0 tribute the ISDN trunks and SDL across several peripher-
0 als.

0 (ii) CCS7 trunks must terminate on DTCs ONLY. Signalling Links
0 can terminate on DTCs, DCMs or LTCs. Signalling Links
0 and CCS7 trunks can be assigned to the same DTC.

0 (iii) CCS7 trunks can be mixed with PTS trunks on the same DTC,
0 however, both cannot be in the same trunk group.

0 (iv) Provision one (1) NT6X55AB DS0A Signaling Interface CP on
0 the DTC for each DS0A CCS7 signaling link. (Refer to
0 section 3.5 for more information.)

0 (v) DTC modules supporting CCS7 trunks must be equipped with
0 Extended Memory (NT6X46) and Enhanced Messaging (NT6X69).

0 (vi) The maximum number of DTCs utilizing CCS7 is 60 per of-
0 fice based on each DTC requiring 2 IPMLs per MSB7.

0 (vii) Each DTC utilizing CCS7, requires two continuity cards
0 NT6X70AA for continuity checking on ISUP trunks for BCS23
0 and earlier. In BCS24 and later, the software require-
0 ment for Continuity Cards was removed so that customers
0 requesting the cost reduction when testing is not re-
0 quired are not required to order the cards.

0 For U.S. applications only, since the NT6X70-- is re-
0 quired for the COT test, it is recommended that continu-

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0 ity cards continue to be provisioned in most cases.
0 Provisioning Continuity Cards on CCS7 DTCs should be con-
0 sidered standard. Only per customer request can they be
0 omitted.

0 For Canadian applications only, many customers have a
0 high penetration of digital trunk facilities and do not
0 require the Continuity card. Provision these cards only
0 on DTCs whose trunks support analog facilities at some
0 point in the end-to-end connection of the trunk.

0 (viii) Refer to Section 3.5 for more information on the DTC, DCM
0 and LTC.

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0 2.3.5 D-Channel Handler

0 (a) General Description

0 The D-Channel Handler separates call control signalling for the B
0 channels (used for encoded voice, circuit switched, or packet
0 data information) from user packet data. Signalling information
0 is passed to the Central Control, while packet data from several
0 D-Channels is multiplexed and routed to the packet handler.

0 (b) References

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 (i) The D channel handling function is performed by two cir-
0 cuit packs on the CPEI:

0 NTBX01AA - ISDN Signalling Pre-processor (ISP) CP

0 NTBX02AA - D Channel Handler CP

0 The ISDN Signalling Pre-processor CP is provisionable;
0 two (2) are required in the CPCI for all applications.

0 (ii) The D channel handler CP will be assigned to slots cur-
0 rently used by DS-1 interface circuit packs. Assignment
0 of a DCH card makes physically unavailable 2 DS-1 ports.

0 (iii) Each DCH circuit pack takes one peripheral port of the
0 twenty P-side ports available. The total of twenty P-
0 side ports are shared between the DS-1, DS-30A and DCH
0 links.

0 (iv) From BCS-28 onwards, one (1) of the DCH circuit packs
0 will be used as a spare to support N+1 redundancy. There
0 is no DCH sparing in BCS-27.

0 At least two DCH cards must be provided after BCS-28 (ie.
0 one plus one spare).

0 (v) Up to ten (10) DCH Circuit Packs may be provided per
0 CPCI. (Nine plus one spare). Refer to the Traffic Crite-

0 ria and Capacities (Chapter 2) to calculate the number of
0 DCH required to support the anticipated packet traffic.

0 (vi) Each DCH circuit pack has 32 "ports" available. One port
0 is dedicated to the ISP, and the remaining 31 ports are
0 capable of handling 4 multiplexed BRI D channels each, or
0 $31 \times 4 = 124$ BRI D channels maximum.

0 The ISP will occupy a free slot on the speech bus.

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0 CHAPTER 7

0 HOST - SIGNALLING INTERFACE EQUIPMENT

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Host - Signalling Interface Equipment
Chapter 7

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0 1.0 Common Channel Signalling Systems

0 1.1 Introduction

0 Common Channel Signalling (CCS) is the generic term for signalling system that separate the signalling and voice paths.

0 In a conventional Per Trunk Signalling (PTS) system, the address and supervisory signals are exchanged between Switching Offices (SO) on the trunks that carry the voice part of the call. This method is called in-band. For economic reasons the signalling part of a call is kept small and is restricted to signalling relevant to the current call. Therefore, PTS can be considered as a combination voice facility with a low grade signalling path.

0 CCS on the other hand exchange the address and supervisory signals on Signalling Links (SL) that may include a supporting signalling network as shown in Figure 315.1, leaving the voice trunks to be used for speech only. Because it is a separate path, data on the signalling link may contain information other than address and supervisory signals that can be included without a loss of call processing capacity. The voice part of a call is exchanged between SO on digital trunks (called voice trunks to differentiate them from trunks used for PTS traffic) that are dedicated to the system but independent of the signalling network.

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0 CCS is implemented by the switch in one or more of the following
0 environments. (Refer to NTP 297-1001-137 and NTP 297-1001-141
0 for more information.)

0 * No. 6 Signalling System (N6LK) for use on the DMS-300 (Gate-
0 way) international switch

0 * Common Channel Interoffice Signalling No. 6 (CCIS6) for use
0 on the U.S. national switching system

0 * CCITT Signalling System No. 6 (CCITT6) for use on the
0 DMS-300 (Gateway) using the message switching buffer

0 * Signalling System 7 (SS7) for use on U.S. national switching
0 systems

0 * Common Channel Signalling No. 7 (CCS7) for use on Canadian
0 national switching systems

0 Signalling system 7 (SS7) is similar to Common Channel Signalling
0 Number 7 (CCS7). The difference between them is the Applications
0 Feature that they use. Throughout this section, the term CCS7 is
0 used to mean CCS7 and SS7.

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0 DMS Hardware components for CCS

0 The major DMS hardware components for CCS is composed of the fol-
0 lowing: CCS speech circuits (voice only), trunk circuits with
0 voice and per trunk signalling, CCS Signalling Layer, Message
0 Switching Buffer (MSB), Signalling Terminals, modems (CCIS and
0 CCITT #6 only) and analog modem output (CCIS and CCITT #6 only).

0 The trunks for voice and per trunk signalling can be analog
0 trunks or digital trunks in DCM or DTC.

0 Each Signalling Layer has two (2) links. In normal operating
0 conditions, the two links in the pair will be working in load
0 sharing mode and each link acts as a back up for the mate link in
0 the event of failure in either link. The link is composed of two
0 transfer links (also known as Voice Frequency Links or VFL). The
0 transfer links are logically paired with one being active and the
0 other being in standby mode. The active and standby should be on
0 different facilities, for reliability.

0 The Transfer Link interface card can be located in appropriate
0 trunk modules (TM's), Digital Carrier Module (DCM) or Digital
0 Trunk Controller (DTC) in the DMS system. DMS will support the
0 digital interface of the transmission over specific time slots in
0 a T1 PCM carrier system.

0 Trunk circuits listed below can be used to interface the transfer
0 link and DMS:

0	PEC	Circuit Type
0	NT2X35AB	DCM Line Card
0	NT6X50AA	DS1 Interface CP
0	NT2X72AC	4W E&M 600 L GN E Supr. Contr.

0 Echo Suppression devices are not included in the Transfer Link.

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0 Common Channel Interoffice Signalling No. 6

0 Common Channel Interoffice Signalling No. 6 (CCIS6) provides a SO
0 with the capability of handling Plain Ordinary Telephone Service
0 (POTS) calls with common channel signalling. CCIS6 uses the
0 quasi-associated mode of operation using only A-links or E-links.
0 CCIS6 includes a facility known as Direct Signalling (DS) for use
0 with advanced subscriber services. The version of CCIS adopted
0 for use by the DMS-100 Family includes DS.

0 The CCIS6 signalling network provides four alternate routes be-
0 tween SO for signalling messages. These routes form two levels
0 of redundancy in the event of a failure of a route. The first
0 level is a signalling layer consisting of two signalling links or
0 linksets. The second level is provided by two transmission links
0 to each signalling link.

0 Selection of a route through the signalling network is made by
0 the originating SO using one of two methods depending on the type
0 of signalling used. The first method, used for call processing,
0 is banded signalling which relies on a preassigned route. The
0 other, used for data base queries, is direct signalling which re-
0 lies on a destination address and does not require a preassigned
0 route.

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0 CCITT Signalling System No. 6

0 CCITT Signalling System No. 6 (CCITT6) provides a S0 with the ca-
0 pability of handling national and international telephone service
0 calls with common channel signalling. The DMS-100 Family uses
0 CCITT6 as a gateway switch to the international telephone net-
0 work, using a combined associated and quasi-associated mode of
0 operation. A S0 interfaces with the signalling network using F-
0 links (associated mode) as the primary links, and A-links or E-
0 links (quasi-associated mode) as the back up links.

0 The CCITT6 signalling network provides alternate routes for sig-
0 nalling messages, between S0. These routes form a hierarchical
0 structure of redundancy in the event of one or more failure of
0 signalling routes between the S0.

0 Selection of a route through the signalling network is made by
0 the originating S0 using banded signalling. Banded signalling
0 relies on pre-assigned routes for all signalling messages.

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0 Common Channel Signalling No. 7

0 Common Channel Signalling No. 7 (CCS7) (also Signalling System 7)
0 is an internationally recognized general purpose signalling sys-
0 tem designed to use existing digital facilities for Connection
0 Oriented and Connectionless signalling between Switching Offices
0 (SO) in telecommunications networks. rcp;There are three types
0 of nodes in a CCS7 network - the Service Switching Point (SSP),
0 Signal Transfer Point (STP), and Service Control Point (SCP).

0 The SSP is an ordinary end-office or access tandem switch,
0 equipped with hardware and software which allow it to interface
0 to the CCS7 network and interpret CCS7 messages. Section 1.3 of
0 Chapter 3, Section 3.15 describes the hardware and software re-
0 quired for the SSP.

0 An STP is a switch whose function is to accept incoming CCS7 mes-
0 sages and route them to the appropriate destination. It does not
0 source or sink messages or perform any traditional call process-
0 ing functions. An SCP is a node which functions as a real-time
0 transactional database. It receives queries from the CCS7 net-
0 work and issues a reply based on the results of a database
0 look-up.

0 The two forms of Common Channel Signaling are Associated and
0 Quasi-Associated signaling. With associated signaling, CCS7 mes-
0 sages are conveyed over a set of links interconnecting SSP of-
0 fices directly. With quasi-associated signalling, the messages
0 are conveyed via at least one STP before arriving at the ultimate
0 destination.

0 There are two modes of CCS7 operation. The inter-office common
0 channel signaling mode, through the Integrated Services User Part
0 (ISUP) protocol, provides the basic functions for inter-office
0 call set-up, supervision, and maintenance. This mode is also
0 known as trunk signaling mode. The query/response transaction
0 mode, through the Transaction Capabilities Application Part
0 (TCAP) protocol, provides the capability for remote operations
0 across the CCS7 network. Transaction Capabilities are functions
0 controlling non-circuit related information transfer between
0 nodes, such as database queries.

0 CCS7 allows Meridian Digital Centrex (MDC) features to operate
0 transparently across the network, a concept called Feature Net-
0 working. For example, Calling Line Identification (CLID) is
0 available with CCS7 Trunk Signaling. On calls originating from
0 MDC lines, the directory number of the line is transmitted to the

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0 far end switching office as part of the Initial Address Message
0 via the CCS7 signaling links. This directory number can be dis-
0 played on an Electronic Business Set with the display option.

0 With NT6X66AC CCS7 Signaling Terminal CP, CCS7 Bert can be per-
0 formed. C7BERT is a facility to measure the quality of a digital
0 transmission path used for fault isolation on signaling data
0 links. C7BERT operates by transmitting a pseudo-random 2047-bit
0 test pattern out onto the link and comparing the returned pattern
0 with what was originally transmitted as outlined in CCITT Recom-
0 mendation 0.152. This test bit pattern is recommended for bit
0 rates in the range of 48 kbits/s to 168 kbits/s.

0 The path testable by the C7BERT is the CCS7 signaling link. For
0 the DMS-100 based CCS7 node this includes the Message Switch and
0 Buffer (MSB7) speech path, the network, the interface peripheral
0 (LTC, DTC, or DCM) speech, and the associated transmission facil-
0 ity (DS-1). For the Supernode based CCS7 node the testable path
0 includes the link termination paddleboard (PB) and the associated
0 transmission facility (DS-0 or V.35).

0 The CCS7 hardware architecture is illustrated in Figure 315.2.
0 The CCS7 digital signalling links (T1) from another SO or from a
0 Signalling Transfer Point (STP) (referred to as CCS7 network) en-
0 ter the office via a DTC, LTC or DCM and are switched via nailed
0 up connections into the MSB7. The signalling channels pass
0 through the MSB7's time switch and terminated on the ST. The ST
0 interfaces with the MSB7 via shared memory.

0 ISDN trunks are only supported on DTC's.

0 Connection Oriented signalling is the signalling associated with
0 the setup and takedown of ISDN trunks used for the transfer of
0 ISDN voice or data.

0 Connectionless Signalling carries messages between SOs and to
0 data bases for maintenance or administrative purposes. There are
0 no associated ISDN trunks with this type of signalling.

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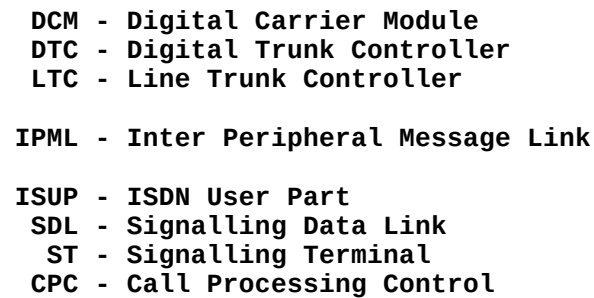


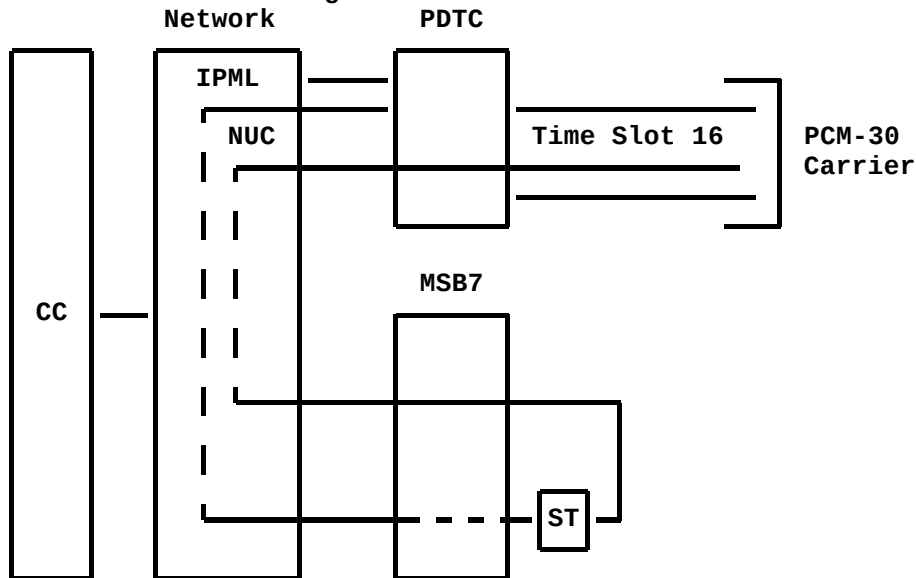
Figure 315.2

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Digital Private Network Signalling System #1 (DPNSS)

Digital Private Network Signalling System #1 (DPNSS) is a UK common channel signalling standard for a network of digital PBX's. DPNSS allows advanced network features to be supported in a multi-vendor private network.

The hardware implementation of DPNSS is almost identical to domestic CCS7. See Figure 315.3.



IPML - Inter Peripheral Message Link
NUC - Nailed Up Connection

Figure 315.3

In the DPNSS configuration, Time Slot 16 of the incoming PCM-30 span carries the associated signalling information for the thirty (30) channels in the PCM-30 span. Therefore, the Signalling Terminal (ST) and Signalling Data Link (SDL) will handle only 30 trunks.

The maximum number of DPNSS signalling data links is 255, therefore, the DPNSS configuration is limited to a maximum of 30 x 255 = 7650 trunks.

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0 1.2 Features

0 1.2.1 CCS7 Trunks Interconnection Supported

0 CCS7 supports the following trunk interconnections:

- 0 1) CCS7 Trunk to CCS7 Trunk InterLocal
- 0 2) CCS7 Trunk to CCS7 Trunk InterToll
- 0 3) CCS7 Trunk to PTS Trunk InterToll
- 0 4) CCS7 Toll Access to PTS InterToll
- 0 5) CCS7 InterToll to PTS Toll Completing
- 0 6) PTS Local to CCS7 Toll Access
- 0 7) PTS Toll Access to CCS7 InterToll
- 0 8) PTS InterToll to CCS7 Toll Completing
- 0 9) CCS7 Trunk to In Tandem
- 0 10) Incoming Call to TOPS/AOSS position via CCS7 Inter-Toll
- 0 11) Incoming Call to Directory Assistance
- 0 12) Incoming call from another operator in a different exchange for assistance
- 0 13) Outgoing call from a TOPS/AOSS position via CCS7 feature

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0 1.2.2 MDC Line/CCS7 Trunks Interconnection

0 Calls originating from or terminating on standard and/or featured
0 Meridian Digital Centrex (MDC) POTS lines can be interconnected
0 directly with CCS7 trunks without utilizing loop-back trunks.
0 Most MDC line features are directly supported. There are a few
0 exceptions which require loop-back trunks between the MDC line
0 and the CCS7 trunk. Those features may include the following,
0 depending on BCS:

- 0 1) POTS lines equipped with basic 3-Way Calling feature require
0 loop-back trunks for interconnection with CCS7 trunks.
- 0 2) Coin lines with the Local Coin Overtime (LCO) option require
0 loop-back trunks for interconnection with CCS7 trunks. Coin
0 lines without this option will interconnect directly.
- 0 3) Calls originating from POTS lines equipped with Auto Identi-
0 fied Outward Dialing (AIOD) require loop-back trunks to
0 interconnect with CCS7 outgoing trunks. Incoming calls from
0 CCS7 trunks terminating on AIOD lines interface directly
0 without loop-back.
- 0 4) Calls incoming from CCS7 trunks terminating on POTS coin
0 lines with the Free Number Termination (FNT) option require
0 loop-back trunks for interconnection. Calls originating
0 from FNT lines may be interconnected directly with CCS7
0 trunks without utilizing loop-back.
- 0 5) Calls terminating on Emergency Service Lines (ESL) from CCS7
0 trunks require loop-back trunks for interconnection.
- 0 6) Calls terminating on Direct Inward System Access (DISA) di-
0 rectory numbers over a CCS7 trunk require loop-back trunks
0 at the terminating office.

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0 1.2.3 Interconnections Not Supported

0 Only two call types are not supported with CCS7 signalling or
0 loop-back trunking. They are as follows:

0 1) CCS7 trunks/Emergency Service Bureau (ESB) line intercon-
0 nection is not supported.

0 2) Circuit Switched Digital Data Service (CSDDS) calls are not
0 supported. (Note: CSDDS is not the same as Datapath.
0 Datapath and the CCS7 Network are compatible.)

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0 1.2.4 Console Features Requiring Loop-Back Trunks

0 When a console feature, that is not compatible with an Integrated
0 Digital Services Network User Part (ISUP) trunk, is activated, a
0 loop-back trunk is required.

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0 1.2.5 Loop-Back Trunk Requirement0 (a) General Description

0 Loop-back trunks are required in an office utilizing CCS7 Trunk
0 Signalling to accommodate lines equipped with incompatible fea-
0 tures in the CCS7 trunk.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) Provisioning calculations for loop-back trunks are as
0 follows:

$$\begin{array}{r} (A+B+C+D+E+F \text{ calls/hr}) \times \text{Avg Hold Time (sec)} \\ \hline 100 \end{array}$$

0 = CCS Loop-Back

0 Where:

0 A = HDBH calls utilizing CCS7 trunks that
0 originate from and terminate on POTS
0 and/or MDC lines equipped with Basic Three
0 Way Call.

0 B = HDBH calls utilizing CCS7 trunks that
0 originate on POTS lines with AIOD.

0 C = HDBH calls utilizing CCS7 trunks that
0 terminate on POTS and/or MDC lines with
0 FNT.

0 D = HDBH calls utilizing CCS7 trunks that
0 originate from coin lines with LCO
0 feature.

0 E = HDBH calls utilizing CCS7 trunks that
0 terminate on MDC lines via DISA.

0 F = HDBH calls utilizing CCS7 trunks that
0 terminate on ESAL lines.

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0 Refer to traffic provisioning tables (Chapter 2) for
0 trunk capacities to determine the required trunk quanti-
0 ties for POTS/MDC loop-back trunks.

0 (ii) Loop-Back Trunk Requirements (BCS-24)

0 The following MDC features are incompatible with CCS7
0 trunks in BCS-24 and will require loop-back trunks be-
0 tween the MDC line and the CCS7 trunk:

- 0 1) Basic 3-Way Calling (3WC)
- 0 2) Free Number Termination (FNT)
- 0 3) Direct Inward System Access (DISA)

0 (iii) Loop-Back Trunk Requirements (BCS-25, BCS-26)

0 Loop-back trunking is required for the following condi-
0 tions:

- 0 1) ISUP to DISA (trunk is released after digits are col-
0 lected)
- 0 2) ISUP to LCO
- 0 3) ISUP to AIOD

0 (iv) Loop-Back Trunk Requirements (BCS-27+)

0 Loop-back trunking is required for the following condi-
0 tions:

- 0 1) ISUP to DISA (trunk is released after digits are col-
0 lected)
- 0 2) ISUP to LCO

0 (v) Loop-Back Trunk Requirements (BCS-31)

0 Loop-back trunking is required for the following condi-
0 tions:

- 0 1) ISUP to DISA (trunk is released after digits are col-
0 lected
0 - only if there are no UTRs provisioned on the DTC
0 terminating the ISUP trunk.

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0 (vi) Loop-Back Span Provisioning

0 No. Loop-Back T1 Spans =

0 #Console # POTS-MDC
0 Loop-Back Trunks + Loop-Back Trunks
0 ----- (Round Up)
0 24

0 #Total T1 Spans Req'd = #Loop-Back T1 Spans X 2

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0 1.2.6 Console Features Requiring Loop-Back Trunks

0 (a) General Description

0 Loop-back trunks are required in an office utilizing a console
0 feature that is not compatible with an Integrated Digital Ser-
0 vices Network User Part (ISUP) trunk.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) Console Loop-Back Trunk Provisioning (BCS-24)

0 Loop-back trunks must be provisioned for all ISUP trunks
0 which require access to the console. These can be di-
0 vided into four categories:

- 0 1) ISUP trunk to console requiring call
0 extension
0 2) ISUP trunk to console not requiring call
0 extension
0 3) Console extended to an ISUP trunk
0 4) Console originated to an ISUP trunk

0 The call rate for console calls can be calculated based
0 on the number of Attendant Consoles (AC) in the office,
0 the average length of all console queues in the office
0 (QL) and the average time required for a console to proc-
0 ess a call (T), by using the following formulas:

0
$$\text{Terminating Call Rate} = \frac{\#AC + QL}{T}$$

0
$$\text{Originating Call Rate} = \frac{\#AC}{T}$$

0 These call rates can be multiplied by the percentage of
0 calls in each of the four categories to determine the
0 call rate for each category.

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0 The holding times may be different for each of the four
0 call types.

0 1) For ISUP trunk to console calls that do require ex-
0 tending, the holding time is equivalent to the aver-
0 age holding time of the call plus the average console
0 call handling time (T).

0 2) For ISUP trunk to console calls that do not require
0 extending, the holding time is equivalent to the av-
0 erage console call handling time (T).

0 3) For console extending to an ISUP trunk, the holding
0 time is equivalent to the average holding time of an
0 ISUP trunk to console call that requires extension
0 less the average console call handling time.

0 4) For console originating to an ISUP trunk, the holding
0 time is equivalent to the average holding time of the
0 call plus the average console call handling time (T).

0 The total console loop-back load required can be calcu-
0 lated by adding the required load for each of the four
0 categories. The loop-back load for each category can be
0 calculated using the following:

0 Loop-Back Trunk Load = Call Rate X Holding Time
0 per Category

0 Total Loop-Back Load = Category 1 + Category 2
0 + Category 3 +
0 Category 4

0 After the total console loop-back load is determined, the
0 total number of trunks can be calculated using the
0 Poisson Tables. The number of loop-back trunks should
0 not exceed the number of ISUP trunks.

0 (iii) Console Loop-Back Trunk Provisioning (BCS-25)

0 For BCS-25, all attendant calls and features require
0 loop-back treatment only when the calls are being ex-
0 tended. The loop-back trunk requirement is reduced be-
0 cause the loop-back trunk is released after the call is
0 extended.

0 (iv) Console Loop-Back Trunk Provisioning (BCS-26 to BCS-31)

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0 For BCS-26 to BCS-31, the loop-back requirement is re-
0 duced. The Code Calling feature, the Conference Hold &
0 Release feature, and the End-to-End Signaling feature is
0 the only requirement for loop-back treatment.

0 (v) Loop-Back Span Provisioning

0 No. Loop-Back T1 Spans =

0 #Console # POTS-MDC
0 Loop-Back Trunks + Loop-Back Trunks
0 ----- (Round Up)
0 24

0 #Total T1 Spans Req'd = #Loop-Back T1 Spans X 2

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0 1.2.7 Signalling Terminal0 (a) General Description

0 The Common Channel Signalling System Signalling Terminal (ST)
0 transmits and receives signalling data between the DMS-100 Family
0 switch and the CCS transmission links. It implements the link
0 protocol and monitors signalling link performance.

0 (b) Reference

0 NTP 297-1001-137 Common Channel Signalling CCIS6
0 and CCITT6 System Description
0 NTP 297-1001-141 Common Channel Signalling 7
0 Description
0 GS6X65 CCIS Signalling Terminal
0 GS6X66 CCS7 Signalling Terminal

0 (c) Provisioning Considerations:

0 (i) The following Signalling Terminal (ST) Cards are
0 provisionable on the ST6E/ST7E frame.

0 FOR ST6E FOR ST7E FOR DPNSS

0 ST CARDS NT6X65AA NT6X66AA NT6X66CA

0 (ii) Provide one Signalling Terminal CP per signalling link.
0 In CCIS #6, CCITT #6, and CCS7 signalling links are pro-
0 visioned in pairs (i.e. a signalling layer). The two (2)
0 ST CP's associated with a signaling layer must be pro-
0 vided on separate STA6/STA7 shelves within the same
0 MSB6/MSB7 module. The two ST CP's can mount on the same
0 ST7G shelf. For DPNSS, the signalling links are provi-
0 sioned individually - one per associated PCM-30 span.

0 (iii) The Data Transmission Rate of the various ST CP's are as
0 follows:

0 CCIS ST (NT6X65) 2400 bits/sec
0 CCS7 ST (NT6X66) 15 kbits/sec

0 (iv) The CCS7 ST can handle the full load of the 56 Kilo bits
0 per second (kbps) link running at 100%. (i.e. 112 kbps at
0 full duplex transmission).

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0 For trunk signalling, the average message size is 20
0 octets (8 bits) and each call uses approximately 6 mes-
0 sages. Therefore, assuming a calling rate of 16
0 calls/hr/trunk, a pair of STs can handle up to 52,500
0 trunks at maximum capacity. However, links are engi-
0 neered at 35% under normal conditions and up to 60-70%
0 under failure conditions. Using these assumptions, the
0 ST should be engineered to handle a maximum of 9,187
0 trunks or 18,375 trunks per ST pair.

0 For database transactions, the average message size is
0 100 octets and each DB transaction uses an average of 2
0 messages. In this case, the ST should be engineered to
0 handle a maximum of 88,200 transactions/hr or 176,400
0 transactions/hr.

0 The ST should be provisioned based on the following three
0 equations:

0 (1) $(6 \times 20 \times A \times B) + (2 \times 100 \times C) \leq 35,280,000$
0 (per ST Pair)

0 (2) 72 STs per MSB7 (Physical Limit)

0 (3) $(6 \times A \times B \times D) + (4 \times C) \leq \text{MAX (MSB Limitation)}$

0 where:

0 A = Average call attempts/hr/trk
0 B = No. of ISDN User Part (ISUP) trunks sup-
0 ported by the ST pair
0 C = Database transactions/hr
0 D = Total number of STs on the MSB7 (1 or 2)
0 MAX = 900,000 Msg/hr for a 1 MSB configuration
0 = 720,000 Msg/hr for a 2 MSB configuration

0 Using "A" = 16, the number of ISUP trunks vs the number of
0 DB transactions per ST pair is shown in Figure 315.4.

0 Assumptions: 16 ISUP calls/hr/trk
0 20+ ISUP msg length = 20 octets
0 18+ 800+ msg length = 100 octets
0 No. 18+ Equal # of originating and
0 16+ terminating calls

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0 1.2.8 Message Switch and Buffer

0 (a) General Description

0 The Message Switch and Buffer (MSB) performs signalling functions
0 between suitably-equipped Digital Trunk Controllers (DTC), in ac-
0 cordance with the procedures of Common Channel Signalling System.

0 The MSB provides and maintains a signalling path between the CCS
0 transmission link and the Signalling Terminals (ST). It also
0 performs message switching and distribution functions between the
0 DTC, handling the voice part of a call, and the associated ST
0 handling the signalling part of the call.

0 The MSB is fully duplicated with one unit active, performing all
0 call processing functions, and the other unit operating in a
0 standby mode, ready to take over in the event of a failure in the
0 active unit or when dictated by the call processing software.

0 (b) Reference

0 NTP 297-1001-137 Common Channel Signalling CCIS6
0 and CCITT6 System Description
0 NTP 297-1001-141 Common Channel Signalling 7
0 Description
0 GS6X07 Message Switching Buffer 6
0 GS6X32 Message Switch and Buffer 7

0 (c) Provisioning Considerations:

0 (i) The following Message Switch and Buffer (MSB) common cir-
0 cuit pack fills are available:

MSB TYPE	PEC	APPLICATION	FRAME TYPE	NOTE
MSB6	NT6X07AC	CCIS6/CCITT6	MS6E	2.
MSB7	NT6X32CC	CCS7	MS7E	1.
MSB7	NT6X32BA	DPNSS	MS7E	

0 NOTE:

0 1. NT6X32CC is used on new jobs so that BCS-27 expanded
0 memory requirement can be met.

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0 2. NT6X07AC replaces NT6X07AB.

0 The Signalling Terminals (ST) are connected to the MSB
0 via a microprocessor bus. The MSB6 is capable of con-
0 necting a maximum of 64 STs while the MSB7 is capable of
0 connecting a maximum of 72 STs.

0 The maximum number of MSB7s on a DMS switch is four (4).

0 The maximum number of DPNSS MSB7's on a DMS switch is
0 five (5).

0 For MSB6, the minimum packfill for BCS-32/33 is NT6X07AC.

0 (ii) MSB7 Provisioning

0 DS30 Ports (MSB7)

0 The MSB7 peripheral communicates with the Central Control
0 (CC) and other peripherals via DS30 ports to the network.

0 The number of MSB7 DS30 ports to the network is determined
0 by the following calculation:

0 (# DTCs terminating) (# Signalling)
0 (CCS7 trk X 2) + (links/terminals)
0 -----
0 30 Channels/Port

0 A minimum of three DS30 ports are required and eight
0 ports are maximum.

0 (iii) Multiple MSB7 Provisioning

0 The maximum number of MSB7s per office is 4. The required
0 number of MSB7s can be determined using the following
0 calculations.

0 Abbreviations used:

0 ACB - Automatic Call Back
0 ACCS - Automatic Calling Card Service
0 AR - Automatic Recall
0 BNS - Billing Number Screening
0 CLI - Calling Line Information
0 CODP - Central Office Data Processor
0 DB Query - Database Query

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0 DN Valid - Directory Number Validation
0 HDBHCA - High Day Busy Hour Call Attempts
0 ISUP - Integrated Services User Part
0 NMS - Network Message Service
0 PIN - Personal Identification Number
0 PVN - Private Virtual Networking
0 RAG - Ring Again
0 TCAP - Transaction Capabilities Application Part
0 TS - Trunk Signalling

0 A) ISUP HDBHCA
0 ----- X (6 or 12) = ISUP msg/sec
0 3600

0 NOTE: When calculating the ISUP msg/sec in an Access Tan-
0 dem office, 12 msg/CA must be used due to the in-
0 coming and outgoing portions of the message for the
0 MSB7 in the Access Tandem office. For an end of-
0 fice, 6 msg/sec must be used.

0 B) DB Query HDBHCA
0 ----- X 2 = DB Query msg/sec
0 3600

0 NOTE: Types of DB Query messages may include the
0 following:

0 E800/800+/E008
0 ACCS
0 BNS

0 C) PVN wo PIN HDBHCA
0 ----- X 2 = PVN wo PIN msg/sec
0 3600

0 D) PVN with PIN HDBHCA
0 ----- X 4 = PVN with PIN msg/sec
0 3600

0 E) RAG HDBHCA
0 ----- X 4 = RAG msg/sec
0 3600

0 F) ACB HDBHCA
0 ----- X (13 or 8) = ACB msg/sec
0 3600

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0 NOTE: Use 13 for U.S. applications,
0 Use 8 for Canadian applications.

0 G) AR HDBHCA
0 ----- X 2 = AR msg/sec
0 3600

0 H) CLI HDBHCA
0 ----- X 2 = CODP msg/sec
0 3600

0 I) NMS HDBHCA
0 ----- X 4 = NMS msg/sec
0 3600

0 J) DN Validation HDBHCA
0 ----- X 2 = DN Validation msg/sec
0 3600

0 K) B + C + D + E + F + G + H + I + J = TCAP msg/sec

0 L) 1. If $A + 2 \cdot K \leq 135$ and $K \leq 31$,
0 # MSB7s required = 1.

0 2. If $A + 2 \cdot K \leq 205$ and $K \leq 46$,
0 # MSB7s required = 2.

0 3. If $A + 2 \cdot K \leq 340$ and $K \leq 76$,
0 # MSB7s required = 3.

0 4. If $A + 2 \cdot K \leq 460$ and $K \leq 107$,
0 # MSB7s required = 4.

0 (iv) Optional Software Features (MSB7)

0 Enhanced Office Recovery, NTXA66AA, is an optional soft-
0 ware feature that improves the present office recovery
0 time of extended peripheral modules (XPM). Extended XPM
0 Diagnostics, NTXA67AA, is an optional software feature

(v) The minimum packfill for MSB7 under BCS-32/33 is NT6X32CA/AB.

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0 1.2.9 Message Switching Equipment Frame

0 (a) General Description

0 The Message Switching 6 Equipment (MS6E) frame houses DMS Common
0 Channel Interoffice Signalling (CCIS) hardware and DMS CCITT #6
0 Signaling (for DMS-300 application) hardware. The Message Sig-
0 nalling 7 Frame (MS7E) houses the hardware key to CCS7 implemen-
0 tation on the DMS-100 family switches.

0 (b) Reference

0 NTP 297-1001-137 Common Channel Signalling CCIS6
0 and CCITT6 System Description
0 NTP 297-1001-141 Common Channel Signalling 7
0 Description

0 (c) Provisioning Considerations:

0 (i) Each MS6E (NT6X06AC) is composed of one (1) Message
0 Switch and Buffer 6 (MSB6), one (1) AC Modem Shelf (DSM)
0 and two (2) Inverters. The DSM holds up to 16 Modem CP.
0 Provide one Modem CP, A0302338 per ST provided in the
0 MSB6 of the same MS6E frame. The ST's and associated
0 modems are setup into two (2) groups of eight (8) on the
0 MS6E frame (therefore, a maximum of 16 ST per MS6E
0 Frame).

0 (ii) Each MS7E (NT6X31AA) is composed of one (1) Message
0 Switch and Buffer 7 (MSB7) and one (1) Signalling Termi-
0 nal 7 Group Shelf (ST7G). The MSB7 holds up to eight (8)
0 ST's while the ST7G holds up to 16 ST's. The MS7E frame
0 can house a maximum of 24 ST's.

0 (iii) If the number of ST's required for the office exceeds the
0 maximum number of ST's allowed in the MS6E/MS7E frame,
0 then a Signalling Terminal Extension Frame (STE) must be
0 provided (see next subsection).

0 Provide two (2) Signalling Terminal Interface CP
0 (NT6X68AA) per MS6E frame when a STE frame will be pro-
0 vided. Provide two (2) Signalling Terminal Interface
0 with Terminator CP when a STE frame is not provided.

0 Provide two (2) Signalling Terminal Interface CP
0 (NT6X68AC) per MSB7 when one or more ST7G shelf are asso-

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0 ciated with this MSB7 unit. Provide two (2) Signalling
0 Terminal Interface CP for each STG (STG:0 and STG:1 make
0 up the ST7G) when the ST group is not the last in the of-
0 fice. Provide two (2) Signalling Terminal Interface with
0 Terminator CP (NT6X68AD) per MSB7 when the MSB7 shelf is
0 the last shelf on the MS7E, i.e., the ST requirements for
0 the office do not exceed eight (8) ST's. Provide two (2)
0 Signalling Terminal Interface with Terminator CP on the
0 last STG of the ST7G shelf, i.e., no STE frames will be
0 provide.

0 (iv) When ISG is being applied to an office, the MS7E frames
0 and their associated ST7E frames must be powered from the
0 same PDC frame. The MS6E frames and the ST6E frames do
0 not need to be powered from the same PDC frame.

0 (v) The NT6X66AC CCS7 Signalling Terminal CP replaces the
0 NT6X66AA for all applications of the MS7E frame, and also
0 has the C7BERT capability.

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0 1.2.10 Signalling Terminal Extension Frame

0 (a) General Description

0 The Signalling Terminal Extension Frame (ST6E/ST7E) houses CCITT
0 No. 6/CCIS6/CCS7 signalling terminals. The ST6E/ST7E provides
0 the capacity to add up to 48 ST's (on 3 ST extension shelves) in
0 addition to the 16 ST's on the MS6E frame or the 24 ST's on the
0 MS7E frame. The Data Modem Extension Frame (DME) must always be
0 provisioned with the ST6E frame.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) The following Signalling Terminal Cards are provisionable
0 on the ST6E/ST7E frame.

0 ST Card	ST6E	ST7E	DPNSS
0 Sign. Terminal	NT6X65AA	NT6X66AA	NT6X66CA
0 ST with I/F	NT6X68AA	NT6X68AC	NT6X68AC
0 ST I/F Terminator	NT6X68AB	NT6X68AD	NT6X68AD

0 Each ST6E/ST7E frame can house up to six (6) ST groups.
0 Each ST group houses up to eight (8) ST's. Provide two
0 (2) Signalling Terminal Interface CP per ST group when
0 the ST group is not the last one associated with the
0 MSB6/MSB7. Provide two (2) Signalling Terminal Interface
0 with Terminator CP per ST group when the ST group is the
0 last shelf associated with the MSB6/MSB7.

0 (ii) The provisioning of the ST6E/ST7E frames are based on the
0 maximum number of ST's that can be controlled by the
0 MSB6/MSB7.

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0 1.2.11 Data Modem Extension Frame

0 (a) General Description

0 The Data Modem Extension Frame (DME) houses analog 2400 baud mod-
0 ems which modulate/demodulate serial binary data (in dibits)
0 to/from the Phase Shift Keying (PSK). The PSK is used in the
0 CCIS/CCITT #6 environment to transmit serial binary data over an-
0 analog channels. An AC modem is dedicated to each ST. The DMS
0 frame is provisioned in conjunction with the ST6E frame.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

- 0 (i) Provide one (1) DME frame per ST6E frame.
- 0 (ii) Provide one (1) AC Modem CP A0302338 per ST provided (on
0 the ST6E frame).
- 0 (iii) Each DME can house a maximum of 48 AC Modem CP cards.

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0 1.2.12 Signalling Data Links (SDL)

0 (a) General Description

0 A Signalling Link (SL) is a bi-directional transmission path for
0 transferring trunk signaling information from an end-office Ser-
0 vice Switching Point (SSP) to another SSP or a Signaling Transfer
0 Point (STP). Each SL is comprised of a Signalling Data Link
0 (SDL) and a Signalling Terminal (ST) (NT6X66). A linkset is a
0 set of links to be used as a group, each equally capable of car-
0 rying traffic between the origination point and a destination
0 point.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) For redundancy, a pair of SLs is composed of two Signal-
0 ling Terminal (ST) cards and two T1 links. The maximum
0 number of STs per MSB7 is 72. Therefore, the maximum num-
0 ber of redundant Signalling Links is 36.

0 (ii) A single pair of CCS7 links can handle the throughput of
0 a MSB7. Therefore, link quantities can be determined by
0 the quantity of MSB7s (minimum of one pair of links/MSB7)
0 and the number of nodes associated with the DMS-100
0 and/or DMS-200.

0 (iii) Signalling Links (Terminals) must be provided as redun-
0 dant pairs, therefore, the no. of ST cards (NT6X66AC)
0 equals the no. of Signalling Links x 2.

0 (iv) CCS7 signalling links utilize digital T1 trunks as the
0 physical transmission medium to the CCS7 Signalling Net-
0 work. These T1s may terminate on either a DTC, LTC or
0 DCM.

0	No. of	# of calculated Signalling	
0	DS-1	Links (Terminal)	X 2 (redundancy)
0	circuits =	-----	
0	required	24 Channels	

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0 1.2.13 Nailed-Up Connections

0 (a) General Description

0 Inter-Peripheral Message Links (IPML) are nailed-up connections
0 that allow the DTCs to communicate with the MSB7s through the
0 network. Each DTC utilizing CCS7, requires two IPMLs to each
0 network. The maximum number of Interperipheral Message Links
0 (IPML) per MSB7 is 120 based on the maximum number of channels on
0 the enhanced messageing card being 128. (8 ports reserved for
0 future use.)

0 Each ST requires one nailed-up connection.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) The total number of nailed-up connections required is
0 calculated as follows:

0 # DTC X 2 IPML X # MSB7 + Total # ST (all MSB7)

0 The maximum number of nailed-up connections is 768. To
0 ensure that degradation of network throughput does not
0 occur, no more than 100 nailed-up connections per network
0 paths should be utilized.

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0 1.2.14 Common Peripheral Controller Equipment

0 (a) General Description

0 The Signalling Data Link (SDL) is channel on a T1 Carrier which
0 terminates on a DTC, DCM or LTC. ISDN trunks must terminate on a
0 DTC since they are only supported on DTCs.

0 (b) Reference

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations:

0 (i) The DTC may be used for SDL and ISDN trunks, however, for
0 reliability against failures, it is recommended to dis-
0 tribute the ISDN trunks and SDL across several peripher-
0 als.

0 (ii) CCS7 trunks must terminate on DTCs ONLY. Signalling Links
0 can terminate on DTCs, DCMs or LTCs. Signalling Links
0 and CCS7 trunks can be assigned to the same DTC.

0 (iii) CCS7 trunks can be mixed with PTS trunks on the same DTC,
0 however, both cannot be in the same trunk group.

0 (iv) Provision one (1) NT6X55AB DS0A Signaling Interface CP on
0 the DTC for each DS0A CCS7 signaling link. (Refer to
0 section 3.5 for more information.)

0 (v) DTC modules supporting CCS7 trunks must be equipped with
0 Extended Memory (NT6X46) and Enhanced Messaging (NT6X69).

0 (vi) The maximum number of DTCs utilizing CCS7 is 60 per of-
0 fice based on each DTC requiring 2 IPMLs per MSB7.

0 (vii) Each DTC utilizing CCS7, requires two continuity cards
0 NT6X70AA for continuity checking on ISUP trunks for BCS23
0 and earlier. In BCS24 and later, the software require-
0 ment for Continuity Cards was removed so that customers
0 requesting the cost reduction when testing is not re-
0 quired are not required to order the cards.

0 For U.S. applications only, since the NT6X70-- is re-
0 quired for the COT test, it is recommended that continu-

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0 ity cards continue to be provisioned in most cases.
0 Provisioning Continuity Cards on CCS7 DTCs should be con-
0 sidered standard. Only per customer request can they be
0 omitted.

0 For Canadian applications only, many customers have a
0 high penetration of digital trunk facilities and do not
0 require the Continuity card. Provision these cards only
0 on DTCs whose trunks support analog facilities at some
0 point in the end-to-end connection of the trunk.

0 (viii) Refer to Section 3.5 for more information on the DTC, DCM
0 and LTC.

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0 1.2.15 Link Interface Module (LIM)/Link Peripheral Processor (LPP)

0 (a) General Description

0 Software has been introduced to allow the Link Interface Module
0 (LIM), also known as Link Peripheral Processor (LPP), to support
0 CCS7 signaling links in Service Switching Point (SSP) and Signal-
0 ing Point (SP) end office applications.

0 The NT9X70__ LIM cabinet was introduced to support CCS7 signaling
0 links only in Signal Transfer Point (STP) offices initially. At
0 a Service Switching Point (SSP) or Signaling Point (SP) end of-
0 fice, trunk peripherals were provisioned to interface the signal-
0 ing links, and NT6X31__ MS7E frames were provisioned to perform
0 message handling functions. This configuration is illustrated in
0 Figure 315.5. Note the requirement for nailed connections
0 through the network between the MSB7 and trunk peripherals, thus
0 consuming network capacity. As well, additional hardware (LTC,
0 DTC or DCM ports) are required to interface the signaling links.
0 The MSB7 is the limiting component in CCS7 messaging capacity.

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In BCS30, software is introduced which allows the LIM to interface CCS7 signaling links in an SSP/SP office. This configuration is illustrated in Figure 315.6. With a junctored network, ISUP call processing messages from the LIM are routed via the MS and "bounced" off the Computing Module, then through the network to the DTC. In Enhanced Network (E-Net) applications, messages bypass the CM and are routed directly through the Message Switch.

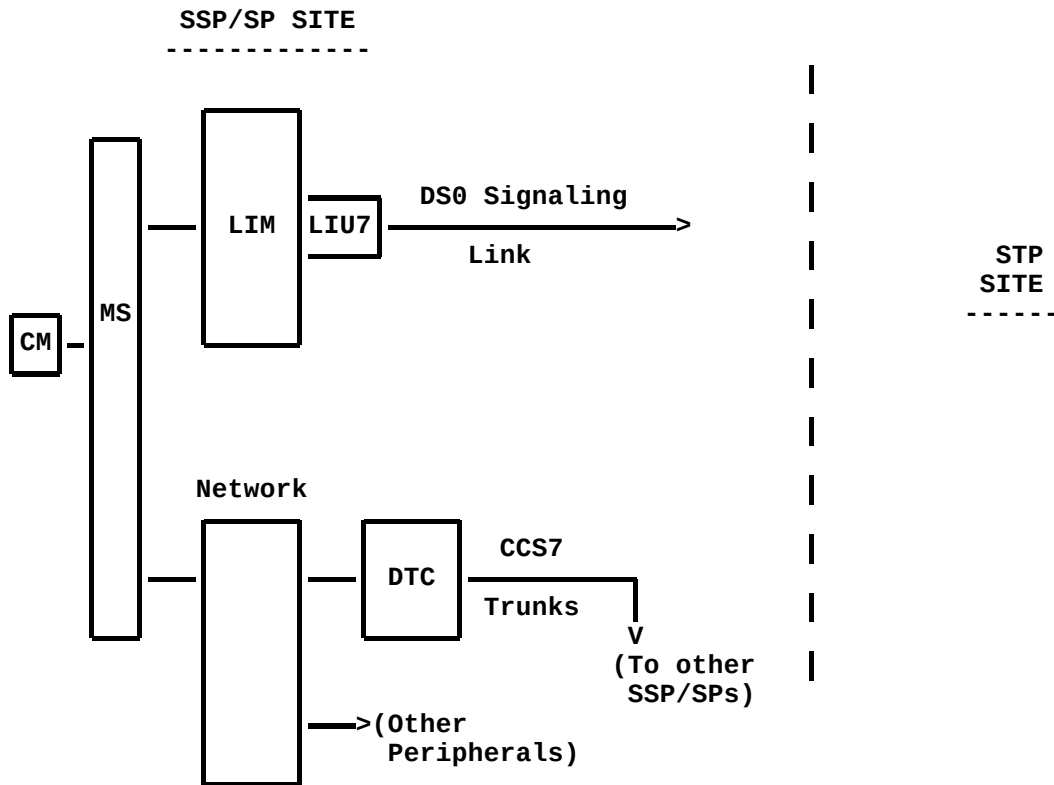


Figure 315.6 CCS7 Architecture with LIM in SSP/SP

(b) Reference

Chapter 3, Section 3.9 DMS Supernode and Network Subsystem

(c) Provisioning Considerations:

- (i) The LIM can be provisioned into an office which already contains MS7E frames, subject to the dependencies de-

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0 scribed in the next section. The concurrent use of MSB7s
0 and LIMs will not be supported over BCS upgrades, how-
0 ever. All CCS7 links assigned to MSB7s must be moved
0 over to LIMs during the same BCS, and the MS7E frames set
0 to an inactive state and/or removed.

0 (ii) The LIM can only be provisioned into a Supernode-based
0 SSP/SP. Offices equipped with the NT40 core can only use
0 MS7E peripherals for CCS7 applications.

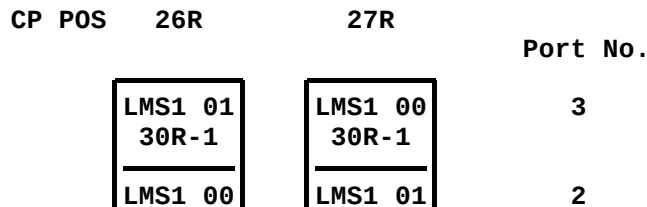
0 (iii) In the DMS-Core Message Switch, NT9X23BA paddleboards
0 must be used to interface DS-30 links from the LIM.

0 Provision four (4) NT9X17AA MS 4-Port CP (two CP per MS)
0 for every two LIM cabinets connected to the Message
0 Switch. The 4-Port cards must be provisioned in pairs on
0 the MS so that the DS-30 ports from a LIM cabinet may be
0 spread across adjacent 4-Port cards. Also provide one
0 (1) NT9X23BA DS-30 Paddleboard for each NT9X17AA MS
0 4-Port CP provisioned.

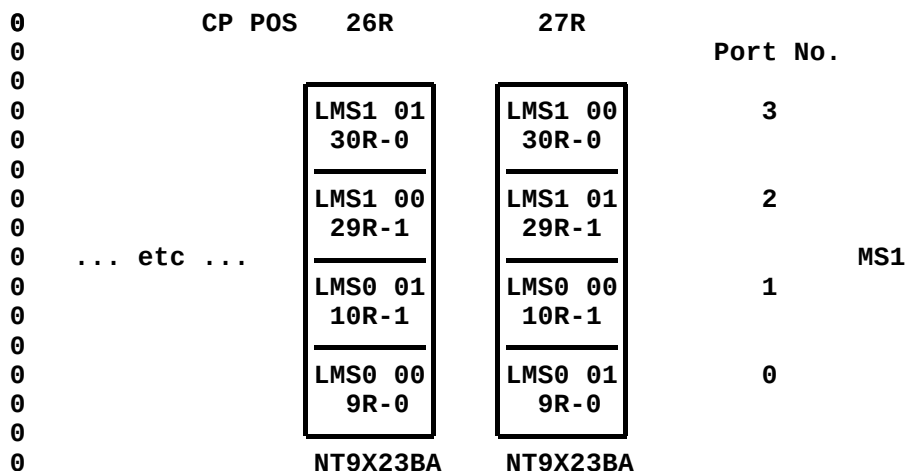
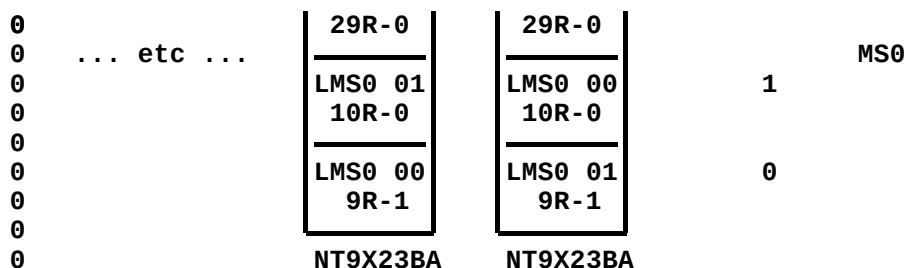
0 Two DS-30 ports are connected from each LMS (LMS0 and
0 LMS1) to each MS (MS0 and MS1) as shown in Figure 315.7.
0 A total of eight (8) ports i required per LIM. Each MS
0 port is shown with the specific port on the specific LIM
0 cabinet to which it connects. For example:

0 LMS1 01 indicates LMS Side 1 LIM 01
0 29R-0 CP Pos 29R Port 0

0 In an STP office, a dedicated DMS-Core with dedicated MS
0 is used to interface the LIMs. In an SSP/SP office, how-
0 ever, the existing DMS-Core is used and the DS-30 links
0 from the LIMs must share DS-30 ports with existing equip-
0 ment. Thus, the CP POS shown in Figure 315.7 will have
0 to be adjusted to suit the individua office being engi-
0 neered. In general, additional LIM cabinets will be con-
0 nected to additional DS-30 port cards using the same
0 pattern as shown in the figure.



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0 Figure 315.7

0 MS DS-30 Port Connections from LMS (Two LIM Configuration)

0 Note: Port 0 of CP position 28R and 29R is reserved for an IOC con-
0 nection by the system boot software, and so cannot interface to the
0 LMS.

0 (iv) LIM hardware provisioning is the same as for STP applica-
0 tions; refer to the STP section of this document for de-
0 tails. This section discusses the provisioning of
0 signaling links and multiple LIM cabinets at the SSP/SP
0 office.

0 The CCS7 Network is classified in two ways; the FULLY AS-
0 SOCIATED NETWORK and the QUASI ASSOCIATED NETWORK. The
0 Fully Associated Network has every Service Switching
0 Point (SSP - End Office) connected directly to the other
0 SSPs. In this mode, the links are called F-links. The
0 number of F-links is equal to $n(n-1)$; where n = number of

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0 SSP nodes. The Quasi Associated Network has every SSP
0 connected to other SSP through a Signaling Transfer Point
0 (STP). In this case, the STPs serve as the hub for the
0 signaling networks. The STP is configured in mated
0 pairs. An SSP/SP is connected to the Home STP pair with
0 A-links. The number of A-links is equal to $2n$; where n =
0 number of SSP nodes. The SSP may also be connected to a
0 Remote STP pair by E-links. Typically for SSP/SPs, it is
0 the A or E links that are provisioned based on traffic
0 figures.

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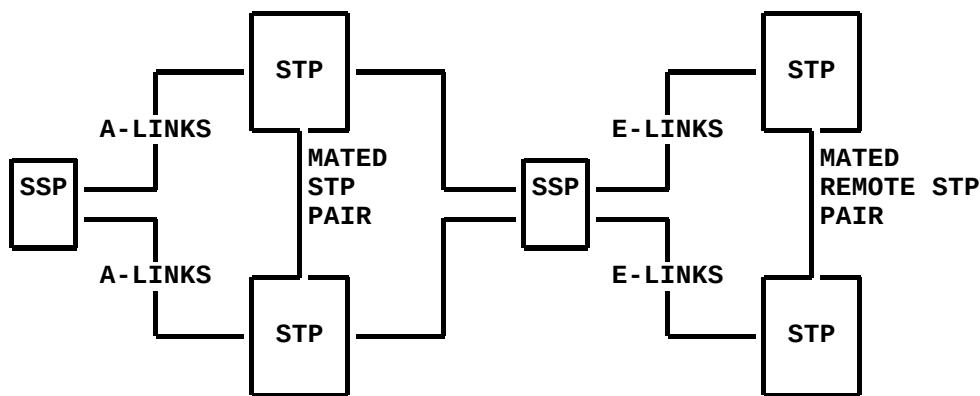
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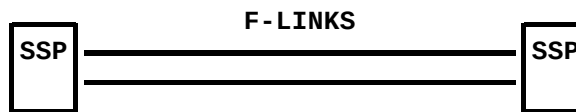
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QUASI-ASSOCIATED SIGNALING



FULLY-ASSOCIATED SIGNALING

Figure 315.8: CCS7 SIGNALING METHODS

Each CCS7 signaling link operates at 56 kbit/s in each direction. If subrate links are equipped, the calculations below can be modified according to the data transmission rate actually used. The signaling links are provisioned as redundant pairs per destination (STP pairs or other SSP/SP) to provide load sharing of message traffic. Each link is engineered to maximum 40% occupancy such that under a link failure condition, the failed link traffic can be routed to a parallel link or links. For example, if two links were engineered, with one failing, the parallel link would be able to continue to route traffic up to its maximum of 80% occupancy limit. Therefore, the message capacity of one link is:

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0 (56 kbit/s x 2 directions x 40% occupancy)
0 ----- = 5600 octet/s
0 (8 bits per octet)

0 Telecom Canada uses an occupancy figure of 40%; the re-
0 sulting message capacity is then 5600 octet/s for this
0 application.

0 In the case of 100% ISUP calls, assuming 25 octets per
0 message (msg) and 11,200 octet/s link capacity, a signal-
0 ing pair can support:

0 11,200 octet/s

0 ----- = 448 ISUP msg/s maximum

0 25 octet/msg

0 11,200 octet/s
0 ----- = 140 msg/s (assuming TCAP msg length
0 80 octet/msg averages 80 octets)

0 The engineered capacity of one link is derated at 85% of
0 its maximum to account for message length variability.
0 As a result, the maximum engineered link limit is:

0 ISUP msgs/sec:

0 448 msgs/sec X 0.85 = 381 msgs/sec at 0.8E

0 TCAP msgs/sec:

0 140 msgs/sec X 0.85 = 119 msgs/sec at 0.8E

0 Links will be provisioned to operate at 0.4E so a minimum
0 of two (2) links will always be required.

0 Calculate the required number of signaling links as fol-
0 lows:

0 Abbreviations used:

0 ACB - Automatic Call Back
0 ACCS - Automatic Calling Card Service
0 AR - Automatic Recall
0 BNS - Billing Number Screening
0 CLI - Calling Line Information
0 CODP - Central Office Data Processor
0 DB Query - Database Query

0 Host - Signalling Interface Equipment
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0 DN Valid - Directory Number Validation
0 HDBHCA - High Day Busy Hour Call Attempts
0 ISUP - Integrated Services User Part
0 NMS - Network Message Service
0 PIN - Personal Identification Number
0 PVN - Private Virtual Networking
0 RAG - Ring Again
0 TCAP - Transaction Capabilities Application Part
0 TS - Trunk Signaling

0 A) ISUP HDBHCA
0 ----- X (6 or 12) = ISUP msg/sec
0 3600

0 NOTE: When calculating the ISUP msg/sec in an Access Tandem
0 or Toll office, 12 msg/CA must be used due to the in-
0 coming and outgoing portions of the message in the
0 Access Tandem office. For an end office, 6 msg/sec
0 must be used.

0 B) DB Query HDBHCA
0 ----- X 2 = DB Query msg/sec
0 3600

0 NOTE: Types of DB Query messages may include the following:

0 E800/800+/E008
0 ACCS
0 BNS

0 C) PVN wo PIN HDBHCA
0 ----- X 2 = PVN wo PIN msg/sec
0 3600

0 D) PVN with PIN HDBHCA
0 ----- X 4 = PVN with PIN msg/sec
0 3600

0 E) RAG HDBHCA
0 ----- X 4 = RAG msg/sec
0 3600

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0 F) ACB HDBHCA
0 ----- X (13 or 8) = ACB msg/sec
0 3600

0 NOTE: Use 13 for U.S. applications, or 8 for Canadian
0 applications.

0 G) AR HDBHCA
0 ----- X 2 = AR msg/sec
0 3600

0 H) CLI HDBHCA
0 ----- X 2 = CODP msg/sec
0 3600

0 I) DN Validation HDBHCA
0 ----- X 2 = DN Validation msg/sec
0 3600

0 J) NMS HDBHCA
0 ----- X 4 = NMS msg/sec
0 3600

0 K) B + C + D + E + F + G + H + I + J = TCAP msg/sec

0 L) The total links required to support the number of mes-
0 sages that will be generated as a result of HDBHCA and by
0 invoking features is calculated as follows:

0	Total ISUP msgs/sec	Total TCAP msgs/sec	Total # links
0	----- + -----		= at 0.8E
0	381 msgs/sec	119 msgs/sec	

0 Since links are provisioned at 0.4E,

0 Total # Links required = 2 X Total # links at 0.8E

0 NOTE: When provisioning A or E links to the STP pair, round
0 up the total number of links to the next EVEN number.

0 Provision LIM cabinets and LIU7s as required to support
0 the calculated quantity of links. Refer to the STP sec-
0 tion of this document for details.

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0 (v) In the case where the minimum of 2 signaling links is
0 connected to another node, it is recommended for reli-
0 ability that they be assigned to different channel banks
0 and different DS1 facilities.

0 (vi) With an MSB7-based system, TCAP messages longer than 40
0 bytes have to be formatted into packets before passing
0 through the network. With a LIM-based system, full-
0 length messages can be sent, as is. The resulting real
0 time impact using the LIM is 0.550 milliseconds per TCAP
0 message.

0 The real time impact per ISUP message is as follows:

0 ISUP half call with short IAM: 1.053 milliseconds
0 ISUP half call with long IAM : 1.228 milliseconds

0 where:

0 ISUP half call = line to trunk or trunk to line call
0 IAM = Initial Address Message

0 (vii) It is necessary to synchronize all equipment to which
0 signaling links are interfaced, in order that the posi-
0 tion of the bits in the digital data stream can be recov-
0 ered.

0 In the special case in which all LIU7s in a LIM are
0 equipped with V.35 Interface Paddleboards; that is, all
0 links employ V.35 protocol, then there is no need for ex-
0 ternal timing. The timing signal for V.35 is imbedded in
0 the protocol.

0 However, where DS0 interfaces are employed, a master tim-
0 ing reference is required. Typical equipment in a DMS
0 office using DS0 interfaces includes:

- 0 - LIU7s on LIMs,
0 - Channel banks with data services,
0 - NT6X55AB DS0A Interface CP on DTCs.

0 One way of supplying timing is to designate one piece of
0 equipment as the master timing source and all others as
0 slaves. This method is not reliable because if the mas-
0 ter equipment fails then communication between all slave
0 equipment also fails.

The TSG should be located in or near the channel bank frame. Each Timing Output Card provides ten (10) ports. The following TSG equipment is required, and should be supplied by the telco.

Description	Part Number
DCD-400 Shelf Assembly	990-40000-01
Fuse & Alarm Card	990-40014-01
Clock Input Card	990-40010-01
Stratum 3 Clock	990-40013-01
Timing Output Card	990-40011-01
Timing Output Card (Hot Spare)	990-40011-01
Matrix Control Card	990-40015-01

For synchronization of the LIM, each NT9X78AA DS0A Paddleboard (PB) can be interfaced individually to the TSG, or timing can be supplied to the LMS for distribution to all LIU7s in the LIM. LIU7s equipped with NT9X78BA Enhanced DS0A Paddleboards do not have individual timing inputs; timing for this type of PB must be distributed via the LMS.

Where channel banks are used to interface signaling links to DS1 facilities, the channel banks and the LIM can both be timed from the same TSG. The office may have existing channel banks with spare channels that could be used for signaling links. Primary and secondary timing references for the TSG should be derived from the same DS1s that carry the signaling links. See Figure 315.9.



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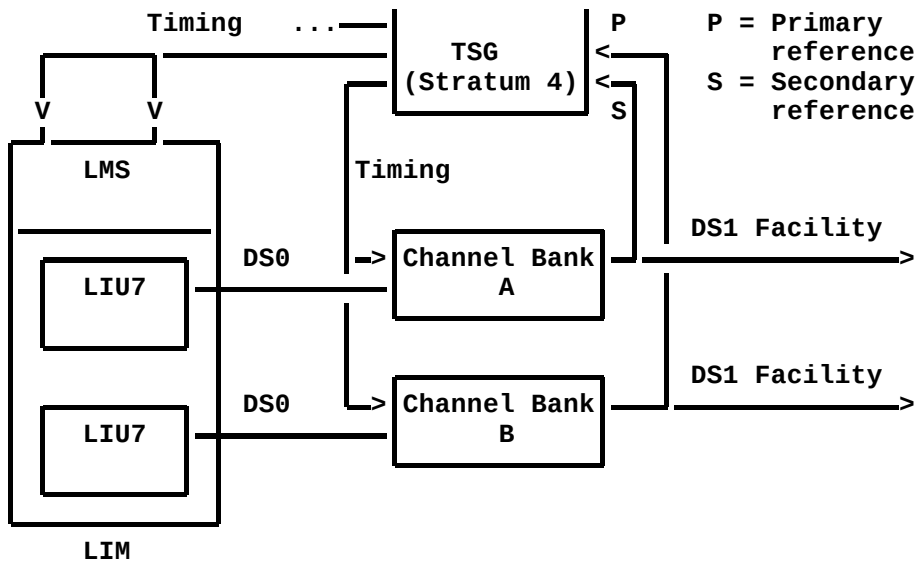


Figure 315.9 Timing Supply - LIM and Channel Banks

Alternatively, the internal Timing Supply Unit (TSU) card on the channel banks could be used as the timing reference, thus eliminating the need for an external TSG. This configuration has limited application since a maximum of two LIU7s can be equipped. Timing must be interfaced directly from the two channel banks to the two DS0A Interface PBs. Only NT9X78AA type paddleboards can be used. It is not permissible to route the timing to the LMS and feed more than two LIU7s, because timing from the two channel banks will be out of phase, and two timing references are required for reliability.

It is not permitted to synchronize the LIU7s from the timing output of NT6X55AB DS0A Interface CPs. This output is present for lab test purposes only. Should a failure occur in this configuration, there would be no way to associate it at the MAP with a CCS7 link failure.

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0 1.2.16 Ethernet Interface Unit (EIU)

0 (a) General Description

0 1) The Ethernet Interface Unit is an interface between
0 DMS-BUS and an Ethernet Local Area Network (LAN). This
0 allows for support of a variety of industry standard ex-
0 ternal communications interfaces (i.e. synchronous, asyn-
0 chronous) and attachment of computers and work stations
0 to the switch. It is based on the industry standard IEEE
0 802.3 10BASE5.

0 These external processors (computers and work stations)
0 and communications interfaces make it possible to support
0 a number of applications. Examples are: Message Detailed
0 Recording for CCS7 Messages (MDR7) on a work station,
0 work station based Service Control Point (SCP) database
0 management, work station based Maintenance and Adminis-
0 tration Position (MAP), etc.

0 The EIU is thus a facilitator of flexible communications
0 between DMS and external systems.

0 Figure 315.10 shows a DMS SuperNode interfacing with an
0 Ethernet LAN.

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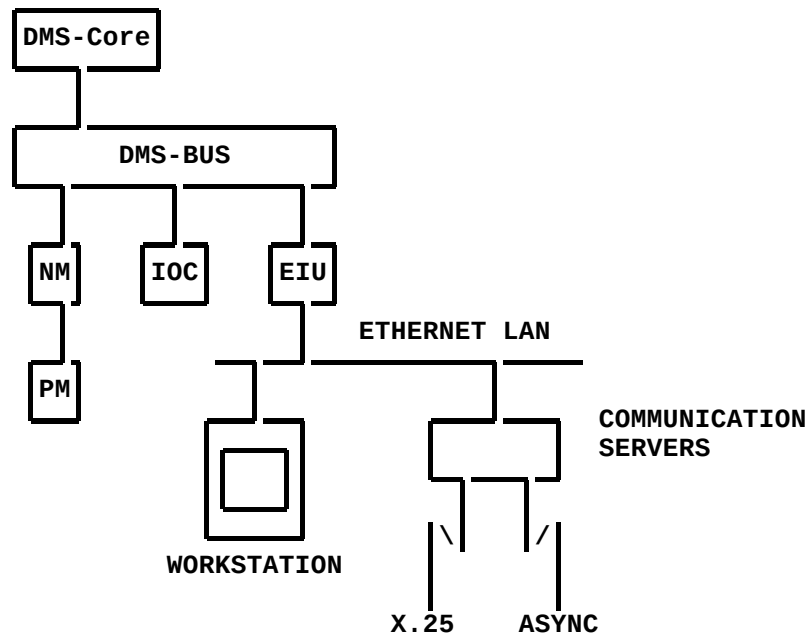


Figure 315.10: A DMS SuperNode Interfacing With An Ethernet LAN

- 2) The Ethernet Interface Unit (EIU) acts as a "gateway" between the DMS-BUS and an Ethernet LAN supporting user data links. It acts as a concentration point between the peripherals (terminals and modems) and the DMS-BUS. The actual peripherals are not terminated on this unit, but on remote concentrators. These remote peripherals allow connection of HDLC (X.25, etc.) and asynchronous (MAP terminals, printers, etc.) terminal equipment to the system. The Ethernet also provides a linkage between DMS and workstations used for attached processing.

- 3) With the introduction of the EIU, each NT9X70AA can house up to twenty-four (24) individual LIU7s or EIUs, or a combination of both. Each NT9X70BA can house up to thirty-six (36) individual LIU7s or EIUs, or a combination of both.

A LIM cabinet containing an EIU is deployed in a DMS SuperNode to establish Ethernet connectivity. Figure 315.13 shows the placement of a LIM cabinet with an EIU on a DMS SuperNode.

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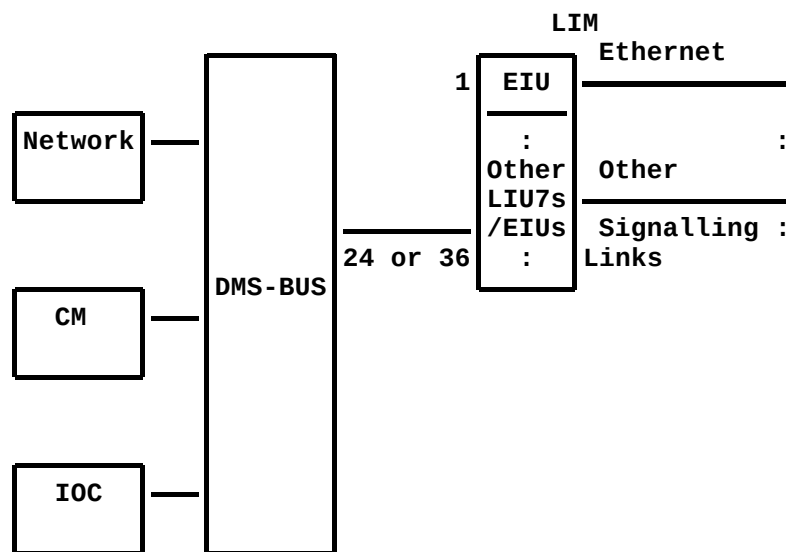


Figure 315.11: A DMS SuperNode equipped with an EIU in a LIM (Local message switches not shown for clarity.)

(b) Reference

None

(c) Provisioning Considerations:

(i) Ethernet Addresses

One area of unique datafill pertains to the EIU. By industry convention, Ethernet addresses are to be unique everywhere. For this reason, a 48-bit number is used. It is divided into several fields to identify manufacturers and individual units. In typical workstation applications, the Ethernet address is burned into a PROM device on the interface circuit pack. In order to facilitate DMS manufacturing and operations, these numbers will be datafilled.

The manufacturer field consists of a 24 bit number assigned by the IEEE. NT has been assigned such a number.

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0 This leaves 16 million Ethernet addresses to be assigned
0 to NT products. The remaining 24 bits are partitioned
0 internally by NT. EIUs have been assigned 20 bits
0 (greater than 1 million addresses) out of this range.
0 Addresses are datafilled on each SuperNode with EIUs as a
0 range of 16 addresses. This allows 65536 ranges of ad-
0 dresses (16 bits).

0 NTs IEEE address range is assigned to be:
0 00 00 AE F0 00 00 ---> 00 00 AE FF FF FF
0 where 00 00 AE = 0000 0000 0000 0000 1010 1110
0 = IEEE assigned 24 bit NT address

0 The IEEE-assigned, 24 bit NT address is (from least sig-
0 nificant to most significant bit):

0 0000 0000 0000 0000 1010 1110

0 which is the order that IEEE wants to see the bits on the
0 LAN.

0 However, when writing down the address for datafill, the
0 convention is to use HEXADECIMAL. Therefore, in HEX the
0 NT address is: 00 00 75 (i.e. Flip the bits in each byte
0 end for end).

0 Hence, NTs IEEE address range is assigned to be:

0 00 00 75 F0 00 00 ---> 00 00 75 FF FF FF.

0 Each Ethernet address needs to be partitioned with some
0 bits for the SuperNode portion and some for the EIU.

0 BNR has suggested 16 EIUs per SuperNode. This means that
0 the EIU number is within the range 00 ---> 1F. Therefore,
0 the SuperNode number is within the range:

0 00 00 75 F0 00 00 ---> 00 00 75 FF FF E0.

0 Note: 00 00 75 F0 00 00 : first SN
0 00 00 75 F0 00 20 : second SN
0 00 00 75 F0 00 40 : third SN
0 00 00 75 F0 00 60 : fourth SN
0 ...

0 This allows for 32K SuperNodes before a new block of ad-
0 dresses is needed.

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0 Datafill restricts the datafill of data table LIUINV to
0 up to four (4) EIUs per SuperNode.

0 The Customer is responsible for providing the appropriate
0 Internet Protocol (IP) Addresses for his network.

0 (ii) The EIU has a relatively low throughput, as compared to
0 the bandwidth of the Ethernet LAN. Additional EIUs per
0 LAN or LANs may be required to reduce the traffic per EIU
0 to an acceptable level. These ratings are characterized
0 at an application level and the traffic loading is appli-
0 cation dependent.

0 In addition, since the EIU acts as a gateway between the
0 LAN and the LIM FBUS, traffic engineering may be required
0 for combinations of EIUs, LIU7s, Application Processor
0 Units (APUs), and Serial Interface Units (SIUs). Traffic
0 based provisioning is required for most configurations
0 using the full LIM cabinet where more than one shelf is
0 populated.

0 (iii) Don't order the software package for EIU.

0 The software packages of the applications which require
0 the EIU would be ordered. The individual packages which
0 make up the software package of a particular application
0 would not be ordered.

0 For example, the software package for the MDR7 (Message
0 Detailed Recording for CCS7 Messages) application is
0 NTXJ91AA. It consists of the following software pack-
0 ages:

0 NTXF19AA TCP/IP Protocols
0 NTXF05AA Ethernet Interface Unit (EIU)
0 NTXN18AA LIU/FBUS Base
0 NTXF20AA LMS on LPP
0 NTXF71AA SuperNode Enhanced Messaging

0 Hence, when the MDR7 application is needed, the fol-
0 lowing software packages are required:

0 NTXJ91AA MDR7

0 The other above software packages are not ordered be-
0 cause they are automatically pulled in via NTXJ91AA.

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0 Check the appropriate software report for availabil-
0 ity and to confirm required supporting packages.

0 | (iv) Minimum BCS-30 software is required to use the NTEX22AA
0 IPF Integrated Processor and FBUS Interface CP.

0 NTXF05AA and NTXF19AA require BCS-31. As mentioned
0 in the above example, these software packages would
0 not be ordered. Instead, the software package of the
0 application which required the EIU would be ordered.

0 | (v) This product requires a DMS SuperNode in the office.

0 | (vi) For detailed provisioning information relating to the EIU
0 and Link Interface Module (LIM), see the section on the
0 Link Interface Module.

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0 1.2.17 CCS7 Message Detail Recording (MDR7)

0 (a) General Description

0 The delivery of advanced network services often requires the
0 interaction of multiple CCS7 networks and the use of resources
0 owned by several telephone operating companies and/or their cus-
0 tomers. As a conduit for internetwork CCS7 traffic, the DMS-STP
0 provides a centralized location for the collection of statistical
0 information that can be used for usage sensitive CCS7 services.

0 The CCS7 Message Detail Recording feature allows the telco to
0 capture the detailed CCS7 message signaling units (MSUs) being
0 transported in the CCS7 network. Information provided by this
0 feature in turn supplies the data that allows recording of ser-
0 vices or allocations of resources among the networks that inter-
0 work to deliver advanced network services.

0 MDR7 uses the DMS-STP Gateway Screening feature (NTX840AA is a
0 prerequisite) to identify which messages are to be tracked. The
0 feature then takes a snapshot of the MTP, SCCP, and TCAP (or
0 ISUP) of the CCS7 message and sends the snapshot across the
0 DMS-Bus to the appropriate Ethernet Interface Unit (EIU), a
0 68020-based IEEE 802.3 interface card that resides in the LPP
0 cabinet. The EIU routes the snapshot over an Ethernet LAN to a
0 customer-provided store-and-forward processor (SFP), where it is
0 processed as required and then forwarded to the customer's
0 mainframe computer.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 | (i) For the initial (BCS31 and BCS32) MDR7 offering, only one
0 pair of Ethernet Interface Units and a single Store and
0 Forward Processor are supported.

0 | (ii) Each EIU pair supports a distinct set of LIU7s which are
0 determined by datafill. The LIU7s carrying the data of
0 interest must be identified and datafilled accordingly so
0 that this information is sent via the MDR7 Ethernet
0 Interface Units.

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0 (iii) MDR7 requires the use of the Ethernet Interface Unit
0 mounted on a Link Interface Shelf in a Link Interface
0 Module (LIM) frame. (The LIM frame is also known as a
0 Link Peripheral Processor (LPP) frame.) The EIU requires
0 a cable (NT9X0190) to the bulkhead and cabling from the
0 bulkhead to the customer-provided Attachment Unit. This
0 cabling is available for standard cable duct applications
0 (NTNX36PZ) or for raised- floor/HVAC ductwork applica-
0 tions (NTNX36PU).

0 Either the two or three-slot EIUs may be used for MDR7.
0 If the office has a NT9X70AA LIM with space available, a
0 three-slot EIU can be used. Otherwise, the two slot EIU
0 should be provided. Refer to the section on EIU
0 provisionig (above) and under the Link Interface Module
0 in the next section.

0 (iv) During the BCS-31/32 Verification Office applications,
0 only a single pair of EIUs will be supplied for MDR7.

0 The Ethernet Interface Unit (EIU) mounts on a NT9X7201 or
0 NT9X7204 Link Interface Shelf and provides one port. Re-
0 fer to API-505 for EIU provisioning information.

0 The physical interface to the Ethernet system is the
0 NT9X85AA Ethernet Access Unit Interface which provides
0 the interface between the Ethernet controller and the Me-
0 dia Access Unit. This interface is compatible with all
0 implementations of Ethernet through external equipment.

0 The EIU throughput supported is as follows:

0 Let a = Busy hour traffic per link in MSU/sec
0 b = Fraction of MSUs recorded (0<b<1)
0 c = mean number of bytes copied per MSU.

0
$$\text{Links supported} = \frac{12 \cdot 1024 \cdot 0.4}{a \cdot b \cdot c}$$

0
$$\text{MSUs recorded/hour} = \frac{3600 \cdot 12 \cdot 1024 \cdot 0.4}{c}$$

0 (v) Up to four pairs of EIUs may be provisioned without con-
0 cern for LIM/LPP traffic engineering. Since the initial
0 MDR7 offering is limited to one EIU pair, LIM/LPP traffic

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0 engineering is not currently required. The message
0 throughput of the EIU pair (12kb/sec) must not be ex-
0 ceeded. This must be managed by datafill, by selection
0 of message type to record and which LIU7s are monitored.

0 (vi) MDR7 is primarily a software feature. Physical details
0 for the hardware associated with MDR7 are documented in
0 the section on the Link Interface Module, under STP (fol-
0 lowing).

0 (vii) EIUs are provided in pairs with one active unit and one
0 hot spare unit which carries test traffic. In the event
0 of failure of the active unit, the spare takes over
0 within ten seconds.

0 (viii) The feature package for MDR7 is NTXJ91AA. The DMS-STP
0 Gateway Screening feature (NTX840AA) is a prerequisite,
0 since it is used to identify which messages are to be
0 tracked.

0 (ix) Traffic information for a specific LIU7 is assigned to
0 an EIU by datafill. The customer must determine which
0 LIU7s are carrying the information of interest and
0 datafill accordingly.

0 (x) The EIU has 4 Mbytes of memory which is dedicated to the
0 MDR7 application. MDR7 requires 4 Kbytes of memory in the
0 LIU7 and 410 Kbytes in the DMS Core.

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0 2.0 Signalling Transfer Point

0 2.1 Introduction

0 The Signalling Transfer Point (STP) forms a node in a CCS7 network. The STP provides a message switching function between nodes in the network. It does not source or sink CCS7 messages. It performs message discrimination and routing along with signalling link and network management functions.

0 The STP is configured as a mated pair interconnected by signalling links. A minimum of two links should be provisioned between mated pairs. In the event of partial or complete failure of one STP, the mate STP will provide uninterrupted message transfer for all connected signalling points.

0 The STP is comprised of five major subsystems (reference Figure 315.12):

0 Link Interface Module (LIM) - This houses the individual Link Interface Units (LIU7s), the Local Message Switch (LMS), and one or more Ethernet Interface Units (EIU). A LIM cabinet containing an EIU is deployed in a DMS SuperNode to establish Ethernet connectivity. The LIM is also referred to as the Link Peripheral Processor (LPP).

0 Dual Plane Combined Core Cabinet (DPCC) - This is a standard DMS-Core configuration consisting of a Computing Module (CM), two Messages Switches (MS) (one per plane) and a System Load Module (SLM).

0 Input/Output Equipment - This is the standard DMS-100 IOE frame. It is equipped with a disk drive, mag tape drive plus some additional I/O terminal controller cards to interface printers/VDUs etc.

0 OAS - Office Alarm System. A Trunk Module Equipment (TME) frame will be equipped with an Alarm Cross Connect (AXU) shelf and two (2) Maintenance Trunk Modules (MTM) to provide alarming functions for the STP office.

0 DSNE - A Double Shelf Network Equipment frame will be equipped with one (1) duplicated network (one network module per plane) to interface the MTM shelves to the Enhanced Core Message Switch.

0 The STP will operate under the same environmental conditions as all DMS-100 family equipment.



0 2.2 Features

0 None

0 2.3 Equipment Provisioning

0 2.3.1 Dual Plane Combined Core (DPCC)

0 (a) General Description

0 The Dual Plane Combined Core Cabinet (DPCC) is a standard
0 DMS-Core configuration consisting of a Computing Module (CM), two
0 Message Switches (MS) (one per plane) and a System Load Module
0 (SLM).

0 Provision the following equipment as required for STP applica-
0 tion. Provide additional equipment as detailed in Section 3.9
0 DMS Supernode and Network Subsystems.

0 (b) Reference

0 Chapter 3, Section 3.9 DMS Supernode and Network Subsystems

0 (c) Provisioning Considerations:

0 (i) Use current memory provisioning processes for determining
0 memory requirements.

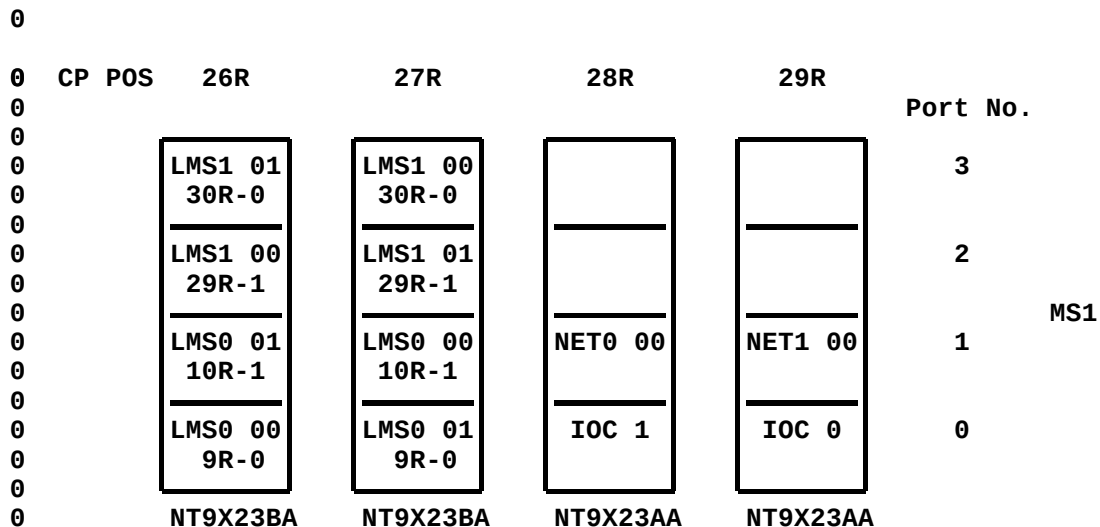
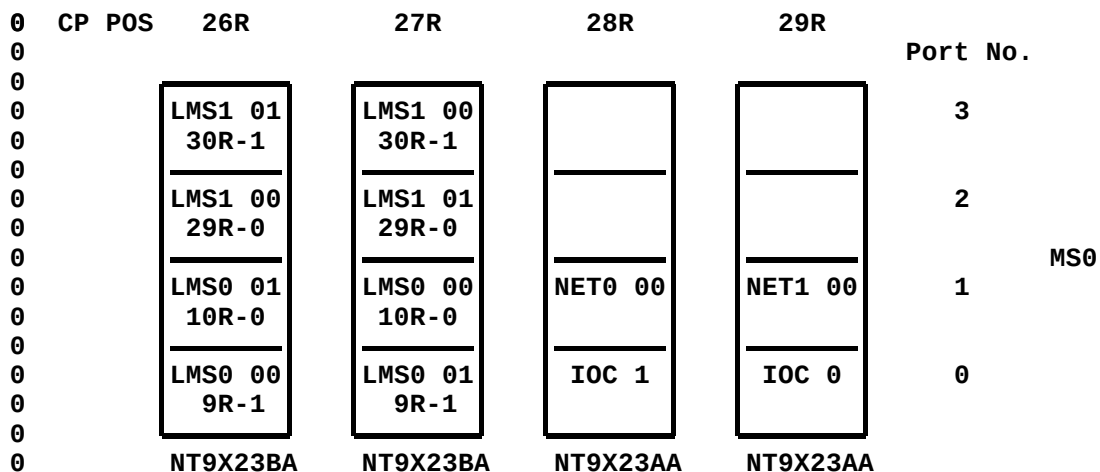
0 (ii) System Load Unit

0 The DPCC cabinet comes equipped with the SLM Ext Shelf
0 Assembly. The SLM must always be provisioned for STP ap-
0 plications. Equip as detailed in Section 3.9 DMS Super-
0 node and Network Subsystems.

0 (iii) Message Switch

0 Provide four (4) (two per MS) NT9X17AA MS 4-port CP to
0 interface the message links from the network and the IOC
0 shelf. Provide four (4) NT9X23AA DS-30 Paddleboards (one
0 per NT9X17AA).

0 In addition, provide four (4) NT9X17AA (two per MS) for
0 each two LIM cabinets connected to the Message Switch.



MS DS-30 Port Connections For Two LIM Configuration

Figure 315.13

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0 2.3.2 Link Interface Module

0 (a) General Description

0 The Link Interface Module (LIM) houses the individual Link Inter-
0 face Units (LIU7s) and the Local Message Switch (LMS). It is
0 also referred to as the Link Peripheral Processor (LPP). The
0 NT9X70BA Link Interface Module (LIU7/DCP) Cabinet can mount up to
0 36 LIU7s and is an enhancement to the NT9X70AA Link Interface
0 Module Cabinet which can mount up to 24 LIU7s.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) Local Message Switch Shelf

0 Provide one (1) Local Message Switch Common CP, NT9X71AB
0 to equip LMS shelf. This CP fill equips the LMS for PBUS
0 Parity Protection.

0 Provide two (2) NT9X13DB CPU CP per LMS Shelf. Offices
0 must be equipped with BCS28 or higher. The NT9X13DB re-
0 places NT9X13DA on existing offices when PBUS Protection
0 Parity is required.

0 (ii) Link Interface Shelf (LIS)

0 1) Provision one (1) NT9X72AD, Link Interface Unit Shelf
0 Common Circuit Pack Fill to equip each LIS on the
0 NT9X70AA Cabinet for use with the 2-slot LIU. This
0 packfill is for new equipment only. Note that all
0 three shelves must be equipped with Common CP. Each
0 LIS shelf can support up to eight (8) LIU7s.

0 Provision one (1) NT9X72BA, Link Interface Unit Shelf
0 Common Circuit Pack Fill to equip each LIS on the
0 NT9X70BA Cabinet. Note that all three shelves must
0 be equipped with Common CP. Each LIS shelf can sup-
0 port up to 12 LIU7s.

0 2) For the bottom-most LIS on the frame, provision two
0 (2) NT9X79BA, F-Bus Extender Paddleboard with termi-

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0 nation. On each of the other two LIS provision two
0 (2) NT9X79AA, F-Bus Extender Paddleboard.

- 0 3) The Signalling Data Links (SDLs) are load sharing and
0 they are always provisioned in pairs; one for the STP
0 and one for the mate STP. The figures for message
0 length (octets per message) are NT recommended esti-
0 mates and can be revised per customer input. To cal-
0 culate the required quantity of paired SDLs, use the
0 following formula:

0 Let A = HDBH Trunk Signaling = input
0 Call Attempts

0 B = Trunk Signalling Octets = 25
0 per message

0 C = HDBH 800 Database Query = input
0 Call Attempts

0 D = 800 Database Query = 80
0 Octets per message

0 E = HDBH ACB/AR Call = input
0 Attempts

0 F = ACB/AR Octets per = 80
0 message

0 G = HDBH Ring Again Call = input
0 Attempts

0 H = Ring Again Octets per = 80
0 message

0 I = HDBH Private Virtual = input
0 Networking (PVN) without
0 Personnal ID Number (PIN)
0 Call Attempts

0 J = PVN without PIN Octets = Table 1
0 per message

0 K = HDBH PVN with PIN Call = input
0 Attempts

0 L = PVN with PIN Octets per = Table 1
0 message

0 M = Average Octets per = input
0 message

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$$\begin{array}{l} 0 \\ 0 \\ 0 \end{array} \quad \begin{array}{l} (AXBX6) + (CXDX2) + (EXFX6) + (GXHX4) + (IXJX2) + (KXLX4) \\ M = \frac{\text{-----}}{3600} \end{array}$$

0

$$\begin{array}{l} 0 \\ 0 \\ 0 \end{array} \quad \begin{array}{l} \\ N = \text{Link Pairs required} = \frac{M}{11,200 \text{ oct/sec}} \end{array}$$

0

0 The following table is used to determine the average
0 message length for PVN calls. For a PVN call, the SSP
0 invokes a query to SCP for routing information and
0 the SSP responds. If a PIN number is required, the
0 SSP invokes a second query to the SCP.

0

Table 1

0 Use the following parameters to calculate the message length
0 for PVN calls. (all measurements in octets)

0 QUERY to SCP

- 0 1) National Call = 58
- 0 2) International Call = 62
- 0 3) Remote Access = 85
- 0 4) For a call carrying traveling class mark (TCM), add 8
0 octets to 1 and 2 above
- 0 5) For calls blocked by Automatic Call Gapping (ACG),
0 add 5 octets to 1,2 and 3 above.

0 RESPONSE returned by SCP

- 0 1) Public Routing no billing required = 66
- 0 2) Public Routing billing required = 121

0
0
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- 0
0
- 3) Private Routing no overflow to public network and no
billing = 71
- 0
0
- 4) Private Routing can overflow to public network and no
billing = 115
- 0
0
- 5) Private Routing can overflow to public network and
billing = 208
- 0
0
- 6) For calls requiring ACG, add 30 octets to 1,2,3,4 and
5 above

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0 SCP requests PIN NUMBER

0 1) Message to SSP = 34

0 2) Response to SCP = 37

0 4) The individual SDLs terminate at the Link Interface
0 Unit (LIU7). One (1) LIU7 will support one (1) SDL.
0 One NT9X7201 LIS will support up to eight (8) LIU7s
0 up to a maximum of 24 LIU7s per NT9X70AA LIM cabinet.
0 One NT9X7204 LIS will support up to 12 LIU7s up to a
0 maximum of 36 LIU7s per NT9X70BA LIM cabinet. Addi-
0 tional LIM cabinets may be provisioned up to a maxi-
0 mum of 17 LIMs. The office is currently limited to a
0 maximum of 408 signalling links.

0 To support the signalling links, provisionable inter-
0 face paddleboards are required. There are two types
0 of paddleboards, one to interface V.35-protocol sig-
0 nalling links, the other to interface DS0A-protocol
0 signalling links. The two types may be mixed within
0 the LIS.

0 The NT9X77AA V.35 Interface Paddleboard supports one
0 V.35 signalling link. It can operate at the full
0 V.35 rate (56 kbit/s) or at the following subrate
0 speeds: 2.4, 4.8, 9.6 and 19.2 kbit/s. Optional
0 software is required for subrate opera- tion (see
0 Software Packages). V.35 Data Sets, if required, are
0 to be furnished by the customer for this application.

0 The NT9X78AA DS0A Interface Paddleboard supports one
0 DS0A signalling link.

0 The NT9X78BA Enhanced DS0A Interface Paddleboard sup-
0 ports one DS0A signalling link. It is enhanced from
0 the NT9X78AA paddleboard by the addition of DS0A
0 loopback and BERT capabilities for testing purposes.
0 The External Composite Clock Terminator included in
0 the NT9X78AA CP was removed in the NT9X78BA. Pro-
0 vision the NT9X78BA paddleboard only when interfacing
0 a DS0A signalling link and when Enhanced Maintenance
0 feature is required (BCS28 or higher). Otherwise,
0 provision NT9X78AA.

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0 Each 2-slot LIU7 is composed of the following CPs:

0 - One (1) NT9X78AA, DS0A Interface Paddleboard,
0 OR One (1) NT9X78BA, Enhanced DS0A Interface
0 Paddleboard,
0 OR One (1) NT9X77AA, V.35 Interface Paddleboard,

0 AND:

0 - One (1) NT9X76AA, STP - Signaling Terminal CP
0 - One (1) NTEX22AA, IPF Integrated Processor and
0 FBUS CP

0 These three cards make up a single Link Interface
0 Unit.

0 Each 3-slot LIU7 is composed of the following CPs:

0 - One (1) NT9X78AA, DS0A Interface Paddleboard,
0 OR One (1) NT9X78BA, Enhanced DS0A Interface
0 Paddleboard,
0 OR One (1) NT9X77AA, V.35 Interface Paddleboard,

0 AND:

0 - One (1) NT9X76AA, STP - Signaling Terminal CP
0 - One (1) NT9X13CA, Link General Processor CP
0 - One (1) NT9X75AA, F-Bus Interface CP

0 These four cards make up a single Link Interface
0 Unit.

0 The 2-slot (shrink) LIU7s can mount on the existing
0 NT9X70AA LIM cabinets or the NT9X70BA cabinets. The
0 3-slot LIU7s can mount on the NT9X70AA LIM cabinets
0 only; not on the NT9X70BA cabinets.

0 5) Provide one (1) NT9X0145 DS30 Cable Assembly per each
0 DS0A Interface PB, Enhanced DS0A Interface PB, or
0 V.35 Interface PB. This cable connects the
0 paddleboard to the LIM cabinet bulkhead (on the
0 NT9X70AA Cabinet only). Note that switchboard cabl-
0 ing is also required from the outside of the
0 bulkhead.

0 Provide one (1) NT9X0193 DS30 Cable Assembly per each
0 DS0A Interface PB, Enhanced DS0A Interface PB, or
0 V.35 Interface PB. This cable connects the

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0 paddleboard to the LIM cabinet bulkhead (on the
0 NT9X70BA Cabinet only).

0 6) Provide two (2) NT9X19AA Filler Face plates and one
0 (1) NT9X19BA Paddleboard filler plate for each une-
0 quipped LIU7 position on a LIS shelf equipped with
0 the NT9X72BA CP fill.

0 Provide three (3) NT9X19AA Filler Face plates and one
0 (1) NT9X19BA Paddleboard filler plate for each une-
0 quipped LIU7 position on a LIS shelf equipped with
0 the NT9X72AA/AC fill.

0 (iii) Ethernet Interface Unit (EIU)

0 1) The EIU consists of a three-card slot entity (not
0 counting the paddleboard) on the NT9X70AA and a two-
0 card slot entity (not counting the paddleboard) on
0 the NT9X70BA.

0 2) The three-card slot EIU entity consists of two (2)
0 circuit packs, one (1) filler face plate, and one (1)
0 paddleboard:

0 NTEX22AA Integrated Processor and FBUS Interface CP
0 NT9X84AA Ethernet Interface CP
0 NT9X19AA Filler Face Plate
0 NT9X85AA Ethernet Access Unit Interface PB

0 The EIU mounts on the Link Interface Shelf (LIS) of
0 the NT9X70AA cabinet.

0 On the NT9X70AA, each LIS shelf can mount up to eight
0 (8) EIUs or LIU7s, or a combination of both.

0 For each EIU, one (1) NT9X0190 Ethernet Cable Assem-
0 bly is required to cable from each EIU Paddleboard to
0 the LIS Bulkhead.

0 For field applications only, if EIUs will be mounted
0 on NT9X70AA, one (1) NT9X70AZ Product Change Kit for
0 EIU Retrofit is required per NT9X70AA. This will
0 provide the proper bulkheads (on each LIS shelf)
0 which will be compatible with the 15-pin D-type con-
0 nector.

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- 0 3) The two-card slot EIU entity consists of two (2) circuit packs and one (1) paddleboard:
0

0 NTX22AA Integrated Processor and FBUS Interface CP
0 NT9X84AA Ethernet Interface CP
0 NT9X85AA Ethernet Access Unit Interface PB

0 The EIU mounts on the Link Interface Shelf (LIS) of
0 the NT9X70BA cabinet.

0 On the NT9X70BA, each LIS shelf can mount up to
0 twelve (12) EIUs or LIU7s, or a combination of both.

0 For each EIU, one (1) NT9X0190 Ethernet Cable Assembly is required to cable from each EIU Paddleboard to the LIS Bulkhead.
0

0 Provisioning of EIUs is application-dependent. That is, the quantities required and their configuration is determined by a combination of product, software, and traffic engineering criteria.
0

0 The NT9X84AA will support one (1) Ethernet communications link.
0

- 0 4) The NT9X85AA is a paddleboard located behind the NT9S84AA. The physical interface to the Ethernet system, it is a 25-pin D-type connector which provides the interface between the Ethernet controller and the Media Access Unit (MAU).
0

0 There is an industry standard 15-pin AUI connector located at the LIS Bulkhead. This is a generic interface and is supported as an industry standard (IEEE 802.3 10BASE5 implementation). Note that this interface is compatible with all implementations of Ethernet through external equipment.
0

0 The NT9X0190 Ethernet Cable Assembly is a cable with a 25-pin connector at one end and a 15 pin connector at the other end. It cables from the NT9X85AA to the LIS Bulkhead.
0

0 (iv) C-Link Provisioning

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0 2.3.3 Input/Output Equipment Frame

0 (a) General Description

0 The Input/Output Equipment Frame (NT0X43AD) is the standard
0 DMS-100 IOE frame. It is equipped with a disk drive, mag tape
0 drive plus some additional I/O terminal controller cards to
0 interface printers/VDUs etc.

0 (b) Reference

0 Section 3.6 Input/Output

0 (c) Provisioning Considerations:

0 (i) Provide one (1) Disk Drive Unit (DDU). A second DDU may
0 be provided for reliability to back up the first DDU.
0 Refer to the Input/Output Device Requirements in Section
0 3.6 for more information on the DDU.

0 (ii) Provide one (1) Cook Mag Tape Drive. Refer to the Mag-
0 netic Tape Storage in Section 3.6 for more information.

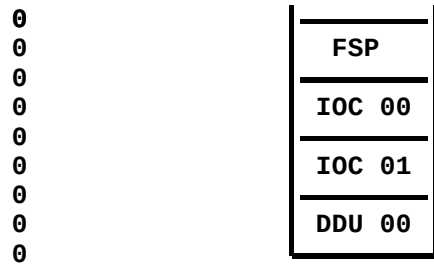
0 (iii) Provide two (2) Input/Output Controller (IOC) shelf as-
0 semblies and two (2) IOC circuit pack fills. Provide two
0 (2) NT1X62CA I/O MSG Controller (one per IOC shelf).
0 Provide I/O Controller Cards as required for DDU, MTD and
0 miscellaneous I/O equipment.

0 (iv) Provide as an option, one (1) NT1X89AA Multiprotocol Con-
0 troller CP to provide two (2) RS-232 Interfaces to ex-
0 ternal Operations Support Systems, or for downloading
0 software patches.

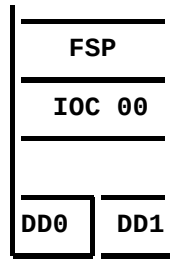
0 (v) Additional I/O equipment that may be required are two
0 VDUs, and a printer.

0 (vi) I/O Frame(s) will be configured according to the amount
0 of equipment provided. Existing STP installations using
0 one 14" DDU may be configured as shown in Figure 315.14.
0 Initial STP jobs using 8" DDUs can be configured as per
0 the example in Figure 315.15.

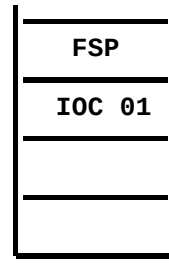




IOE 00
Figure 315.14



IOE 00
Figure 315.15



IOE 01

0 For more information on the IOE frame and associated
0 equipment, refer to Section 3.6 Input/Output.

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0 2.3.4 Office Alarm System0 (a) General Description

0 An Office Alarm System (OAS) is a Trunk Module Equipment (TME)
0 frame equipped with an Alarm Cross Connect (AXU) shelf and two
0 (2) Maintenance Trunk Modules (MTM) to provide alarming functions
0 for the STP office.

0 (b) Reference

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations:

0 (i) MTM 00 will act as the primary alarm MTM. MTM 01 will be
0 designated as the secondary alarm MTM. The following
0 should be provisioned to ensure that the primary and sec-
0 ondary MTMs are powered from different power feeds:

0 One (1) NT0X82WB FSP Strapping Information
0 One (1) A0324131 TB Jumper
0 Two (2) NT0X95CL Cable Assemblies
0 One (1) NT7X3406 Cable Assembly

0 (ii) Equip the primary MTM as follows:

QTY	PEC	DESCRIPTION
1	NT3X82AB	OAU Dead System Alarm with Common Audible
	or	
1	NT3X83AA	Remote Alarm Transfer (if remote alarm transfer feature is required)
1	NT0X10AA	Miscellaneous Scan Point Card
1	NT2X57AA	Signal Distribution Card

0 Equip the secondary MTM with one (1) NT3X82-- OAU Dead
0 System Alarm circuit pack (must be the same as on the
0 primary MTM) per customer requirements.

0 In addition, provide one (1) NT0X63__ Alarm Control &
0 Display Panel (NT0X63AA or NT0X63AC) per customer re-
0 quirements. The NT0X63AA is ordered when the OAS Dead
0 System with Unique Audible NT3X82AA is equipped; NT0X63AC

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0 is ordered when the OAS Dead System with Common Audible
0 NT3X82AB is equipped.

0 (iii) Miscellaneous Service Circuits

0 Provide one (1) Transmission Test Trunk (TTT) consisting
0 of one (1) PCM Test Signal Generator NT1X90AA and one (1)
0 PCM Level Meter NT2X96AA. Equip these on an MTM shelf to
0 allow in-service testing of the MTMs.

0 (iv) For more information on Trunk Modules, refer to Section
0 3.5 Peripheral Modules - Host.

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0 2.3.5 Double Shelf Network Equipment

0 (a) General Description

0 A Double Shelf Network Equipment (DSNE) frame (NT8X10AA) will be
0 equipped with one (1) duplicated network (one network module per
0 plane) to interface the MTM shelves to the Enhanced Core Message
0 Switch.

0 (b) Reference

0 Section 3.9 DMS Supernode and Network Subsystems

0 (c) Provisioning Considerations:

0 (i) The DSNE frame is provisioned according to the rules
0 found in Section 3.9 on the Network Module.

0 One network module per plane will be equipped.

0 (ii) Provide two (2) NT3X76AC Network Clock (DMS-Core) CP and
0 two (2) NT3X74BB Network Central Processor (DMS-Core) CP
0 to equip the DSN for applications with DMS-Core.

0 (iii) Speech Links

0 For STP application, the speech links from the TME frame
0 (MTM shelves) must be connected to the Double Shelf Net-
0 work. In a DMS-100 office the speech links would be con-
0 nected through a speech link connection frame. For this
0 application, they may be cabled directly, thereby elimi-
0 nating the need for speech link connecting panels and
0 frames.

0 Provision the following cables:

QTY	PEC	DESCRIPTION
1/TME Frame	NT0X96AJ	TME (C05) to DSNE Plane 0
1/TME Frame	NT0X96AJ	TME (C06) to DSNE Plane 1

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0 | 2.3.6 DataSPAN (Frame Relay Service)

0 (a) General Description

0 The Frame Relay Service (FRS) is a new high speed, connection
0 oriented, switched packet data service. DATASPAN is the Northern
0 Telecom trade name for this service.

0 Customers may use Frame Relay Service to transfer data in
0 packetized format from one location to another via a Datapath
0 connection, a DDS (Digital Datapath Service) channel, or from a
0 LAN via a T1 line.

0 Datapath is a Northern Telecom feature on the DMS 100 or DMS 250
0 providing dial-up data circuits operating at 56 kbs. DDS is an
0 AT&T developed private line digital data service operating at 56
0 kbs. Token Ring and Ethernet are types of LAN (local area net-
0 works) for connecting computer peripherals together. All these
0 types of data services can now be connected using Frame Relay
0 Service to transmit and receive data.

0 Figure 315.16 shows the connections of these type services to a
0 DMS-100. A Datapath subscriber is connected through the DMS
0 switching network to a FRS access channel as shown in Figure
0 315.18. DDS subscribers must be multiplexed on to a T1 line which
0 can be connected directly to a FRS access channel. A LAN can be
0 connected via a non-channelized T1 line directly to a FRS access
0 channel.

0 Figure 315.17 shows the connections of these type services to a
0 DMS-250. Datapath subscribers access channels would terminate on
0 a DTC for switching through the DMS network to a FRS access chan-
0 nel. DDS and LAN access are the same as for the DMS-100.

0 FRS is available on the DMS-100 LEC (Local Exchange Carrier) and
0 the DMS-250 IEC (Inter Exchange Carrier) from BCS 32 and beyond.

0 An FRS subscriber is connected to the frame relay switch via an
0 access channel on which multiple logical link connections (LLC)
0 to a number of other subscribers may exist. Each logical link
0 connection operates independently of other logical links on the
0 access channel.

0 The types of connection allowed are:

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0 * Private - Customer FRS agent (logical link) to another FRS agent
0 owned by the same customer.

0 * Non-private - Customer FRS agent to another FRS agent owned by
0 a different customer.

0 Each logical link permits a full duplex exchange of frames and
0 the order of frames is preserved in each direction. FRS limits
0 the maximum frame size to 1600 bytes.

0 The initial release of FRS supports only permanent logical link
0 connections (PLLC) which are set up at Telco subscription time.
0 The throughput on a single logical link connection can be in ex-
0 cess of 1 megabit/second with an internal switch one way transit
0 delay less than 3 ms. The two access channel speeds supported in
0 the initial release are :

0 * 56 kbps over DATAPATH and DDS circuits.

0 * 1.536 Mbps over T1 line (non-channelized)
0 circuits.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 (i) DATAPATH Support:

0 DATAPATH provides access via a local loop, a DMS remote
0 peripheral, or a D4 channel bank. DATAPATH uses the DMS
0 hotline feature to automatically connect the DTE to the
0 frame relay service when the DTE comes on line. Only 56
0 kbps rates will be supported. T-link sub-rate encoding is
0 not supported. The customer is required to use the High
0 Speed Data Unit (HSDU) which supports the V.35 physical
0 interfaces. Refer to ECM 270, Datapath Modem Pooling.

0 (ii) DDS support: Digital Data Service (DDS) is an AT&T de-
0 veloped private line digital data service. Only the 56
0 Kbps non-error correcting form of this service will be
0 supported. Individual DS0 must be multiplexed onto a T1
0 prior to connecting to Supernode . A maximum of 24 56

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0 kbps access connections are supported on a single T1 ac-
0 cess circuit.

0 (iii) Non-channelized T1: The non-channelized mode uses all 192
0 bits of information in a T1 frame to carry data associ-
0 ated with a single frame relay frame.

0 (iv) All customer access protocols must use HDLC framing plus
0 either LAPB/SDLC or LAPD logical link identification.

0 Refer to Figures 315.16 and 315.17 for access channel
0 configurations.

0 (v) Dataspan T1 Trunking

0 Separate LPP cabinets in the Dataspan networks can be
0 connected via non-channelized T1 trunks. The trunks can
0 connect LPP cabinets in the same office or in two differ-
0 ent offices. These trunks are in trunk groups. The trunks
0 can be of two types, standard or enhanced. The trunk
0 groups can be of two types, shared or non-shared.

0 Standard trunks offer a basic node-to-node transport me-
0 dium using the frame relay standard as it exists today
0 (the ANSI T1S1 standard). They are connected to suppliers
0 of end office equipment other than Northern Telecom, and
0 could be used to expand the network to areas not serviced
0 by DMS Supernodes. Standard trunks may not be placed in
0 trunk groups of more than one member.

0 Enhanced trunks offer the standard service plus a fault
0 resistant capability. Enhanced trunk members may be
0 grouped together into trunk groups of more than one mem-
0 ber, and connections can be given a secondary route over
0 a separate trunk member within the group. Connection
0 duplication greatly improves reliability, and allows a
0 trunk member in a multiple member group to be taken out
0 of service for maintenance without seriously disrupting
0 service for customers. Because of this enhancement, end-
0 to-end sequencing of frames is done; that is; frames are
0 guaranteed ordered from one access point to the eventual
0 destination even in the case of trunk member failure
0 (although with perhaps some frame loss).

0 A shared trunk group has members which may carry frames
0 belonging to any customer who purchases connections
0 across the trunk.

0 A non-shared trunk group is one in which all of the con-
0 nections assigned to the group belong to a single cus-
0 tomer. This customer , in effect, purchases the trunk
0 group for his own private use.

0 Connections using trunks may be datafilled in such a way
0 that they are tandem to an office. With this ability, a
0 network need not be engineered to have maximum
0 conectivity.

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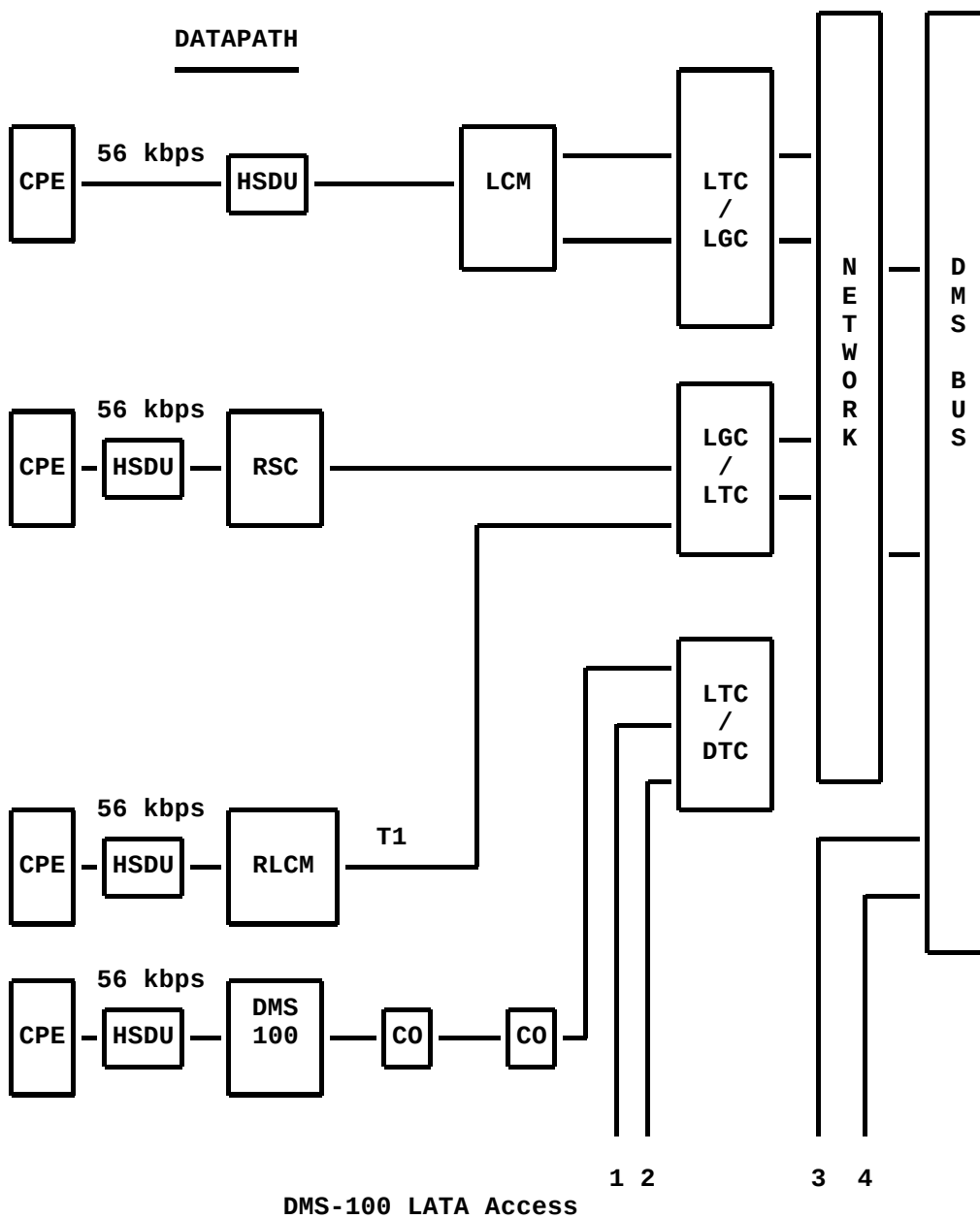


Figure 315.16

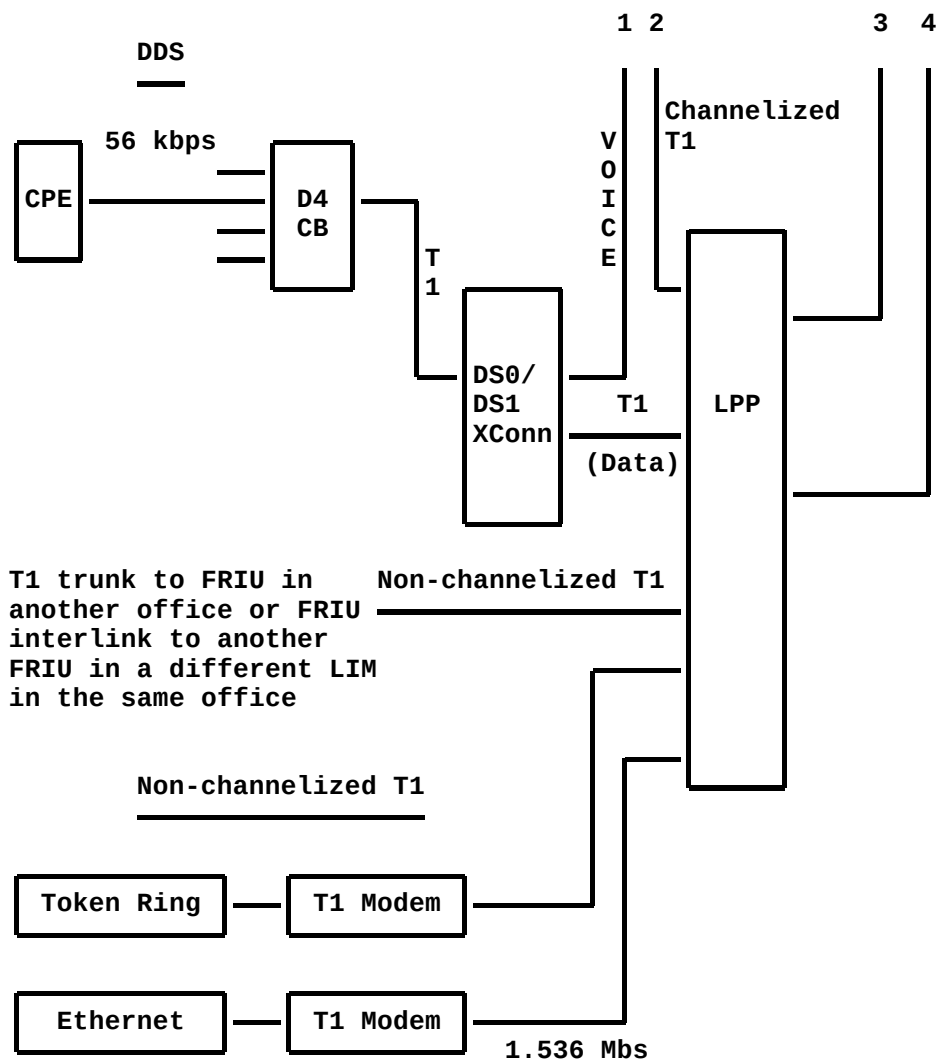
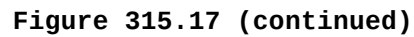
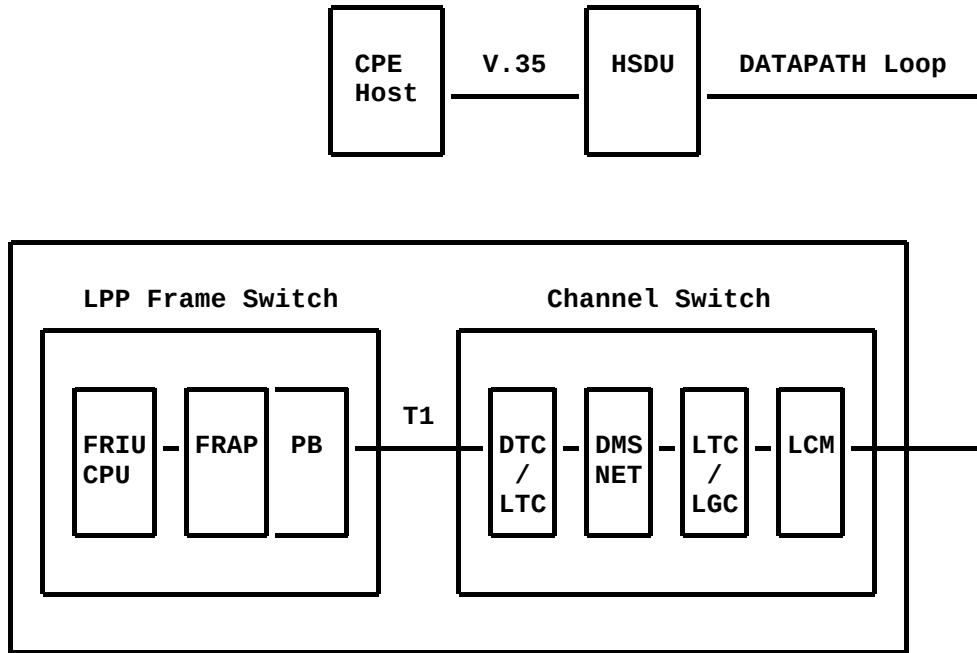


Figure 315.16 (Continued)



DATAPATH Connection to FRIU for Frame Relay Service



Connection of the DATAPATH line to the FRIU is accomplished via the hotline feature. The FRIU channel is assigned a DN in a single member trunk group for this purpose.

Figure 315.18

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0 (vi) The DMS-100 and DMS-250 switch must be a Supernode and be
0 equipped with an LIM(LPP). If Frame Relay Services via
0 DATAPATH lines is required, the switch must also be
0 equipped with DATAPATH and any network upgrades required
0 by that product.

0 (vii) A two-slot FRIU will be available for use on the 36 unit
0 LIM(LPP) (NT9X70BA) only.

0 (viii) BCS 32 Frame Relay Services must use LIM (LPP) dedicated
0 to FRIU.

0 The FRIU may co-exist on the LIM (LPP) with other DCP
0 (Digital Communications Processor) such as the LIU7 and
0 the EIU in BCS 33 and beyond subject to engineering rules
0 to be specified later.

0 (ix) Any T1 connected to the the LIM (LPP) must be connected
0 to the appropriate DS1 terminating equipment for the re-
0 quired central office protection.

0 (x) The FRIU on the LIM(LPP) for FRS channel access must have
0 the following CP mounted with the new FRAP (NTEX31AA) and
0 the new T1 paddleboard (NTEX30AA).

0 * NTEX22AA IPF Proc and F-Bus I/F CP

0 (xi) A FRIU consists of three (3) circuit packs which mount on
0 a 36 unit LIM(LPP). These circuit packs are:

0 * NTEX22AA IPF Proc and F-Bus I/F CP

0 * NTEX31AA Frame Relay Access Processor CP

0 * NTEX30AA T1 Access Paddleboard

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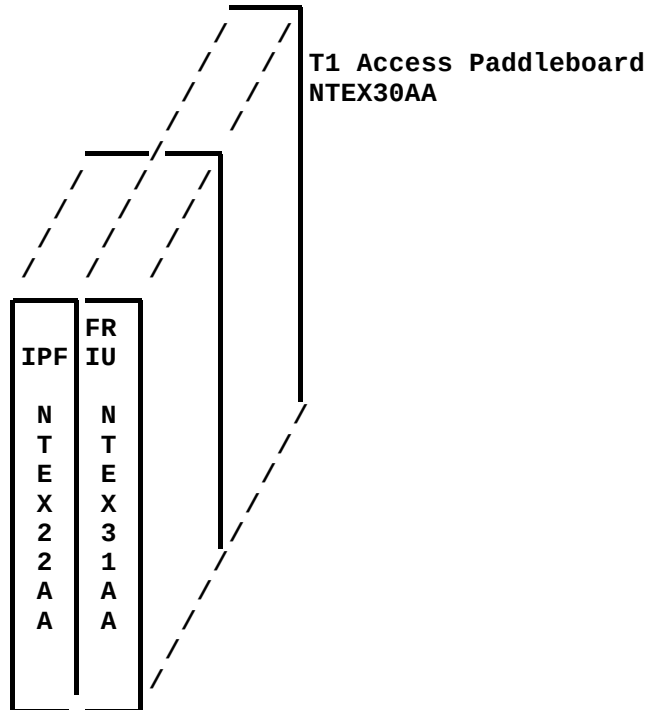
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The FRIU CP shall be mounted on the LIS shelf on the LIM(LPP) as shown in Figure 4.

Two (2) slot backplane with two (2) slot FRIU



Slot i i+1

i = 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30

Figure 315.19

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- 0 (xii) Provide one (1) FRIU for each twenty-four (24) DATAPATH
0 customer access channels required. Also provide one (1)
0 T1 port on a DTC/LTC per FRIU provided for DATAPATH ac-
0 cess channels.
- 0 (xiii) Provide one (1) FRIU for each channelized T1 line carry-
0 ing DDS service requiring FRS.
- 0 (xiv) Provide one (1) FRIU for each non-channelized T1 line re-
0 quiring FRS.
- 0 (xv) Two (2) NT9X0191 Cable Assemblies are required per FRIU.
0 This cable assembly connects the paddleboard to the cable
0 bulkhead.
- 0 (xvi) Traffic Provisioning
- 0 The following information provides the method of provi-
0 sioning FRIU and LPP for Dataspan service based on data
0 traffic calculations.

0 Assumptions

0 The first objective of this section is to give a brief
0 overview of the factors which determine the maximum
0 throughput of an LPP. Second the impact of the DataSPAN
0 application on these factors is discussed. Next, the as-
0 sumptions required to engineer an LPP to support the
0 DataSPAN application are stated. Finally some comments
0 are made regarding network architecture.

0 This information presented is limited to engineering an
0 LPP to handle only the DataSPAN application. Mixed ap-
0 plication engineering assumptions will be added in the
0 next release of this document.

0 LPP Throughput Overview

0 From a traffic engineering point of view there are six
0 factors that may limit total throughput of an LPP: the
0 utilization of the links terminating on the LPP, the max-
0 imum throughput of the DCPs, the number of DCPs sup-
0 ported, the maximum throughput of the FBUS, the maximum
0 throughput of the LMS and the maximum throughput of the
0 DS30 links.

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0 An LPP frame can hold up to 36 DCPs. Each DCP terminates
0 one link. The LPP has two FBUSs and two LMSs. The
0 FBUS/LMS pairs operate in a load sharing mode. The FBUS
0 is used to connect the DCPs to the LMS. Each FBUS has a
0 bandwidth of 32 Mbps (8 bits wide running at 4 Mhz). Each
0 DCP has access to both FBUSs and therefore both LMSs. The
0 LMSs control the flow of traffic between DCPs in the LPP
0 and traffic between DCPs and the DMS-Bus. Each LMS has a
0 bandwidth of 128 Mbps (32 bits wide running at 4 Mhz).
0 The LPP is connected to the DMS-Bus by 8 DS30 links (2
0 links from each LMS to each unit of the DMS-Bus).

0 DataSPAN Application Impact

0 For the DataSPAN application, traffic enters the system
0 as a data frame on a T1 span. This T1 span can be either
0 an access line carrying data from one or more customer
0 sites or a T1 trunk carrying data from another LPP. The
0 access lines can be either channelized (24 individual 64
0 Kbps channels) or unchannelized (one 1.536 Mbps channel).
0 The T1 spans are terminated by an FRIU (the DCP for the
0 DataSPAN application). After processing by the FRIU (a
0 CRC check and DLCI translation), the frame travels 'up'
0 the FBUS to the LMS. The frame then traverses the LMS
0 and is routed back 'down' the FBUS to the appropriate
0 FRIU. This FRIU then transmits the frame on its T1 span.
0 This T1 span can again be either an access line or a T1
0 trunk with one exception.

0 The key points to note about how the LPP handles DataSPAN
0 traffic are as follows:

- 0 * DataSPAN traffic does not impact the DS30 links. The
0 impact of the traffic is confined to the LPP itself.
0 The throughput of the DS30 links will therefore not
0 be a limiting factor for the DataSPAN application.
- 0 * Each DataSPAN frame handled makes two trips across
0 the FBUS and one trip across the LMS. Since the LMS
0 handles each DataSPAN frame only once and has a
0 higher bandwidth than the FBUS, the throughput of the
0 LMS will not be a limiting factor for the DataSPAN
0 application.

0 This leaves four potentially limiting factors for
0 DataSPAN traffic throughput:

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- 0 * The utilization of the T1 spans.
- 0 * The maximum throughput of an FRIU.
- 0 * The number of FRIUs supported.
- 0 * The maximum throughput an FBUS.

0 DataSPAN Engineering Assumptions

0 The following statements summarize the traffic engineer-
0 ing assumptions made regarding the factors which may
0 limit LPP throughput for the DataSPAN application:

- 0 1) T1 Trunks can be engineered to a maximum of 65% of
0 their bandwidth (1 Mbps in each direction).
- 0 2) For Access Lines, the utilization of the T1 is deter-
0 mined by the traffic requirements of the customer.
0 The access load used in the engineering calculations
0 which follow should represent the mean peak busy hour
0 utilization of the link.

0 The utilization assumed for an access line should not
0 exceed 65% of the T1's bandwidth.
- 0 3) An FRIU is engineered to handle 800 frames per second
0 in each direction for a total of 1600 frames per sec-
0 ond.
- 0 4) The LPP can support a maximum of 36 FRIUs. Each FRIU
0 terminates a single T1 span (either an Access Line or
0 a T1 Trunk).
- 0 5) The DMS is engineered to handle single faults of du-
0 plicated equipment with no loss of service. For the
0 DataSPAN application this means that the LPP is engi-
0 neered to handle a single FBUS/LMS failure. The
0 throughput of the system is therefore limited by the
0 throughput of a single FBUS.
- 0 6) An FBUS is engineered to 65% of its total bandwidth
0 (20.8 Mbps).

0 FRIU throughput (item 3 above) is generally not limiting
0 for the DataSPAN application. For longer frames, the
0 throughput of the FRIU will be limited by the bandwidth

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0 of the T1 and not the processing power of the FRIU. For
0 shorter frames, however, it is possible that the through-
0 put of the FRIU will be the limiting factor. While the
0 engineering rules presented in the next section do not
0 directly address this issue, it is possible to compensate
0 for this possibility by adjusting the maximum utilization
0 of a T1 span (both access line and T1 trunk) based on the
0 mean frame length anticipated in the DataSPAN network.
0 The table below presents the maximum T1 utilization to
0 use for various mean message lengths.

0 Maximum T1 Utilization vs Mean Frame Length

0 Mean Frame Size	Maximum T1 Utilization
0 50	20%
0 100	41%
0 150	62%
0 156 and up	65%

0 Network Architecture Considerations

0 Consider the following when planning a DataSPAN network:

- 0 * DataSPAN frame tandeming is not supported.
- 0 * If there is a known community of interest (COI) for a
0 virtual private network then it should be considered
0 when planning the network (for instance, all the ac-
0 cess lines of a VPN should be put on a single LPP if
0 possible).
- 0 * With T1 trunking, DataSPAN networks are limited to
0 approximately 5 LPP. Multiple parallel DataSPAN net-
0 works can be deployed for networks that have multiple
0 VPNs which do not have a COI between them.
- 0 * If a VPN has a remote site with one access line and
0 no other traffic is passing on other VPN, then back-
0 haul the T1 carrier to a different LPP.

0 (xvii) DataSPAN Engineering Procedure

0 Engineering a frame relay network is an iterative proc-
0 ess. The first step in the process is to define the ma-
0 jor network elements: the number of sites, the number of

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0 access lines per site and the traffic level per access
0 line. With this information, an initial estimate is made
0 of the number of LPPs required. Using this estimate, ac-
0 cess lines are distributed across the available LPPs and
0 inter LPP trunking requirements are determined. This
0 completely defines the network.

0 With this information, the number of FRIUs required and
0 the FBUS traffic load can be determined for each LPP in
0 the network. These values are then compared with the ap-
0 propriate engineering standards. If there are no vio-
0 lations then the process is complete. If one or more of
0 the LPPs violate the engineering rules then additional
0 LPPs must be added to the network and the process re-
0 peated until all the engineering rules are satisfied.

0 From an LPP engineering point of view, there is little
0 difference between co-located LPPs and LPPs located in
0 different sites. The only important difference is that
0 access lines can be allocated as desired between co- lo-
0 cated LPPs. Once the access lines are assigned, however,
0 the LPP engineering rules (specifically the T1 trunking
0 rules) treat each LPP as a separate entity.

0 Step 1 - Network Definition

0 The purpose of this step is to collect the background
0 data required to engineer the network. Specifically the
0 following information is required:

- 0 1) Number of sites in the network. This should not be
0 confused with the number of LPPs.
- 0 2) Number of access lines per site.
- 0 3) Incoming load of each access line. This is defined
0 as the incoming customer traffic measured in Mbits
0 per second.

0 Step 2 - Initial LPP Estimate

0 The goal of this step is to make an initial estimate of
0 the number of LPPs required using the data collected in
0 Step 1. LPPs are allocated on a site by site basis. For
0 each site, the number of LPPs allocated must satisfy the
0 following rules:

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0 1) Number Number of Access Lines
 0 of LPPs >= -----
 0 Allocated 36

0 2) Number 2 * Site Access Line Load (Mbits/sec)
 0 of LPPs >= -----
 0 Allocated 20.8 (Mbits/sec)

0 The first rule represents the physical limits of the LPP
 0 frame. The second rule represents the bandwidth limits
 0 of a single working FBUS. In this equation, the 'site
 0 access line load' is calculated by summing up the 'incom-
 0 ing load of each access line' assigned to that site. The
 0 factor of two is included to account for the fact that
 0 for both intra LPP traffic and T1 trunking traffic every
 0 incoming frame makes two trips across the FBUS.

0 These two rules do not take into account any trunk traf-
 0 fic requirements. This will be handled later. To shorten
 0 the engineering process an extra LPP may be added to
 0 those sites that are close to requiring an additional LPP
 0 based solely on the access line requirements.

0 Step 3 - Access Lines Allocation

0 This is the first step in the iterative part of the engi-
 0 neering process. If the initial allocation of LPPs
 0 proves to be insufficient and therefore additional LPPs
 0 are allocated then the process will be restarted at this
 0 point.

0 In this step access lines are allocated to LPPs. In those
 0 sites with only one LPP this is a simple process (all ac-
 0 cess lines are assigned to that one LPP). In sites with
 0 multiple LPPs, access lines belonging to a community of
 0 interest (COI) should be assigned to the same LPP. This
 0 will reduce the intra site T1 trunking requirements. If
 0 there are no known COIs, then the access lines should be
 0 allocated to best balance the access line load across the
 0 available LPPs. Beyond these two suggestions the network
 0 planner is free to assign the access links to LPPs as de-
 0 sired.

0 Once this process is complete, calculate the following
 0 values for each LPP in the network:

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- 0 1) Access Lines{*i*} = num of access lines assigned to LPP '*i*'
0 2) Access Load{*i*} = tot 'incoming load of each access line'
0 assigned to LPP '*i*' (Mbits per second)

0 Using this information, calculate the following two net-
0 work wide values:

- 0 1) NLPP = num of LPPs in the network
0 2) Network Access Load = Sum (*i* = 1 to NLPP) of (Access Load{*i*}
0 (Mbits per second)

0 The second values represents the total incoming access
0 line load on the network.

0 Step 4 - T1 Trunking Load

0 The purpose of this step is to determine the T1 trunk
0 traffic load between every two LPPs in the network. This
0 information will be used in the next step to determine
0 the number of inter LPP trunks required. The inter LPP
0 trunking load will be defined as follows:

0 T1 Load{*i*,*j*} = the tot.T1 trunk traffic load from LPP '*i*' to
0 LPP '*j*' (Mbits per second)

0 Note that there is no requirement that T1 Load{*i*,*j*} equal
0 T1 Load{*j*,*i*}. This means that the traffic load is not
0 required to be the same in each direction on a trunk
0 route.

0 To define the T1 trunk load the following definition will
0 be used:

0 Mix{*i*,*j*} = the fraction of the access line load incoming to LPP '*i*'
0 that is destined for access lines assigned to LPP '*j*'

0 The network planner must supply the values for the 'Mix'
0 variable. This should be based on any known COIs in the
0 network. There is no single 'best' method for determin-
0 ing the proper values to use. If necessary, the planner
0 may need to determine the traffic mix for every individ-
0 ual access line in the network and then sum the results

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0 by LPP. Regardless of the method used, the following two
0 statements must hold true:

- 0 1) $Mix\{i,i\}$ = the fraction of intra LPP traffic for LPP 'i'.
0 2) $\text{Sum (for } j = 1 \text{ to NLPP) of } (Mix\{i,j\}) = 1.0$ for all i.

0 The first statement is true by definition. The second
0 rule requires that exactly 100% of the incoming access
0 line traffic to each LPP is accounted for.

0 If there are no known COIs then the following method can
0 be used to estimate the traffic split (i.e. 'Mix' values)
0 for each LPP.

0 $Mix\{i,j\} = \text{Access Load}\{j\} / \text{Network Access Load}$

0 This method assumes that incoming traffic from each ac-
0 cess line is to be distributed over the entire network
0 and that each access line will receive traffic in direct
0 proportion to the amount of traffic it inputs to the net-
0 work. Using this method ensures that for all access
0 lines the incoming traffic load will equal the outgoing
0 traffic load.

0 Note that, using this method, the results depend only on
0 the access line load of the receiving LPP ('j'). There-
0 fore, if LPP 1 sends 10% of its traffic to LPP 2 then all
0 LPPs in the network will send 10% of their traffic to LPP
0 2. In addition 10% of the access line load for LPP 2
0 will be intra LPP traffic.

0 With $Mix\{i,j\}$ defined for all LPPs in the network, the T1
0 trunk load from LPP 'i' to LPP 'j' can be calculated as
0 follows:

0 $T1 \text{ Load}\{i,j\} = \text{Access Load}\{i\} * Mix\{i,j\}$

0 Step 5 - T1 Trunking Requirements

0 The purpose of this step is to determine the number of T1
0 trunks required between each pair of LPPs in the network.
0 These calculations do not depend upon whether the LPPs to
0 be interconnected are in the same or different sites. The

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0 number of trunks allocated between any two pair of LPPs
0 is defined as follows:

0 T1 Trunks{*i*,*j*} = the number of trunks allocated between LPP '*i*' and
0 LPP '*j*'

0 By definition the following statement is true:

0 T1 Trunks{*i*,*j*} = T1 Trunks{*j*,*i*}

0 There are several factors to consider when determining
0 the number of T1 trunks required. First, trunks are en-
0 gineered to 65% of their bandwidth (1.0 Mbits per second
0 in each direction). Second, the number of trunks allo-
0 cated must be sufficient to handle the trunking load in
0 both directions. Third, trunks between two sites can be
0 organized into trunk groups with a maximum size of 6 T1
0 trunks per trunk group. Finally, T1 trunking reliability
0 can be improved by making use of the Enhanced Trunking
0 feature.

0 Enhanced Trunking allows for the assignment of a second-
0 ary route to each logical connection carried by a trunk
0 group. This allows the system to be engineered so that
0 it can survive a single T1 trunk failure with no loss of
0 service. If Enhanced Trunking is desired between two
0 LPPs in the network then an extra T1 trunk, above and be-
0 yond the number required to handle the estimated trunk
0 traffic load, should be assigned to the trunk group con-
0 necting those two LPPs.

0 The number of trunks assigned between each pair of LPPs
0 should satisfy the following rule:

0 $T1\ Trunks\{i,j\} \geq \max(T1\ Load\{i,j\}, T1\ Load\{j,i\}) / 1.0$
0 for each pair of LPPs in the network

0 The 1.0 factor represents the engineerable bandwidth of
0 each T1 trunk. The Max function is used to determine
0 which direction is the most limiting.

0 If Enhanced Trunking is not required then the number of
0 trunks assigned between each pair of LPPs should be the
0 minimum number of trunks required to satisfy the rule
0 given above. If Enhanced Trunking is required, then an

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0 additional trunk should be allocated. If this yields a
0 total of more than 6 T1 trunks between any two LPPs then
0 the trunking load between those two LPPs will need to be
0 spread across multiple trunk groups and each trunk group
0 will need to be assigned a spare trunk.

0 Step 6 - LIU Requirements

0 The purpose of this step is to determine the number of
0 LIUs required by each LPP in the network. This quantity
0 will be defined as follows:

0 $LIU\{i\}$ = the number of LIUs required by LPP 'i'

0 This includes the FRIUs required to meet both the access
0 line and T1 trunking requirements of each LPP. It is
0 calculated as follows:

0 $LIU\{i\} = \text{Access Line}\{i\} + \text{Sum}(j \neq i) \text{ of } (T1 \text{ Trunk}\{i,j\})$

0 Step 7 - FBUS Loading

0 The purpose of this step is determine the total load on
0 the FBUS of each LPP in the network. The load on the
0 FBUS will be defined as follows:

0 $FBUS \text{ Load}\{i\}$ = the total load on the FBUS of LPP 'i'
0 (Mbits per second)

0 The FBUS load calculations are based on the incoming load
0 from both the access lines and T1 trunks. It is calcu-
0 lated as follows:

0 $FBUS \text{ Load}\{i\} = 2 * (\text{Access Load}\{i\} + \text{Sum}(j \neq i) \text{ of } (T1 \text{ Load}\{j,i\}))$

0 The factor of two is included to account for the fact
0 that for both intra LPP traffic and T1 trunking traffic
0 every incoming frame makes two trips across the FBUS. The
0 summation expression adds to the access line load the T1
0 trunking load received from every other LPP in the net-
0 work.

0 Step 8 - Configuration Verification

0 The network has now been completely defined. The purpose
0 of this step is to ensure that the engineering rules have
0 been satisfied. For the current configuration to be ac-
0 ceptable, the following two engineering rules must be
0 satisfied for all the LPPs in the network:

- 0 1) LIU{i} <= 36
0 2) FBUS Load{i} <= 20.8 (Mbits per Second)

0 As in Step 2, the first rule represents the physical lim-
0 its of the LPP frame and the second rule represents the
0 bandwidth limits of a single FBUS.

0 If these engineering rules are satisfied for all the LPPs
0 in the network then the process is complete and the cur-
0 rent network configuration is acceptable. If one or more
0 or the LPPs in the network are found to be in violation
0 of the engineering rules then additional LPPs are re-
0 quired. Specifically, any site with one or more LPPs in
0 violation must add at least one LPP. The process is then
0 restarted at Step 3, the point where the access lines are
0 allocated across the available LPPs, and it continues un-
0 til no LPPs are found to be in violation of the engineer-
0 ing rules.

0 (xviii) DataSPAN Network Engineering Example

0 To illustrate the procedure presented above, this section
0 presents a network engineering example. The sample prob-
0 lem proceeds step by step and demonstrates the iterative
0 nature of the procedure.

0 Step 1 - Network Definition

0 Figure 2-1 shows the example network. In this network
0 there are three sites (labeled A, B and C) with 32, 18
0 and 19 access lines respectively. All 69 access lines
0 are assumed to be channelized access links with a mean
0 busy hour link utilization of 20% (this implies an incom-
0 ing load of 0.27 Mbits/sec per access line).

0 Step 2 - Initial LPP Estimate

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0 To estimate the number of LPPs required, consider first
0 Site A. The initial estimate of the number of LPPs re-
0 quired must satisfy the following rules:

0 1) Number of LPPs Allocated $\geq 32 / 36 = 0.89$

0 2) Number of LPPs Allocated $\geq 2 * (32 * 0.27) / 20.8 =$
0 0.83

0 Therefore at least one LPP is required at Site A. It
0 might be wise to initially allocate two LPPs at Site A
0 since it is close to needing a second LPP just to satisfy
0 the access line requirements, but, to make the example
0 problem more comprehensive this will not be done.

0 The other two sites are smaller than Site A and therefore
0 will also be allocated one LPP each.

0 Step 3 - Access Lines Allocation

0 Given the initial estimate of one LPP per site, the net-
0 work will contain 3 LPPs and the access line assignments
0 are clear. Based on this information, the table below
0 summarizes the calculation of the required access line
0 data.

0 Sample Problem Access Line Data

0 Table 1

0 Site	0 LPP 0 Index 0 'i'	0 Access 0 Lines 0 {i}	0 Access Load{i} 0 (Mbits per Second)
0 A	0 1	0 32	0 $32 * 0.27 = 8.64$
0 B	0 2	0 18	0 $18 * 0.27 = 4.86$
0 C	0 3	0 19	0 $19 * 0.27 = 5.13$
0 Total	0 3	0 69	0 18.63

0 Step 4 - T1 Trunking Load

0 In this example, it will be assumed that there are no
0 known COIs and the traffic split (the 'Mix' values) will
0 be calculated using the default method discussed in the
0 procedure above. The T1 trunk load values can therefore
0 be calculated as follows:

0 $T1 \text{ Load}\{i,j\} = \text{Access Load}\{i\} * \text{Mix}\{i,j\}$

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$$\begin{array}{l} 0 \\ 0 \\ 0 \quad T1 \text{ Load}\{i,j\} = \text{Access Load}\{i\} * \frac{\text{Access Load}\{j\}}{\text{Network Access Load}} \\ 0 \end{array}$$

0 For example, consider the T1 trunk load from LPP 1 to LPP
0 2.

$$\begin{array}{l} 0 \quad T1 \text{ Load}\{1,2\} = 8.64 * (4.86 / 18.63) \\ 0 \quad \quad \quad = 2.25 \end{array}$$

0 The table below summarizes the complete set of results.
0 Sample Problem T1 Trunk Load Data
0 (Mbits per Second)

0 Table 2

0 0 Originating 0 LPP 'i'	Terminating LPP 'j'			
	1	2	3	Total
0 1	4.01	2.25	2.38	8.64
0 2	2.25	1.27	1.34	4.86
0 3	2.38	1.34	1.41	5.13
0 Total	8.64	4.86	5.13	18.63

0 Note that by assuming no COIs and using the method for
0 calculating Mix{i,j} outlined above, the trunk load is
0 the same in each direction (i.e T1 Load{i,j} = T1
0 Load{j,i}).

0 Step 5 - T1 Trunking Requirements

0 In this example, it will be assumed that Enhanced Trunk-
0 ing is required. As an example of the T1 trunking calcu-
0 lations, consider the trunking requirements between LPP 1
0 and LPP 2.

$$\begin{array}{l} 0 \quad T1 \text{ Trunks}\{1,2\} \geq \text{Max}(2.25 , 2.25) / 1.0 \\ 0 \quad \quad \quad \geq 2.25 \end{array}$$

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0 This means that a minimum of 3 trunks are required be-
0 tween LPP 1 and LPP 2 to support the traffic load. Since
0 Enhanced Trunking is required a fourth trunk should be
0 allocated to the trunk group. In a similar manner the
0 rest of the network trunking requirements can be deter-
0 mined. The table below summarizes the complete set of
0 results.

0 Sample Problem T1 Trunking Requirements

0 Table 3

LPP {i}	LPP {j}	T1 Trunks{i,j}
1	2	$\text{Max}(2.25, 2.25) / 1.0 + 1 \leq 3 + 1 = 4$
1	3	$\text{Max}(2.38, 2.38) / 1.0 + 1 \leq 3 + 1 = 4$
2	3	$\text{Max}(1.34, 1.34) / 1.0 + 1 \leq 2 + 1 = 3$

0 Step 6 - LIU Requirements

0 The LIU requirement calculations are summarized in the
0 following table.

0 Sample Problem LIU Requirements

0 Table 4

LPP{i}	LIU{i}
1	$32 + 4 + 4 = 40$
2	$18 + 4 + 3 = 25$
3	$19 + 4 + 3 = 26$

0 Step 7 - FBUS Loading

0 The FBUS loading calculations are summarized in the fol-
0 lowing table.

0 Sample Problem FBUS Loading

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Table 5

LPP{i}	FBUS Load{i} (Mbits per Second)
1	$2 * (8.64 + 2.25 + 2.38) = 26.54$
2	$2 * (4.86 + 2.25 + 1.34) = 16.90$
3	$2 * (5.13 + 2.38 + 1.34) = 17.70$

Step 8 - Configuration Verification

Comparing the data presented in Tables 4 and 5 to the engineering standards reveals that both LPP 2 and LPP 3 meet the engineering requirements and that LPP 1 is in violation of both rules. Since LPP 1 is located at Site A, an additional LPP needs to be allocated at Site A. The process now needs to return to Step 3.

Repeat Step 3 - Access Lines Allocation

With the new estimate of 2 LPPs for Site A, the access lines for this site need to be reallocated. Since there are no known COIs and all 32 access lines have the same assumed traffic level (0.27 Mbits per second), one logical allocation would be to assign each of the Site A LPPs half the access lines (i.e. 16 access lines each). To make the example more general it will be assumed the network planner decides to instead assign 20 links to the one LPP and the remaining 12 links to the other LPP.

Given this information, the table below summarizes the calculation of the required access line data.

Sample Problem Access Line Data

Table 6

Site	LPP Index 'i'	Access Lines {i}	Access Load{i} (Mbits per Second)
A	1	20	$20 * 0.27 = 5.40$
	2	12	$12 * 0.27 = 3.24$
B	3	18	$18 * 0.27 = 4.86$
C	4	19	$19 * 0.27 = 5.13$

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0
0 Total 4 69 18.63

0 Note that the LPP indexes have changed from the last pass
0 through Step 3. For example the index of the LPP at Site
0 C is now '4' instead of '3'.

0 Repeat Step 4 - T1 Trunking Load

0 Again no COIs will be assumed and the access line traffic
0 will be spread across the entire network using default
0 method for defining the 'Mix' values.

0 For example, consider the T1 trunk load from LPP 1 to LPP
0 2. This is an intra site T1 trunking route, but it is
0 handled in exactly the same manner as inter site T1
0 trunking route.

0
$$\text{T1 Load}\{1,2\} = 5.40 * (3.24 / 18.63)$$

0
$$= 0.94$$

0 The table below summarizes the complete set of results.

0 Sample Problem T1 Trunk Load Data
0 (Mbits per Second)

0 Table 7

Orig. LPP 'i'	Terminating LPP 'j'				
	1	2	3	4	Total
1	1.57	0.94	1.40	1.49	5.40
2	0.94	0.56	0.85	0.89	3.24
3	1.40	0.85	1.27	1.34	4.86
4	1.49	0.89	1.34	1.41	5.13
Total	5.40	3.24	4.86	5.13	18.63

0 Repeat Step 5 - T1 Trunking Requirements

0 Again, it will be assumed that Enhanced Trunking is re-
0 quired. The table below summarizes the T1 trunking re-
0 quirement calculations.

0 Sample Problem T1 Trunking Requirements

0 Table 8

LPP {i}	LPP {j}	T1 Trunks{i,j}
1	2	$\text{Max}(0.94, 0.94) / 1.0 + 1 \leq 1 + 1 = 2$
1	3	$\text{Max}(1.40, 1.40) / 1.0 + 1 \leq 2 + 1 = 3$
1	4	$\text{Max}(1.49, 1.49) / 1.0 + 1 \leq 2 + 1 = 3$
2	3	$\text{Max}(0.85, 0.85) / 1.0 + 1 \leq 1 + 1 = 2$
2	4	$\text{Max}(0.89, 0.89) / 1.0 + 1 \leq 1 + 1 = 2$
3	4	$\text{Max}(1.34, 1.34) / 1.0 + 1 \leq 2 + 1 = 3$

0 Repeat Step 6 - LIU Requirements

0 The new LIU requirement calculations are summarized in
0 the following table.

0 Sample Problem LIU Requirements

0 Table 9

LPP{i}	LIU{i}
1	$20 + 2 + 3 + 3 = 28$
2	$12 + 2 + 2 + 2 = 18$
3	$18 + 3 + 2 + 3 = 26$
4	$19 + 3 + 2 + 3 = 27$

0 Repeat Step 7 - FBUS Loading

0

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0 The new FBUS loading calculations as summarized in the
0 following table.

0 Sample Problem FBUS Loading

0 Table 10

LPP{i}	FBUS Load{i} (Mbits per Second)
1	$2 * (5.40 + 0.94 + 1.40 + 1.49) = 18.46$
2	$2 * (3.24 + 0.94 + 0.85 + 0.89) = 11.84$
3	$2 * (4.86 + 1.40 + 0.85 + 1.34) = 16.90$
4	$2 * (5.13 + 1.49 + 0.89 + 1.34) = 17.70$

0 Repeat Step 8 - Configuration Verification

0 Comparing the data presented in Tables 9 and 10 to the
0 engineering standards reveals that all four LPPs meet the
0 engineering requirements. This means that this is valid
0 configuration and the engineering process is complete.

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0 3.0 Service Control Point

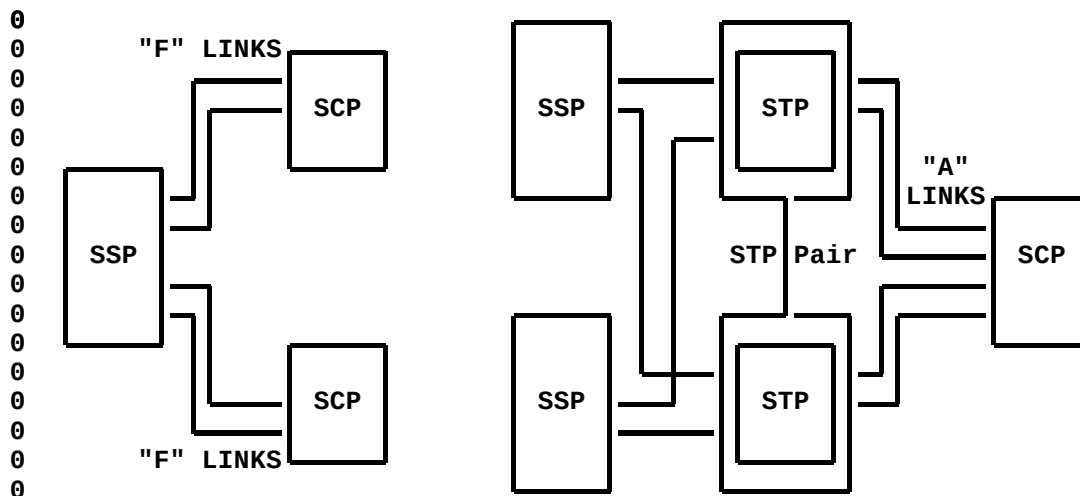
0 3.1 Introduction

0 The DMS - Service Control Point (DMS-SCP) is a node in a CCS7
0 network which provides a real-time transactional environment from
0 which to answer database queries. The initial applications which
0 are supported are as follows:

- 0 - 800 Plus Service (800+ in Canada, E008 in Australia. 800+
0 refers to both services unless otherwise specified.)
- 0 - Automated Calling Card Service (ACCS)
- 0 - Billed Number Screening (BNS) (Telecom Canada only)

0 The CCS7 Network is classified in two ways; the FULLY ASSOCIATED
0 NETWORK and the QUASI ASSOCIATED NETWORK. The Fully Associated
0 Network has every Service Switching Point (SSP - End Office) con-
0 nected directly to the SCP(s). The Quasi Associated Network has
0 every SSP connected to the SCP through a Signaling Transfer Point
0 (STP).

0 Figure 315.20: CCS7 Network Classification



0 FULLY ASSOCIATED NETWORK

0 QUASI ASSOCIATED NETWORK

0 There is at least one provisionable CCS7 "F" Link Set from
0 each SSP to each SCP node in the Fully Associated Network. In the
0 Quasi Associated Network, the CCS7 "A" link pairs exists from

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0 each Toll SSP to the corresponding regional STPs and "A" link
0 pairs exist from each SCP to corresponding regional STP pairs.

0 The DMS-SCP network is made up of one SCP Transaction Processors
0 (SCP-TP) and one or two SCP Operations, Administration and Main-
0 tenance (SCP-OAM) machines. The SCP-TP is made up of two (2) DVS
0 cabinet lineups and performs the actual query processing and real
0 time functions by responding to incoming database queries from
0 the network. The SCP-OAM consists of one (1) DVS cabinet lineup.
0 It updates the application databases and handles the OA&M func-
0 tions of the system.

0 The SCP-OAM is capable of handling OA&M functions for up to two
0 SCP-TP machines. In addition, OA&M functions may be distributed
0 over several SCP-OAM machines.

0 Each DMS-SCP site must also be equipped with a "Minisys" software
0 update machine. The Minisys can be used for save and restore of
0 system data, backup tape verification, Master/Slave audit, ETAS
0 Dial-in, and installation of Network Software Release (NSR)/SCP
0 Software updates.

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0 3.1.1 SCP-TP Hardware Description

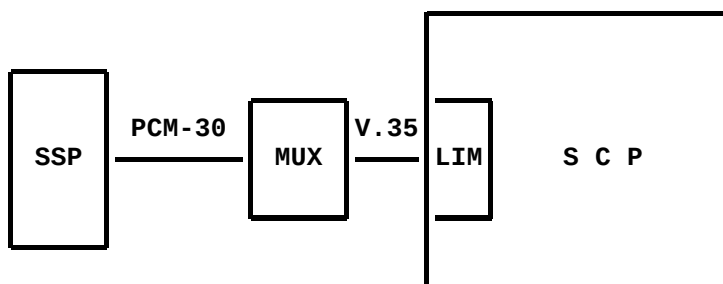
0 The SCP-TP architecture is illustrated in figure 2 and is made up
0 of the following components:

- 0 - Link Interface Module (LIM)/Link Peripheral Processor (LPP)
- 0 - Message Switch and Buffer (MSB7) (replaced by the LIM)
- 0 - Data-Voice System (DVS)
- 0 - DMS-Core (Dual Plane Combined Core Cabinet)
- 0 - Speech Link Connector (SLC)
- 0 - Double Shelf Network (DSN)
- 0 - Digital Network Interconnect (DNI)
- 0 - Digital Trunk Controller (DTC) (replaced by the LIM)
- 0 - Input/Output Equipment (IOE)
- 0 - Trunk Module Equipment (TME)
- 0 - Power Distribution Center (PDC)
- 0 - Miscellaneous Equipment (MIS)
- 0 - Maintenance Spares Storage (MSS)
- 0 - Meridian Storage Frame

0 The MSB7 is a dedicated peripheral module responsible for dis-
0 tributing messages between the SCP-TP components and the CCS7
0 network (Message Transfer Part (MTP) signalling message handling
0 and Signalling Connection Control Part (SCCP)). It is provi-
0 sioned with Signalling Terminals (STs) which interface to the
0 CCS7 links. For more information on the MSB7, refer to Message
0 Switch and Buffer in this section.

0 The LIM, which interfaces directly with the DMS SuperNode
0 DMS-BUS, also interfaces CCS7 signalling links. LIMs are to be
0 provided for new jobs and for extensions where the maximum capac-
0 ity of the MSB7-based system is exceeded.

0 For Telecom Australia, V.35 signalling links interface with the
0 LIM through a MUX. Refer to Figure 315.21.



0
0 | Figure 315.21: TELECOM AUSTRALIA SIGNALLING LINKS TO SCP
0 (BCS-30)

0 For more information on the LIM, refer to the section on the Sig-
0 nalling Transfer Point (STP).

0 The TP1 and TP2 lineups are Slave Database modules responsible
0 for database querying, Transaction Capabilities Application Part
0 (TCAP) encoding/decoding, and remote operation server functions.
0 Each TP lineup consists of up to ten cabinets equipped with
0 Shared Resource Units (SRUs), each of which performs a specific
0 hardware function.

0 The DMS SuperNode equipment consists of the DMS-CORE and the
0 DMS-BUS housed in a single cabinet:

0 The DMS-CORE consists of a Computing Module (contains dupli-
0 cated DMS SuperNode CPUs) and System Load Module SLM. It is
0 responsible for the overall control of all components except
0 the TP1 and TP2.

0 The DMS-BUS performs the routing of messages within the
0 SCP-TP.

0 The SLC is a digital cross-connect, connecting the network side
0 of the MSB7, DTC and MTM to the peripheral side of the DSN.

0 The DSN is used to nail-up connections between the DTC and MSB7.
0 It also carries maintenance messages and alarms to and from the
0 MTM, DTC and MSB7.

0 The optional DNI provides a patch cord junctor cross connect fa-
0 cility for the DSNs.

0 The DTC is a dedicated peripheral module which interfaces the
0 CCS7 links to the SCP-TP. In other words, it is responsible for
0 the data link function of the Message Transfer Part (MTP). (The
0 DTC is replaced by the LIM on new jobs or extensions where the
0 maximum capacity of the MSB7-based system is exceeded.)

0 The IOE supports various devices including disk, tape and MAP
0 terminals required to load and operate the DMS SuperNode.

0 The TME houses the MTMs which support service circuits, test fa-
0 cilities and office alarm circuits. The latter facility provides
0 visual and audible indication of trouble conditions in the DMS

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0 equipment. The TME also houses the Alarm Cross-connect Unit
0 (AXU).

0 The PDC houses the interface between the -48V office batteries
0 and the other DMS-SCP frames and equipment.

0 The MIS frame provides rack space for housing modems, DVS Lan
0 Interface Units (LIUs), power inverters and other equipment.

0 The MSS cabinet offers storage space for DMS Supernode spare cir-
0 cuit packs. The Meridian Storage frame offers storage space for
0 the DVS SRU equipment.

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0 3.1.2 SCP-OAM Hardware Description

0 The SCP-OAM consists of a Data Voice System, provisioned with
0 Shared Resource Units for implementation of the OA&M function.

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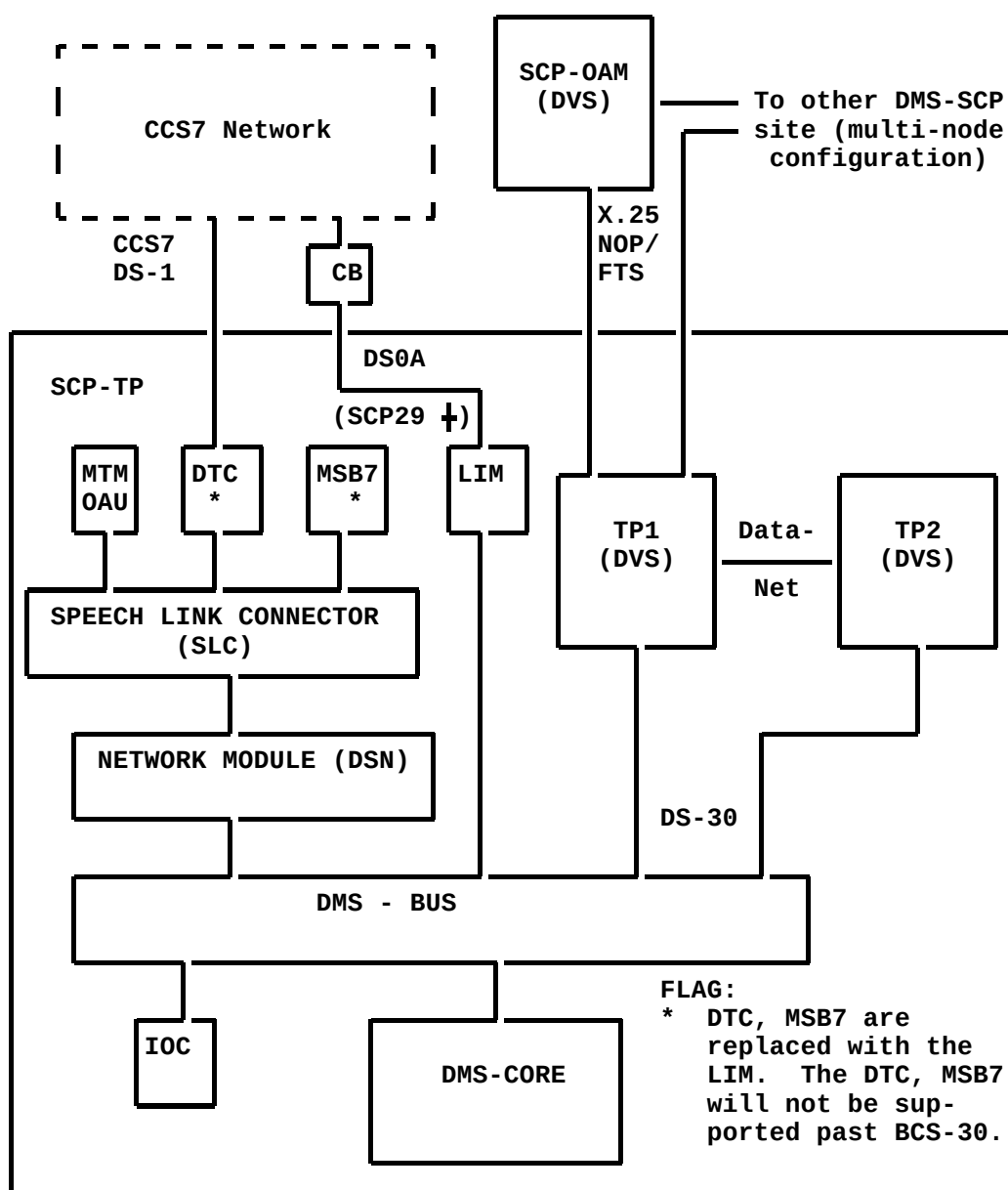


Figure 315.22 DMS - Service Control Point (DMS-SCP)

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0 3.1.3 Dual Plane Combined Core (DPCC)

0 (a) General Description

0 The Dual Plane Combined Core Cabinet (DPCC) is a standard
0 DMS-Core configuration consisting of a Computing Module (CM), two
0 Message Switches (MS) (one per plane) and a System Load Module
0 (SLM).

0 Provision the following equipment as required for SCP applica-
0 tion. Provide additional equipment as detailed in Section 3.9
0 DMS Supernode and Network Subsystems.

0 (b) Reference

0 Chapter 3, Section 3.9 DMS Supernode and Network Subsystems

0 (c) Provisioning Considerations:

0 (i) One (1) DPCC is required per SCP-TP configuration. Note
0 that combined CCS7 products are not currently supported.
0 Thus, DMS-SCP requires its own dedicated DPCC.

0 PER UNIT COMPONENT CAPACITY:

0 Each DMS-BUS: 9,000 Q/S
0 Each DMS-CORE: 200 Q/S (Combined 800+/ACCS/BNS)
0 180 Q/S (ACCS/BNS)
0 225 Q/S (800+)

0 (ii) The provisionable circuit packs for the DMS-BUS are the
0 number of 4-Port cards (NT9X17AA) and associated paddle
0 boards (NT9X23AA). In addition to the always provided
0 number of NT9X17AA cards, the following equation should
0 be used to calculate the number of NT9X17AA and NT9X23AA
0 to provision the MS for DMS-SCP:

0
$$\#NT9X17AA = \#NT9X23AA = \# \text{ Network Modules (NM)} / 4$$

0
$$+ \# \text{ IOCs} / 4$$

0
$$+ \# \text{ DS-30 SRUs} / 4$$

0 (Rounded up to the next integral number)
0 (Note: NM is a single plane)

0 Note: The DS-30 SRU is a Data Voice System component.

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0 (iii) If the DMS Synchronizable Clock / Stratum II is employed
0 in the DMS-SCP system, related equipment must be provi-
0 sioned on the IOE (see Input/Output Equipment Frame sec-
0 tion below).

0 (iv) Refer to Section 3.9 for more details on DMS SuperNode
0 Provisioning.

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0 3.1.4 Link Interface Module0 (a) General Description

0 The Link Interface Module (LIM) houses the individual Link Inter-
0 face Units (LIU7s) and the Local Message Switch (LMS). It is
0 also referred to as the Link Peripheral Processor (LPP).

0 (b) Reference

0 None.

0 (c) Provisioning Considerations:

0 (i) The number of LIU7s required is based on the query rate
0 and length of CCS7 query messages.

$$\begin{array}{l} 0 \qquad \qquad \qquad \text{Total HDBH Query Traffic} \quad \text{(Round up to} \\ 0 \quad \# \text{ LIU7} = \frac{\qquad \qquad \qquad}{\text{LIU7 Capacity at 0.4 Erlangs}} \quad \text{the next} \\ 0 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \text{even integer)} \end{array}$$

0 Where:

0 Total HDBH Query Traffic is taken at the SCP for
0 Quasi Associated Networks; at the SSP for Fully Asso-
0 ciated Networks.

$$\begin{array}{l} 0 \qquad \qquad \qquad \qquad \qquad \qquad \text{Data} \\ 0 \quad \text{LIU7} \quad \quad \quad 0.4 \text{ Erlangs} \times \text{Transmission Rate} \times 2 \\ 0 \quad \text{Capacity} = \frac{\qquad \qquad \qquad}{\qquad \qquad \qquad} \\ 0 \qquad \qquad \qquad \# \text{ of bits/Octect} \times \text{message} \times \text{msgs/query} \\ 0 \qquad \qquad \qquad \qquad \qquad \qquad \text{length} \end{array}$$

0 2 is due to a full duplex link

0 # of bits/Octect = 8 bits

0 Typical SS7 message lengths:

0 800+ Applications: 100 Octets

0 ACCS/BNS Applications: 130 Octets

0 # of messages per query for 800+/ACCS/BNS = 2

0 The calculation above represents the number of LIU7s
0 assigned to the SCP in the Quasi Associated Networks;
0 the number of LIU7s assigned to an SSP in the Fully
0 Associated Network.

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- 0 (ii) The number of links in a Linkset is 1/2 the total number
0 of LIU7s (as calculated in the formula above).
- 0 (iii) A LIM can hold 24 or 36 LIU7s. Refer to Link Interface
0 Module of the Signal Transfer Point (above) for more LIM
0 engineering information.
- 0 (iv) The LIMs are to be provided instead of the DTC and MSB7
0 for new jobs and for extensions where the maximum capac-
0 ity of the MSB7-based system is exceeded.

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0 3.1.5 Input/Output Equipment Frame

0 (a) General Description

0 The Input/Output Equipment Frame (NT0X43AD) is the standard
0 DMS-100 IOE frame. It is equipped with a disk drive, mag tape
0 drive plus some additional I/O terminal controller cards to
0 interface printers/VDUs etc.

0 (b) Reference

0 Chapter 3, Section 3.6 Input/Output

0 (c) Provisioning Considerations:

0 (i) Provide Input/Output Equipment (IOE) as required. Refer
0 to Section 3.6 for more provisioning information for the
0 IOE.

0 (ii) Two IOCs per SCP-TP are required along with their associ-
0 ated disk, tape and terminal requirements. If Stratum
0 clock synchronization (Stratum II or Stratum 2.5) is re-
0 quired for the DMS-SCP, a Remote Oscillator Shelf and as-
0 sociated circuit packs are required. Refer to the
0 Input/Output Equipment Frame of the Signalling Transfer
0 Point (above) for more information.

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0 3.1.6 Office Alarm System

0 (a) General Description

0 An Office Alarm System (OAS) is a Trunk Module Equipment (TME)
0 frame equipped with an Alarm Cross Connect (AXU) shelf and two
0 (2) Maintenance Trunk Modules (MTM) to provide alarming functions
0 for the SCP office.

0 (b) Reference

0 None.

0 (c) Provisioning Considerations:

0 (i) In each SCP-TP provide one TME equipped with at least two
0 MTM shelves. Refer to the Office Alarm System of the
0 Signalling Transfer Point (above) for more information on
0 the Office Alarms for SCP.

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0 3.1.7 Double Shelf Network Equipment

0 (a) General Description

0 A Double Shelf Network Equipment (DSNE) frame (NT8X10AA) will be
0 equipped with one (1) duplicated network (one network module per
0 plane) to interface the MTM shelves to the Enhanced Core Message
0 Switch.

0 (b) Reference

0 Chapter 3, Section 3.9 DMS Supernode and Network Subsystems

0 (c) Provisioning Considerations:

0 (i) Provide one Double Shelf Network (DSN) for every two (2)
0 MSB7s provisioned; that is,

$$\begin{array}{l} \text{\# of NM units (DSN)} = \frac{\text{No. of MSB7s}}{2} \text{ or } \frac{\text{Traffic Load}}{45 \text{ Q/S}} \end{array}$$

0 (which ever is greater)
0 (round up to the next integer)

0 Where:

0 45 Q/S is the Component Capacity.

0 Allocation of messaging links must be spread across the
0 four network subgroups; that is, the 4 links from every
0 two MSB7s must connect one to each of the 4 network sub-
0 groups.

0 (ii) Refer to Section 3.9 for provisioning rules for the DSN.
0 Depending on the number of network modules provided, a
0 Digital Network Interconnect (DNI) frame may also be re-
0 quired.

0 (iii) Speech Link Connector (SLC) Frame

0 Provide Speech Link Connector (SLC) frames as required.
0 Depending on the number of peripheral-side links it is
0 usual to provide the single-bay Speech Link Connector
0 Combined (SLCC) frame. Refer to Engineering Manual Sec-

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0 tion EMA3-02-000 for provisioning information for the
0 SLC/SLCC.

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0 3.1.8 Data Voice System Equipment

0 (a) General Description

0 The DVS portion of an DMS-SCP is a standard DVS (Data Voice Sys-
0 tem) hardware configuration with disk, tape, printer, terminal
0 services and communications links. Figure 315.19 illustrates the
0 configuration of a typical DMS-SCP for QUASI Associated CCS7 Net-
0 work.

0 The computing power of an DMS-SCP is contained in the various Ap-
0 plication Processor (AP) System Resource Units (SRU's). Each of
0 these contains a processor and memory and is loaded with a number
0 of Program Resource Units (PRU's) to execute the required func-
0 tions.

0 Service Orders to update a database are inputted at an SCP-OAM.
0 Service Orders are additions, changes, and deletions to an Appli-
0 cation Database. Updates to the databases are done in two (2)
0 ways; Deferred Transaction and Immediate Transaction.

0 Deferred Transaction carries out the Service Orders (SO) at a
0 specified low traffic time. The SOs are grouped together in an
0 Update File in the SCP-OAM and sent to the TP ahead of designated
0 time. At the designated time, both the SCP-OAM and the TPs up-
0 date their databases.

0 Through Immediate Transactions, the databases are updated imme-
0 diately (in 15 minutes) by sending transactions to the RAM of the
0 DS-30 SRUs. At the next designated update, the transactions in
0 RAM are applied to the databases stored in hard disks.

0 Service Orders are entered via terminals. Bulk input is done
0 through a 9-Track Tape format or a Remote File Transfer (RTF)
0 interface (which is used to transfer batch files from a remote
0 host).

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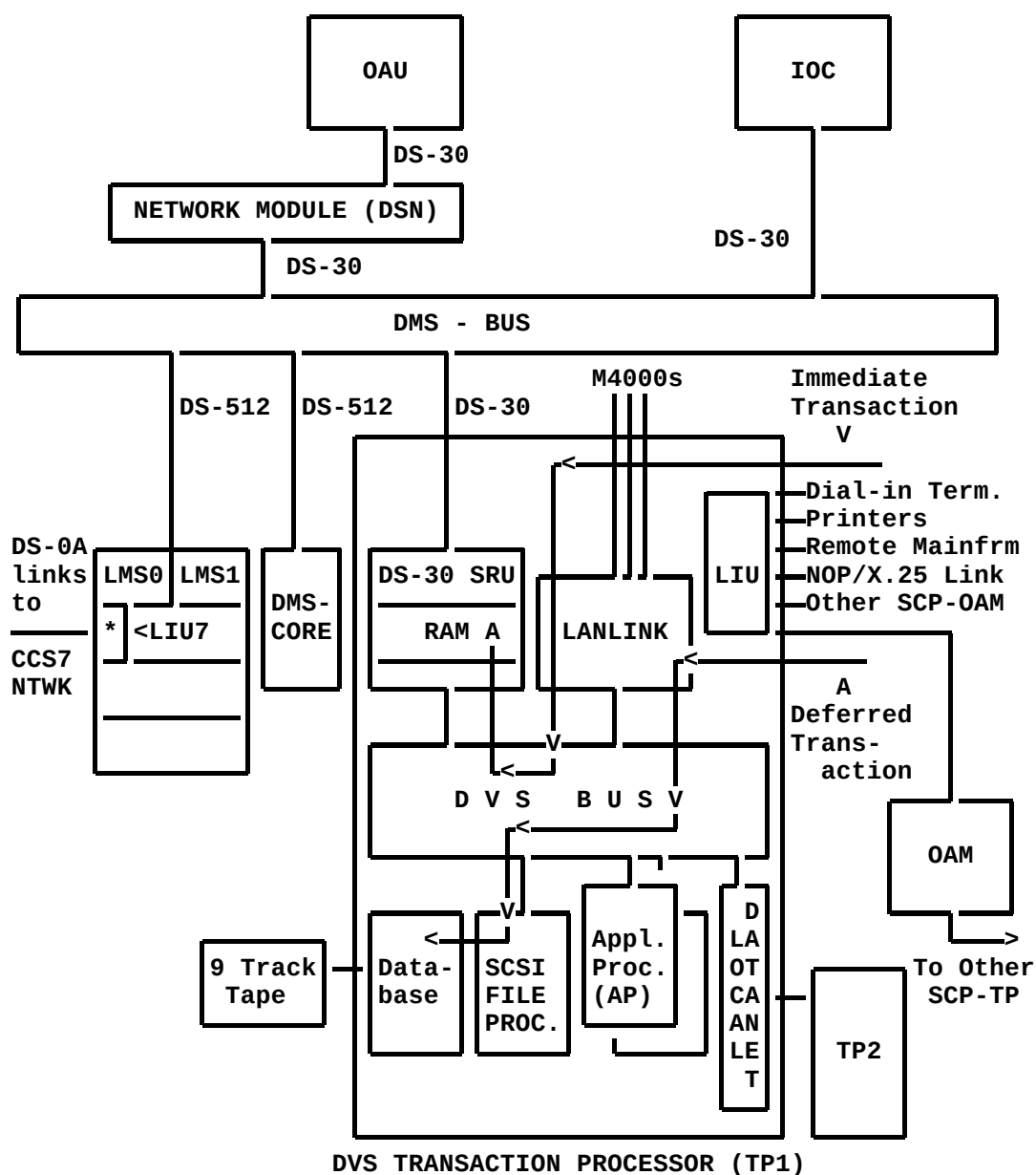


Figure 315.23 -- DMS - Service Control Point (DMS-SCP)

(b) Reference

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0 NTP 450-1061-101 DMS-SCP General Description

0 (c) Provisioning Considerations:

0 (i) Refer to NTP 450-1061-101 DMS - Service Control Point
0 General Description for information on the DVS equipment.

0 (ii) BIX Cross-Connect Panel

0 The BIX Cross-Connect Panel A0332547 is a self-contained
0 wall mounted cross-connect system that is required by the
0 DVS for connections to stand-alone equipment. It is
0 equipped with five 50-pin teledapt connectors across the
0 top allowing termination of up to five (5) LANLINK or
0 Datanet SRUs; one SRU per connector. Inputs are required
0 for the Datanet SRU's in order to connect the Local
0 Datanet link between TP1 and TP2. Below this there are
0 five panels which will each accept 12 teledapt connec-
0 tors. Each panel is associated with one of the five
0 50-pin connectors on the top row. Thus 12 ports for each
0 of the five (5) LANLinks (max) for a maximum of 60 ports.

0 (iii) Miscellaneous Equipment Frame

0 Provide as required for housing modems, LIUs, power
0 inverters and BIX panels. The LIUs are to be oriented
0 vertically on standard NT3X25AA Common Equipment Shelves
0 (maximum 5 LIUs per shelf). LIUs are to be powered from
0 protected AC via an inverter unit.

0 (iv) Maintenance Spares Storage

0 Provide NT1M40AN (A0363241) Meridian Storage Frame for
0 storage of spare DVS SRUs. The Meridian Storage Frame is
0 to be equipped with doors and end panels, and can house
0 up to 40 1/4 SRUs.

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The Link Interface Module (LIM) was initially introduced as a 24-Link Cabinet. However, the 36-Link Cabinet was later introduced as the standard LIM offering. The two cabinets are shown below in Figure 1:

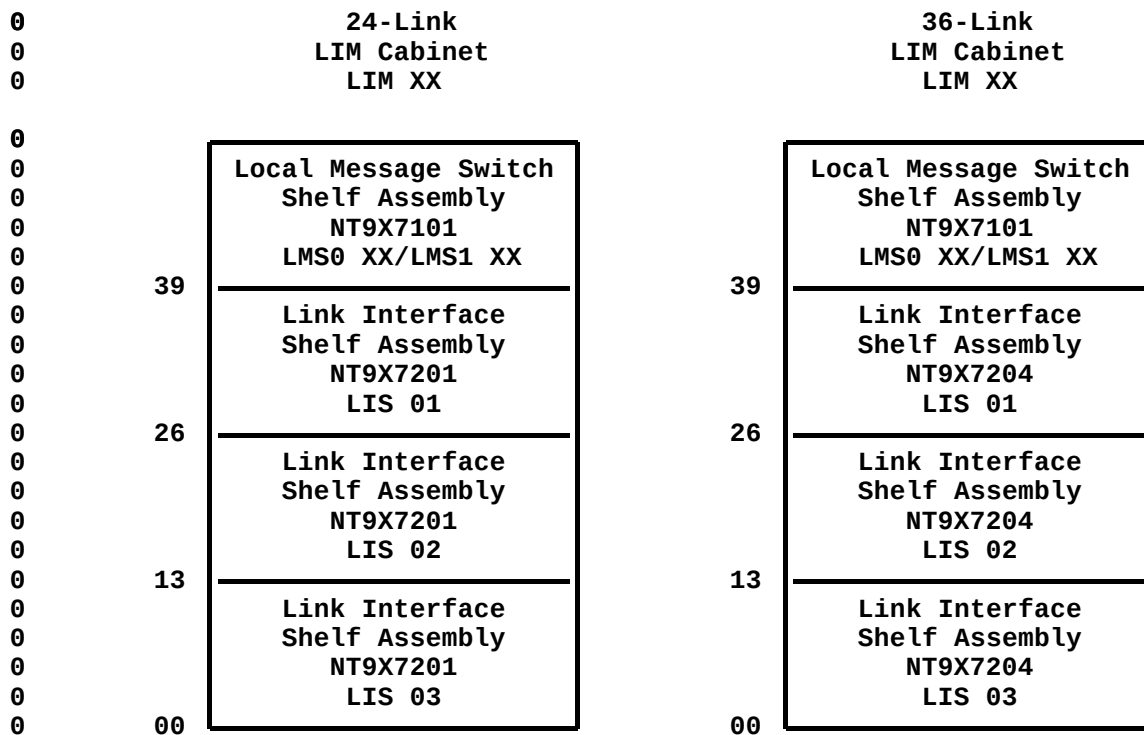


Figure 1: LIM Cabinets

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0 The upper shelf of the LIM (Sh 39) contains the duplicated load-
0 sharing Local Message Switch (LMS). The LMS connects to the
0 DMS-BUS using DS-30 for maintenance and administration, and for
0 inter-LIM communication.

0 The lower three shelves of the LIM (Sh 26,13,00) contain the Ap-
0 plication Specific Units (ASUs). An FBUS is cabled from the LMS
0 shelf to the three ASU shelves and provides the path for messages
0 to/from the various ASUs.

0 The Channelized Access ASUs (NIUs) are unique among ASUs as there
0 are only two places in shelf positions 26, 13 and 00 where they
0 can be mounted.
0 The left NIU mounts in circuit pack position 17, for a 24 link
0 frame and circuit pack position 18 for a 36 link frame.
0 The right NIU mounts in circuit pack position 20, for 24 and 36
0 link frames.

0 Examples of ASUs are LIU7, EIU, FRIU, XLIU and NIU. The 24-Link
0 Cabinet holds a maximum of 24 ASUs, and the 36-Link Cabinet holds
0 a maximum of 36 ASUs.

0 4.1 HARDWARE PROVISIONING

0

0 4.1.1 HARDWARE USAGE RESTRICTIONS

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0 Hardware Usage Restrictions for STP

0

0 Not applicable.

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0 Hardware Usage Restrictions for SSP/SEP

0
0 The LIM can be provisioned into an office which already contains
0 MS7E frames, subject to the dependencies described in the next
0 section. However, the concurrent use of MSB7s and LIMs will not
0 be supported over BCS upgrades. All CCS7 links assigned to MSB7s
0 must be moved over to LIMs during the same BCS, and the MS7E
0 frames set to an inactive state and/or removed.

0 Hardware Usage Restrictions for EIU

0
0 Not Applicable

0 Hardware Usage Restrictions for MDR7

0
0 For the initial (BCS31 and BCS32) MDR7 offering, only one pair of
0 EtherNet Interface Units and a single Store and Forward Processor
0 are supported. Each EIU pair supports a distinct set of LIU7s
0 which are determined by datafill.

0 Hardware Usage Restrictions for FRIU

0
0 The DMS-100 switch must be a Supernode and be equipped with an
0 LIM(LPP). If Frame Relay Services via DATAPATH lines is required,
0 the switch must also be equipped with DATAPATH and any network
0 upgrades required by that product.
0
0 BCS 32 Frame Relay Services must use LIM(LPP) dedicated to FRIU.

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0 The FRIU may co-exist on the LIM(LPP) with other ASU such as the
0 LIU7 and the EIU in BCS 33 and beyond subject to engineering
0 rules to be specified later. FRIU shall not be mounted on an LPP
0 in an STP only office.

0 Since each power supply serves six FRIUs, FRIUs should be added
0 to the LPP so that they are spread as evenly as possible across
0 the six power supplies (or half shelves). In addition, no more
0 than one trunk in a trunk group should be served by any single
0 power supply. With Enhanced Trunking this will ensure that a sin-
0 gle power supply failure does not simultaneously disable both the
0 primary and secondary route of an LLC.

0 56 Kbs DataSPAN access channels cannot be combined with 384 Kbs
0 access channels on a T1 span. 384 Kbs channels on a T1 span can-
0 not be concatenated to form larger bandwidth DataSPAN access
0 channels.

0 The NTEX22BB/NTEX31BA FRIU must replace the NTEX22AA/ NTEX31AA at
0 BCS 34 and beyond. The NTEX22BB/NTEX31BA is not backwards compat-
0 ible with the NTEX22AA/NTEX31AA.

0 The LSSGR (TR-TSY-000509), Section 9.1.2.4, states that no single
0 hardware fault should cause a loss of service to groups of more
0 than 64 switching network terminations. If this criteria is ap-
0 plied to the DataSPAN application, this means that no power sup-
0 ply should control the availability of more than 64 access
0 channels. (All other shared components of the system are dupli-
0 cated.)

0 Hardware Usage Restrictions for DMS-PH

0
0 Each DMS Switch can have a MAXIMUM of eleven (11) XLIUs,
0 X.25/X.75 Link Interface Unit.

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0 Hardware Usage Restrictions for NIU

0
0 NIUs can be provisioned on the 3-slot LIU LIM cabinet (9X70AA) or
0 the 2-slot LIU LIM cabinet (9X70BA).
0 Two (2) NIUs must be provided for each LIS shelf requiring
0 channelized access.
0 The two NIUs must occupy the two central ASU positions in each
0 LIS shelf.

0 The NTEX22AA (4 Meg) Integrated Processor and FBUS Interface Card
0 cannot be used for NIU applications.
0 The NTEX22BB (8 Meg Enhanced) circuit pack must be used for NIU
0 applications.
0 The reason for this restriction is that the NIU software load ex-
0 ceeds 4 Meg of memory, hence the 8 meg circuit pack must be used
0 to provide sufficient memory for the NIU application.

0 Hardware Usage Restrictions for SEP

0
0 SEP utilizes only the LIM/LPP, making conversion from MSB7 equip-
0 ment not applicable. When used for SEP, the LIU7 cardset includes
0 the NT9X76CA in place of the NT9X76AA. The SEP always utilizes
0 Channelized Access (NIU) as the interface to the LIU7.

0 All restrictions for NIU as documented in section 2.2.7 are ap-
0 plicable, with the following exceptions:

- 0 - SEP utilizes only NT9X70BA and newer vintage LPP cabinets.

0 0 4.1.2 HARDWARE DEPENDENCIES

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0 P AND C SIDE PORT REQUIREMENTS

0

0 DMS BUS PORT REQUIREMENTS

0

0 CIRCUITS PER CARD

0

0 DISCRIMINATION NUMBERING

0

0 Hardware Dependencies for STP

0

0 Timing reference for the STP LIM can be referenced to an ex-
0 ternal, customer-provided Timing Service Generator (TSG) or Sig-
0 nal Reference Distribution (SRD) system. Cabling to the TSG/SRD
0 is documented in CA0X06. Maximum distance from the LMS shelf to
0 the TSG/SRD is 457 meters (1500 feet).

0 Interconnection to the TSG/SRD should be engineered to ensure
0 minimum impact on the operation of the LIM if there are failures
0 in the TSG/SRD unit. For example, when there is more than one
0 output port card available on the TSG/SRD, the link from each LMS
0 plane (LMS 0 and LMS 1) should be assigned to a different port
0 card.

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0 The TSG should be located in or near the channel bank. Each Tim-
0 ing Output Card provides ten (10) ports. The following TSG equip-
0 ment is required and should be supplied by the telco:

0 Description	Part Number
0 -----	-----
0 DCD-400 Shelf Assembly	990-40000-01
0 Fuse & Alarm Card	990-40014-01
0 Clock Input Card	990-40010-01
0 Stratum 3 Clock	990-40013-01
0 Timing Output Card	990-40011-01
0 Timing Output Card (Hot Spare)	990-40011-01
0 Matrix Control Card	990-40015-01

0 (Equipment manufactured by Telecom Solutions.)

0 Hardware Dependencies for SSP/SEP

0

0 The LIM can only be provisioned into a Supernode-based SSP/SEP.
0 Offices equipped with the NT40 core can only use MS7E peripherals
0 for CCS7 applications.

0 It is necessary to synchronize all equipment to which signaling
0 links are interfaced, in order that the position of the bits in
0 the digital data stream can be recovered.

0 In the special case in which all LIU7s in a LIM are equipped with
0 V.35 Interface Paddleboards; that is, all links employ V.35 pro-
0 tocol, then there is no need for external timing. The timing
0 signal for V.35 is imbedded in the protocol.

0 However, where DS0 interfaces are employed, a master timing ref-
0 erence is required. Typical equipment in a DMS office using DS0
0 interfaces includes:

- 0 - LIU7s on LIMs,
- 0 - Channel banks with data services,
- 0 - DS0A Interface CP on DTCs.

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0 The preferred method is to use a Timing Supply Generator (TSG),
0 also known as Signal Reference Distribution (SRD), which supplies
0 all equipment with the required timing signal. For reliability,
0 the components of the TSG are fully duplicated with hot standby
0 capability. In an SSP/SP office, the TSG can be an inexpensive
0 type, of low Stratum standard, without impacting reliability of
0 the CCS7 links. The Stratum standard of the TSG does not have to
0 agree with the Stratum standard of the SSP/SP office. The TSG is
0 to be supplied by the telco.

0 For synchronization of the LIM, each NT9X78AA DS0A Paddleboard
0 (PB) can be interfaced individually to the TSG, or timing can be
0 supplied to the LMS for distribution to all LIU7s in the LIM.
0 LIU7s equipped with NT9X78BA Enhanced DS0A Paddleboards do not
0 have individual timing inputs; timing for this type of PB must be
0 distributed via the LMS.
0 The NT9X78CA requires BCS33 and higher software.

0 Where channel banks are used to interface signaling links to DS1
0 facilities, the channel banks and the LIM can both be timed from
0 the same TSG. The office may have existing channel banks with
0 spare channels that could be used for signaling links. Primary
0 and secondary timing references for the TSG should be derived
0 from the same DS1s that carry the signaling links.

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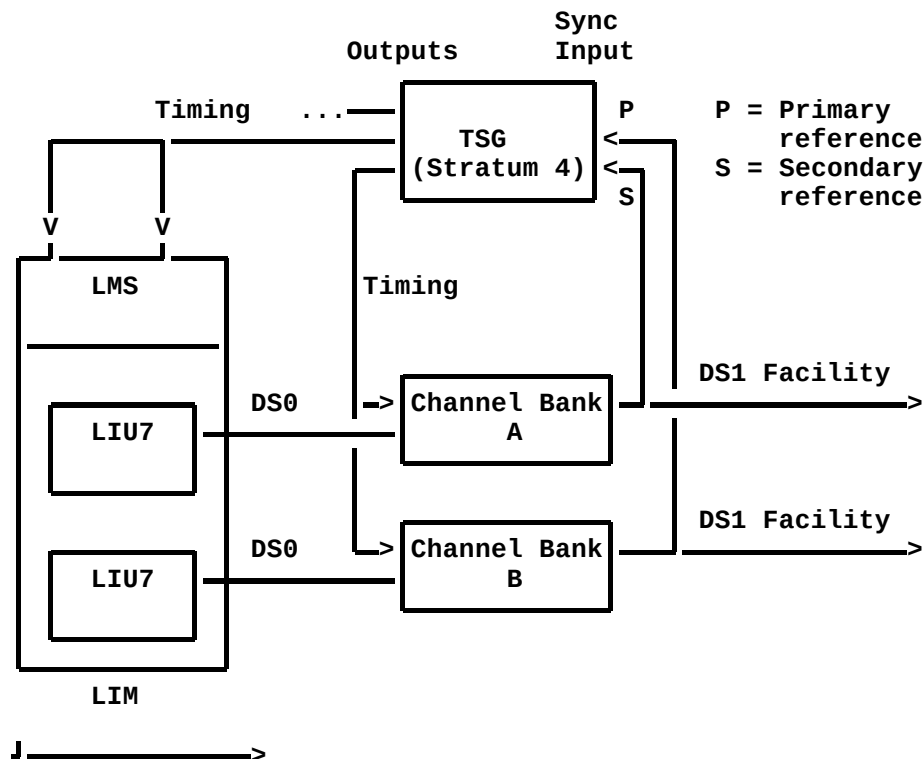


Figure 2: Timing Supply - LIM and Channel Banks

Alternatively, the internal Timing Supply Unit (TSU) card on the channel banks could be used as the timing reference, thus eliminating the need for an external TSG. This configuration has limited application since a maximum of two LIU7s can be equipped. Timing must be interfaced directly from the two channel banks to the two DS0A Interface PBs. Only NT9X78AA type paddleboards can be used. It is not permissible to route the timing to the LMS and feed more than two LIU7s, because timing from the two channel banks will be out of phase, and two timing references are required for reliability.

It is not permitted to synchronize the LIU7s from the timing output of DTC DS0A Interface CPs. This output is present for lab test purposes only. Should a failure occur in this configura-

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0 tion, there would be no way to associate it at the MAP with a
0 CCS7 link failure.

0 Hardware Dependencies for EIU

0
0 Not Applicable

0 Hardware Dependencies for MDR7

0
0 MDR7 requires the use of the Ethernet Interface Unit mounted on a
0 Link Interface Shelf in a Link Interface Module (LIM) frame. The
0 EIU requires a cable (NT9X0190) to the bulkhead and cabling from
0 the bulkhead to the customer-provided Attachment Unit. This cabl-
0 ing is available for standard cable duct applications or for
0 raised- floor/HVAC ductwork applications.

0 Either two or three slot EIUs may be used for MDR7.

0 Hardware Dependencies for FRIU

0
0 The FRIU on the LIM(LPP) for FRS channel access for BCS 33 or
0 earlier includes the NTEX22AA IPF, NTEX31AA FRAP and NTEX30AA
0 T1PB.

0 The FRIU on the LIM(LPP) for FRS channel access for BCS 34 or
0 later includes the NTEX22BB IPF, NTEX31BA EFRAP and NTEX30AA
0 T1PB.

0 LIS shelves on LPP frames equipped with FRIU(s) must be equipped
0 with NT9X74DA FBUS/CBUS I/F CP.

0

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0 Hardware Dependencies for DMS-PH

0
0 The DMS Packet Handler requires that the switch be a DMS Super-
0 node equipped for ISDN and has an LPP/LIM Cabinet.

0 The DMS Packet Handler also requires that the DMS-Bus be
0 equipped with the following:

BCS Level	Memory Req.
BCS-34	10 MBytes of Memory
BCS-35	7 MBytes of Memory

0 Refer to the following documents for the provisioning rules of
0 the DMS-Bus:

0 ECM-626 BBlock Eng - Supernode In S/DMS Cabinet

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0 Hardware Dependencies for NIU

0
0 The DMS-BUS at the Central Office host site that is connected to
0 the LPP that requires channelized access, must be configured with
0 at least two (2) Inter-Message Switch Links (IMSLs).

0 Refer to NTP297-1001-451, Table MSILINV for datafill provisioning
0 guidelines.

0 Refer to ECM-626, DMS Core or ECM-632, SuperNode SE for provi-
0 sioning information related to the Inter-Message Switch Links
0 (IMSLs).
0 Inter-Message Switch links are provisioned in a different manner
0 on a standard SuperNode versus SuperNode SE.

0 Hardware Dependencies for SEP

0
0 All dependencies for SSP/SP as documented in section 2.3.2 are
0 applicable, with the following exceptions:

- 0 - SEP applies to Supernode offices only.
- 0 - SEP utilizes Channelized Access (NIU) interface only.

0 All dependencies for NIU as documented in section 2.3.7 are ap-
0 plicable.

0 In addition, the following requirement must be met:

- 0 - SEP always utilizes PCM30 type CCS7 trunks (voice
0 channels), which must have NT6X70AA Continuity Tone
0 Detector CP's equipped in the trunk peripherals.

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0 4.1.3 PROVISIONING CONSIDERATIONS

0
0 The following ASU platforms are supported on the Link Interface
0 Module (LIM):

ASU Platform	24-Link LIM Cabinet	36-Link LIM Cabinet
LIU7 Link I/F Unit for SS7	YES	YES
EIU Ethernet Interface Unit	YES	YES
FRIU Frame Relay I/F Unit	NO	YES
NIU Network Interface Unit	YES	YES
XLIU X.25/X.75 Link I/F Unit	NO	YES

0
0 The following Chart represents for BCS35 the verified ASU combi-
0 nations. These combinations represent ASU maximums. Other quanti-
0 ties of ASUs are allowed as long as they do not exceed these
0 values. For example Option 3 shows a combinations of 6,7,7(LIU7s,
0 FRIUs,XLIUs). This implies that a combination of 4,2,2
0 (LIU7s,FRIUs, XLIUs) is supported since the maximum number of
0 ASUs has not been exceeded.

ASU Platform	36 Link LIM Cabinet		
	Option 1	Option 2	Option 3
LIU7 Link I/F Unit for SS7	6	6	6
FRIU	24		16

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0 The STP is shown below. Refer to the appropriate documents for
0 provisioning information (ECM-620 provides information for the
0 LIM only).



0 Figure 3: A Conceptual View Of The DMS-STP
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0 The individual SDLs terminate at the Link Interface Unit (LIU7).
0 One (1) LIU7 will support one (1) SDL.

0 To support the signalling links, provisionable interface
0 paddleboards are required. There are two types of paddleboards,
0 one to interface V.35-protocol signalling links, the other to
0 interface DS0A-protocol signalling links. The two types may be
0 mixed within the LIS.

0 The NT9X77AA V.35 Interface Paddleboard supports one V.35 signal-
0 ling link. It can operate at the full V.35 rate (56 kbit/s) or
0 at the following subrate speeds: 2.4, 4.8, 9.6 and 19.2 kbit/s.
0 Optional software is required for subrate operation (see Software
0 Packages). V.35 Data Sets, if required, are to be furnished by
0 the customer for this application.

0 The NT9X78AA DS0A Interface Paddleboard supports one DS0A signal-
0 ling link.

0 The NT9X78BA Enhanced DS0A Interface Paddleboard supports one
0 DS0A signalling link. It is enhanced from the NT9X78AA
0 paddleboard by the addition of DS0A loopback and BERT capabili-
0 ties for testing purposes.

0 The NT9X78CA Enhanced DS0A Interface Paddleboard supports one
0 DS0A signalling link. It provides all the capabilities of the
0 NT9X78BA plus the added feature of 56 kb/s and 64 kb/s trans-
0 mission rates. The NT9X78BA and NT9X78AA only support a single
0 transmission rate of 56 kb/s.

0 The NT9X78CA paddleboard works for International Applications at
0 64Kbs. If the NT9X78CA is ordered for domestic applications, it
0 can be datafiled as a NT9X78BA and does function, but it cannot
0 provide 64Kbs rates for the domestic application.

0 The NT9X78CA requires BCS33 and higher software along with the
0 software package:

0 NTXN19AA - LIU7 for LPP Based CCS7 Applications.

0 The External Composite Clock Terminator included in the NT9X78AA
0 CP was removed in the NT9X78BA. Provision this paddleboard only
0 when interfacing a DS0A signalling link and when Enhanced Mainte-
0 nance feature is required (BCS28 or higher). Otherwise, provision
0 NT9X78AA.

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0 C-Link Provisioning

0 C-Links are the provisioned signalling links between mated STP
0 pairs. A minimum of two links must be provisioned and assigned as
0 follows:

0 If there are two or more LIM cabinets in an office, the C-Links
0 should be assigned to different cabinets for reliability.

0 If there is only one LIM cabinet in the office, the two C-Links
0 should be assigned to a different LIS and assigned to different
0 halves of the shelf because the two halves are powered from dif-
0 ferent feeds.

0 In some situations it may be necessary to provision more than two
0 links. Enough links should be provisioned to carry all of the
0 traffic between the two largest nodes attached to the STP. In the
0 event of a multiple link failure, the C-Links would be required
0 to support this traffic.

0 Service Switching Pt (SSP)/Signaling Pt (SP)

0
0 The LIM cabinet was introduced to support CCS7 signaling links
0 only in Signal Transfer Point (STP) offices initially. At a Ser-
0 vice Switching Point (SSP) or Signaling Point (SP) end office,
0 trunk peripherals were provisioned to interface the signaling
0 links, and MS7E frames were provisioned to perform message hand-
0 ling functions. This configuration is illustrated in Figure 4.
0 Note the requirement for nailed connections through the network
0 between the MSB7 and trunk peripherals, thus consuming network
0 capacity. As well, additional hardware (LTC, DTC or DCM ports)
0 are required to interface the signaling links. The MSB7 is the
0 limiting component in CCS7 messaging capacity.

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In BCS30, software is introduced which allows the LIM to interface CCS7 signaling links in an SSP/SP office. This configuration is illustrated in Figure 5. With a junctored network, ISUP call processing messages from the LIM are routed via the MS and "bounced" off the Computing Module, then through the network to the DTC. In Enhanced Network (E-Net) applications, messages bypass the CM and are routed directly through the Message Switch.

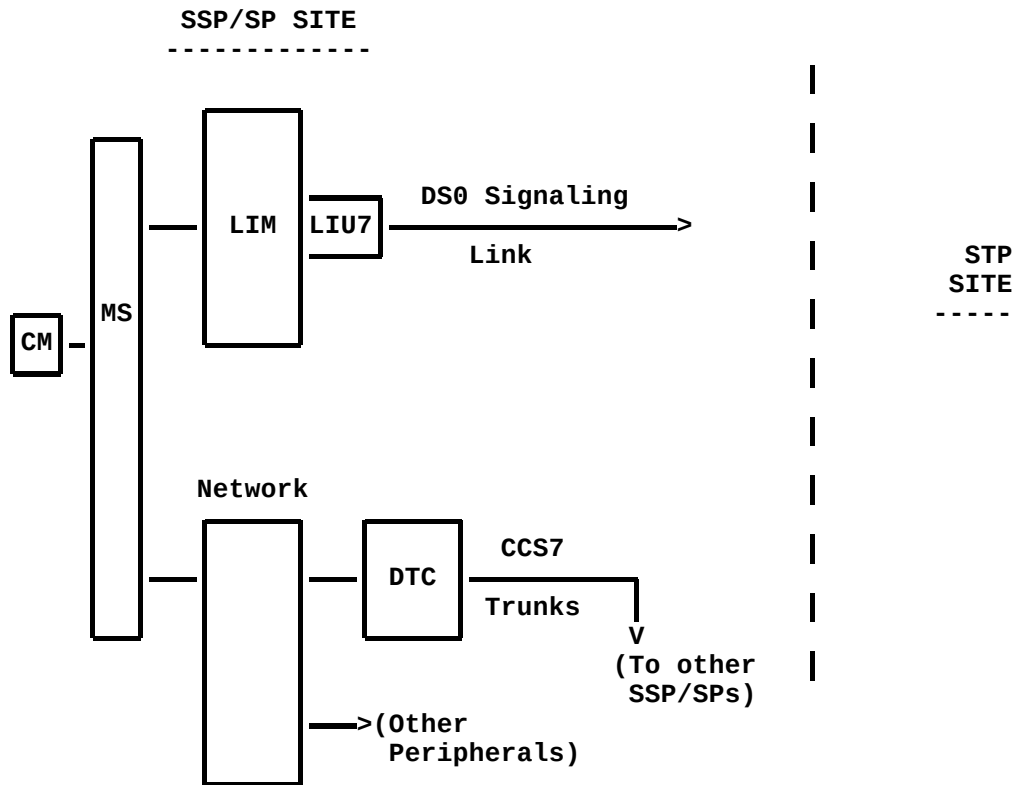
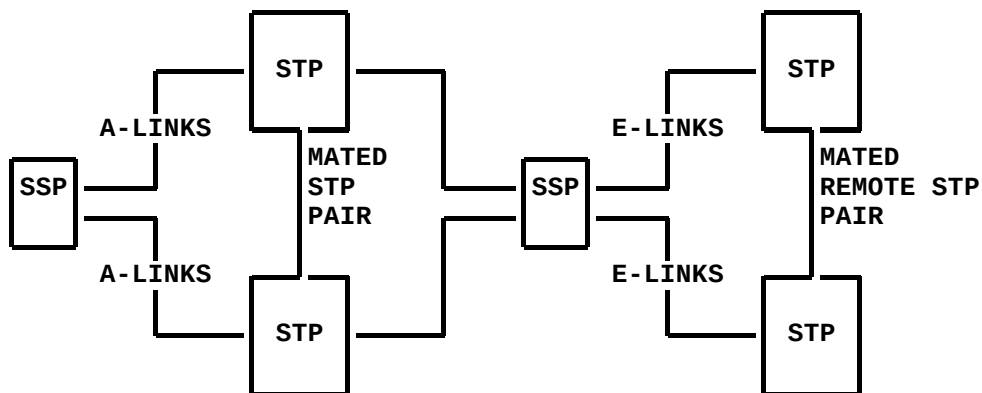


Figure 5: CCS7 Architecture with LIM in SSP/SP

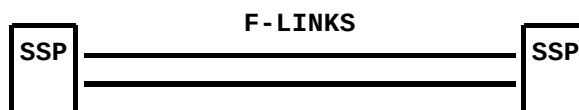
LIM hardware provisioning is the same as for STP applications. This section discusses the provisioning of signaling links and multiple LIM cabinets at the SSP/SP office.

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The CCS7 Network is classified in two ways; the FULLY ASSOCIATED NETWORK and the QUASI ASSOCIATED NETWORK. The Fully Associated Network has every Service Switching Point (SSP - End Office) connected directly to the other SSPs. In this mode, the links are called F-links. The number of F-links is equal to $n(n-1)$; where n = number of SSP nodes. The Quasi Associated Network has every SSP connected to other SSP through a Signaling Transfer Point (STP). In this case, the STPs serve as the hub for the signaling networks. The STP is configured in mated pairs. An SSP/SP is connected to the Home STP pair with A-links. The number of A-links is equal to $2n$; where n = number of SSP nodes. The SSP may also be connected to a Remote STP pair by E-links. Typically for SSP/SPs, it is the A or E links that are provisioned based on traffic figures.



QUASI-ASSOCIATED SIGNALING



FULLY-ASSOCIATED SIGNALING

Figure 6: CCS7 SIGNALING METHODS

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0 Provision LIM cabinets and LIU7s as required to support the cal-
0 culated quantity of links based on Traffic Provisioning.

0 In the case where the minimum of 2 signaling links is connected
0 to another node, for reliability they will be assigned to differ-
0 ent channel banks and different DS1 facilities.

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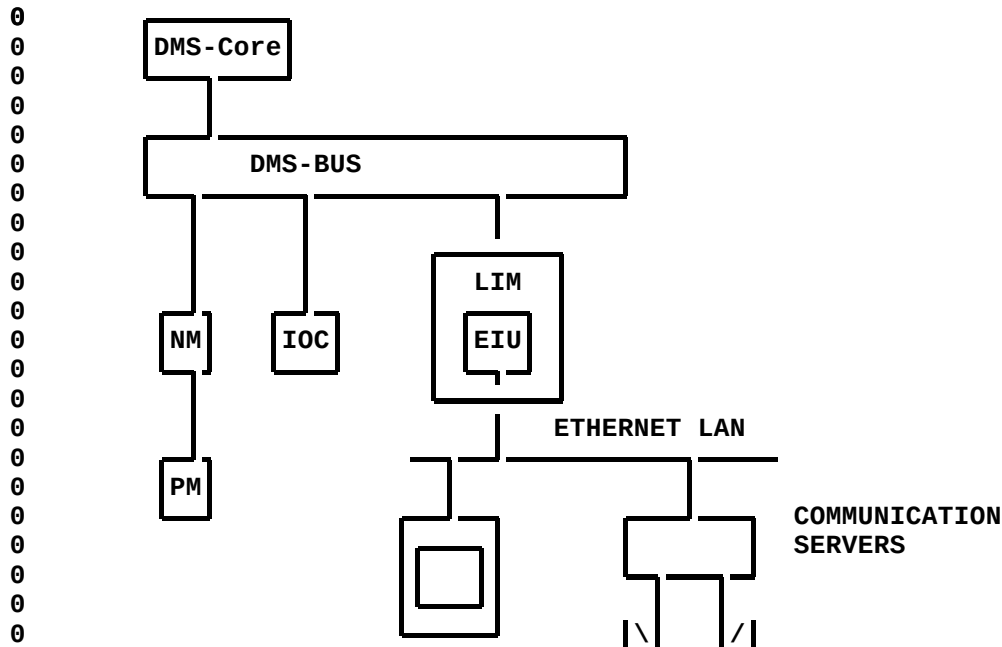
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0 The EIU is thus a facilitator of flexible communications between
0 DMS and external systems. The figure below shows a DMS SuperNode
0 interfacing with an Ethernet LAN.



0 WORKSTATION | |
0 X.25 ASYNC

0 Figure 7: A DMS SuperNode Interfacing With An Ethernet LAN
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0 The Ethernet Interface Unit (EIU) acts as a "gateway" between the
0 DMS-BUS and an Ethernet LAN supporting user data links. It acts
0 as a concentration point between the peripherals (terminals and
0 modems) and the DMS-BUS. The actual peripherals are not termi-
0 nated on this unit, but on remote concentrators. These remote
0 peripherals allow connection of HDLC (X.25, etc.) and asynchro-
0 nous (MAP terminals, printers, etc.) terminal equipment to the
0 system. The Ethernet also provides a linkage between DMS and
0 workstations used for attached processing. Future versions of
0 the EIU will provide standard synchronous and asynchronous inter-
0 faces directly on the switch.

0 One of the main components of the STP is a Link Interface Module
0 (LIM) Cabinet. An LIM cabinet containing an EIU is deployed in a
0 DMS SuperNode to establish Ethernet connectivity. Provisioning
0 of EIUs is application dependent. That is, the quantities re-
0 quired and their configuration is determined by a combination of
0 product, software, and traffic engineering criteria.

0 Each EIU will support one (1) Ethernet communications link
0 (port).

0 The EIU consists of a three-card slot entity on the 24-Link Cabi-
0 net, and a two-card slot entity on the 36-Link Cabinet.

0 The three-card slot EIU entity consists of the following:

0 Integrated Processor and FBUS Interface CP
0 Ethernet Interface CP
0 Filler Face Plate
0 Ethernet Access Unit Interface PB

0 The two-card slot EIU entity consists of the following:

0 Integrated Processor and FBUS Interface CP
0 Ethernet Interface CP
0 Ethernet Access Unit Interface PB

0 The Ethernet Interface CP will support one (1) Ethernet communi-
0 cations link.

0 The EIU Paddleboard is the physical interface to the Ethernet
0 system. It is a 25-pin D-type connector that provides the inter-
0 face between the Ethernet controller and the Media Access Unit
0 (MAU).

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0 There is an industry standard 15 pin AUI connector located at the
0 LIS Bulkhead. This is a generic interface and is supported as an
0 industry standard (IEEE 802.3 10BASE5 implementation). Note that
0 this interface is compatible with ALL implementations of Ethernet
0 through external equipment.

0 For each EIU, one (1) Ethernet Cable Assembly is required to ca-
0 ble from each EIU Paddleboard to the LIS Bulkhead. The Ethernet
0 Cable Assembly is a cable with a 25 pin connector at one end and
0 a 15 pin connector at the other end. It cables from the EIU
0 Paddleboard to the LIS Bulkhead.

0 If EIUs are to be mounted on the 24-Link Cabinet, one (1)
0 NT9X70AZ Product Change Kit for LIS Retrofit is required per
0 24-Link Cabinet. This will provide the proper bulkheads (on each
0 LIS shelf) which will be compatible with the 15-pin D-type con-
0 nector.

0 Data Assignment Of Ethernet Addresses

0 One area of unique datafill pertains to the EIU. By industry
0 convention, Ethernet addresses are to be unique everywhere. For
0 this reason, a 48 bit number is used. It is divided into several
0 fields to identify manufacturers and individual units. In typical
0 workstation applications, the Ethernet address is burned into a
0 PROM device on the interface circuit pack.

0 Datafill restricts the datafill of data table LIUINV to up to
0 four (4) EIUs per SuperNode.

0 Data Engineering Process (Northern Telecom Department S642,
0 Bramalea) is responsible for providing and distributing all
0 global EIU ethernet addresses.

0 For information on datafilling ethernet addresses and other
0 ethernet related datafill on the SuperNode, reference:

0 NTP-297-1001-451 Customer Data Schema

0 Internet Protocol Network Table (IPNETWRK)
0 Internet Protocol Subnet Router Table (IPROUTER)
0 Internet Protocol SuperNode End Host Table (IPHOST)

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0 Message Detail Recording (MDR7)

0
0 The delivery of advanced network services often requires the
0 interaction of multiple CCS7 networks and the use of resources
0 owned by several telephone operating companies and/or their cus-
0 tomers. As a conduit for internetwork CCS7 traffic, the DMS-STP
0 provides a centralized location for the collection of statistical
0 information that can be used for usage sensitive CCS7 services.

0 The CCS7 Message Detail Recording feature allows the telco to
0 capture the detailed CCS7 message signaling units (MSUs) being
0 transported in the CCS7 network. Information provided by this
0 feature in turn supplies the data that allows recording of ser-
0 vices or allocations of resources among the networks that inter-
0 work to deliver advanced network services.

0 MDR7 uses the DMS-STP Gateway Screening feature (NTX840AA is a
0 prerequisite) to identify which messages are to be tracked. The
0 feature then takes a snapshot of the MTP, SCCP, and TCAP (or
0 ISUP) of the CCS7 message and sends the snapshot across the
0 DMS-Bus to the appropriate EtherNet Interface Unit (EIU), a
0 68020-based IEEE 802.3 interface card that resides in the LPP
0 cabinet. The EIU routes the snapshot over an EtherNet LAN to a
0 customer-provided store-and-forward processor (SFP), where it is
0 processed as required and then forwarded to the customer's
0 mainframe computer. Refer to the EIU Section for EIU provisioning
0 information.

0 The physical interface to the Ethernet system is the NT9X85AA
0 Ethernet Access Unit Interface which provides the interface be-
0 tween the Ethernet controller and the Media Access Unit. This
0 interface is compatible with all implementations of Ethernet
0 through external equipment.

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0 Frame Relay Interface Unit (FRIU)

0
0 Refer to section 1.4 for abbreviation definitions.

0 The Frame Relay Service (FRS) is a new high speed, connection
0 oriented, switched packet data service. DATASPAN is the Northern
0 Telecom trade name for this service.

0 Customers may use Frame Relay Service to transfer data in
0 packetized format from one location to another via a Datapath
0 connection, a DDS (Digital Datapath Service) channel, or from a
0 LAN via a T1 line.

0 Datapath is a Northern Telecom feature on the DMS 100 or DMS 250
0 providing dial-up data circuits operating at 56 kbps. DDS is an
0 AT&T developed private line digital data service operating at 56
0 kbps. Token Ring and Ethernet are types of LAN (local area net-
0 works) for connecting computer peripherals together. All these
0 types of data services can now be connected using Frame Relay
0 Service to transmit and receive data.

0 Figure 8 shows the connections of these type services to a
0 DMS-100. A Datapath subscriber is connected through the DMS
0 switching network to a FRS access channel as shown in Figure 10.
0 DDS subscribers must be multiplexed on to a T1 line which can be
0 connected directly to a FRS access channel. A LAN can be con-
0 nected via a non-channelized T1 line directly to a FRS access
0 channel.

0 Figure 9 shows the connections of these type services to a
0 DMS-250. Datapath subscribers access channels would terminate on
0 a DTC for switching through the DMS network to a FRS access chan-
0 nel. DDS and LAN access are the same as for the DMS-100.

0 FRS is available on the DMS-100 LEC (Local Exchange Carrier) and
0 the DMS-250 IEC (Inter Exchange Carrier) from BCS 32 and beyond.

0 An FRS subscriber is connected to the frame relay switch via an
0 access channel on which multiple logical link connections (LLC)
0 to a number of other subscribers may exist. Each logical link
0 connection operates independently of other logical links on the
0 access channel.

0 The types of connection allowed are:

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0 * Private - Customer FRS agent (logical link) to another FRS
0 agent owned by the same customer.

0 * Non-private - Customer FRS agent to another FRS agent owned by
0 a different customer.

0 Each logical link permits a full duplex exchange of frames and
0 the order of frames is preserved in each direction. FRS limits
0 the maximum frame size to 1600 bytes.

0 The initial release of FRS supports only permanent logical link
0 connections (PLLC) which are set up at Telco subscription time.
0 The throughput on a single logical link connection can be in ex-
0 cess of 1 megabit/second with an internal switch one way transit
0 delay less than 3 ms. The three access channel speeds supported
0 in the initial release are :

0 * 56 kbps over DATAPATH and DDS circuits.

0 * 1.344 Mbps SF over T1 line (non-channelized) circuits

0 * 1.536 Mbps ESF over T1 line (non-channelized) circuits

0 DATAPATH Support: DATAPATH provides access via a local loop, a
0 DMS remote peripheral, or a D4 channel bank. DATAPATH uses the
0 DMS hotline feature to automatically connect the DTE to the frame
0 relay service when the DTE comes on line. Only 56 kbps rates will
0 be supported. T-link sub-rate encoding is not supported. The cus-
0 tomer is required to use the High Speed Data Unit (HSDU) which
0 supports the V.35 physical interfaces. Refer to ECM 270, Datapath
0 Modem Pooling.

0 DDS support: Digital Data Service (DDS) is an AT&T developed pri-
0 vate line digital data service. Only the 56 Kbps non-error cor-
0 recting form of this service will be supported. Individual DS0
0 must be multiplexed onto a T1 prior to connecting to Supernode .
0 A maximum of 24 56 kbps access connections are supported on a
0 single T1 access circuit.

0 Non-channelized T1: The non-channelized mode uses all 192 bits of
0 information in a T1 frame to carry data associated with a single
0 frame relay frame.

0 All customer access protocols must use HDLC framing plus either
0 LAPB/SDLC or LAPD logical link identification.

0 Refer to Figure 8 and Figure 9 for access channel configurations.

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0 Dataspan T1 Trunking

0 Separate LPP cabinets in the Dataspan networks can be connected
0 via non-channelized T1 trunks. The trunks can connect LPP cabi-
0 nets in the same office or in two different offices. These trunks
0 are in trunk groups. The trunks can be of two types, standard or
0 enhanced. The trunk groups can be of two types, shared or non-
0 shared.

0 Standard trunks offer a basic node-to-node transport medium using
0 the frame relay standard as it exists today (the ANSI T1S1 stand-
0 ard). They are connected to suppliers of end office equipment
0 other than Northern Telecom, and could be used to expand the net-
0 work to areas not serviced by DMS Supernodes. Standard trunks may
0 not be placed in trunk groups of more than one member.

0 Enhanced trunks offer the standard service plus a fault resistant
0 capability. Enhanced trunk members may be grouped together into
0 trunk groups of more than one member, and connections can be
0 given a secondary route over a separate trunk member within the
0 group. Connection duplication greatly improves reliability, and
0 allows a trunk member in a multiple member group to be taken out
0 of service for maintenance without seriously disrupting service
0 for customers. Because of this enhancement, end-to-end sequencing
0 of frames is done; that is; frames are guaranteed ordered from
0 one access point to the eventual destination even in the case of
0 trunk member failure (although with perhaps some frame loss).

0 A shared trunk group has members which may carry frames belonging
0 to any customer who purchases connections across the trunk.

0 A non-shared trunk group is one in which all of the connections
0 assigned to the group belong to a single customer. This customer
0 , in effect, purchases the trunk group for his own private use.

0 Connections using trunks may be datafilled in such a way that
0 they are tandem to an office. With this ability, a network need
0 not be engineered to have maximum conectivity.

0 The enhancement of DataSPAN (Frame Relay Services) for Fractional
0 T1 and ESF support is accomplished through the introduction of
0 the EFRAP (ESF Frame Relay Applications Processor) circuit pack.
0 The EFRAP replaces the FRAP introduced in BCS 33 as part of the
0 FRIU (Frame Relay Interface Unit). The EFRAP, like the FRAP, is
0 mounted on the LPP(LIM).

0

0 Fractional T1 supports four 384 Kbs hyper-channels for end-user
0 access. With fractional T1 access, end-users who require greater
0 than 56 Kbps for access, can also select a 384 Kbps channel to
0 support their applications. Any unused T1 channels cannot be used
0 for voice services. The DataSPAN product requires that the T1
0 carry only data.

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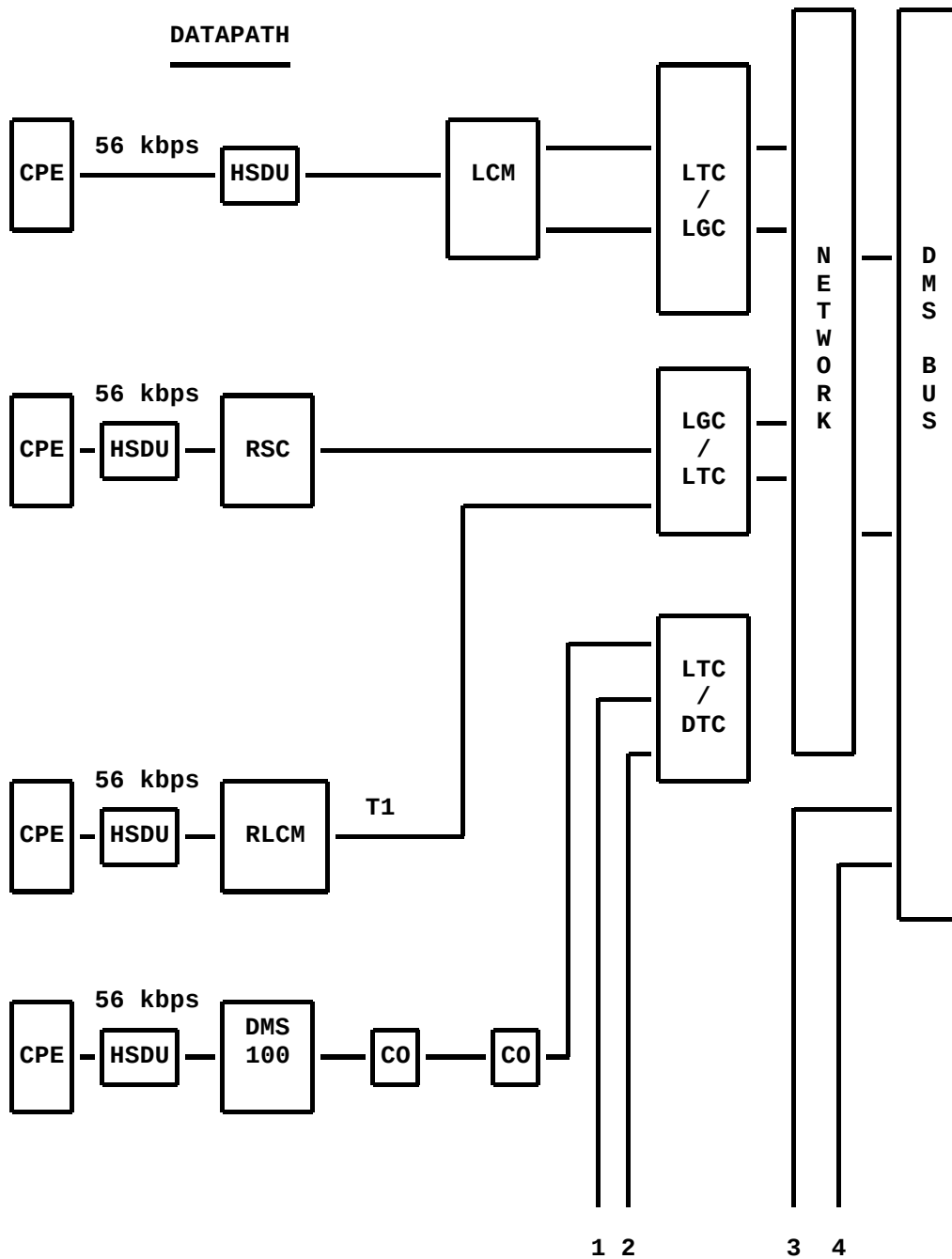
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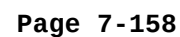
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0 Figure 8 (Continued): DMS-100 LATA Access
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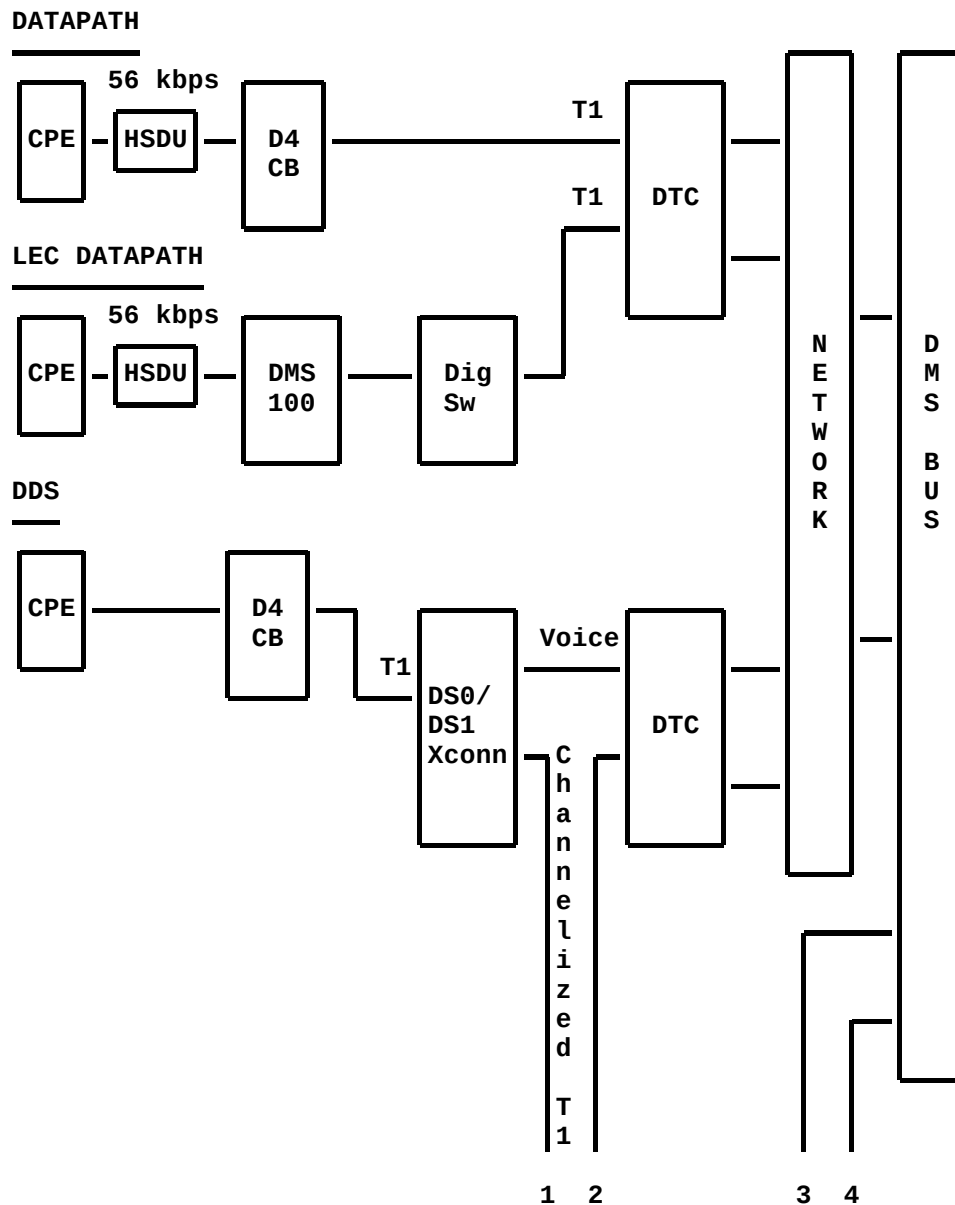


Figure 9: DMS-250 Access

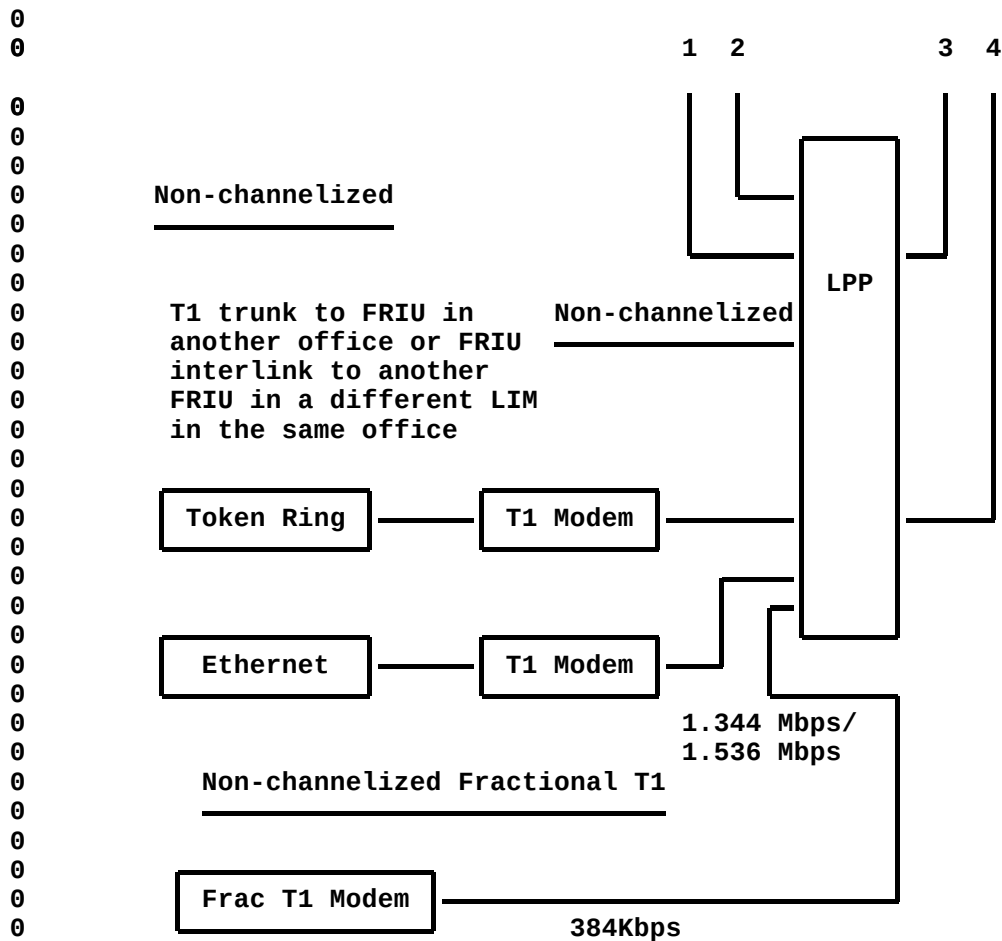
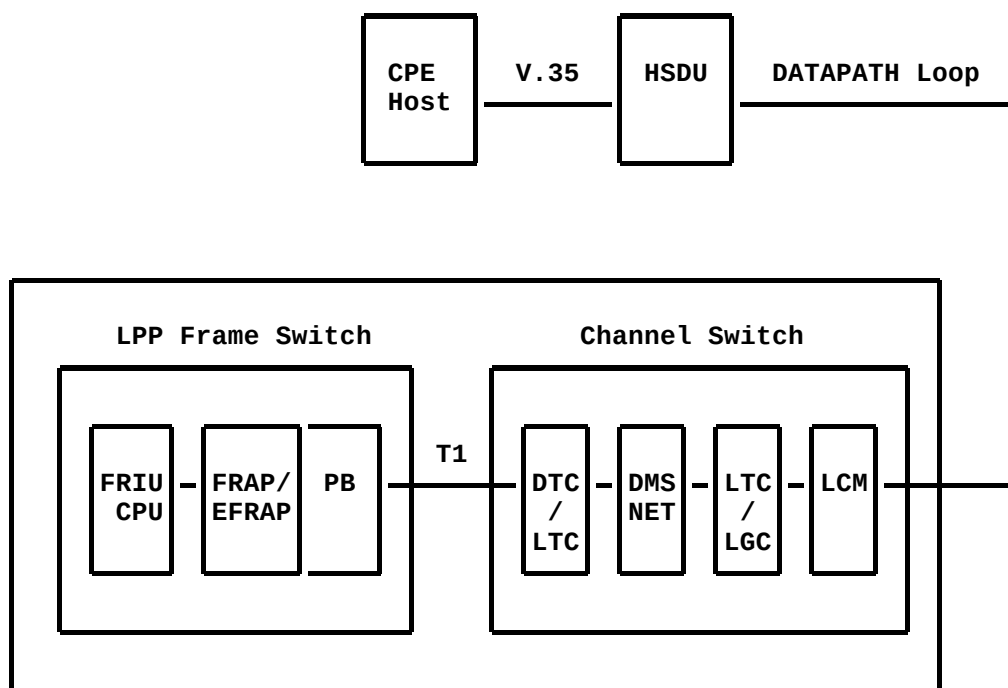


Figure 9 (Continued): DMS-250 Access

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DATAPATH Connection to FRIU for Frame Relay Service



Connection of the DATAPATH line to the FRIU is accomplished via the hotline feature. The FRIU channel is assigned a DN in a single member trunk group for this purpose.

Figure 10

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0 DMS Integrated Packet Handler (DMS-PH)

0
0 Presently, packet services are provided by the DPN-based Packet
0 Handler (DPN PH) which is connected to the DMS via DS1 links. The
0 DMS Packet Handler (DMS PH) is being introduced to provide X.25
0 packet service for DMS-100 Integrated Services Digital Network
0 (ISDN) as an integral component of the DMS Switch.

0 The DMS PH is based on the Link Interface Module (LIM) platform.
0 The LIM provides the protocol processors required for packet
0 switching. It relies on the common DMS operations, maintenance
0 and provisioning systems to provide all OAM functions. To provide
0 for simplified and consistent call services, the DMS PH will rely
0 on the Call Processor of the DMS-Core to provide functions such
0 as Digit translation and Hunt Group processing.

0 The DMS PH uses two types of Application Specific Units (ASU).
0 These are the XLIU and the NIU, and are detailed as follows:

0 A) The X.25/X.75 Link Interface Unit (XLIU) provides interface to
0 the X.25/X.75 Protocols. The XLIU handles physical, data
0 link, and network level protocol services. One (1) Link
0 Interface Shelf (LIS) will support up to ten (10) XLIUs; up to
0 a maximum of thirty (30) XLIUs per LIM Cabinet. In order to
0 keep Packet Handler traffic off the DMS-Bus, all the XLIUs
0 must be located in the same LIM Cabinet.

0 Each XLIU should be provisioned using the following rules:

0 Traffic load of 130 data packets per second.
0 Maximum of 512 X.25 D-channel terminals.
0 Maximum of 31 DS-0 channels where each DS-0 can carry:
0 - one (1) X.75/X.75' trunk, OR
0 - one (1) B-channel port, OR
0 - up to sixty-four (64) D-channel terminals

0 The XLIU must be provisioned for either X.25 lines or
0 X.75/X.75' trunks. For X.25 service, a mixture of B-channel
0 and D-channel terminals can be provisioned on the same XLIU.
0 Each B-channel port consumes one of the 31 XLIU channels. D-
0 channel terminals can be statistically multiplexed at a ratio
0 of up to 64 on each XLIU channel to the maximum of 512 per

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0 XLIU. Similarly, both X.75 and X.75' trunks can be terminated
0 on the same XLIU, one trunk for each XLIU channel. Traffic
0 should be estimated on a per channel basis and then channel
0 allocation may be done on a per XLIU basis (Refer to SEB
0 90-05-002).

0 Each X.25/X.75 Link Interface Unit (XLIU) occupies two slots
0 on the LIS and is composed of the following:

0 Integrated Proc and FBUS I/F (IPF)
0 HDLC Frame Processor (HFP)
0 CBUS Interface Paddleboard (CIP)

0 B) The Network Interface Unit (NIU) allows the LIM to be con-
0 nected to the switching network such that the Application Spe-
0 cific Units (ASU) can have direct access to network channels.

0 The NIU must be provisioned for each LIS shelf containing any
0 XLIUs. The NIU must be assigned to the CP position specified.
0 Other applications (LIU7, EIU, FRIU, etc) shall be relocated
0 if the need arises.

0 One (1) NIU will support ten (10) XLIUs. One (1) Link Inter-
0 face Shelf (LIS) will support one (1) NIU; up to a maximum of
0 three (3) NIUs per LIM Cabinet. However, the NIU can only
0 mount on a Link Interface Shelf (LIS) that has been equipped
0 for Channel Bus (Cbus) Access. This is accomplished by equip-
0 ping the LIS with the NT9X74DA, FBus Repeater CP.

0 The Network Interface Unit (NIU) consists of two units called
0 UNIT:0 and UNIT:1. UNIT:0 provides the interface to Network
0 Plane:0 and UNIT:1 provides the interface to Network Plane:1.

0 UNIT:0 of the Network Interface Unit (NIU) is composed of the
0 following:

0 Integrated Proc and FBUS I/F (IPF)
0 Channel Bus Controller (CBC) Unit 0
0 DS30 Link Interface Paddleboard (LPB)

0 UNIT:1 of the Network Interface Unit (NIU) is composed of the
0 following:

0 Integrated Proc and FBUS I/F (IPF)
0 Channel Bus Controller (CBC) Unit 1
0 DS30 Link Interface Paddleboard (LPB)

0

0 C) Provide four (4) DS-30 Links per Switching Network Plane for
0 each NIU provisioned.

0 The DMS Packet Handler also requires that the DMS-Bus be
0 equipped with the following:

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BCS Level	Memory Req.
BCS-34	10 MBytes of Memory
BCS-35	7 MBytes of Memory

0 Refer to the following documents for the provisioning rules of
0 the DMS-Bus:

0 ECM-626 BBlock Eng - Supernode In S/DMS Cabinet

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0 Network Interface Unit (NIU)

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0 LPP (Link Peripheral Processor) channelized access provides access to the LPP over the network without the need of an external OEM Channel Bank.

0 An OEM channel bank was previously required to interface 56/64 Kbps LIU7 to the PCM30.

0 Channelized Access also provides the advantage of LIU sparing and also increases the number of applications available through the LPP.

0 The LPP interface to the network is provided by the Network Interface Unit (NIU) that resides in the LIS shelf of the LPP cabinet.

0 The NIU is a warm spare peripheral with a DS-30 interface towards the network with the Channel Bus (CBUS) on the LIU7 side. LIUs that reside on a shelf with NIUs (plane 0,1) can have access to the CBUS through the Channel Bus Interface paddleboard and thus to the DMS network. The NIU must be provided on all shelves where channel access is required, as the CBUSs are not extended between shelves.

0 Channelized access on LPP are supported on both the 2 slot and 3 slot LIU shelves. Channelized access on the LPP is available for the following applications:

0 SSP - Service Switching Point

0 ISDN - Integrated Packet Handler

0 SEP - Signaling End Point

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0 Signaling End Point (SEP)

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0 The Signaling End Point (SEP) in the Japan network is equivalent
0 to an SSP/SP in the North American network operating in the
0 Quasi-Associated Signaling mode, as shown in Figure 6. The sig-
0 naling data links and their end points share the North American
0 terminology; for example, A-Links and STP.

0 The SEP always includes Channelized Access (NIU) as the interface
0 to the LIU7. SEP functionality is known as Japan ISUP in NT/BNR
0 documentation.

0 All provisioning considerations for SSP/SP and NIU, as documented
0 in sections 2.4.2 and 2.4.7, are applicable, with the following
0 exceptions:

- 0 - SEP utilizes the 36 link LPP (NT9X70BA and newer vintage) only
- 0 - SEP utilizes NT9X76CA instead of NT9X76AA in the LIU7 cardset
0 in figure 15.
- 0 - SEP LIU7/SDL signaling rates and protocols are different than
0 North American rates and protocols, therefore use
0 NTP 297-5121-101J to verify planned link quantities.

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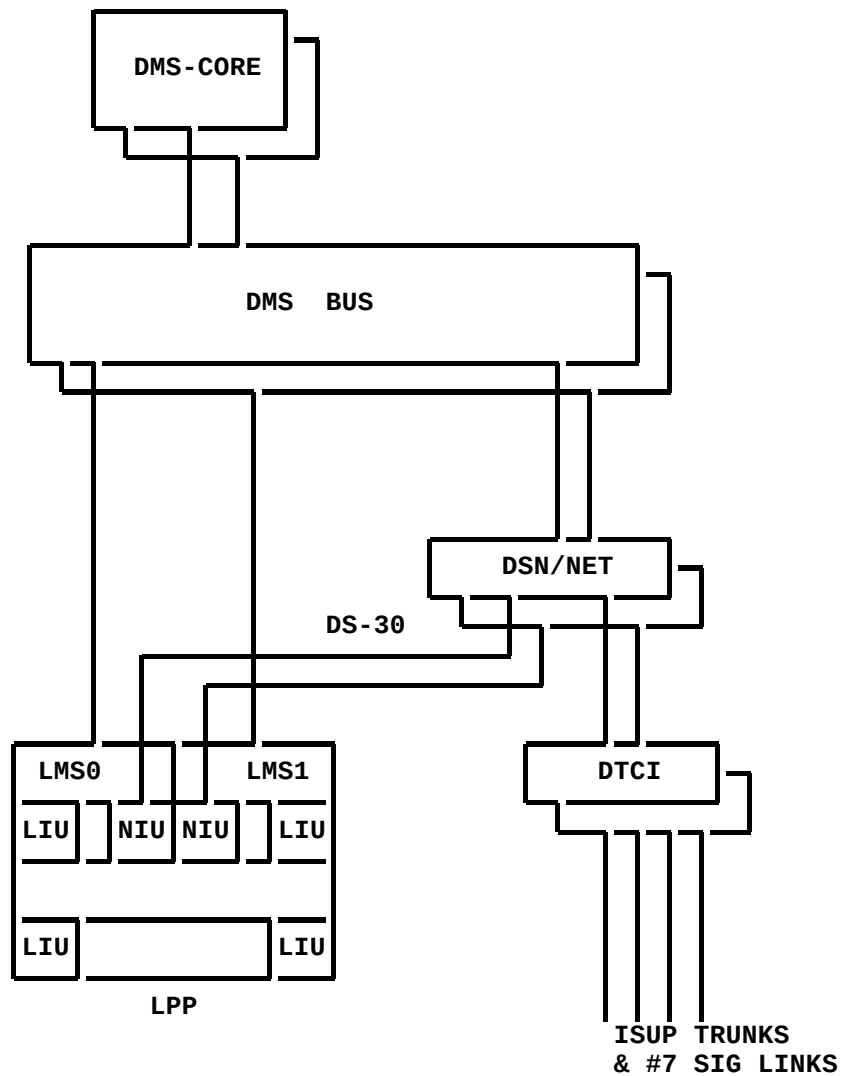


Figure 11: LPP with Channelized Access

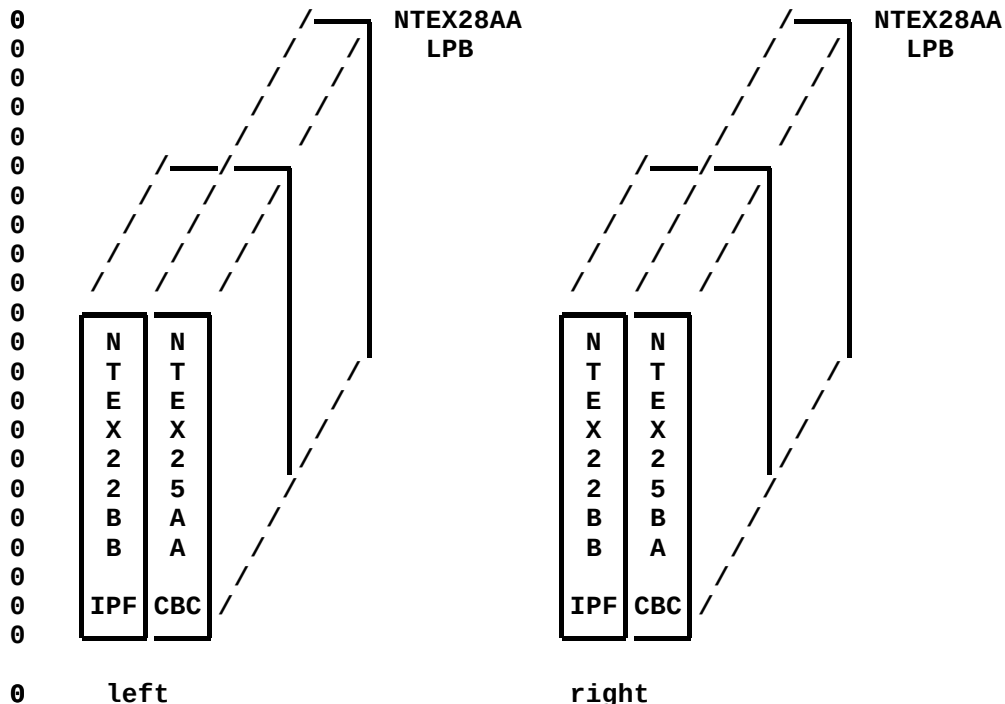
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LMS 0						LMS 1					
L	L	L	L	L	N	N	L	L	L	L	L
I	I	I	I	I	I	I	I	I	I	I	I
U	U	U	U	U	U	U	U	U	U	U	U
7	7	7	7	7		7	7	7	7	7	7
L	L	L	L	L	N	N	L	L	L	L	L
I	I	I	I	I	I	I	I	I	I	I	I
U	U	U	U	U	U	U	U	U	U	U	U
7	7	7	7	7		7	7	7	7	7	7
L	L	L	L	L	N	N	L	L	L	L	L
I	I	I	I	I	I	I	I	I	I	I	I
U	U	U	U	U	U	U	U	U	U	U	U
7	7	7	7	7		7	7	7	7	7	7

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0 The NIU is made up of the following cards as shown in Figure 13.
0 The left unit, UNIT:0 uses the CBC NTEX25AA CP while the right unit,
0 UNIT:1 uses the NTEX25BA CP.



0 Figure 13: NIUs
0 -----

0 Provide one (1) NTEX25AA for the left unit, UNIT:0 and one (1)
0 NTEX25BA for the right unit, UNIT:1 for each LIS shelf that requires
0 channelized access. The Channel Bus Controller (NTEX25AA/BA) does
0 plane selection and controls the CBUS. The Channel Bus Controller
0 (CBC) also receives and transmits data to and from the CBUS and the
0 DMS network.

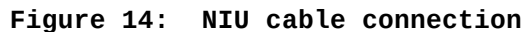
0 Provide two (2) NTEX28AA per LIS shelf (one for each unit). The Link
0 Interface Paddleboard (NTEX28AA) interfaces four (4) DS-30 links and
0 also interfaces to both CBCs (Channel Bus Controllers).

0 Provide two (2) NTEX22BB per LIS shelf (one for each unit). The Inte-
0 grated Processor and FBUS I/F is an integration of the NT9X13CA and
0 NT9X75AA developed for LIU shrink.


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0 Provide four (4) NT9X7020 DS-30 Cable Assemblys per LIS shelf. Each
0 cable connects an LPB (NTEX28AA) to its designated position on the
0 bulkhead. The DS-30 cable connection allows the transmission of data
0 from the network over four (4) DS-30 links.
0 The network data is transferred to the Channel Bus Controller
0 (NTEX25AA/BA) through the LPB.

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0 Provide two (2) NT9X74DA per LIS shelf, one (1) at each end of the
0 shelf, for channelized access.
0 The CBUS Repeater/Terminator Card (NT9X74DA) provides terminations for
0 the intra shelf CBUS.

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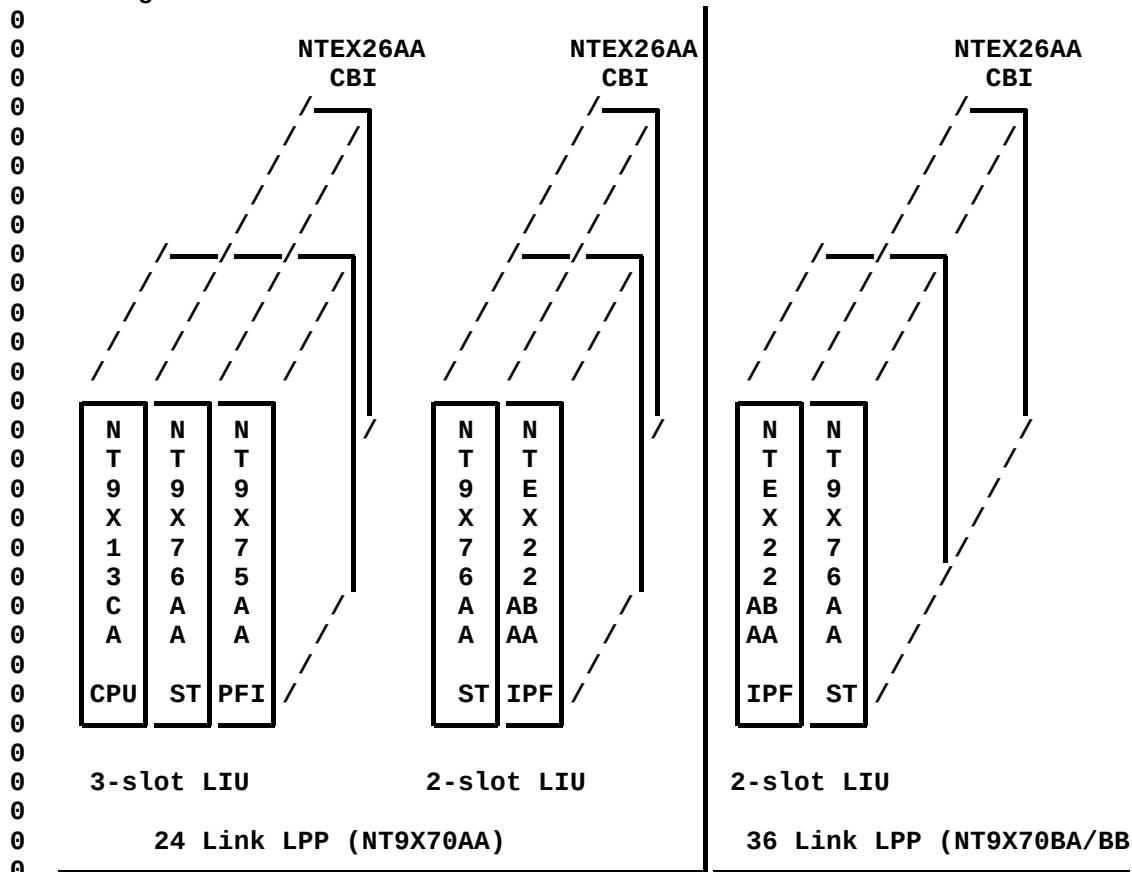
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0 Provision up to a maximum of six (6) LIUs per shelf for the 3-slot LIU
0 LPP cabinet (NT9X70AA) or 10 LIUs per shelf for the 2-slot LIU LPP
0 cabinet (NT9X70BA/BB) for an LPP requiring channelized access as shown
0 in Figure 12.



0 Figure 15: LIU configuration requiring channelized access
0

0 Provide one (1) NTEX26AA for each LIU requiring channelized access.
0 The Channel Bus Interface Paddleboard (NTEX26AA) provides an interface
0 from the CBUS to the ST (Signalling Terminal) card (NT9X76AA), and
0 hence, does not have any external cable connections to it.
0 When in receive mode, the CBI selects data from the CBUS, selects the
0 proper channel then transfers the data serially to the NT9X76AA. In
0 transmit mode, the CBI drives the proper channels on both CBUSs. The
0 CBI also provides CBUS functions related to fault detection and iso-
0 lation.

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0 Provide one (1) NT9X76AA (ST) card for each LIU.
0 or
0 provide one (1) NT9X76CA (TTC7 ST) card for each LIU when 48K rate
0 ISUP capability is required for SEP applications.
0 The only paddleboard that can be used with the NT9X76CA type LIU7 is
0 the NTEX26AA. This is because the only application that the NT9X76CA
0 can be used for is a Channelized Access application. That is, the
0 ISUP SEP LIU7 can only be used on a shelf that the NIU has been provi-
0 sioned on.

0 AND

0 Provide one (1) NTEX22AA

0 OR

0 Provide one (1) NTEX22BA Integrated FBUS I/F card for each 2-slot LIU
0 as shown in Figure 15.

0 For a 3-slot LIU, provision a 2-slot LIU,
0 and add:
0 one (1) NT9X19AA Filler pack.
0 in addition to all the items provided for a 2-slot LIU.

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0 4.1.4 OFFICE LAYOUT INFORMATION

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0 Refer to ECM626 for office layout restrictions when this cabinet
0 is applied in a stand alone lineup.

0 Refer to ECM600 for office layout restrictions when this cabinet
0 is applied in a DMS-100 Cabinetized lineup.

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0 DS-30 Port Spread For LIM

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0 Two DS-30 ports are connected from each LMS (LMS0 and LMS1) to
0 each MS (MS0 and MS1) as shown below. Each MS port is shown with
0 the specific port on the specific LIM cabinet to which it con-
0 nects. For example:

0 LMS1 01 indicates LMS Side 1 LIM 01
0 29R-0 CP Pos 29R Port 0

0 Additional LIM cabinets will be connected to additional DS-30
0 port cards using the same pattern as shown below:

CP POS	26R	27R	28R	29R	Port No.	
	LMS1 01 30R-1	LMS1 00 30R-1			3	
	LMS1 00 29R-0	LMS1 01 29R-0			2	
	LMS0 01 10R-0	LMS0 00 10R-0	NET0 00	NET1 00	1	MS0
	LMS0 00 9R-1	LMS0 01 9R-1	IOC 1	IOC 0	0	
	NT9X23BA	NT9X23BA	NT9X23AA	NT9X23AA		

CP POS	26R	27R	28R	29R	Port No.	
	LMS1 01 30R-0	LMS1 00 30R-0			3	
	LMS1 00 29R-1	LMS1 01 29R-1			2	
	LMS0 01 10R-1	LMS0 00 10R-1	NET0 00	NET1 00	1	MS1
	LMS0 00	LMS0 01	IOC 1	IOC 0	0	

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9R-0	9R-0		
NT9X23BA	NT9X23BA	NT9X23AA	NT9X23AA

0 MS DS-30 Port Connections For Two LIM Configuration

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0 4.1.5 TRAFFIC TABLES

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0 Refer to the following SEBs:

0 92-02-001 LPP and FLIS Mixed Application Provisioning Rules.

0 91-11-002 LIU7 Throughput and Capacity.

0 91-07-002 DataSpan Traffic Engineering Rules.

0 90-06-001 LPP on SSP Performance.

0 90-05-002 DMS-100 Capacity Management Guidelines For ISDN

0 90-04-001 Common Channel Signaling#7 (CCS7) Product Performance

0 90-08-001 MSB7 Throughput and Capacity Update.

0 89-09-001 MSB7 Traffic Capacity Test.

0 For SEP, refer to the following NTP:

0 297-5121-101J DMS SuperNode Signaling End Point
0 Planning and Engineering Guide

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0 4.2 PRODUCT/SYSTEM SPECIFICATION

0

0 4.2.1 PHYSICAL CHARACTERISTICS

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0 36-Link LIM Cabinet NT9X70BB

0

0 The following describes the characteristics of the NT9X70BB
0 36-Link LIM Cabinet:

0 Input Voltage.....-48VDC
0 Power Consumption.....3832 watts (+/- 10%) fully equipped
0 Current Drain.....80 Amps
0 Thermal Dissipation.....-NA- BTU/hr
0 Fusing Requirements.....Eight (8) 20A Fuses - two per Shelf
0 (at PDC) (LMS and LIS)
0 Two (2) 10Amp Fuses - Cooling Unit

0 MECHANICAL DIMENSIONS

0 Height 72in. Width 42in. Depth 28in.

0 Weight 1400lbs. (Full)

0 Max current drain for a fully-equipped LIS shelf = 173.3A at 5V.

0 Max power dissipation for a fully-equipped LIS shelf = 990W.

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0 4.2.2 EMI/EARTHQUAKE INFORMATION

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0 No additional bracing or stiffening hardware will be required for
0 the enhanced cabinet in normal installations. The cabinet must
0 be bolted to the floor in four (4) places through anchor holes
0 provided in the base of the cabinet. When the cabinet is bolted
0 in place, the optional leveling feet must not be installed.
0 Leveling will be accomplished through the use of non-conductive
0 shims.

0 For raised floor installations, a sub-structure support between
0 the concrete sub-floor and the raised floor will be required. A
0 qualified seismic engineer should be consulted regarding the re-
0 quired additional bracing.

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0 93 12 030 4.2.3 SPARING INFORMATION

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0 Use standard sparing algorithms for all applications on the LIM,
0 unless otherwise specified in a 4.3 sub-section.

0 Sparing Information for STP

0

0 FOR U.S. OFFICES - use standard sparing algorithms to determine
0 spare equipment quantities.0 FOR CANADIAN OFFICES - provide spares for the STP unique circuit
0 packs as follows. Note: these quantities are based on a 95% con-
0 fidence level and a turnaround time (T) as shown. Sparing for
0 the remaining LIM circuit packs and the DMS-Core circuit packs is
0 calculated using standard sparing algorithms or PAQS100.

0

QUANTITY OF SPARES

0	PEC	QUANTITY	T = 480 HRS	T = 720 HRS
0	NT9X73AA	2-6		1
0		8-34		2
0		2-10	1	
0		12-34	2	
0	NT9X74AA	2-20		1
0		22-102		2
0		2-32	1	
0		34-102	2	
0	NT9X75AA	1-6		1
0		7-45		2
0		46-100		3
0		1-9	1	

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0 68-150 3

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0	PEC	QUANTITY	T = 480 HRS	T = 720 HRS
0	NT9X76AA	1-7		1
0		8-50		2
0		51-113		3
0		1-10	1	
0		11-76	2	
0		77-169	3	
0	NT9X77AA,	1-15		1
0	NT9X78AA/	16-106		2
0	BA/	107-238		3
0	CA	1-23	1	
0		24-163	2	
0		164-365	3	
0	NT9X79AA	1-68		1
0	NT9X79BA	1-68		1
0	NT9X23BA	4-16		1
0		20-68		2
0		4-24	1	
0		28-68	2	

0 Sparing Information for MDR7

0
0 EIU's are provided in pairs with one active unit and one hot spare
0 unit which carries test traffic. In the event of failure of the
0 active unit, the spare takes over within ten seconds.

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0 4.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 4.2.5 CURRENT DRAIN INFORMATION

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0 4.3 SOFTWARE PROVISIONING

0

0 4.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Required Software for STP

0

0 The following software packages are applicable to STP. Check the
0 appropriate SMS (Software Management System) report for avail-
0 ability and to confirm required supporting packages.

0 A) Required Packages:

0 NTX832AA STP Base (Master package)(through BCS-29)

0 The Master package software for STP was removed from BCS-30 pend-
0 ing a reorganization. Modified packaging has been added back into
0 BCS-31 as follows:

0 NTX832AB STP Base (Master package)(BCS-31 and up)

0 NTX960AC DMS SUPERNODE Series 20 Processor (Master Pkg.)

0 The following software is also required:

0 NTX833AA STP Operations

0 NTX048AA Synchronization

0 NTX056AA Enhanced Administration

0 NTX074AA Disk Data Storage System

0 NTX445AB OM Selective Output

0 B) Optional Packages

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0 NTX834AA DS1S6 Translation (for Nynex customer only)

0 NTX835AA DMS-STP SEAS Interface (release 1.1)

0 NTX836AA STP - V.35 Subrate Links
0 This package is required only if the V.35 Interface
0 Paddleboard is provided, and operation at subrate
0 speeds is required. Operation at a full 56 kbit/s
0 is included in mandatory package NTX833AA.

0 NTX839AA STP - Enhanced Maintenance and BERT OR
0 NTX839AB LPP - Enhanced Maintenance and BERT (requires BCS-31)
0 This package requires the NT9X78BA Enhanced DS0A
0 Paddleboard.

0 NTX840AA STP - Gateway Message Screening

0 NTXE55AA SEAS Interface (release 2.0)

0 NTXE24AA SEAS - Gateway Screening (release 3.0)

0 NTXE32AA MTP - Preventive Cyclic Retransmission

0 NTX292AB/BA - Enhanced Security Package

0 NTXR37AA CCS7 Increased Route Sets
0 If this package is used for increased routing then
0 the NTEX22BA card must be used. The NTXR37AA software
0 package will be available and optional in BCS35.

0 NTXS04AA MTP Routing Enhancement
0 If this package is used then the NTEX22BA card is
0 required. The NTXS04AA software package will be
0 available and optional in BCS35.

0 Required Software for SSP/SP

0

0 Provision the following packages to support the LIM in an SSP/SP
0 office. Refer to the appropriate Software Management System
0 (SMS) report for package status and interdependencies:

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0 Provide master package:

0 NTXD44AA LPP on DMS Supernode SSP

0 This master package contains:

0 NTXF20AA LMS on LPP

0 NTXF71AA Supernode Enhanced Messaging

0 NTXN18AA FBUS-LIU Base

0 Provide feature packages:

0 NTXN19AA LIU7 on SSP

0 NTX041AB CCS7 MTP/SCCP

0 (for all MSB7s, and existing LPPs at BCS33 or below)

0 NTXR72AA CCS7 MTP/SCCP on LPP

0 (for LPP initials and BCS34 upgrades)

0 The NT9X78CA requires BCS33 and higher software along with the
0 software package:

0 NTXN19AA LIU7 on SSP

0 The NT9X78CA paddleboard only works for International Applica-
0 tions. If the NT9X78CA is ordered for domestic applications, it
0 can be datafiled as a NT9X78BA and does function, but it cannot
0 provide the 64Kbs rate for domestic applications.

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0 Required Software for EIU

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0 The software package for EIU is not to be ordered.

0 The software packages of the applications which require the EIU
0 would be ordered. The individual packages which make up the
0 software package of a particular application would not be or-
0 dered.

0 For example, the software package for the MDR7 (Message Detailed
0 Recording for CCS7 Messages) application is NTXJ91AA. It consists
0 of the following software packages:

0 NTXF19AA TCP/IP Protocols
0 NTXF05AA Ethernet Interface Unit (EIU)
0 NTXN18AA LIU/FBUS Base
0 NTXF20AA LMS on LPP
0 NTXF71AA SuperNode Enhanced Messaging

0 Hence, when the MDR7 application is needed, the following soft-
0 ware packages are required:

0 NTXJ91AA MDR7

0 The other above software packages are not ordered because they
0 are automatically pulled in via NTXJ91AA.

0 Check the appropriate SMS (Software Management System) report for
0 availability and to confirm required supporting packages.

0 Required Software for MDR7

0
0 The feature package for MDR7 is NTXJ91AA. The DMS-STP Gateway
0 Screening feature (NTX840AA) is a prerequisite, since it is used
0 to identify which messages are to be tracked. Refer to the SMS
0 database for interdependencies and additional information.

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0 Required Software for FRIU

0
0 For BCS 32 and 33, the following package is required for basic
0 Frame Relay Services:

0 NTXF25AA Frame Relay Basic.

0 For BCS 34 and later, the following package is required for basic
0 Frame Relay Services:

0 NTXF25AB Frame Relay Base (Upgrade of NTXF25AA)

0 Package NTXF25AB contains the Extended Superframe Format support
0 feature.

0 The NTXF25AB is MD'd and is replaced with NTXF25AC and NTXR28AA
0 from BCS 35 onwards.

0 For BCS 33 and later, the following packages are optional for
0 Frame Relay Services:

0 NTXQ34AA Frame Relay Billing Base Package

0 NTXQ35AA Frame Relay LEC Billing

0 For BCS 34 and later, the following packages are optional for
0 Frame Relay Services:

0 NTXR28AA Fractional T1 Access

0 Refer to the SMS database for package content, inter-dependencies
0 and availability.

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0 Required Software for DMS-PH

0
0 The DMS Packet Handler is being introduced in BCS-34 (VO and Limited Availability offices), and will be Generally Available in BCS-35. The DMS Packet Handler requires the following software packages:

0 NTXD44 - LPP Master Package
0 NTXF93 - ISDN Provisioning SERVORD
0 NTX750 - ISDN Basic Access

0 NTXH77 - NIU Software Base
0 NTXP47 - DMS PH Software Base
0 NTXP75 - ISDN DMS PH SERVORD

0 Refer to SMSQUERY for the Software Interdependencies of the above packages.

0 Required Software for NIU

0
0 Refer to the individual applications for S/W requirements when channelized Access is needed.

0
0 Required Software for SEP

0
0 All required software for SSP/SEP as documented in section 4.1.2 is applicable.

0 In addition to the above, SEP utilizes the following software according to NT/BNR design documentation:

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0 NTXA79AA IBN TRUNKS WITH ISUP SIGNALING
0 NTXB57AA OPEN NUMBER TRANSLATIONS
0 NTXH86AB JAPAN LINE INTERFACE
0 NTXV18AA JPN MESSAGE TRANSFER PART
0 NTXV22AA JPN ISUP TRUNK SIGNALING
0 NTXV23AA JPN ISUP TRUNK INTERWORKING
0 NTXZ02AA ACD SUPPORT SOFTWARE 3
0 NTX060AB NETWORK MANAGEMENT
0 NTX060BB NETWORK MANAGEMENT - ENHANCED
0 NTX167AB CCS7 TRUNK SIGNALING

0 NTXH77AA - Channelized Access on LPP/LIS
0 NTXH70AA - CCS7 Support for Channelized Access

0 In addition, the following feature packages are provided for
0 BCS-35 SEP V0 delivery:

0 NTXH14AA NTT NCCI CCITT #7 MTP
0 NTXJ41AA CCS7 TEST TOOLS
0 NTXQ89AA INTEGRATED LINK PROTOCOL TESTS
0 NTXV24AA JPN FLEX CHG SYS CALL TERM
0 NTXV25AA JPN AUTO MASS TRK CONVERSION
0 NTXZ11AA JAPAN TONES
0 NTX875AA CCS7 MASS TRUNK CONVERSION

0 The SMS database must be consulted for any newly identified soft-
0 ware requirements.

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0 4.3.2 SOFTWARE USAGE RESTRICTIONS

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0 Software Usage Restrictions for STP

0
0 Minimum BCS-30 software is required to use the NTEX22AA IPF Inte-
0 grated Proc and FBUS I/F CP (LIU Shrink).

0 Software Usage Restrictions for SSP/SP

0
0 Not Applicable

0 Software Usage Restrictions for EIU

0
0 Minimum BCS-30 software is required to use the NTEX22AA IPF Inte-
0 grated Processor and FBUS Interface CP.

0 NTXF05AA and NTXF19AA require BCS-31. As mentioned in the above
0 example, these software packages would not be ordered. Instead,
0 the software package of the application which required the EIU
0 would be ordered.

0 Software Usage Restrictions for MDR7

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0 Traffic information for a specific LIU7 is assigned to an EIU by
0 datafill. The customer must determine which LIU7s are carrying
0 the information of interest and datafill accordingly.

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0 Software Usage Restrictions for FRIU

0
0 The following software restrictions apply:

- 0 * 256,000 connections allowed to be programmed per office
- 0 * 1000 customers per office
- 0 * 2200 FRS agents allowed
- 0 * 992 connections allowed on each FRS agent (non-channelized)
- 0 * 254 connections allowed on each FRS agent (channelized)
- 0 * LAPD range of DLCI = 0 - 1023
- 0 * Customer may only own 10,000 connections

0 An FRS agent is defined as the logical termination of a frame re-
0 lay service. Each FRIU can have up to 24 FRS agents in the
0 channelized mode. As stated above the current limit for all FRS
0 agents is 2200.

0 The NTEX31BA or NTZZ30LA can operate at 24 x 64 Kbs channels but
0 software will only allow 24 x 56 Kbs channels.

0 For FRIU at BCS 34 and later, the NTEX22BB/NTEX31BA

0 Software Usage Restrictions for DMS-PH

0
0 Not Applicable.

0

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0 Software Usage Restrictions for NIU

0
0 The office must have at least BCS33 release software.

0 Software Usage Restrictions for SEP

0
0 The office must have at least BCS35 release software.

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0 4.3.3 MEMORY PROVISIONING

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0 Memory Provisioning for STP

0
0 For Computing Module memory calculations, use the MEMCALC pro-
0 gram.

0 Memory Provisioning for SSP/SP

0
0 A new office parm is introduced into parm table OFCOPT. Parameter
0 CCS7_NODE_ATTRIBUTES should be set to CCS7_SSP (the default).
0 This new parm consumes 30 words of data store.

0 Other permissible parameter values, CCS7_STP and CCS7_SCP, do not
0 apply to an SSP/SP office.

0 Memory Provisioning for EIU

0
0 Not Applicable.

0 Memory Provisioning for MDR7

0

0

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0 The EIU has 4 Mbytes of memory which is dedicated to the MDR7 ap-
0 plication. MDR7 requires 4 Kbytes of memory in the LIU7 and 410
0 Kbytes in the DMS Core.

0 Memory Provisioning for FRIU

0
0 Refer to the MEMCALC program.

0 Memory Provisioning for DMS-PH

0
0 Refer to the MEMCALC program.

0 The DMS Packet Handler requires that the DMS-Bus be equipped with
0 the following:

0

BCS Level	Memory Req.
BCS-34	10 MBytes of Memory
BCS-35	7 MBytes of Memory

0

0 Refer to the following documents for the provisioning rules of
0 the DMS-Bus:

0 ECM-626 BBlock Eng - Supernode In S/DMS Cabinet

0 Memory provisioning is impacted by the number of Call Condensed
0 Blocks (CCBs) required for LPP-based Packet Services. Traditional
0 calculation of CCB requirement does not apply to packet service.
0 Initial view of CCB requirement for LPP-based Packet Service is
0 stated as 200 CCBs per XLIU.

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0 Memory Provisioning for NIU

0
0 Not Applicable.

0 Memory Provisioning for SEP

0
0 Refer to MEMCALC for specific instructions on memory provisioning
0 for SEP.

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0 4.4 REAL TIME IMPACT

0 Refer to the System Engineering Bulletin for your application.

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0 5.0 Fiberized LIS (FLIS or Single Shelf LPP)

0 The Fiberized LIS ((F)LIS) is designed to provide a small number of
0 Link Interface Units (LIUs) in a SuperNode office in a cost-effective
0 manner. Up to two Link Interface Shelves (LISs) with a maximum total
0 of twenty-four LIUs may be provisioned.

0 The existing (non-fiberized) LIS shelves are housed in a Link Inter-
0 face Module (LIM) cabinet and require Local Message Switch (LMS)
0 shelves to interface to the Message Switch (MS).

0 The fiberized LIS uses a new FBUS controller circuit pack and a new
0 fiber interface paddleboard to support a direct connection between the
0 LIS and the MS.

0 The (F)LIS uses the Enhanced Multi-Purpose Cabinet (EMC) or C42
0 (S/DMS) Cabinet to house up to two LIS shelves. The first shelf re-
0 sides in shelf position 26 and the second shelf, if provisioned, re-
0 sides in shelf position 13. (Shelf positions 39 and 00 contain filler
0 shelves and are reserved for future applications.)

0 FLIS in C42(S/DMS) cabinet is a cost and functionally enhanced version
0 of the existing FLIS cabinet. The S/DMS cabinet is 42 inches wide com-
0 pared with Streamline's width of 28 inches. This new cabinet supports
0 features such as modified framework based on Streamline,
0 "horizontal"(through line-up) cabling, and "hot slide" capability.
0 "Horizontal" cabling meaning, cables running through a hole in the
0 side of a cabinet and into the next cabinet(s) in the same lineup.
0 "Hot slide" is the process of moving an operating cabinet into an ex-
0 isting lineup of equipment. The following diagram gives a pictorial
0 representation of this cabinet:

0

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0

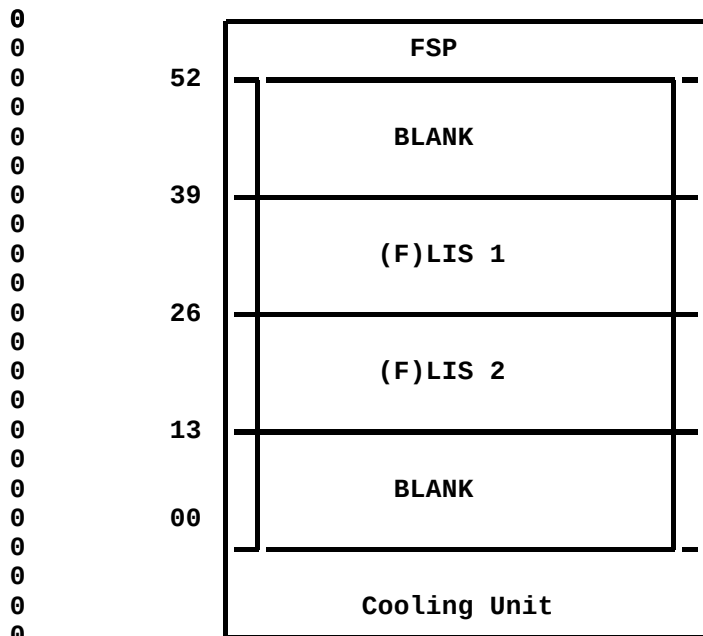
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0 FLIS in EMC or C42 Cabinet

0 5.1 HARDWARE PROVISIONING

0

0 5.1.1 HARDWARE USAGE RESTRICTIONS

0
0 No more than twenty-four LIUs may be provisioned using (F)LIS.
0 If additional LIUs are required, a LIM cabinet must be used.

0 The NT9X62BA CANNOT be used for the Inter-MS Link(IML) feature.

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0 5.1.2 HARDWARE DEPENDENCIES

0
0 The (F)LIS requires the use of the following:

- 0 - NT9X13DC MS processor with 10 MBytes of memory.
- 0 - Two inter-MS links.

0 The power and ground cabling of the S/DMS cabinet depends on the
0 site configuration. Installations that do not utilize horizontal
0 cabling, require the power cables entering the cabinet to be fed
0 through Electromagnetic Compatibility(EMC) filters. On the other
0 hand, use of S/DMS cabinet in a Streamline lineup do not need the
0 power filters.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Refer to section 2.4.2 Inter-MS Link Provisioning.

0 CIRCUITS PER CARD

0
0 Not applicable

0

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0 DISCRIMINATION NUMBERING

0
0 Not applicable

0 5.1.3 PROVISIONING CONSIDERATIONS

0

0 (F)LIS Provisioning

0
0 If one to twelve LIUs are required, provision one LIS shelf in
0 shelf position 26. This shelf is referred to as LIS 1.

0 If thirteen to twenty-four LIUs are required, provision two LIS
0 shelves in shelf positions 26 and 13. These shelves are referred
0 to as LIS 1 and LIS 2, respectively.

0 Each Link Interface Unit (LIU) is composed of two circuit packs
0 and one paddleboard. The first circuit pack is the NTEX22BA IPF
0 Processor and F-Bus Interface and is provisioned in an even-
0 numbered slot from 8F to 30F. The second circuit pack is the
0 NT9X76AA STP Signalling Terminal and is provisioned in the next
0 highest (odd-numbered) slot (from 9F to 31F). The paddleboard is
0 either an NT9X77AA V.35 Interface or an NT9X78BA Enhanced DS0A
0 Interface and is provisioned behind the NT9X76AA (in an odd-
0 numbered slot from 9R to 31R).

0 These three cards make up a single Link Interface Unit.

0 Refer to Figure.

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0 To support the signalling links, provisionable interface
0 paddleboards are required. There are two types of paddleboards,
0 one to interface V.35-protocol signalling links, the other to
0 interface DS0A-protocol signalling links. The two types may be
0 mixed within the LIS.

0 The NT9X77AA V.35 Interface Paddleboard supports one V.35 signal-
0 ling link. It can operate at the full V.35 rate (56 kbit/s) or
0 at the following subrate speeds: 2.4, 4.8, 9.6 and 19.2 kbit/s.
0 Optional software is required for subrate operation (see Software
0 Packages). V.35 Data Sets, if required, are to be furnished by
0 the customer for this application.

0 NTZZ30WA (CCS7 Link Interface Unit (V.35 2 Slot))

0 The NTZZ30WA provides one Signaling Data Link for interface to
0 other SS7 offices. Each LIU7 provides one V.35 link.

0 The NT9X78BA Enhanced DS0A Interface Paddleboard supports one
0 DS0A signalling link. It is enhanced from the NT9X78AA
0 paddleboard by the addition of DS0A loopback and BERT capabili-
0 ties for testing purposes.

0 For reliability the LIU7s must be assigned to shelf positions 26,
0 and 13 in the order that is described in the rules section.

0 NTZZ30UA (CCS7 Link Interface Unit (E-DS0A 2 Slot))

0 The NTZZ30UA provides one Signaling Data Link for interface to
0 other SS7 offices. Each LIU7 provides one E-DS0A link. Enhanced
0 maintenance is available with the use of this type DS0A link.

0 Each LIS shelf requires two ports on the MS. The MS should pro-
0 vide these ports via the NT9X17AC 4-Port MS Interface Circuit
0 Pack and the NT9X62BA 4-Link SR512 Paddleboard.

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0 The DMS packet Handler (DMS PH) provides integrated X.25 packet
0 service for the DMS-100 family of ISDN nodes. For the DMS packet
0 handler application, the ASU is the X.25/X.75/X.75' Link Inter-
0 face Unit (XLIU), which provides the X.25 and X.75 protocol proc-
0 essing for the DMS PH.

0 The XLIU is a three-card unit that includes the following cards:

- 0 1) NTEX22 IPF for layer 3 processing and F-Bus access.
- 0 2) NTFX10 HFP for layer 2 processing.
- 0 3) NTFX09 CIP for channel bus access to provide the HFP with the
0 channelized data

0 The XLIU is configured for redundant access to the C-bus. Note
0 that LIS MUST be provisioned with NIUs to use the DMS Packet Han-
0 dler configuration, and NIUs cannot be split over two shelves.

0 The NIU pair is a six-card redundant unit consisting of two of
0 each of the following cards:

- 0 1) NTEX25 CBC interfaces the network planes with parallel C-bus
0 to the XLIU and other ASUs. Two different models of CBC card are
0 supplied with the NIU pair, one for NIU unit 0 and the other for
0 NIU unit 1.
- 0 2) NTEX22 IPF
- 0 3) NTEX28AA DS-30 link interface paddle board supports four (4)
0 DS30 links for the DMS PH.

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0 Inter-MS Link Provisioning

0
0 The two inter-MS links (IMLs) required for (F)LIS to connect MS
0 plane 0 to MS plane 1 and provide a path for messages in event of
0 a failure. These links utilize DS-30 links and should be provi-
0 sioned as follows:

0 For applications NOT using Streamline cabinets, and where DS-30
0 inter-MS links are required, provision two (2) NTEX5022 Inter-MS
0 DS-30 Cable Assemblies. (one NTEX5022 cable per IML)

0 For Streamline cabinet applications where DS-30 inter-MS links
0 are required, provision two (2) NTEX5023 Inter-MS DS-30 Cable As-
0 semblies. (one NTEX5023 cable per IML)

0 Each DS-30 IML can be provisioned on any un-used DS-30 port on
0 either an NT9X23AA or an NT9X23BA or an NT9X69BA paddleboard sub-
0 ject to the following restrictions:

0 The DS-30 ports selected for the two links must be on different
0 paddleboards. That is, if the only free DS-30 ports are on the
0 same paddleboard they cannot both be used for the IMLs; another
0 port must be freed up on another paddleboard in order to equip
0 the second link.

0 The paddleboards and ports selected must be the same on each MS.
0 For example, if port 3 on paddleboards in slots 16 and 17 are se-
0 lected in MS 0, then port 3 on paddleboards in slots 16 and 17 in
0 MS 1 must be used.

0 The paddleboards and ports selected can be in any slot or port in
0 which DS-30 paddleboards are allowed except port 0 on
0 paddleboards in slots 28 and 29.

0 Provisioning of DS-30 IMLs is currently limited to the SuperNode
0 in standalone and Streamline cabinets. No requirements have been
0 identified for the support of IMLs on the Meridian Cabinets,
0 MSL100 and SL100 products. Hence, this is not currently sup-
0 ported.

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0 C42(S/DMS) Cabinet Provisioning

0
0 The S/DMS cabinet is very similar to the existing cabinet, items
0 such as packs, shelf assemblies, interconnect cables, and
0 bulkhead packs do not change. The differences from the existing
0 Supernode cabinet are listed below.

0 1) The Cabinet changes from NT9X0113 to NT9X95AA

0 2) The Kick plate is not required with the S/DMS cabinet.

0 3) Power wiring is optional. If the cabinet is in a Stream-
0 line lineup, the cables will be equipped to take advantage
0 of "horizontal" cabling. If the cabinet is in a Standalone
0 lineup, power cables will be similar to existing power
0 cables, so filters will have to be provisioned.

0 5.1.4 OFFICE LAYOUT INFORMATION

0
0 The S/DMS cabinet will be shipped with the doors, shelves, circuit
0 packs, FSP, and cooling unit installed. The bus bar will be in-
0 stalled and appropriate connections will be made at the factory.
0 The bulkheads form part of the Electromagnetic Compatibility(EMC)
0 cage around the equipment and provide a place to mount filter
0 PCBs and optional power filters. The rear of the cabinet is
0 equipped with two removeable bulkhead panels near the bottom of
0 the cabinet. When these panels are removed, the cabinet can be
0 installed in, or removed from, a lineup equipped with horizontal
0 cabling. The cabinet may be slid "FORWARD" only.

0 Refer to ECM600 for office layout restrictions when this cabinet
0 is applied in a DMS-100 Cabinetized lineup.

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0 5.1.5 TRAFFIC TABLES

0
0 Not applicable.

0 5.2 PRODUCT/SYSTEM SPECIFICATION

0

0 5.2.1 PHYSICAL CHARACTERISTICS

0
0 MECHANICAL DIMENSIONS

0 Height 72in. Width 42in. Depth 28in.

0 Weight Approximately 800 lbs.

0 5.2.2 EMI/EARTHQUAKE INFORMATION

0
0 End panels are required to complete the EMC enclosure for cabi-
0 nets located at the end of a lineup. In earthquake installa-
0 tions, the S/DMS cabinet must be bolted to the floor in four(4)
0 places through anchor holes provided in the base of the cabinet.
0 The cooling unit must be removed for access to the bolts. When
0 the cabinet is bolted in place, the optional leveling feet must
0 not be installed. Leveling will be accomplished through the use
0 of non-conductive shims. The bolts must be tightened with a
0 torque wrench to ensure adequate pretension.

0 For raised floor installations, a sub-structure support between
0 the concrete sub-floor and the raised floor will be required. A
0 qualified seismic engineer should be consulted regarding the re-
0 quired additional bracing.

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0 5.2.3 SPARING INFORMATION

0
0 For U.S. applications use standard sparing algorithms.

0 For Canadian and other applications the following may be used.

0 a) LIS Shelf:

0	0	0	0
0	0	NO.	FOR
0	0	SPARES	ENGINEERED
0	0		INVENTORY
0	PEC		
0	NTEX20AA	1	1
0	NTEX20BA	1	1
0	NT9X96AA	1	2
0	NT9X98AA	1	2

0 b) Version 2, C42 Cooling Unit:

0 -----

0 Blowers 660,000 hrs MTBF in its useful life of 10 years.
0 MTM cards 4,700,000 hrs MTBF
0 Relay 100,000,000 hrs MTBF

0 Note that the blower's useful life is about 10 years. Around
0 that time, failures are to be expected. Good practice might dic-
0 tate replacement of operating blowers around that time (analagous
0 to replacing your car's engine belts before they break).

0 5.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 The following fuses and feeds are required:

0 Fusing for the NTEX01AA is as follows:
0 Two (2) 20 Amp fuses per LIS shelf and
0 four (4) 5 Amp fuses for cooling blowers.

0

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0 Fusing for the NTEX01AB is as follows:

0 Two (2) 20 Amp fuses per LIS shelf and
0 Two (2) 10 Amp fuses for cooling blowers.

0 5.2.5 CURRENT DRAIN INFORMATION

0
0 The following describes the characteristics of the NTEX01AA FLIS
0 cabinet:

0 Input Voltage.....-48VDC
0 Power Consumption.....1720 watts(+/- 10%) for 2 shelves
0 Current Drain.....72 Amps
0 Thermal Dissipation.....-NA- BTU/hr

0 5.3 SOFTWARE PROVISIONING

0

0 5.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 The (F)LIS requires the following software package(s):
0 NTXD87AA - Master Package. It consists of the following Packages.

0 NTXF71AB Super Node Enhanced Messaging
0 NTXN18AA FBUS - LIU Base
0 NTXN83AA LIS Support over SR512 Interface
0 NTXQ51AA Support For LIS-Resident LIS Controller
0 NTX945AA MS Base Link Maintenance

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0 The (F)LIS requires the following software package for the CCS7
0 jobs.

0 NTXN19AA - LIU7 for LPP Based CCS7 Applications (if sup-
0 ported)

0 5.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 The (F)LIS requires software release BCS-33 or higher.

0 5.3.3 MEMORY PROVISIONING

0
0 Not applicable.

0 5.4 REAL TIME IMPACT

0 Not applicable.

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0 6.0 Network Interface Changes

0 The purpose of this ECM is to provide information required to in-
0 troduce the DMS Supernode into a DMS central office equipped with
0 old networks (i.e. NT0X48AA/AB/AC/AG/AH/AJ and NT5X13AA/BA).
0 These Network frames must be modified for use with the DMS Core.

0 6.1 HARDWARE PROVISIONING

0

0 6.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Canadian Applications Only

0 The NT5X13AA NETC frame should not be ordered for new jobs. Its
0 status is going to be changed to A&M.

0

0 6.1.2 HARDWARE DEPENDENCIES

0

0 Canadian Applications Only

0 The circuit pack fill will be selected based on the applica-
0 tion: domestic applications - NT5X13AC and international applica-
0 tions - NT5X13BB. In addition, the following circuit packs must
0 be provisioned for domestic applications:

0 NT3X76AA - Non DMS-Core applications
0 NT3X76AC - DMS-Core applications
0 NT3X74AA - Non DMS-Core applications
0 NT3X74AB - DMS-Core applications
0 NT3X70AA - when gain feature is not required
0 NT3X70AB - when gain feature is required (IOS application only)
0 NT3X75AA - Non ISDN applications & ISDN applications w/o remotes

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0 NT3X75AB - ISDN applications with remotes

0 The DC cooling unit, NT3X90AC will now be provisionable on the
0 NETC frame.

0

0 6.1.3 PROVISIONING CONSIDERATIONS

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0 NET Frames

0

0 To provide the capability for introducing the DMS SuperNode
0 into a DMS central office equipped with old networks (i.e. NET
0 frames NT0X48AA/AB/AC/AG/AH/AJ), the following product change
0 kits have been created:

0 NT0X48AK - Network Change Kit (DMS SuperNode)
0 NT0X48AL - Network Change Kit (DMS SuperNode)

0 Both product change kits are required to provide the necessary
0 modifications to the NET frame to enable it to operate with
0 DMS SuperNode in a DMS Central Office.

0 Provide one each of NT0X48AK and NT0X48AL per NET frame per
0 plane when DMS SuperNode is introduced into a DMS central of-
0 fice.

0 NOTE (for Canadian Applications Only)

0 The Change Application department will field upgrade all of-
0 fices, which have existing NET frames, with product change kit
0 NT0X48AK (i.e. Systems Application Engineering will NOT order
0 this kit). However, after Change Application field upgrades
0 an office, Systems Application Engineering will update the of-
0 fice records accordingly.

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0 Hence, for future office extensions, when a DMS office with
0 existing NET frames is retrofitted with SuperNode, Systems Ap-
0 plication Engineering must apply product change kit NT0X48AL.

0 If Systems Application Engineering discovers that product
0 change kit NT0X48AK had not been previously applied, they
0 should inform Change Application of the deficiency, and re-
0 quest Change Application to issue an 88K order which will have
0 material delivered to meet the SuperNode schedule.

0 Reference the attached Engineering Manual sections for further
0 details.

0
0 NETC Frames

0
0 Canadian Applications Only

0 The NT5X13BA NETC frame should be ordered instead of the
0 NT5X13AA. Previously this frame was used for international ap-
0 plications. It will now be used for all applications. The
0 NT5X13BA will have an RTO date for domestic applications in
0 Canada of wk 03/87. The RTS date for Canada is wk 30/87. The
0 NT5X13AA should not be ordered for Canadian jobs that 'D' af-
0 ter week 30. The NT5X13 NETC frame will be replaced by the
0 NT8X10AA DSNE frame. Order the NT8X10AA DSNE frame rather
0 than the NT5X13 NETC frame when it is available.

0
0 6.1.4 OFFICE LAYOUT INFORMATION

0
0 N/A

0

0 6.1.5 TRAFFIC TABLES

0
0 N/A

0 6.2 PRODUCT/SYSTEM SPECIFICATION

0

0 6.2.1 PHYSICAL CHARACTERISTICS

0
0 N/A

0

0 6.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Refer to Engineering Manual section EMA15-01-000 for earthquake
0 framework information.

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0 6.2.3 SPARING INFORMATION

0
0 N/A

0 6.3 SOFTWARE PROVISIONING

0

0 6.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 N/A

0

0 6.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 N/A

0

0 6.3.3 MEMORY PROVISIONING

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0 N/A

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0 6.4 REAL TIME IMPACT

0 N/A

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0 7.0 Integrated Services Digital Network (ISDN)

0 ISDN (Integrated Services Digital Network) related services offered by
0 the DMS-100 Hardware/Software are defined as Bearer Services and
0 TeleServices communicated over a Non-Switched, Switched, and/or the
0 packet switched network. Refer to Figure #3a, 3b, and 3c for an over-
0 view of the ISDN Configuration. :dl tsize= 20. :dthd.SERVICE
0 :ddhd.SERVICE DESCRIPTION :dt.BEARER :dd.This service represent the
0 digital connections used for communication and may be circuit switched
0 or packet connections.

0 Supplementary bearer services represent different ways of manipulating
0 these connections to provide features e.g. call forwarding etc.
0 :dt.TELESERVICES :dd.These are higher level services, such as voice or
0 text messaging, which use the Bearer Services for connections and run
0 messaging protocols over these connections to control the service op-
0 eration. :edl.

0 Users have access to these services through two multi-purpose
0 user-network interfaces BRI & PRI: :sl compact. :li.Basic Rate
0 Interface (BRI), :li.Primary Rate Interface (PRI), :li.Packet
0 Switch Access, and :li.Customer Premise Equipment (CPE). :esl.

0 7.1 HARDWARE PROVISIONING

0

0 7.1.1 HARDWARE USAGE RESTRICTIONS

0
0 The following hardware usage restrictions must be addressed prior
0 to provisioning this equipment. Specific areas addressed are:

- 0 |
0 * XPM Plus and EDCH Usage Restrictions
0 * Use of NT6X46BB and NT6X62AB on DMS250 PMs equipped with
0 NT6X02AI/LE.
0 | * SMUI Restrictions

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0 XPM Plus and EDCH Usage Restrictions

0
0 XPM Plus and EDCH usage restrictions are expressed below in terms
0 of the DMS-100, DMS-250, and RSCI:

0 * The difference between the DCH and EDCH PM Loads are as fol-
0 lows:

0 - The DCH load has a limit of 1MByte which can run in ei-
0 ther the DCH (NTBX02AA) or the EDCH (BX02BA) hardware
0 platform. Due to memory constraint, the BCS35 DCH load
0 is the LAST load containing new features. The EDCH load
0 will contain any new functionality starting in BCS36 as
0 well as any debugging tools which were removed from the
0 DCH load due to memory constraints. The EDCH load can
0 only run on EDCH platform.

0 - UPGRADE STRATEGY

0 - The Upgrade Strategy consists of freezing the DCH load
0 for 3 BCS before it is Manufacture Discontinued (forward
0 compatibility) or of making the EDCH BCS gating meaning
0 that no freeze load is required. We should use similar
0 strategies which will be adopted by XPMPLUS project.

0 - If one element of the switch is upgraded to a new BCS,
0 all elements must be upgraded. The telco can only up-
0 grade in no more than a 3 BCS jump.

0 - During the BCS application, elements are upgraded from
0 the pside elements to the CC. Thus, the upgrade is done
0 in the following sequence: DCH, LCME, XPM, MS, CM. DCH
0 is backward compatible with up to 3 previous XPM and CC
0 loads.

0 - EDCH hardware can either run the DCH or the EDCH load
0 starting in BCS35. This means that pre-BCS35 loads will
0 not run on EDCH platform.

0 - EDCH load can only return to service if the XPM is up-
0 graded to UP-EISP.

0 - Loading a NTBX02AA circuit pack with an EDCH load may
0 fail. RTSing this DCH will fail.

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- 0 - Sparing from a NTB02BA circuit pack with an EDCH load to
0 a NTB02AA circuit pack is not permitted.
- 0 - Sparing from a NTB02BA circuit pack with a DCH load to a
0 NTB02AA circuit pack is permitted.
- 0 - Sparing from a DCH to an EDCH circuit pack is permitted.
0 |
- 0 - Sparing from an EDCH to an EDCH circuit pack with the
0 different load types is only permitted; if performing a
0 spare from a DCH load to a EDCH load.
0 |

0 XPM Plus Restrictions

0
0 The following restrictions apply to XPM+ provisioning:

- 0 | 1. Application of XPM PLUS to LGCI, LTCI modules is mandatory
0 (BCS Gating) for BCS-34. Application of XPM PLUS to DTCI mod-
0 ules is mandatory for BCS-39. All initial orders will be on
0 the NT601AD frame.
0 |
- 0 2. BCS-34 is required to provide XPM+ pm tje DTC. DTC7, and DTCI
0 modules. This applies to both new shipments and upgrades.

0 DMS-250 Specific Restrictions

0
0 The following restrictions apply to provisioning modules for
0 DMS-250 applications:

0 |

- 0 1. NT602AI/LE Modules with NT646BB/NT662AB

0

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0 Modules equipped with the NT6X02AI and or NT6X02LE will not
0 function properly with the NT6X46BB and NT6X62AB installed on
0 the same PM. Provision the PMs as follows:

- 0 a. Provision the NT6X46BA and NT6X62AB combination for all
0 applications unless the LCME is subtending.
- 0 b. Provision the NT6X46BB and NT6X62AA when LCMEs are sub-
0 tending and or when Blue Box Fraud is required.

0 SMUI Specific Restrictions

0
0 The following restrictions apply to provisioning SMUI modules:

- 0 1. Multi-Point Embedded Operations Channel (MP-EOC) and 3-DS0
0 Time Division Multiplex (TDM) Services are not supported.
- 0 2. All DS-1 links from a particular DMS-1U must terminate on the
0 same SMUI.

0 7.1.2 HARDWARE DEPENDENCIES

0
0 The software development for 2B1Q will be done in two phases. In
0 Phase I (BCS31): The LCME will support only ISDN lines. In Phase
0 II (BCS32): The LCME will support ISDN lines POTS, EBS, and
0 DATAPATH lines.

0 DMS 100 ISDN XPM Plus LGCI/LTCI/DTCI modules must be equipped
0 with the NTB01AB Enhanced ISDN Signal Pre-processor CP. Existing
0 LGCI/LTCI/ DTCI peripheral modules equipped with NTB01AA ISDN
0 Signal Pre-processor CP will have those CPs replaced by the
0 NTZZ99AH XPM Plus Packfill Change Kit

0 DMS 250 ISDN XPM Plus DTCI modules must be equipped the NTB01AB
0 Enhanced ISDN Signal Pre-processor CP. Existing DTCI modules
0 changed to XPM Plus with the NT6X02XA Kit must also have two
0 NTB01AB EISP CP and associated labels provisioned to replace the

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0 DISCRIMINATION NUMBERING

0
0 Prior to BCS-31, in an office equipped with both ISDN and
0 non-ISDN peripheral controllers, the CPCI modules could be as-
0 signed the same discrimination numbers as existing non-ISDN mod-
0 ules. For example, LGC 01 and LGCI 01 could co-exist in an
0 office. The same is not true for LCME/LCMI versus LCM bays.

0 For BCS-31 and above, discrimination numbering of ISDN peripher-
0 als has been changed, requiring them to be consecutive with
0 non-ISDN modules. Frame level naming and numbering is unchanged
0 and the frame type is still determined by the bottom module in
0 the frame. At the MAP, ISDN modules are no longer called
0 LGCI/LTCI. Instead, only LGC/LTC are allowed. (Note that DTCI has
0 not been changed to DTC at the MAP). As a result of this change,
0 at BCS-31, existing ISDN peripheral controllers (LGCI/LTCI) will
0 need to be renumbered to be consecutive with non-ISDN control-
0 lers. For example, an office with existing LGC 00-05 and LGCI
0 00-01 will require renumbering the ISDN modules to LGCI 06-07 at
0 BCS-31. New labels for the ISDN controllers will be required.

0 DTC and DTCI numbering will not be changed due to the complexity
0 of changing in-service trunks and the lack of a software tool for
0 this activity. Numbering for DTC/DTCI modules will be unchanged
0 from pre-BCS31 practices.

0 At the MAP, modules can still be identified as ISDN or non-ISDN
0 by referring to the ISP16 table.

0 7.1.3 PROVISIONING CONSIDERATIONS

0
0 The following items must be considered when provisioning a host
0 office with ISDN services:

- 0 * The Frame/Cabinet to be used for ISDN peripheral controller
0 Modules
- 0 * Provisioning ISDN peripheral controller Modules based on the
0 access mode required.

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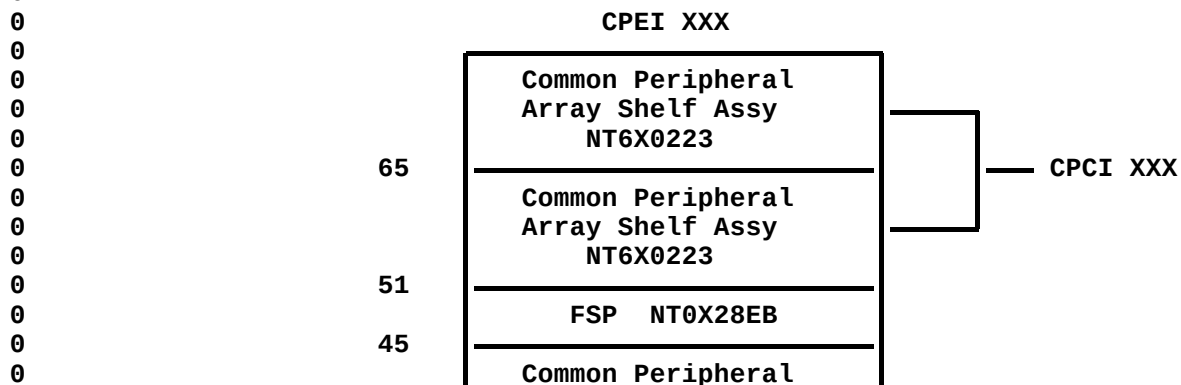
- 0 * ISDN Module Upgrade requirements
- 0 * Packet Network Access Provisioning
- 0 * Provisioning ISDN Line Modules. Refer to ECM-685 to provision these modules.
- 0 * Traffic requirement/limitations for the ISDN Controller Modules. Refer to ECM-497 for Traffic Provisioning Rules.
- 0 * DMS-1U To Host Office Access

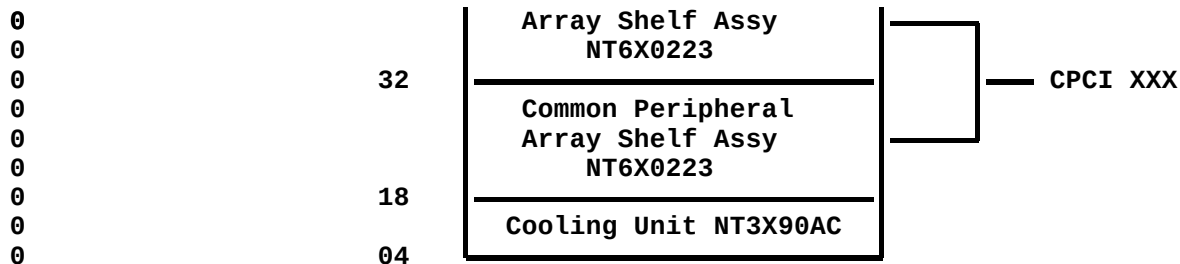
0 ISDN Frame/Cabinet Provisioning

0 One of three ISDN Common Peripheral Controller housing units (CPEI Frame or Cabinet) may be provisioned today. The available units are: NT6X01AB (ISDN Only Frame), NT6X01AD (ISDN or POTS Frame), or NTZZ22CA (ISDN or POTS Cabinets). Refer to ECM-373 for provisioning requirements for the POTS units provisionable on the NT6X01AD Frame and NTRX36AB/NTZZ22CA Cabinet.

0 The ISDN Common Peripheral Controller Equipment frame is illustrated in Figure #4. This frame is based on the standard LTE frame with some changes to the FSP and the shelf backplane wiring.

0 Upgrade kits will NOT be available to apply ISDN capability to existing LGE/LTE/DTE/SME frames.





0 Figure 4: ISDN Common Peripheral Controller Equipment Frame

0 Note: The NT6X0223 shelf replaced the NT6X0215
0 Shelf on release 19 of the NT6X01AB frame.
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The frame and its modules and shelves are assigned functional names depending on the ISDN access modes supported. Depicted in the chart below are the Frame to Module and Module to Access Mode relationships.,

ACCESS MODES	EQUIPMENT	NAME	ABBREVIATION
DS-30A links to LCM/LCME/LCMIs, DS-1 links to Packet Handler	Frame	ISDN Line Group Equipment	LGEI
	Modules	ISDN Line Group Controller	LGCI
	Shelves	ISDN Line Group Array	LGAI
DS-30A links to LCM/LCME/LCMIs, DS-1 Links To Packet Handler, Non-ISDN DS-1 Trunks	Frame	ISDN Line Trunk Equipment	LTEI
	Modules	ISDN Line Trunk Controller	LTCI
	Shelves	ISDN Line Trunk Array	LTAI
DS-1 links to DMS-1U's	Frame	ISDN Subscriber Module Equipment	SMEI
	Modules	ISDN Subscriber Module for DMS-1U	SMUI
	Shelves	ISDN Subscriber Module Array	SMAI

Planned availability of these functions is as follows:

LGEI In BCS-27, LTEI in BCS-28. In addition, PRI DS-1 links are to be supported on LTEI in BCS-30.

SMUI Initial introduction with BCS 34. The following Upgrade Scenarios apply:

* Effective BCS 34, the SMUI utilizes the Extended Master Processor Memory, Extended Signal Processor Memory, XPM

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0 Processor Cards and New Messaging circuit packs. En-
0 hanced ISDN Pre-Processor circuit packs are also re-
0 quired.

0 * Effective with BCS 36, the SMUI can be field upgraded to
0 utilizes the Unified Process (UP) - NTMX77 on the
0 NT6X01AB frame. New orders of SMUI with XPM Plus must
0 use the NT6X01AD frame.

0 XPM+ For DMS 100 offices only, the LGCI/LTCI/DTCI must be changed
0 to XPM Plus modules at BCS 34.

0 XPM+ For DMS 250 offices, equipped with BCS 34 or later, the DTCI
0 may be upgraded to an XPM Plus module.

0 Note:

- 0 1. The LTCI/LGCI/DTCI DMS 250 DTCI must also be equipped with
0 the Enhanced ISDN Signal Pre-Processor. The Enhanced ISDN
0 Signal Pre-Processor in part of the NT6X02XA upgrade kit.
- 0 2. Refer to the attached Engineering Manual sections for fur-
0 ther provisioning details.

0 Provisioning ISDN Modules

0
0 Provisioning Considerations are detailed in this section for the
0 following CPE/CPEI Modules:

- 0 1. DTC - DMS-250 Digital Trunk Controller
- 0 2. DTCI - Digital Trunk Controller ISDN
- 0 3. LGCI - Line Group Controller ISDN
- 0 4. LTCI - Line/Trunk Controller ISDN
- 0 5. SMUI - Subscriber Module Urban ISDN

0 The CPE/CPEI Modules has 20 P-Side ports that are provisioned as
0 required to support the following:

- 0 * DS-30A links from LCMs and LCMEs;
- 0 * DS-1 links to the Packet Handler;
- 0 * DS-1 links for PRI or non-ISDN trunks;
- 0 * DS-1 To DMS-1U for Special Services, BRI, and MBS Lines.

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0 * D-channel handlers.

0 The maximum number of each type of link, and the minimum software
0 release that supports it is:

0 * LCM/LCME - CPEI DS-30A links: up to 18 (BCS-27 or higher)
0 * CPEI - Packet Handler DS-1 links: up to 16 (BCS-27 or higher)
0 * Non-ISDN trunks - up to 16 (BCS-28 or higher)
0 * PRI trunks - up to 16 (BCS-29 or higher)
0 * SMUI - DS-1 Links to DMS-1U that support BRI, Special Ser-
0 vices, and MBS Lines (BCS-34 or higher)

0 There are no restrictions on the assignment of Bb or Bd channels to
0 packet handler DS-1 link channels. Note that the CPEI statmux maximum
0 is 64:1 for Bd channels.

0 DTC - DMS-250 Digital Trunk Controller

0 Digital Trunk Controller for DMS-250

0 The DTC NT6X02AI for DMS-250 can be mounted on the CPCE frame
0 (for Richardson applications only). This module will handle
0 non-ISDN trunking (employing A/B bit signaling) required for
0 DMS-250 applications but will not handle ISDN PRI. The DTC can
0 be converted at a later date to a DTCI in order to handle ISDN
0 PRI.

0 Provide one (1) NT6X01WC DTC Wiring Options (NT6X01AB) per each
0 non-ISDN module which is mounted on the CPCE frame. This option
0 provides a wire strap of the backpanel (NT6X0103) Slot 12 be-
0 tweens pins 7A and 8A to modules used for non-ISDN applications.

0 Provide the necessary circuit packs, normally provided on the
0 DTC, required for DMS-250 applications. Refer to the Engineering
0 Manual sections for more information on which PECs are Always
0 Provided (AP) with the NT6X02AI DTC CP Fill and which PECs are
0 provisionable.

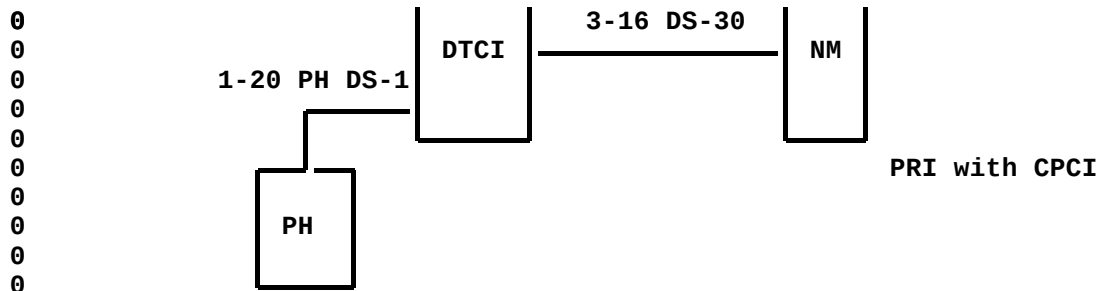
0 DTCI - Digital Trunk Controller ISDN

0

0 Primary Rate Interface (PRI) Level Provisioning



0 Host - Signalling Interface Equipment
0 Chapter 7



0 Figure 16: Primary Rate Interface
0

0 PRI Link Provisioning

0 The sixteen network ports (C-side) on the peripheral controllers
0 are pre-allocated for each p-side trunk member. For example: The
0 first five DS-1 links are mapped onto the first four C-side ports
0 (reference Figure 17 below).

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DS-1 P-side	Port	Port	DS-30 C-side
24 channels	1	1	30 channels
24 channels	2	2	30 channels
24 channels	3	3	30 channels
24 channels	4	4	30 channels
24 channels	5	.	
	.	.	
	.	CPCI	
24 channels X 5 ports = 120 channels total			30 channels X 4 ports = 120 channels total

0 Figure 17: Pre-Allocated Network Ports
0

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0 | A single PRI D channel may provide signalling for up to 16 DS-1
0 links (479 B channels). All of these DS-1 facilities must be
0 present on the same ISDN peripheral.

0 The CPEI has twenty (20) peripheral ports. These are divided be-
0 tween the PRI DS-1 links and provisioned DS-1 links to the Packet
0 Handler. On the LGEI/LTEI only, p-side ports are reserved for
0 DS-30A links from LCE and LCEI frames (BRI or combined BRI/PRI
0 access).

0 PRI Equipment

0 For the CPCI peripheral controller:

- 0 1. Provide one (1) NT6X01AB, or NT6X01AD, or NTRX36AB ISDN Com-
0 mon Peripheral Controller Equipment Cabinet or frame.
- 0 2. Provide one (1) NT6X02NA ISDN Common CP Fill for each module
0 to be equipped.
- 0 3. Provide one (1) NT6X50AB to accommodate two DS-1 links up to
0 a maximum of ten circuit packs (20 DS-1 links) per DTCI mod-
0 ule.

0 If the module is only equipped for PRI it will be called DTCI,
0 and if equipped for BRI/PRI it will be called LTCI. D-channel
0 Handler (DCH/EDCH) CP are not required on the DTCI.

0 LGCI - Line Group Controller ISDN

0 LTCI - Line/Trunk Controller ISDN

0 SMUI - Subscriber Module Urban ISDN

0 The ISDN Subscriber Module Urban (SMUI), also referred to as En-
0 hanced SMU is an evolution of the Subscriber Module Urban (SMU)
0 to support ISDN BRA and/or MBS services to and from a DMS-1 Urban
0 (DMS-1U). The SMUI module mounts on the NT6X01AB, NT6X01AD, and
0 or NTRX36AB frames/cabinets. When the lower module in a CPEI
0 frame/cabinet is a SMUI the frame/cabinet will be stamped as a
0 SMEI frame. NOTE: The DMS-1U is sometimes referred to as an RCU.

0 The following circuits are provisionable on the SMUI:

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- 0 * DS-1 Interface circuit packs and D-Channel Handlers are to be
0 provisioned per engineering manual rules and job require-
0 ments.
- 0 * The SMUI may interface the Network via up to 16 DS-30 Copper
0 speech links (C-Side Ports) . In this case DS-30 Network
0 Interface packs shall be provisioned. When fiber interface
0 to the Enhanced Network is required, the SMUI is to be con-
0 figured with DS-512 Network Interface packs.
- 0 * The Universal Tone Receiver (UTR) is not available on the
0 SMUI until BCS 35. Digitone Receivers must be provisioned for
0 lines at the RCU.
- 0 * The CLASS Modem Resource circuit pack must be provisioned
0 when the Calling Number Delivery feature is to be supported.
- 0 * P-Side Ports
- 0 Up to 20 P-Side Ports total may be provisioned. These ports
0 may be assigned as:
- 0 - DS-1 Ports, Max 20. All DS-1 links from a particular
0 DMS-1U must terminate on the same SMUI.
- 0 - Non-Switched Specials (NSS) via Channel Banks
- 0 One Channel (DS-0) is required per NSS. One DS-1 has 24
0 Channels (DS-0s) that may be assigned for the NSS
0 functionality.
- 0 - One (1) P-Side port is required per EDCH/DCH CP assigned
0 and One (1) additional port is made unavailable by the
0 EDCH/DCH CP, therefore, 2 Ports are consumed per DCH/EDCH
0 CP.
- 0 * The number of P-Side ports available to be assigned as DS-1
0 ports to a DMS-1U may be expressed as follows:
- 0
$$\#DS-1s = (20 - (\#CNSS/24 \text{ RU}) - (2 * \#EDCH/DCH))$$
- 0 Note: RU = Round Up.
- 0 * The following four examples demonstrate the application of
0 the formula above:
- 0 - Example #1

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0 SMUI not supporting ISDN or MBS lines (DCH/EDCH CPs are
0 not required, and not supporting Non-Switched Specials
0 (NSS):

0 $\#DS-1s = (20 - (\#CNSS/24 \text{ RU}) - (2 * \#EDCH/DCH))$
0 $\#DS-1s = (20 - (0/24) - (2 * 0))$
0 $\#DS-1s = 20$

0 In this case, all 20 P-side ports are available for DS-1
0 connections between the DMS-1Us and the supporting SMUI.
0 Therefore, a maximum of ten DMS-1Us (2 DS-1 links each)
0 can interface an SMUI that does not support ISDN lines or
0 MBS lines or non-switched specials.

0 - Example #2

0 SMUI requires 48 Channels for non-switched specials, but
0 not supporting ISDN or MBS lines:

0 $\#DS-1s = (20 - (\#CNSS/24 \text{ RU}) - (2 * \#EDCH/DCH))$
0 $\#DS-1s = (20 - (48/24 \text{ RU}) - (2 * 0))$
0 $\#DS-1s = (20 - 2 - (2 * 0))$
0 $\#DS-1s = 18$

0 In this case, two P-Side ports are taken up by nailed up
0 connections, then up to 18 ports are left for DS-1 con-
0 nections between the DMS-1Us and the supporting SMUI.
0 P-side ports not taken by the Non-Switched Specials(NSS)
0 or sometimes referred to as nailed-up connections are not
0 available for DS-1 links.

0 - Example #3

0 SMUI supporting ISDN and/or MBS lines, but not supporting
0 Non-Switched Specials. A minimum of two D-Channel Han-
0 dler circuit packs (one active and one spare) are provi-
0 sioned in the SMUI to support ISDN and/or MBS lines.

0 $\#DS-1s = (20 - (\#NSS/24 \text{ RU}) - (2 * \#EDCH/DCH))$
0 $\#DS-1s = (20 - (0/24 \text{ RU}) - (2 * 2))$
0 $\#DS-1s = (20 - (0) - (4))$
0 $\#DS-1s = 16$

0 In this case, each D-channel Handler makes two P-side
0 ports unavailable for DS-1 connections. Therefore, a max-
0 imum of 16 ports are left available for the DS-1 con-
0 nections between the DMS-1Us and the supporting SMUI.

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0 - Example #4

0 The SMUI is supporting 48 Channels for Nailed-Up Con-
0 nections or Non-Switched Specials and supporting ISDN
0 and/or MBS Lines. A minimum of two D-Channel Handlers
0 are provisioned.

0 #DS-1s = (20 - (#CNSS/24 RU) - (2 * #EDCH/DCH))
0 #DS-1s = (20 - (48/24 RU) - (2 * 2))
0 #DS-1s = (20 - (2) - (4))
0 #DS-1s = 14

0 In this case, a maximum of 14 P-side ports are left
0 available for the DS-1 connections between the DMS-1Us
0 and the supporting SMUI. Provisioning two EDCH/DCH CPs
0 consumed four P-Side ports. Two more ports were assigned
0 to Non-Switched Specials (Nailed-Up Connections).

0 * P-Side Ports To DMS-1U or RCU are configured based on the
0 following:

0 - Each RCU supports up to 528 lines and connects to its
0 supporting SMUI by 2-8 DS-1 facilities.

0 - 5280 POTS lines (Coin Lines Included), 324 ISDN Lines, or
0 324 MBS Meridian Business Set lines.

0 - When ISDN and/or MBS lines are supported, a minimum of
0 two D-Channel Handler circuit packs must be provisioned
0 in the SMUI module.

0 * Two fully configured DMS-1 Urbans (8 DS-1s/RCU) and can sup-
0 port up to ten minimally equipped Urbans (2 DS-1s/RCU).

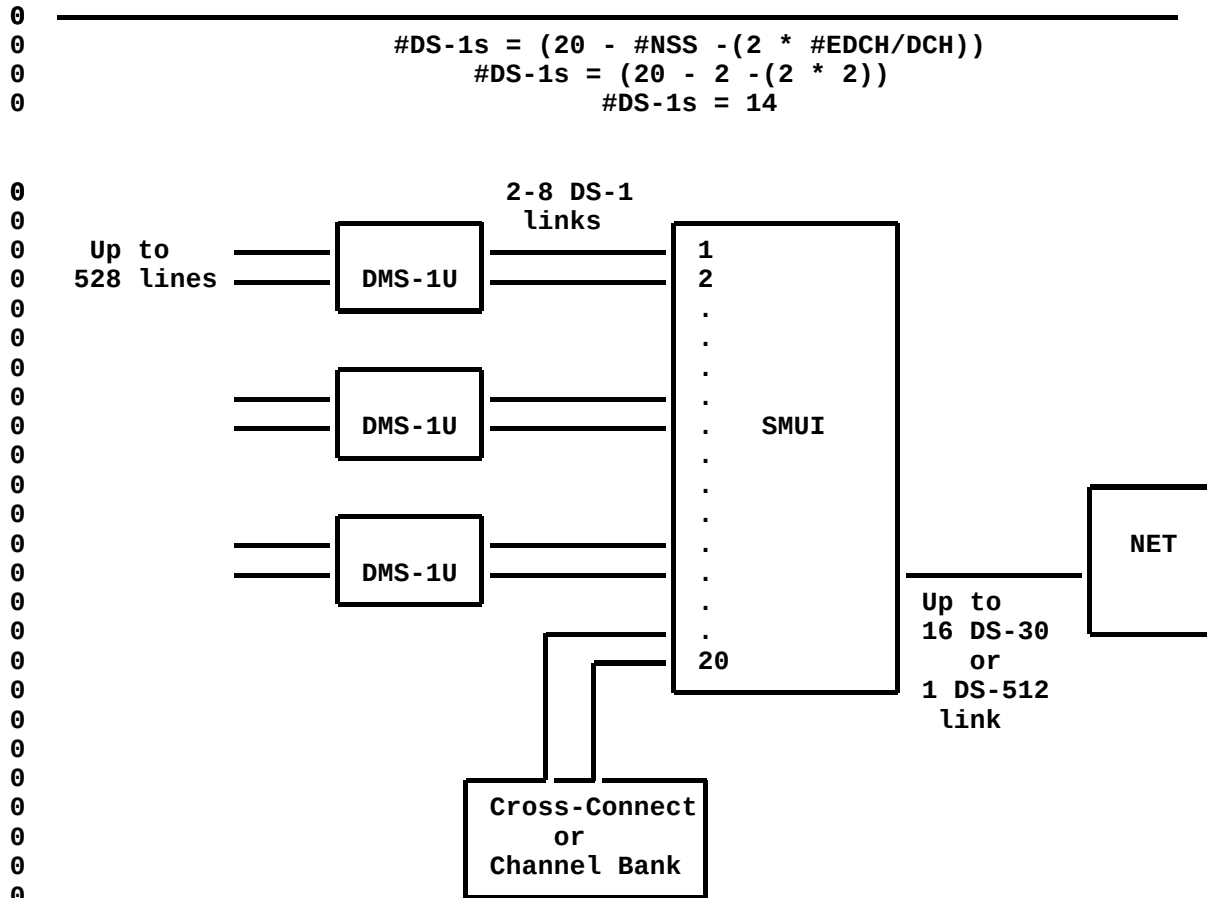
0 * Special Services, including 4WSS, 2WSS, ISDN B-Channels, and
0 packets of D Channel data out of the DMS-100 to a Channel
0 Bank, to a Digital Cross Connect system (DCS) or to a Packet
0 Switch.

0 * Refer to appropriate Engineering Manual Inserts for detail
0 and Building Block packfills required as well as
0 provisionable circuit pack codes and rules.

0

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0 The diagram below, depicts a typical example of SMUI P-Side port
0 utilization per Examples 1 thru 4:



0 Figure 5: SMUI supporting Non-Switched Specials, ISDN, and/or MBS
0 lines

0 The terms used in the formula above are defined as:

0 $\#NSS = \#$ Non-Switched Specials

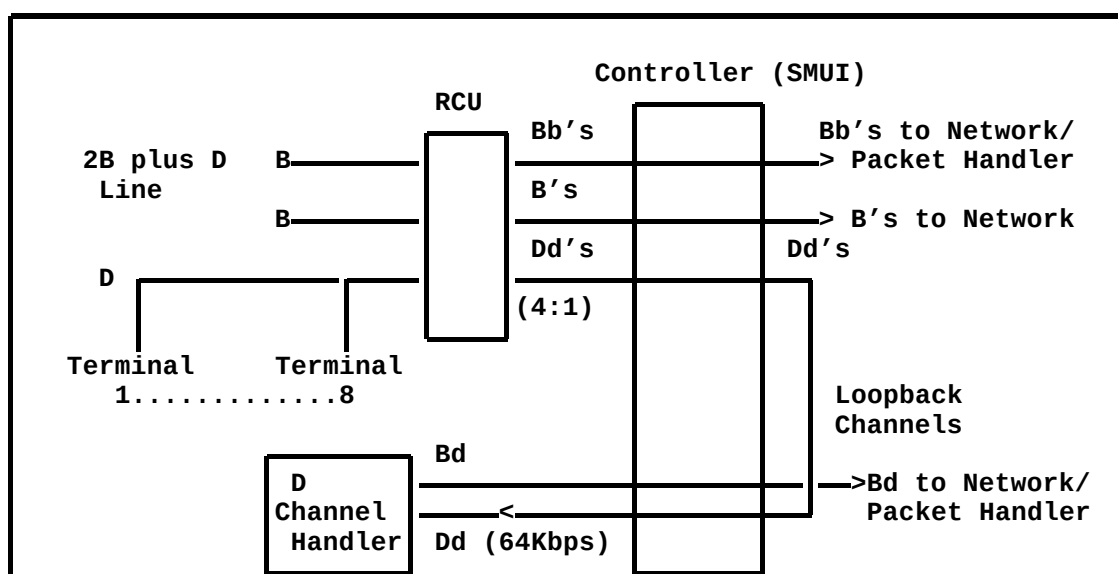
0 $\#EDCH/DCH = \#$ DCH or EDCH CPs provisioned. Multiplied by
0 two (2) equals the $\#$ ports made unavailable by
0 DCHs or EDCHs.

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0 Concentration: The RCU is used in a concentrating mode. Blocking in
0 the RCU is due to contention for channels at the DS-1 links.

0 The SMUI is used in a non-concentrating mode.

0 ISDN Channel Routing: The following diagram shows the ISDN Channel
0 Routing for the RCU/SMUI:



0 Figure 8: ISDN CHANNEL ROUTING (C-Side Packet Configuration)

0 Explanation Of Acronyms Used:

- 0 B Channels - Channels that are switched through the network module.
- 0 Bb Channels - Channels that are dedicated high speed packet traffic.
0 These channels are switched to the packet handler via
0 the network module.
- 0 Dd Channels - Channels that are looped back to the D-Channel handler
0 (DCH) via a hair-pinned connection.
- 0 Bd channels - Channels used for low speed packet data concentrated
0 in the DCH) are switched to the packet handler via the
0 network module.

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0 Refer to ECM 497 for further SMUI/RCU traffic provisioning rules.
0

0
0 D-Channel Handler

0 NTBX02AA - D Channel Handler (DCH) CP
0 NTBX02AA - Enhanced D Channel Handler (EDCH) CP is
0 applicable at BCS 34 and above

0 The D channel handling function is performed by two circuit packs
0 on the CPEI Module:

0 NTBX01AA - ISDN Signalling Pre-processor (ISP) CP
0 NTBX02AA - D Channel Handler CP
0 - OR -

0 NTBX01AB - Enhanced ISDN Signalling Pre-processor (EISP)
0 CP
0 NTBX02AA - Enhanced D Channel Handler (EDCH)

0 The ISDN Signalling Pre-processor CP is provisionable; two (2)
0 are required in the CPCI Module for all applications which re-
0 quire ISDN.

0 The D channel handler CP will be provisioned subject to the fol-
0 lowing rules:

- 0 1. The D channel handler CP will be assigned to slots currently
0 used by DS-1 interface circuit packs. Assignment of a
0 DCH/EDCH card makes unavailable 2 DS-1 ports - physically and
0 1 DS-1 Port - electrically.
- 0 2. Each DCH/EDCH circuit pack takes one peripheral port of the
0 twenty P-side ports available. The total of twenty P-side
0 ports are shared between the DS-1, DS-30A and DCH links.
- 0 3. From BCS-28 onwards, one (1) of the DCH/EDCH circuit packs
0 will be used as a spare to support N+1 redundancy. There is
0 no DCH sparing in BCS-27. EDCH only shall be provisioned
0 from BCS-34 forward for LGCI/LTCI application and BCS-36 for
0 SMUI applications. The EDCH is currently not provisionable
0 on the TMS CPEI Module.

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- 0 4. At least two DCH/EDCH cards must be provided after BCS-28
0 (ie. one plus one spare).
- 0 5. Up to ten (10) DCH/EDCH CPs may be provided per CPCI. (Nine
0 plus one spare). Refer to ECM- 497 to calculate the number
0 of DCH/EDCH CPs required to support the anticipated packet
0 traffic.
- 0 6. Each DCH/EDCH circuit pack has 32 "ports" available. One port
0 is dedicated to the ISP/EISP CP, and the remaining 31 ports
0 are capable of handling 4 multiplexed BRI D channels each, or
0 $31 \times 4 = 124$ BRI D channels maximum.
- 0 7. The ISP/EISP will occupy a free slot on the speech bus.

0 DPN EQUIPMENT PROVISIONING

0
0 The following information is intended as an aid to Customer Engi-
0 neering to determine the Digital Packet Network (DPN) equipment
0 requirements.

0 The DSD Customer Engineer will be ultimately responsible for the
0 engineering of the entire ISDN office including the DPN equip-
0 ment. The generation of material equipment lists and configura-
0 tion drawings for the DPN equipment, however, will be done in
0 conjunction with a Data Networks Division (DND) engineer.

0 For Canadian jobs, the DSD System Application Engineer will be
0 responsible for the overall office engineering including the
0 power distribution and grounding hardware for the DPN equipment.
0 Also, any cabling from DMS to DPN equipment will be engineered by
0 the DSD engineer.

0 This information will not be entered into CADES because a fully
0 integrated process whereby specs for DPN hardware can be gener-
0 ated is not presently feasible.

0 For U.S. offices, the System Application Engineer (SAE) has pri-
0 mary responsibility for the ISDN office. The SAE must contact
0 DND to ensure the participation of both divisions at the time of
0 order capture. DND will assist by completing the Packet Handler
0 section of the NT8630 order capture document.

0 After order capture DND will complete a "Hardware Configuration"
0 which is to be turned over to the SAE before the release of the
0 NT8630. The SAE must include the "Hardware Configuration" in the
0 Main Equipment List (MEL) as notes to the ISDN section.

0 The order capture (CI), release of order capture (DCI), Delivery
0 (D), Installation Start (H) and Cutover (K) dates for the Packet
0 Handler Equipment must match the same dates for the DMS equip-
0 ment.

0 DIU Provisioning

0 The Digital Interworking Unit (DIU) provides the DS-1 interface
0 for the DPN packet switch.

0 The quantity of DS-1 links from the DMS is used to determine the
0 quantity of DIU systems (shelves) and sub-systems required. Each
0 sub-system supports a single DS-1 link, and the number of inter-
0 face cards in the sub-system is determined by the number of Bb
0 and Bd channels provisioned on the DS-1 link.

0 On the CPCI, DS-1 links and individual channels within the links
0 may be allocated to Bb or Bd as required. Bb and Bd should be
0 distributed as equally as possible over all the links from the
0 same CPCI.

0 A DIU system consists of one shelf equipped with two (2) Supervi-
0 sory Processor Module (SPM), two (2) SPM Paddle Cards (SPMPC),
0 two (2) power converters and one (1) Alarm Termination Paddle
0 Card (ATPC). DIU subsystems can be added until the shelf is
0 full. The number of DIU subsystems to be provisioned is equal to
0 the number of DS-1 links presented to the DIU. A total of 16
0 slots per shelf are available for DIU subsystems.

0 Each DIU subsystem is composed of one T1 Interface Module (TIM),
0 and from one to three Serial Interface Modules (SIM) and Access
0 Module Interface Paddle Cards (V.35 AMIPC). The DS-1 link termi-
0 nates on the TIM, and the 24 channel DS-1 bit stream is demulti-
0 plexed into 24 individual 64 kbit/s data streams. The reciprocal
0 is true for data transmission in the other direction. These in-
0 dividual streams are then input to the SIM. Each SIM can handle
0 up to eight 64 kbit/s channels; thus, there are up to three SIMs
0 required per TIM. Associated with each SIM is one V.35 AMIPC to
0 interface to the Resource Module.

0

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PEC	DESCRIPTION	RULE
QMY556B	DIU Shelf Assembly	Provision in G24 and higher; see note 3
QPA165	Power Converter	Provision two (2) per DIU Shelf
NT8P37	Supervisory Processor Module (SPM)	Provision two (2) per DIU Shelf. (One is always provided with QMY556B.) See note 3.
NT8P36	SPM Paddle Card (SPMPC)	Provision two (2) per DIU Shelf. One (1) is always provided with QMY556B.
NT9P05	T1 Interface Module (TIM)	Provision one (1) per DS-1 link from DMS CPCI
NT9P07	TIM Paddle Card (TIMPC)	Provision one (1) per TIM
NT9P04	Serial Interface Module (SIM)	See note 1
NT9P06	Access Module Interace Paddle Card (AMIPC)	Provision one (1) per SIM
NT8P44	V.35 PC	Provision one (1) per SIM
NT9P25	Alarm Termination Paddle Card (ATPC)	One AP on DIU Shelf
NT9P02	Filler Plate	See note 2
NT0X96AQ	LGCI - DIU Cable	Provision one per TIMPC
QCAD235F	OA&M Cable	Provision one per SPMPC
NT9P16AB	EIA Cable (used only with AMIPC and 4-port PI)	Provision as required; One (1) per Bb, one (1) per Bd channel.
NT9P97	EIA Cable (used with V.35 PC and 8-port V.35 PI)	Provision as required; One (1) per Bb, one (1) per Bd channel.

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0	NT9P2113	Inter-SPM Cable	Provision one (1) per DIU
0			
0	AP: These items are always provided with the DIU shelf.		
0			

0 Note:

- 0 1. Quantity of SIMs in a DIU sub-system depends on whether the
0 associated TIM is assigned a DS-1 link from an optimal or a
0 residual CPCI. (Refer to ECM-413 for an explanation of op-
0 timal and residual CPCI.) One SIM is required for every
0 eight Bd and/or Bb channels on the DS-1 link. The total
0 number of SIMs required in the DIU is the sum of all SIMs in
0 every DIU sub-system.
 - 0 2. Provide one Filler Plate for every unequipped slot on the
0 DIU shelf (front and back slots). Each SPM, SPMP, TIM,
0 TIMPC, SIM, and AMIPC card takes one slot. There is a total
0 of 36 slots available on the DIU shelf (front and back) for
0 these cards.
 - 0 3. Each DIU Shelf has 16 slots available for DIU sub-systems.
0 Each DIU sub-system requires one TIM slot plus one to three
0 SIM slots. Assign DIU sub-systems to the available slots to
0 determine the total number of DIU Shelves required. Do not
0 assign a TIM and its associated SIMs to different DIU
0 Shelves.
- 0 One DIU shelf may accommodate up to four fully utilized
0 (i.e. three SIM cards per DS-1) DS-1 spans or eight minimum
0 configuration DS-1 spans (i.e. only one SIM - eight channels
0 used).

0 Resource Module (RM) Provisioning

0 The RM portion of the DPN-PH is a fully redundant module, includ-
0 ing two (2) office Processing Elements (PE), two (2) Call Servers
0 PEs, two (2) DIU servers, and two (2) Disk drives. In addition,
0 the RM contains the necessary hardware to support the OAM and
0 subscriber service connections.

0 The base DPN-PH has one LAPD service PE which uses a V.35 Periph-
0 eral Interface (PI) and will support two (2) LAPD ports with 50
0 D-channel terminals per port (100 terminals total). It also has
0 one LAPB PE, also using the V.35PI which can support up to eight
0 (8) B-channel terminals.

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0 The DPN-PH has two PEs which are used to support the OAM X.25
0 connections (ex. to the DIU, to the OAMP). These PEs, which use
0 8-port V.24 PIs can also support X.32 dial-in service. X.32
0 dial-out service can be added to the DPN-PH with the addition of
0 an X.32 Server PE.

0 The DPN-PH contains an Async PE/PI (V.24) set which is used to
0 support asynchronous modem pooling.

0 Also included in the base DPN-PH is one PE/PI (V.35) set used for
0 X.75/X.75' and one PE/PI (V.35) set used for Trunking (UTP). X.75
0 or X.75' can be used to connect the DPN-PH to a Telco PPSN, or to
0 a PH of another vendor, or a carrier's PSPDN. Up to eight (8)
0 X.75/X.75' links can be supported on the PE/PI provided (speed
0 and traffic dependent). The trunks can be used to connect the
0 DPN-PH to other DPN-PHs. Up to three 64 Kbps trunks can be sup-
0 ported on the PE/PI provided. With only a software change, these
0 PE/Pis can both be used for either UTP or X.75/X.75' if desired.

0 Network Links are neither supplied nor necessary for the DPN-PH.

0 Two PEs are required for the office (OFC) function. One is al-
0 ways provided in the RM package, and the other will be supplied
0 with the RM Redundancy package. The SCSI PI for the office PE
0 must be supplied separately since it is not included with either
0 of these packages.

0 Two (2) DIU Server PEs are to be equipped in the DPN-PH.

0 The DPN-PH contains two NCS Server PEs (at G26) which are not re-
0 dundant, but may both be required depending on the NCS configura-
0 tion desired.

0 Processor Elements and Peripheral Interface cards are provisioned
0 as per the following table:

PEC	DESCRIPTION	RULE
NT9P26	Processor element (PE)	Provide as required for NCS Server, LAPB, LAPD, Async, Call Server, X.75, OAM, and DIU Server functions.
QPA137	Peripheral Interface (PI)	Provide one (1) for each OFC PE provided.
NT8P31	Peripheral Interface (PI)	Provide one (1) for each

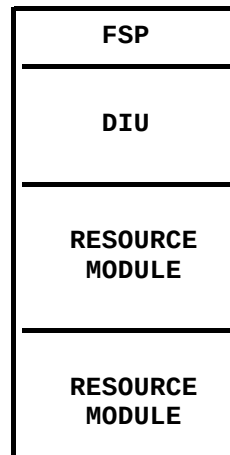
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	(8-Port V.35)	LAPB, LAPD PE provided, and one for each X.75/X.75' or UTP PE provided.
QPA164	Peripheral Interface (PI) (8-Port V.24)	Provide one (1) for each OAM/X.32 PE provided, and one for each Async PE provided.

Once the total quantity of PEs has been determined, the quantity of RM Servers can be determined. Each RM shelf can support 14 PEs and a dual shelf RM can support up to 28 PEs. All new applications should use the DPN-PH configurations as shown in Figure 13. The initial DPN-PH configuration selected depends on initial capacity and future growth requirements. Where possible, two-RM-per-cabinet DPN configurations are preferred to better utilize RM common resources.

Note that DPN-100 cabinets and shelves are not the same as DPN-10/15 equipment; thus, AMs from the older DPNs cannot be assigned to DPN-PH cabinets.

Since the number of Network Link and X.75 Link PEs (and thus the number of RMs) cannot be known in advance of the DND engineering effort, this ECM will not go into detail on this aspect of RM provisioning. The DND engineer should take the total set of required PE/Pis and select the most appropriate configuration in consultation with the System Application Engineer. Refer to NTP 241-1001-156 for detailed RM engineering information.



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COOLING

0 Figure 18 DMS-100 To Data Packet Network Packet Handler (DPN-PH)

0 Network Module (NM)

0 This document will not go into detail about the provisioning of
0 the Network Module.

0 Before G26, the NM is required to provide Network Control System
0 (NCS) and data spooling for Network Management functions. It is
0 designated as a Network Management Module (NMM). For details
0 about NM and NMM engineering and provisioning, refer to NTP
0 241-1001-154.

0 Customer Premise Equipment (CPE)

0
0 Network Termination One (NT1)

0 The Network Termination One (NT1) will provide the interface be-
0 tween 2B+D 2-wire U-interface and the customers 4-wire S/T inter-
0 face.

0 One NTB11AB NT1 is required for each ISDN 'U' Line Card. All
0 standalone NT1 units are to be Merchandise Ordered by the cus-
0 tomer.

0 Offices utilizing the ISDN 'U' line card should provide one NT1
0 unit, one NT1 Power Supply and one P0706571 mounting plate to
0 provide the capability to do acceptance testing and to test these
0 ISDN lines during normal maintenance. This equipment must be Mer-
0 chandise Ordered by the customer.

0 The NT1 is an AC-powered device located at the customer's prem-
0 ise.

0 The T-Side termination hardware will be supplied by the customer
0 to connect from one to eight terminals.

0 The physical dimensions of the NT1 are 1.5"H x 7.8"W x 6.7" L. It
0 has a separate power supply always provided with dimensions 3.9"H
0 x 2.4"W x 2.3"L

0 The supply is connected directly to an AC outlet. It will supply
0 voltages of +5v, +15v and -15v via a cable to the NT1.

0 The NT1 is not required for loops using the ISDN 'S/T' Line Card.

0 M5317T/M5209T ISDN Terminal

0 All ISDN Terminals and their feature options are to be Merchan-
0 dise Ordered. Normally, each terminal requires one B-channel.
0 When the circuit-switched Data Option feature is ordered for the
0 M5317T, however, both B-channels on the BRI loop are used. A
0 maximum of two (2) B-channel LTIDs can be provisioned per loop.
0 Therefore, the total number of BRI loops may have to be increased
0 to accomodate this feature. For example, a customer with two
0 M5317T terminals assigned to one loop will require an additional
0 BRI loop if either set is upgraded with the Data Option feature.

0 The M5209T ISDN Terminal offers a choice of two data configura-
0 tion; one for packet-data services only, and another for select-
0 able circuit-/packet-switched data services. Packet service is
0 provided over a D channel at 110 to 9600 bps from an X.25 packet
0 assembler/disassembler (PAD). The circuit switched service is
0 provided over a B-channel at 110 to 19,200 bps using T-link rate
0 adaption and the Hayes 1200 command set.

0 XPM Plus Provisioning

0
0 Provisioning of XPM Plus is defined below in the following areas:

0 * DMS100

- 0 - New Orders of XPM Plus In LGCI/LTCI/DTCI/SMUI on NT6X01AD
- 0 - Adding XPM Plus To Existing Orders/Extensions
- 0 LGCI/LTCI/DTCI/SMUI Using Building Block Engineering
- 0 (BBE)
- 0 - Adding XPM Plus To Existing Orders/Extensions
- 0 LGCI/LTCI/DTCI/SMUI Using Detailed Engineering

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0 * DMS-250

- 0 - New Order of XPM Plus on DTC, DTC7, and DTCI
- 0 - Adding XPM Plus To Existing Orders/Extensions of DTC,
0 DTC7, and DTCI

0 * RSCI

- 0 - Adding XPM Plus To Existing Orders/Extensions
0 LGCI/LTCI/DTCI Using Building Block Engineering (BBE)
- 0 - New Orders RCCI Detailed Engineering
- 0 - Changes To Existing Orders/Extensions RCCI

0 XPM Plus In DMS-100

0 * New Orders of XPM Plus

0 Provisioning of new production LGCI/LTCI/DTCI XPM Plus pe-
0 ripheral modules on the NT6X01AD frame at BCS 35 and above.
0 At BCS36 the SMUI may be ordered new on the NT6X01AD frame
0 with XPM Plus.

0 * BBE Adding XPM Plus To Existing LGCI/LTCI/DTCI/SMUI Modules

0 For DMS 100 offices with LGCI/LTCI/DTCI/SMUI modules that are
0 to be changed to XPM Plus LGCI/LTCI/DTCI/SMUI modules, pro-
0 vide the following if ordering with Building Block PEC codes:

- 0 - BCS 35 or later software load.
- 0 - BCS 36 or later software load for the SMUI
- 0 - NTXR34AA XPM Plus Basic software package
- 0 - One NTZZ99AH XPM Plus Packfill Change Kit.
- 0 - One NT6X02XA XPM Plus Packfill Change Kit for the SMUI
- 0 - Adequate filler face plates for slots emptied by the XPM
0 Plus Packfill Kit. Refer to the NTZZ99AH/6X02XA XPM Plus
0 Packfill Change Kit Engineering Manual section.

0 * Detailed Engineering Adding XPM Plus In LGCI/LTCI/DTCI/SMUI
0 Modules

0 For DMS 100 offices with LGCI/LTC/DTCI modules that are to be
0 changed to XPM Plus LGCI or LTCI modules, provide the follow-
0 ing if ordering with detail PEC codes:

- 0 - BCS 35 or later software load (BCS36 or later for SMUI)
- 0 - NTXR34AA XPM Plus Basic software package

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- 0 - One NT6X02XA XPM Plus Packfill Change Kit
- 0 - Two NTB01AB Enhanced ISDN Signal Pre-processor CP
- 0 - Two designation labels for NTB01AB
- 0 - Adequate filler face plates for slots emptied by the XPM
- 0 Plus Packfill Kit. Refer to the NT6X02XA XPM Plus
- 0 Packfill Change Kit Engineering Manual section and to the
- 0 NT6X01AB CPEI Frame Engineering Manual section.

0 For BCS 34 offices, only LGCI and LTCI CPCI peripheral
0 modules can be changed to LGCI and LTCI XPM Plus CPCI pe-
0 ripheral modules.

0 XPM Plus In DMS-250

0 * DMS 250 - New Orders of DTC or DTC7

0 For DMS 250 offices adding new DTC or DTC7 XPM Plus periph-
0 eral modules, provide the following:

- 0 - BCS 35 or later software load
- 0 - NTXL79AA XPM Plus For DTC7/DTCI software package
- 0 - One DTC common CP pack fill
- 0 - Two NTMX77AA Universal Processor CP
- 0 - Two designation labels for NTMX77AA
- 0 - Two NTMX71AA XPM Plus Terminator Paddleboards
- 0 - Additional provisionable CP, filler face plates, and des-
0 ignation labels per the NT6X01AB CPEI Frame Engineering
0 Manual section.

0 * DMS-250 Ordering new DTCIs with XPM Plus

0 For DMS 250 offices adding new DTCI XPM Plus peripheral mod-
0 ules, provide the following:

- 0 - BCS 35 or later software load
- 0 - NTXL79AA XPM Plus For DTC7/DTCI software package
- 0 - One DTCI common CP pack fill
- 0 - Two NTMX77AA Universal Processor CP
- 0 - Two designation labels for NTMX77AA
- 0 - Two NTMX71AA XPM Plus Terminator Paddleboards
- 0 - Two NTB01AB Enhanced ISDN Signal Preprocessor CP
- 0 - Two designation labels for NTB01AB
- 0 - Additional provisionable CP, filler face plates, and des-
0 ignation labels per the NT6X01AB CPEI Frame Engineering
0 Manual section.

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0 * DMS-250 Adding XPM Plus To Existing DTCs or DTC7s

0 For DMS 250 offices; for each DTC or DTC7 XPM peripheral mod-
0 ule to be changed to a DTC or DTC7 XPM Plus peripheral module
0 provide the following:

- 0 - BCS 35 or later software load
- 0 - NTXL79AA XPM Plus For DTC7/DTCI software package
- 0 - One NT6X02XA XPM Plus Packfill Kit
- 0 - Adequate filler face plates for slots emptied by the XPM
0 Plus Packfill Kit. Refer to the NT6X02XA XPM Plus
0 Packfill Change Kit Engineering Manual section.

0 * DMS-250 Adding XPM Plus To Existing DTCIs

0 For DMS 250 offices; for each DTCI XPM peripheral module to
0 be changed to a DTCI XPM Plus peripheral module provide the
0 following:

- 0 - BCS 35 or later software load
- 0 - NTXL79AA XPM Plus For DTC7/DTCI software package
- 0 - One NT6X02XA XPM Plus Packfill Kit
- 0 - Two NTB01AB Enhanced ISDN Signal Preprocessor CP
- 0 - Two designation labels for NTB01AB
- 0 - Adequate filler face plates for slots emptied by the XPM
0 Plus Packfill Kit. Refer to the NT6X02AB XPM Plus
0 Packfill Change Kit Engineering Manual section.

0 XPM Plus In RSCI

0 * RSCI - New Orders Of XPM Plus BBE PECs

0 For new RSCI offices whose host office has a BCS 34 or later
0 software load, provide the following if ordering Building
0 Block PEC codes:

- 0 - NTXR34AA XPM Plus Basic software package (in the Host)
- 0 - One NTZZ12NB RCCI XPM Plus Common CP pack fill
- 0 - Provisionable CP, filler face plates, and designation la-
0 bels per the NTZZ12MA RCEI Frame Engineering Manual sec-
0 tion.

0 * RSCI - New Orders Of XPM Plus Detailed PECs

0

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0 For new RSCI offices whose host office has a BCS 34 or later
0 software load, provide the following if ordering detail PEC
0 codes:

- 0 - NTXR34AA XPM Plus Basic software package (in the Host)
- 0 - One NT6X12DE RCCI XPM Plus Common CP pack fill
- 0 - Provisionable CP, filler face plates, and designation la-
0 bels per the NT6X10AD RCEI Frame Engineering Manual sec-
0 tion.

0 * RSCI - Adding XPM Plus To Existing RCCI BB or Detailed Engr.

0 For all RSCI offices, whose Host office has a BCS 34 or later
0 software load, for which a RCCI XPM peripheral module is to
0 be changed to a RCCI XPM Plus peripheral module provide the
0 following if ordering detail or Building Block PEC codes:

- 0 - NTXR34AA XPM Plus Basic software package (in the Host)
- 0 - One NT6X12ZE RCCI XPM Plus Packfill Change Kit
- 0 - Adequate filler face plates for slots emptied by the XPM
0 Plus Packfill Kit.

0 Note: Refer to the Engineering Manual sections for the
0 NT6X12ZE RCCI XPM Plus Packfill Change Kit and the
0 NT6X10AD RCEI Frame or the NTZZ12MA RCEI Frame.

0 Provisioning EDCH

0
0 When provisioning the EDCH the following issues must be consid-
0 ered: (1) Timing/Feature Availability, (2) Upgrades, and New Or-
0 ders:

0 * EDCH Timing Feature Availability

0 The NTB02BA (Enhanced D-Channel Handler (EDCH)) circuit pack
0 is in BCS-35 for VOs Only. New base software (such as DCH
0 patcher) will be provided in the BCS36/BCS37 timeframe. The
0 Enhanced DCH Integration in ISDN LTC feature in BCS-35 pro-
0 vides the firmware and software changes required to integrate
0 the EDCH circuit pack into ISDN LGC/LTC peripherals. The re-
0 commended architecture for BCS-36 onwards is the Unified

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0 Processor (UP), the Enhanced ISDN Signal Preprocessor (EISP),
0 and the EDCH combination.

0 Even though the EDCH is provisionable for VOs offices in
0 BCS-35, the EDCH will act as a DCH only - that is none of the
0 EDCH enhancements will be available (e.g. only 1 meg of the
0 available 4 meg is usable and the 25% increase in Real Time
0 will not be realized).

0 * EDCH Upgrade Scenarios

0 The BRI upgrade for LGCI or LTCI MUST BE in place to deploy
0 NI-2 functionality beginning in BCS-37. Therefore the hard-
0 ware changeouts must be in place, prior to the insertion of
0 BCS-37 to provide an NI-2 XPM platform (i.e. XPM+, EISP,
0 EDCH).

0 EDCH Upgrade Scenarios are defined below in terms of (1) Re-
0 quired Hardware and Software, (2) Change Tracking, (3) PRI On
0 DTCI Change, and (4) MIXED PRI and BRI on LTCI:

0 - Required Software For Hardware Support

0 The following changes are to be made to allow tracking of
0 office deployments:

0 UP (XPM+) NTXR34AA, NTXR42AA w/EISP NTX750AC

0 EISP NTX750AC w/XPM+ NTXR34AA, NTXR42AA

0 EDCH NTX750AD w/XPM+ NTXR34AA, NTXR42AA (includes
0 EISP)

0 The resulting S/W package matrix is:

	34	35	36	37	38	H/W
NTX750AB	GA	MD	MD	MD	-	MP/SP/ISP/DCH
NTX750AC	LTD	GA	A/M	MD	-	UP/EISP/DCH
NTX750AD	-	LTD	GA	GA	GA	UP/EISP/EDCH

0 This results in the following upgrade scenario's to
0 BCS37+:

0 UPGRADE FROM UPGRADE TO

0 pre-BCS34 Provision BCS36 & NTX750AD prior to BCS37

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0 BCS34 Provision BCS36 & NTX750AD prior to BCS37
0 (Note: The 3-BCS Rule restriction applies) or
0 upgrade to NTX750AC prior to BCS37

0 BCS35/36 upgrade to NTX750AC or AD prior to BCS37

0 To allow NTX750AC upgrades to BCS37 (EDCH not included),
0 the EDCH will be tested to allow insertion prior to BCS
0 upgrade (ie: without NTX750AD S/W). This will avoid prob-
0 lems with the short availability of the NTX750AD package.

0 - NI-2 Service Compliance for PRI on DTCI

0 PRI is dependant on the base ISDN package NTX750AB. Up-
0 dates to the DTCI H/W will be tracked via the NTX790 or
0 other package. NI-2 features for PRI include BRI
0 functionality being introduced in the NTX750AC/AD pack-
0 ages. This will have to be determined as the PRI incre-
0 mental program is defined at a later date. Presently, no
0 impact on PRI from NTX750 package updates.

0 - NI-2 Service Compliance On Mixed BRI/PRI Offices

0 A single LTCI with mixed BRI/PRI service will function
0 properly with the XPM+ and EISP H/W and associated
0 NTX750AC/AD packages. Also, a basic XPM cannot be up-
0 graded to ISDN without wiring and backplane changes. This
0 reduces the possibility that an existing XPM would be
0 "changed" to ISDN without the required XPM H/W upgrade
0 since the process involves more than the normal "add a
0 circuit pack, change a load" method.

0 In summary, as far as this H/W upgrade is concerned, an
0 LGCI and a LTCI are the same thing, and are totally
0 independant of the DTCI H/W. Every LGCI/LTCI must be
0 changed at the same time when an upgrade is applied, ie:

	MP/SP	UP	EISP	EDCH
0 LGCI	NTX750AB	NTXR34AA	NTX750AC	NTX750AD
0 LTCI	NTX750AB	NTXR34AA	NTX750AC	NTX750AD
0 DTCI	NTX790AC	N/A	N/A	N/A

0 * EDCH UPGRADE STRATEGY

0 The introduction of this new circuit pack to the XPM environ-
0 ment, includes certain rules that XPM upgrades are going to
0 have to meet. When installing the EDCH pcb, it will occupy
0 one of the DS1 slots that a spare DCH used to occupy. To make



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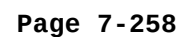
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0 NOTE: For the cases where the EDCH circuit pack can be loaded
0 with the DCH load ... this will only apply to DCH loads
0 created in BCS35 and on.0 7.1.4 OFFICE LAYOUT INFORMATION0
0 The 2B1Q product has been designed to fully meet ANSI and
0 BELLCORE Loop Requirements (number 1 to 15). In terms of loop
0 loss at 40 kHz, the U-loop length restrictions as follows:0
0

26 gauge loop length (in kilo-feet)	Description
16.5	Operational Loss - Loop reached with 49 disturbers in cable
14.5	Application Loss - Loop reached with 49 disturbers in cable plus 6 db margin

0
00 The loop length restriction for the ISDN S/T loop is 3 kilo-feet
0 (point-to-point).0 7.1.5 TRAFFIC TABLES0
0 The traffic engineering rules for the ISDN LCME will be based on
0 the provisioning of the DS-30A links to the LGCI/LTCI. Refer to
0 ECM-497 Simplified Traffic Provisioning.0 Refer to ECM 413 ISDN Traffic Provisioning. This ECM contains
0 worksheets and tables for engineering the required quantity of

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0 DMS-100 ISDN peripherals and DPN packet handler equipment based
0 on carried traffic and Grade of Service considerations.

0 Refer to ECM 497 (issue 05 and above) for SMUI Traffic provision-
0 ing rules.

0 Their is no change to traffic provisioning information for XPM
0 Plus peripheral modules.

0 7.2 PRODUCT/SYSTEM SPECIFICATION

0

0 7.2.1 PHYSICAL CHARACTERISTICS

0

0 Power Requirements

0

0 7.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

0 7.2.3 SPARING INFORMATION

0

0

0

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0 DPN Sparing

0
0 DPN equipment sparing is based on such factors as turn-around
0 time, geographic location of depot and DPN cabinets, and the
0 amount of equipment concentrated at a single location.

0 As a rule of thumb, provision as spare a minimum of one of each
0 item of DPN equipment, up to a maximum of 10% of the total count
0 of that item. Include cards, power converters, and cables in the
0 sparing.

0 7.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 ISDN CPEI Frame

0
0 Fusing will be the same as a conventional CPCE frame (NT6X01AA).

0 Packet Handler

0
0 The following gives the necessary provisioning for powering
0 the Packet Handler (PH) equipment and the DIU from the office
0 PDC.

0 Each Access Module (AM) of the packet handler uses one(1) 35 amp
0 fuse NT0X42AV.

0 Each Resource Module (RM) of the packet handler uses one(1) 35
0 amp fuse NT0X42AV.

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0 DIU

0
0 Each DIU requires one (1) 20 Amp fuse NT0X42AV.

0 These fuses are mounted on a special fuse panel on the PDC frame
0 NT0X42AU. This panel is 8 inches high and may be mounted at po-
0 sitions 21 and 29.

0 The fuses may be assigned to positions 0-2 on the fuse panel.
0 Positions 0-2, A feed and positions 0-2, B feed are to be used.

0 Each Network module (NM) requires two 30 Amp fuses NT0X42AS.
0 These are assigned to the conventional fuse panels.

0 Prior to software Generic G24, each DIU requires one (1) 20 Amp
0 fuse NT0X42AK, assigned to a conventional fuse panel.

0 When assigning 'A' and 'B' power feeds, the following should be
0 considered:

0 a) The Packet Handler Resource Modules/Network Modules
0 should be divided evenly between 'A' powered and 'B' powered.

0 b) The Access Module is to be powered off of the same feed
0 ('A' or 'B') as the Resource Module/Network Module to which
0 its primary Network Link is connected.

0 c) The DIU is to be powered off of the same feed ('A' or
0 'B') as the Access Module to which its links or the majority
0 of its links are connected.

0 d) For an office with only one (1) Resource Module/Network Module,
0 the DIUs and Access Modules (if more than one) may be assigned
0 to different power feeds ('A' or 'B') if required to balance
0 the 'A' and 'B' power requirements.

0 7.2.5 CURRENT DRAIN INFORMATION

0
0 ISDN CPEI Frame Current Drain is as follows:

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0 Current drain - 35 Amps

0 Heat Dissipation - 1700 Watts

0 7.3 SOFTWARE PROVISIONING

0

0 7.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Provision ISDN software packages as follows:

	34	35	36	37	38	H/W
0 NTX750AB	GA	MD	MD	MD	-	MP/SP/ISP/DCH
0 NTX750AC	LTD	GA	A/M	MD	-	UP/EISP/DCH
0 NTX750AD	-	LTD	GA	GA	GA	UP/EISP/EDCH
0 NTXS36AA	-	GA	GA	GA	GA	DTCI W/WO DWS

0 The necessary packages to support XPM PLUS (XPM+) on DTCI modules are:

0 NTXR34AA	(allow XMP+)
0 NTX750AC	(allow XPM+ on ISDN)
0 NTXS36AA	(for DMS100 DTCI only)
0 NTXL79AA	(for DMS250 DTCI only)

0 For Basic Rate Interface (BRI):

0 NTX750 - ISDN BASIC ACCESS
0 NTX753AA - ISDN ADVANCED SIGNALING

0 For BRI Functional Signaling:

0 NTX754AA - ISDN ELECTRONIC KEY TELEPHONE SERVICE
0 NTX755AA - ISDN SUPPLEMENTARY SERVICES COMPLIANCE

0 For Primary Rate Interface:

0 NTX790AA/AB - ISDN Primary Rate Interface Base
0 NTX791AA - ISDN Primary Rate Interface Networking

0 Note: If a DTCI is used for MF Trunks only, the NTX790AA/AB ISDN Pri-
0 mary Rate Interface Base software package must still be provided in
0 order to datafill the module as DTCI.

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0 Package NTX790AA is MD as of BCS-30 and replaced by NTX790AB. Two (2)
0 new software packages have been created. These are:

0 NTX793AA - PRI Intergrated Services Access
0 NTX794AA - PRI CCS7 Interworking

0 Any offices ordering NTX790AA in BCS-29 or earlier is to be upgraded
0 to NTX790AB, NTX793AA, and NTX794AA in conjunction with their next
0 scheduled BCS-30 or higher load.

0 2B1Q capabilities will be provided under the standard ISDN NTX750AB
0 feature package.

0 BCS-31 will enable the LCME to support only ISDN lines. BCS-32 will
0 enable the LCME to support in addition to ISDN lines POTS, EBS, and
0 DATAPATH lines.

0 The software feature package needed to provide ISDN and MBS services
0 for SMUI is NTX387AC.

0 Check the appropriate SMS (Software Management System) report for
0 availability and to confirm required supporting packages.

0 For XPM Plus the following packages are required in addition to other
0 ISDN packages:

0 NTXR34AA XPM Plus Basic (DMS 100) (Rate Change Pending)
0 Note: NTRX34AA is rated MD effective BCS-35 and replaced by
0 NTRX34AB

0 NTXL79AA XPM Plus for DTCI (DMS 250)

0

0 7.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 The software development for 2B1Q will be done in two phases. In
0 the first phase (BCS31), the LCME will support only ISDN lines.
0 In the second phase (BCS32), the LCME will support in addition to
0 ISDN lines POTS, EBS, and DATAPATH lines.

0

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0 Software Packages NTX793AA and NTX794AA are provisioned based on
0 customer requirements. For example, if an ISDN office does not
0 support CCS7, the NTX794AA software package need not be ordered
0 when the offices is being upgraded to BCS-30.

0 NOTE: Package NTX550AA - CCS7 - TRANSACTION SERVICE SUPPORT is
0 needed in an ISDN office if CCS7 interworking is to be available
0 in that office.

0 BCS-31 MTU software load must be installed for a MTU to work with
0 2B1Q lines. If ALT (Automatic Loop Testing) is required, a dedi-
0 cated MTU must have the ALTUSE field in MTAHORIZ table selected
0 as YES. Any LTUs that have access to the LCMEs on the MTA verti-
0 cals must have the ALTUSE field selected as NO.

0 The SMUI will not support E911 PSAP calls. An enhanced SMU may
0 be distinguished from a non-ISDN/MBS SMU by the fact that it has
0 a EISP provisioned on it in table LTCINV. The DMS-100 software
0 will not allow a Public Safety Answering Point (PSAP) which is
0 used for terminating E911 calls, to be provisioned on a SMU with
0 a EISP provisioned on it. Also, a EISP will not be allowed to be
0 provisioned on a SMU that has one or more PSAPs provisioned on
0 it.

0
0 7.3.3 MEMORY PROVISIONING

0
0 Memory provisioning for the DTCTI, LGCI, LTCTI, LCME is as follows:

0	Module	Data Store Datafill Words Required
0	-----	-----
0	DTCTI	717
0	LGCI	1428
0	LTCTI	1428
0	LCME	4511

0 Memory provisioning for the SMUI is as follows:

0 PS - 23 kbytes

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0 DS - 1.5 kwords
0 Datafill DS - 1.5 kwords

0 7.4 REAL TIME IMPACT

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0 7.4.1 Real Time Engineering (BRI)

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0 LGCI/LTCI Real Time Engineering (BRI)

0
0 The following chart illustrates the call types which impact Real
0 Time Engineering of the Master Processor in the LGCI provisioned
0 with Basic Rate Interface (BRI). Currently, the Master Processor
0 is the only processor which requires Real Time Engineering.

CALL TYPE	BCS	
	27	28+
-----	--	---
ISDN Circuit Switched	Y	Y
B Channel Packet Switched	N	N
D Channel Packet Switched	N	N
Electronic Business Set	Y	Y
Datapath	Y	Y
Other (POTS and MDC)	N	Y

0 Refer to System Engineering Bulletin (SEB) 90-05-002 for BCS Ab-
0 breviated Real Time Engineering Guidelines for the LGCI/LTCI.

0 SMUI Real Time Call Attempt Capacity

0

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0 The table below shows the maximum Calls Per Hour (CPH) that the
0 SMUI can handle at the HDBH engineered maximum for each
0 processor. The Master Processor is engineered to 80% and the
0 Signal Processor is engineered to 90%. The processor that is
0 limiting can vary with the call mix that is used by each partic-
0 ular site. Again, the CPH numbers represent Originations + Ter-
0 minations. Each call mix assumes a 50/50 split of
0 Originating/Terminating traffic.

0		Master	Signal
0	POTS DT	15,100	14,900*
0	ISDN	7,100*	12,700
0	MBS	9,750*	13,976

0 * = Limiting Processor

0 Refer to System Engineering Bulletin (SEB) 92-05-002 Enhanced SMU
0 Performance Guidelines for more detailed information on the SMUI.

0 7.4.2 Real Time Engineering (PRI)

0
0 Refer to System Engineering Bulletin (SEB) 89-10-001 for PRI/BRI
0 CC Real Time.

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0 8.0 Integrated ISDN OAM Processor System

0 The Integrated Services Digital Network (ISDN) system combines
0 the circuit switching capabilities of the DMS-100 and the packet
0 switching capabilities of Digital Packet Network (DPN) equipment.

0 Currently, there are three separate interfaces for managing the
0 Operations, Administration and Maintenance (OAM) of the ISDN
0 node:

- 0 - Maintenance and Administration Position (MAP), for perform-
0 ing OAM of circuit switching equipment,
- 0 - Network Control System (NCS), for querying and activating
0 changes to packet services on the DPN packet handler (PH), and
- 0 - Network Administration System (NAS), resident on a mainframe
0 computer, for provisioning and configuring packet services.

0 To integrate these functions into a single user interface, the
0 Integrated ISDN OAM system is being introduced (hereinafter re-
0 ferred to as the "OAM system"). The OAM system consists of links
0 between DMS and DPN equipment, allowing the DMS MAP terminal to
0 access packet handler configuring functions. For example, the
0 MAP operator can assign DS-1 links to the Digital Interworking
0 Unit (DIU), and then configure ports from the DIU to the Access
0 Module. DMS-style service orders are translated into changes to
0 the packet handler Master Configuration File. This translation
0 is done by the OAM Processor (OAMP), a workstation-based process-
0 ing engine. The OAM system configuration is illustrated in Fig-
0 ure 1.

0 A standard MAP terminal is used to access the ISDN OAM system
0 from the DMS. The OAM link between the DMS and DPN is a 9600
0 bits/sec RS-232C (V.24) connection. At the DMS, it is connected
0 to an NT1X89AA Multiprotocol Controller (MPC) CP. At the DPN
0 end, this link connects to a standard Peripheral Interface (PI)
0 and LAPB Processing Element (PE) combination.

0 The OAMP workstation is currently based on a Sun Microsystems
0 Model 3/80 processor unit, equipped with disk drives but no key-
0 board or monitor. A separate VDU terminal is required with the
0 OAMP for performing maintenance functions. A 1/4-inch tape drive
0 with a SCSI interface to the processor unit supports the loading
0 of software cartridge tapes.

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The processor is connected to the DPN packet switch via the same PI/PE set as the DMS-DPN link. The OAMP link is an RS-232C (V.24) link running at 19200 bits/sec. Modems, data units or other local data sets are required on the DMS-to-DPN link and the OAMP-to-DPN link to comply with Isolated System Grounding (ISG).

At present, the OAM system only supports a single link between DMS and DPN, as illustrated. In the event of link failure, warning logs are generated and corrective action is taken by maintenance personnel.

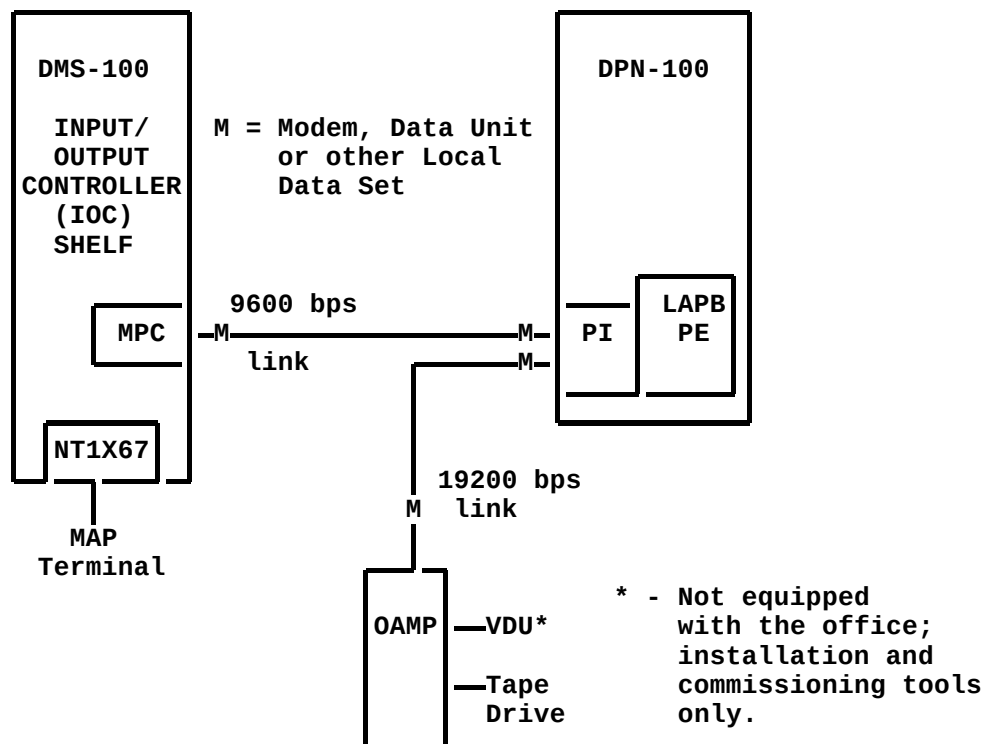


Figure 1 - ISDN OAM Processor System Architecture

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0 8.1 HARDWARE PROVISIONING

0

0 8.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Each ISDN node, consisting of one DMS switch and one DPN switch,
0 can have only one (1) OAMP.

0 8.1.2 HARDWARE DEPENDENCIES

0

0 The ISDN OAM system combines existing MAP and NCS functions, re-
0 moving the need for separate NCS terminals. The DMS MAP
0 position(s) become the primary man-machine interface for the en-
0 tire ISDN node.

0 ISDN packet service provisioning using the OAM system is compat-
0 ible with existing NAS provisioning activities. The two systems
0 co-operate by merging changes to PH configuration before activat-
0 ing them on the packet switch.

0 See Provisioning section for details of DMS and DPN hardware re-
0 quired to support the OAMP.

0 8.1.3 PROVISIONING CONSIDERATIONS

0

0 | This product is no longer orderable. This information is for ex-
0 isting product support only.

0 Engineer the ISDN OAM system as follows:

0

0 Host - Signalling Interface Equipment
0 Chapter 7

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0 Order one (1) NTB95AA Sun Microsystems Model 3/80 CPU. The OAMP
0 processor unit is packaged together with a 208 MB hard disk, 8
0 MByte memory, and other hardware and software options under a
0 single ordering code.

0 Order one (1) A0351570 1/4" SCSI ISDN-OAMP Software Tape. One (1)
0 Sun Tape Drive A0368521 must be ordered so that the 1/4" SCSI S/W
0 tape can be loaded onto the system. The tape contains download
0 utility software required for the Sun workstation to enable com-
0 munication between the OAMP and to the DMS. To order the tape
0 for Canadian applications, contact the V/O Software Production
0 Department S645/7Q43 (Manager: Rick Barre).

0 One (1) approved VT-100-compatible or VT-220-compatible VDU ter-
0 minal is required for loading software and performing commission-
0 ing tests on the OAMP unit. Additional MAP terminals may be
0 provided as required by the telco. If the telco requests NT to
0 provide the terminals, refer to ECM440 or ECM372 for VDUs that
0 are approved and tested with the OAMP system.

0 Provision one (1) NT1X89AA Multiprotocol Controller (MPC) CP in a
0 DMS IOC shelf as needed. Each MPC card has two ports. A MDC
0 card should be dedicated to the DMS-DPN link.

0 Modems are to be used on the DMS-DPN link in order to support ISG
0 isolation. Provide 9600 baud synchronous modems as per ECM313
0 (UDS Modems) or ECM349 (Case Rixon Modems). Two (2) such modems
0 are required on the DMS-DPN link. On the OAMP-DPN link, the cus-
0 tomer is to provide two (2) 19200 baud modems.

0 In place of modems on either link, the Telco can merchandise-
0 order Low Speed Data Units (ie. NT4X25__) from NT. These are
0 available in standalone or rack-mount configuration. In the
0 U.S., Data Units may also be ordered on a COEO basis. Maximum
0 cable distance allowed between Data Units depends on cable gauge
0 used:

Gauge	Maximum Distance
-----	-----
26	4.0 km (2.5 miles)
24	5.5 km (3.4 miles)
22	5.7 km (3.5 miles)

0 Refer to ECM418, DPN Equipment Provisioning section, for informa-
0 tion regarding DPN engineering responsibilities. For the OAM
0 system, one (1) 8-port V.24 Peripheral Interface (PI) card and
0 one (1) LAPB Processor Element (PE) card are required. This pair

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0 of cards will handle both the DMS and the OAMP links. They are
0 already included in new minimum packet handler configurations.
0 In existing offices with spare port capacity, a 4-port PI card is
0 acceptable.

0 When an 8-port PI card is used, NT8P67__ cables are to be engi-
0 neered by DND to appropriate length between the PI card and the
0 modem. This cable is equipped with a standard male RS-232C con-
0 nector at the modem end. When a 4-port PI card is used, refer to
0 CA drawings for cabling details.

0 8.1.4 OFFICE LAYOUT INFORMATION

0
0 DMS-100 equipment, DPN-100 equipment, and OAMP unit must be lo-
0 cated within the maximum distance limitations of the data commu-
0 nications method employed. Refer to Provisioning Information for
0 details. The OAM processor unit is normally co-located with the
0 DMS for ease of access to software loading and maintenance equip-
0 ment.

0 Dimensions of the NTB95AA processor unit are as follows:

0 2.8" H x 16.0" W x 16.0" D (7.1cm H x 40.6cm W x 40.6cm D)

0 These dimensions are too large to permit housing the processor
0 unit on a standard MIS frame Common Equipment Shelf. Instead, it
0 may be positioned on a desktop near the MAP.

0 8.1.5 TRAFFIC TABLES

0
0 Not applicable.

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0 8.2 PRODUCT/SYSTEM SPECIFICATION

0

0 8.2.1 PHYSICAL CHARACTERISTICS

0

0 CURRENT DRAIN

0

0 For reliability, the OAMP and all modems or data units can be
0 powered from DC to AC inverters. Particularly, the OAMP must be
0 powered from essential AC (eg. from an Uninterruptible Power Sup-
0 ply (UPS)) to prevent problems during disk write operations due
0 to power glitches and interruptions. Modems which interface di-
0 rectly to the MPC card or PI card must be powered from isolated
0 inverters, mounted on a dedicated MIS frame. The OAMP unit and
0 its VDU are powered from inverters referenced to the DMS frame
0 ground. This ground reference is chosen because the OAMP unit
0 will probably be located near the DMS MAP, and it is desirable
0 that the MAP and OAMP equipment be at the same ground potential
0 to avoid shock hazard. Refer to ECM289 Isolated System Grounding
0 for further information.

0 A standard A0367433 LaMarche inverter can be provisioned to power
0 the OAMP and its VDU, which consume a total of 85 watts at 110
0 volts AC.

0 8.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

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0 8.2.3 SPARING INFORMATION

0
0 Standard DMS and DPN sparing algorithms apply. Spare hardware
0 for the OAMP workstation is not mandatory.

0 8.3 SOFTWARE PROVISIONING

0

0 8.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software for the OAMP system has been packaged under a master
0 package (which is distributed as standard PM load and docu-
0 mented):

0 NTXD15AC replaces NTXD15AB ISDN INTEGRATED OAM

0 Contains: NTXF92AA ISDN OAM Base - STATUS MD
0 NTXF93AA ISDN Provisioning - Reused for DMS PH
0 NTXF94AB ISDN NCS Passthru - STATUS MD
0 NTXF95AA ISDN OAM Processor* - STATUS MD
0 NTXJ48AA ISDN Integrated PH Maintenance with
0 OAMP Required - STATUS MD

0 * Package NTXF95AA contains the software which runs on the Sun
0 processor. The other packages are standard DMS packages.

0 OAMP29 software is no longer supported; OAMP30 is the minimum
0 base. At BCS31 RTM, the OAMP software will be OAMP31 base.

0 Check the appropriate SMS report for availability and to confirm
0 required supporting packages.

0

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0 8.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Minimum BCS29 DMS software and G25 DPN hardware and software is
0 required to run the OAM system. If a Digital Equipment Corpo-
0 ration (DEC) VAX is the host computer for the NAS system, it must
0 be equipped with minimum release 5.01 software.

0 8.3.3 MEMORY PROVISIONING

0
0 Refer to the Memcalc tool for memory provisioning calculations.

0 8.4 REAL TIME IMPACT

0 This product has no impact on call processing capacity of the
0 DMS.

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0 9.0 International Frame LGE/DTE/LTE

0 The first application for the NT6X01AC International Frame LGE/DTE/LTE
0 Fiber ISDN is the Australia DMS-100 Intelligent Network.

0 The NT6X01AC International Common Peripheral Controller Equipment
0 Frame was developed for the DMS-100 Intelligent Network product for
0 the international market. The NT6X01AC design is based on the domes-
0 tic NT6X01AB ISDN peripheral controller, adapted for applications out-
0 side North America ("International"). It supports PCM30 links, ISDN
0 services, and Common Channel Signaling 7 (CCS7) features on two inde-
0 pendent peripheral modules.

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0 9.1 HARDWARE PROVISIONING

0

0 9.1.1 HARDWARE USAGE RESTRICTIONS

0

0 NT6X01AC International Peripheral Controller Equipment Frame

0 The NT6X01AC International Peripheral Controller Equipment frame
0 supports two peripheral module types: PCM-30 LGC and DTC.

0 PCM-30 LGC - Supports ISDN, Centrex, EBS, IBN and POTS services
0 on standard Line Concentrating Module types

0 - Has PCM-30 P-side links for PRLCM and International
0 Remote Switching Center interface

0 - Operation as a non-ISDN peripheral is not yet imple-
0 mented in software, meaning that the NTB01AA ISDN
0 Pre-Preprocessor CP is required even if no ISDN fea-
0 tures are used

0 - Supports AMI interface to the NT1. 2B1Q is not sup-
0 ported for this interface

0 PCM-30 DTC - Supports CCS7 and R1 signaling in International ap-
0 plications, using PCM-30 links.

0 - ISDN services like Primary Rate Interface are not
0 supported

0 Modules of different types may be mixed on the frame if required.

0 NTB02AA D-Channel Handler CP are not required for PCM-30 DTC ap-
0 plications, nor where the PCM-30 LGC supports only non-ISDN LCMs.

0 NTB01AA ISDN Pre-Processor CP are always required on PCM-30 LGC
0 (until such time as software supports purely non-ISDN operation).
0 This CP is not required on PCM-30 DTC.

0

0 9.1.2 HARDWARE DEPENDENCIES

0
0 All PCM-30 links from a PRCC must terminate on the same host
0 PCM-30 LGC. Only the PCM-30 LGC peripheral type can terminate
0 PRCC host links.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

0

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0 9.1.3 PROVISIONING CONSIDERATIONS

0
0 NT6X01AC International Frame LGE/DTE/LTE ISDN

0 Common Circuit Packfill:

0 NT6X01AC is a general purpose Common Peripheral Controller Equip-
0 ment Frame for applications outside North America ("Internat-
0 tional"). It houses two dual shelf peripheral modules which
0 support PCM30 links, ISDN services, and Common Channel Signaling
0 7 (CCS7) features. Each peripheral module is housed on two adja-
0 cent shelves (ie. a pair of shelves on positions 65 and 51 and a
0 pair of shelves on positions 32 and 18).

0 Each of the two modules in the frame may be configured as:

- 0 - LGCO Line Group Controller Offshore Non-ISDN,
- 0 - LGC0I Line Group Controller Offshore ISDN,
- 0 - DTC0 Digital Trunk Controller Offshore Non-ISDN,
- 0 - DTC0I Digital Trunk Controller Offshore ISDN, or
- 0 - TMS (TOPS Message Switch) for
 - 0 - TPC (TOPS Position Controller) interface,
 - 0 - Data base access, and
 - 0 - Inter DCH (D-Channel Handler) for
- 0 ORDB (Operator Reference Database).

0 Cooling Inverter Unit:

0 Provide for each frame,

- 0 - one (1) NT3X90AC Cooling Inverter Unit.

0 Isolated System Grounding:

0 When extending existing offices not equipped with Isolated System
0 Grounding (ISG), provide:

- 0 - one (1) NT0X0009 Logic Return Cable Assembly.

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0 Common Circuit Packfill:

0 Provide per customer requirements:

0 - maximum two (2) NT6X02UB LGC/DTC Common CPs (International).

0 NT6X02UB replaces NT6X02UA.

0 Filler Faceplates for Unequipped Modules:

0 When shelves 18-32 or 51-65 are not equipped with any circuit
0 packs, provide for each module:

0 - one (1) NT6X02AB CPC Filler Faceplates.

0 Filler Faceplates for Unequipped CP Slots:

0 For each unequipped circuit pack position on the module, provide:

0 - one (1) NT0X50AA filler faceplate.

0 ISDN Applications:

0 When ISDN BRA functions are required (ISDN functions on sub-
0 scriber lines) for each equipped LGC module, provide:

0 - up to nine (9) NTB02AA D Channel Handler CPs.

0 In BCS-28 or later, provide for use as a hot spare:

0 - one (1) additional NTB02AA D Channel Handler CP.

0 Note that NTB01AA/AB and NTB02AA ISDN CPs may not be provi-
0 sioned on a DTC which is provisioned with NT6X70AAs to handle
0 CCIS/CCS7 voice trunking.

0 DCH CP are not required on a PCM-30 DTC module nor where a PCM-30
0 LGC module supports only non-ISDN LCMs.

0 For TMS (TOPS Message Switch) applications, provide:

0 - four (4) NTB02AA D Channel Handler CPs.

0 Each NTB02AA supports up to 124 BRI D-Channels. The spare DCH
0 CP should not be counted when determining the number of NTB02AA
0 required to support D-channel traffic.

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0 Each NTB02AA DCH, including the spare, requires one (1) peripheral port on the PCM-30 LGC module. Assign NTB02AA cards to shelf and slot positions in the following order. The spare DCH should be assigned last:

DCH PACK PROVISIONED	SHELF POSITION	CP POSITION	ASSIGN TO LOGICAL PORT NUMBER
1st DCH CP Provisioned:	X+14	1	19
2nd DCH CP Provisioned:	X	1	17
3rd DCH CP Provisioned:	X+14	2	15
4th DCH CP Provisioned:	X	2	13
5th DCH CP Provisioned:	X+14	3	11
6th DCH CP Provisioned:	X	3	09
7th DCH CP Provisioned:	X+14	4	07
8th DCH CP Provisioned:	X	4	05
9th DCH CP Provisioned:	X+14	5	03
10th DCH CP Provisioned:	X	5	01

0 Where:

0 For the lower module in the frame
0 shelf position X=18, X+14=32

0 For the upper module in the frame
0 shelf position X=51, X+14=65

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0 PCM-30 Interface CPs:

0 Provide for each equipped LGC or DTC module, as per customer re-
0 quirements:

0 - maximum eight (8) NT6X27AC/BB PCM-30 Interface CPs.

0 For each TMS module,

- 0 - For TPC (TOPS Position Controller) interface,
 - 0 - for up to 64 operators, provide:
 - 0 - two (2) NT6X27AC/BB PCM-30 Interface CPs
 - 0 in CP slots 5 of both shelves, and
 - 0 - for more than 64 operators and up to 96 operators,
 - 0 provide an additional:
 - 0 - one (1) NT6X27AC/BB PCM-30 Interface CP
 - 0 in CP slot 4 of shelf 0,
- 0 - For data base access, provide:
 - 0 - two (2) NT6X27AC/BB PCM-30 Interface CPs
 - 0 in CP slot 4 of shelf 1 and
 - 0 in CP slot 3 of shelf 0, and
- 0 - For inter DCH ORDB, provide:
 - 0 - one (1) NT6X27AC/BB PCM-30 Interface CP
 - 0 in CP slot 3 of shelf 1.

0 Otherwise provide for each unequipped CP slot:

- 0 - one (1) NT0X50AA Filler Faceplate.

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Provide one (1) NT6X27AC/BB for every two PCM 30 ports required.

Peripheral port/pack location relationship is as follows:

CP POS	5	4	3	2
SHELF POS X+14	PORTS 2, 3	PORTS 6, 7	PORTS 10, 11	PORTS 14, 15
SHELF POS X	PORTS 0, 1	PORTS 4, 5	PORTS 8, 9	PORTS 12, 13

Where:

For the lower module in the frame
shelf position X=18, X+14=32

For the upper module in the frame
shelf position X=51, X+14=65

Assign NT6X27AC/BB to module starting at port 0 and continue in sequential order to port 15.

Each NTB02AA already assigned to CP pos 2 to 5 physically makes the two PCM 30 ports shown above unavailable for assignment to PCM 30.

LCM Interface CPs:

For PCM-30 LGC applications, to interface links from LCMI and/or LCM, provide:

- four (4) NT6X48AA DS30A LCM Interface CPs.

The NT6X48AA CP are assigned in pairs for reliability. One member of the pair interfaces the same DS30A ports as the other member. Each member of the pair occupies the same CP position, with one CP assigned to LGAI/LTAI 0 (lower shelf of the module) and the other assigned to LGAI/LTAI 1 (upper shelf of the module).

0 The two pairs of NT6X48AA provide interfaces for up to twenty
0 (20) DS30A ports (links) from LCMEs, LCMIs, and/or LCMs.

0 The following is a listing of DS30A ports per DS30A LCM Interface
0 CP, NT6X48AA location:

0			
0			
0		CP POS 6	CP POS 7
0	PORT	2	0
0	PORT	3	1
0	PORT	6	4
0	PORT	7	5
0	PORT	10	8
0	PORT	11	9
0	PORT	14	12
0	PORT	15	13
0	PORT	18	16
0	PORT	19	17

0 The ports for DS30A must be selected from the those ports that
0 remain after assignment of port circuits.

0 Assign ports to DS30A in the following sequence: 19, 17, 18, 16,
0 15, 13, 14, 12, 11, 9, 10, 8, 7, 5, 6, 4, 3, 1, 2 and 0 (if un-
0 used by DCH or DS-1). In an extension job, when adding new DCH
0 ports, the DS30A ports may have to be reconfigured in accordance
0 with this rule.

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0 Two Processor XPM (MP/SP) or XPM Plus (UP):

0 For offices with the XPM (MP/SP) feature, provide for each
0 equipped LGC or DTC module:

- 0 - four (4) NT6X45BA LGC/DTC Processor CPs,
- 0 - two (2) NT6X47AC 4MB MP Memory CPs,
- 0 - two (2) NT0X50AA Filler Face Plates in slot 10, and
- 0 - two (2) NT6X46BA/BB Signal Processor Memory Plus CPs.

0 Also provide NTB01AAs per 2) below.

0 Alternatively, for offices with the XPM Plus (UP) feature, pro-
0 vide for each equipped LGC or DTC module:

- 0 - two (2) NTMX77AA XPM Plus Processor CPs,
- 0 - two (2) NTMX71AA XPM Plus Paddleboards,
- 0 - one (1) NT6X01WE Wiring List XPM Plus, and
- 0 - eight (8) NT0X50AA Filler Face Plates
- 0 in slots 8, 9, 10, and 11.

0 Also provide NTB01ABs per 2) below.

0 In offices with the XPM (MP/SP) feature, provide:

- 0 - for each equipped LGC module:
 - 0 - two (2) NTB01AA ISDN Sig. Preproc. CPs.
 - 0 (Note that NTB01AAs must be provisioned for LGC
 - 0 even when ISDN services are not required).
- 0 - for each equipped DTC module:
 - 0 - when ISDN services are required,
 - 0 - two (2) NTB01AA ISDN Sig. Preproc. CPs, or
 - 0 - when ISDN services are not required,
 - 0 - two (2) NT0X50AA Filler Face Plates.

0 Note that NTB01AA ISDN CPs may not be provisioned on a DTC which
0 is provisioned with NT6X70AAs to handle CCIS/CCS7 voice trunking.

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0 In offices with the XPM Plus (UP) feature, provide:

- 0 - for each equipped LGC module:
 - 0 - two (2) NTB01AB ISDN Sig. Preproc. CPs.
 - 0 (Note that NTB01ABs must be provisioned for LGC
 - 0 even when ISDN services are not required).
- 0 - for each equipped DTC module:
 - 0 - when ISDN services are required,
 - 0 - two (2) NTB01AB ISDN Sig. Preproc. CPs, or
 - 0 - when ISDN services are not required,
 - 0 - two (2) NT0X50AA Filler Face Plates.

0 Note that NTB01AB ISDN CPs may not be provisioned on a DTC which
0 is provisioned with NT6X70AAs to handle CCIS/CCS7 voice trunking.

0 For existing modules being converted from XPM to XPM Plus pro-
0 vide:

- 0 - for each equipped LGC module:
 - 0 - one (1) NT6X02XB XPM Plus Change Kit and
 - 0 NT0X50AA Filler faceplates per EMS
 - 0 EMA2-99-XPM-9 for NT6X02XB.
- 0 - for each equipped DTC module:
 - 0 - In a Non-ISDN environment,
 - 0 - one (1) NT6X02XA XPM Plus Change Kit and
 - 0 NT0X50AA Filler faceplates per EMS
 - 0 EMA2-99-XPM-6 for NT6X02XA, or
 - 0 - In an ISDN environment,
 - 0 - one (1) NT6X02XB XPM Plus Change Kit and
 - 0 NT0X50AA Filler faceplates per EMS
 - 0 EMA2-99-XPM-9 for NT6X02XB.

0 (NT6X02XB has the same parts as NT6X02XA plus two (2) NTB01ABs)

0 Wiring Option for Non-ISDN:

0 Provide one (1) NT6X01WD Wiring Option when ISDN features are not
0 required on the frame. The option adds a wire strap to the back-
0 panel NT6X0103 Slot XX-12 between pins 7A and 8A to allow for
0 non-ISDN operation.

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0 Continuity Tone Detector CPs:

0 When this module is handling CCIS/CCS7 voice trunking, provision
0 for each PCM-30 DTC module:

- 0 - two (2) NT6X70AA Continuity Tone Detector CPs.

0 Note that NT6X70AAs for CCIS/CCS7 voice trunking, may not be pro-
0 visioned on a DTC which is provisioned with NTB01AA/AB ISDN CPs.

0 This CP supports a Continuity Test (COT), and is recommended
0 whenever analog facilities are employed in part or all of the
0 transmission path.

0 When the facility is end-to-end digital, this CP is not required
0 since digital facilities employ other means of fault detection.

0 An LGC may not be provisioned with NT6X70AA CPs.

0 Calling Number Display Feature CPs:

0 When the module is handling CMS Calling Number Display feature,
0 provide for each PCM-30 LGC module:

- 0 - two (2) NT6X78AA/AB CLASS Modem Resource CPs.

0 Universal Time Switch CPs:

0 Provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT6X44EA Universal Time Switch (UK) CPs.

0 Universal Tone Receiver CPs:

0 When analog (POTS) lines are to be supported, or when non-ISDN
0 trunks (A/B bit signalling) are interfaced to a PCM-30 DTC mod-
0 ule, provide the following Universal Tone Receiver (UTR) CP for
0 each PCM-30 LGC module:

- 0 - maximum two (2) NT6X92CA UTR CPs.

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0 Message Protocol and Downloadable Tone CPs:

0 Provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT6X69LB Msg Protcl & Downldbl Tone CPs.

0 The NT6X69LB is recommended for use in all applications in place
0 of the NT6X69LA. However, depending on availability, the
0 NT6X69LA may be used when fiber network interface is not re-
0 quired.

0 Network Interface CPs:

0 When DS30 copper network interface is required in a non-ENET of-
0 fice, provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT6X40AC packs DS30 Network Interface CPs.

0 Otherwise, when fiber network interface is required in an ENET
0 office, provide for each PCM-30 LGC/DTC module:

- 0 - one (1) NT6X02BU Fiber I/F H/W Assembly,
0 - two (2) NT6X40FA DS512 Network Interface CPs,
0 - two (2) NT6X40GA DS512 Paddle Boards, and
0 - two (2) P0736273 Optical Fiber Danger Labels.

0 Depending on availability, NT6X40CA and NT6X40DA functional pair
0 may be used in place of the preferred NT6X40FA and NT6X40GA func-
0 tional pair. The paddleboards and circuit packs cannot be mixed
0 because they do not function in mismatched pairs.

0 Also both pairs in a module must be NT6X40FA and NT6X40GA or both
0 NT6X40CA and NT6X40DA. In other words if one of the pairs in the
0 module is NT6X40FA and NT6X40GA, the other pair in the module may
0 not be NT6X40CA and NT6X40DA.

0 Power Conversion CPs:

0 Provide for each PCM-30 LGC/DTC module:

- 0 - two (2) NT2X70AE Power Conv +/-5V & 12V CPs.

0 Designation Labels for CPs:

0 Provide the appropriate designation label for each CP provided.

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0 PCM-30 Signaling CPs:

0 For each equipped LGC/DTC which supports PCM30 links (NT6X27
0 PCM-30 Interface CPs), or for each equipped LGC module which sup-
0 ports links to an LCM (NT6X48 DS30A LCM Interface CPs provided),
0 and the LCM is equipped with a PCM30 line drawer such as the
0 NT6X05CA, provide:

0 - two (2) NT6X28AA PCM-30 Signaling CPs.

0 CPC Coax Panel:

0 When PCM30 feature is required, provide for each PCM-30 LGC/DTC
0 module:

0 - one (1) NT6X01ZA CPC Coax Panel.

0 When this feature is to be field installed, then the NT6X01ZA CPC
0 Coax Panel will require the following supporting documents:
0 PC6X01ZB and SRJ6X01AC.

0 9.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 9.1.5 TRAFFIC TABLES

0
0 Standard traffic provisioning algorithms apply.

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0 9.2 PRODUCT/SYSTEM SPECIFICATION

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0 9.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 9.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 9.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply.

0 9.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 9.2.5 CURRENT DRAIN INFORMATION

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0 9.3 SOFTWARE PROVISIONING

0
0 9.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 XPM Software Planned Introduction:

0 XPM software XPM01 is planned to be introduced in BCS35 time
0 frame.

0 XPM software XPM02 is planned to be introduced in CSP01 (BCS36)
0 time frame.

0 XPM software XPM03 is planned to be introduced in CSP02 (BCS37)
0 time frame.

0 XPM TWO PROCESSOR (MP/SP) LOAD PHASE-OUT:

0 DTC0 (Digital Trunk Controller Offshore Non-ISDN):

0 Current Two Processor (MP/SP) UDT load supporting DTC0 will
0 be:

- 0 - Frozen in BCS34 software, and
0 - Become unavailable in XPM02 software.

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0 DTCOI (Digital Trunk Controller Offshore ISDN):

0 Current Two Processor (MP/SP) UDI load supporting DTCOI will
0 be:

- 0 - Frozen in XPM01 software, and
- 0 - Become unavailable in XPM02 software.

0 LGCOI (Line Group Controller Offshore ISDN):

0 Current Two Processor (MP/SP) OLG load supporting LGCOI will
0 be:

- 0 - Frozen in BCS34 software, and
- 0 - Become unavailable in XPM01 software.

0 XPM PLUS (UP) LOAD PHASE-IN:

0 DTCO (Digital Trunk Controller Offshore Non-ISDN):

0 XPM Plus (UP) ODT load supporting DTCO will be:

- 0 - Introduced in Verification Office BCS34 software
0 (Feature Packages NTXK79AA and NTXR34AA), and
- 0 - Become Generally Available in XPM01 software.

0 DTCOI (Digital Trunk Controller Offshore ISDN):

0 XPM Plus (UP) ODI load supporting DTCOI will be:

- 0 - Introduced in Verification Office XPM02 software
0 (Feature Packages NTXK79AC and NTXR34AB), and
- 0 - Become Generally Available in XPM03 software.

0 LGCO (Line Group Controller Offshore Non-ISDN):

0 XPM Plus (UP) OLG load supporting LGCO will be:

- 0 - Introduced in Verification Office XMP02 software
0 (Feature Packages NTXK79AC and NTXR34AB), and
- 0 - Become Generally Available in XPM03 software.

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0 LGCOI (Line Group Controller Offshore ISDN):

0 XPM Plus (UP) OGI load supporting LGCOI will be:

- 0 - Introduced in Verification Office BCS34 software
- 0 (Feature Packages NTXK79AA and NTR34AA), and
- 0 - Become Generally Available in XPM01 software.

0 9.3.2 SOFTWARE USAGE RESTRICTIONS

XPM TYPE	TWO PROCESSOR (MP/SP) SOFTWARE			XPM PLUS (UP) SOFTWARE		
	LOAD NAME	LOAD FROZEN	LOAD NOT AVAILABLE	LOAD NAME	VERIF. OFFICE	GENERALLY AVAILABLE
DTCO	UDT	BCS34	XPM02	ODT	BCS34	XPM01
DTCOI	UDI	XPM02	XPM03	ODI	XPM02	XPM03
LGCO	N/A	N/A	N/A	OLG	XPM02	XPM03
LGCOI	OLG	BCS34	XPM01	OGI	BCS34	XPM01

0 9.3.3 MEMORY PROVISIONING

0 There is no program store or data store impact as a result of
0 hardware described in this ECM.

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0 9.4 REAL TIME IMPACT

0 None.

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0 10.0 International Frame Remote Controller ISDN

0 The first application for the NT6X10AE International Frame Remote
0 Controller ISDN is the Australia DMS-100 Intelligent Network.

0 The NT6X10AE International Frame Remote Controller ISDN (RCEI) is
0 based on the domestic NT6X10AD ISDN RCE, adapted for Interna-
0 tional (outside of North America) markets. For remote applica-
0 tions it supports POTS, Centrex and limited ISDN services on
0 standard International and ISDN Line Concentrating Modules
0 (LCMs). PCM30 trunks link the RCEI to the host peripheral con-
0 troller.

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0 10.1 HARDWARE PROVISIONING

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0 10.1.1 HARDWARE USAGE RESTRICTIONS

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0 NT6X10AE International Remote Controller Equipment Frame

0 Unlike its domestic equivalent, the international RCEI frame
0 houses only one (1) Remote Maintenance Module (RMM) shelf. The
0 Remote Cluster Controller shelf is abbreviated "PRCC" (PCM-30 Re-
0 mote Cluster Controller).

0 Note that the following features are NOT supported on the Inter-
0 national RCEI:

0 - P-side PCM-30 links

0 - ISDN Primary Rate Interface (PRI)

0 - Emergency Standalone (ESA) - planned for a future BCS

0 - Intraswitched calls (all calls must be switched via the host
0 office; this must be taken into account when provisioning
0 host links)

0 - Dual RCC

0 - Remote off remote

0 - Data Unit line cards

0 In BCS-31, ISDN Basic Rate Interface (BRI) is not supported. This
0 restriction is removed in BCS-32, at which time LCMI and LCME
0 modules may be interfaced to the PRCC.

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0 10.1.2 HARDWARE DEPENDENCIES

0
0 All PCM30 links from a PRCC must terminate on the same host PLGC.
0 Only the PLGC peripheral type can terminate PRCC host links.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

0

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0 10.1.3 PROVISIONING CONSIDERATIONS

0
0 The International versions of the Common Peripheral Controller
0 Equipment Frame and Remote Controller Equipment Frame are provi-
0 sioned the same as their domestic counterparts (subject to the
0 usage restrictions). The primary difference is the use of PCM-30
0 interfaces instead of DS-1 interfaces. A maximum of sixteen (16)
0 PCM-30 interfaces may be equipped on the PLGC/PDTC versus twenty
0 (20) DS-1 interfaces on the North American product. Provision one
0 (1) NT6X27AC/BB PCM-30 Interface CP for every two PCM-30 inter-
0 faces required. Certain other circuit pack vintages are differ-
0 ent between domestic and International products; refer to the
0 Engineering Manual sections for details. Refer to ECM418 Inte-
0 grated Services Digital Network for NT6X01AB/AC provisioning, and
0 ECM463 ISDN Remote Switching Center for NT6X01AD/AE provisioning.

0 The XPM Plus (UP) processor complex composed of NTMX77AA Unified
0 Processor and NTMX71AA XPM Plus Terminator Paddleboard replaces
0 the old XPM (MP/SP) processor complex consisting of NT6X45BAs,
0 NT6X46BA/BBs, and NT6X47ACs.

0 NTB01AB Preprocessor CP is used in conjunction with the XPM Plus
0 (UP) feature where NTB01AA was used in conjunction with the XPM
0 (MP/SP) feature.

0 Change Kit NT6X02XA for non-ISDN DTC and NT6X02XB for LGC and
0 ISDN DTC provide the parts required to replace the old XPM
0 (MP/SP) processor complex with the new XPM Plus (UP) processor
0 complex.

0 10.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

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0 10.1.5 TRAFFIC TABLES

0
0 Standard traffic provisioning algorithms apply.

0 10.2 PRODUCT/SYSTEM SPECIFICATION

0

0 10.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 10.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 10.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply.

0

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0 10.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 10.2.5 CURRENT DRAIN INFORMATION

0

0 10.3 SOFTWARE PROVISIONING

0

0 10.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 10.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 None.

0 10.3.3 MEMORY PROVISIONING

0

0 There is no program store or data store impact as a result of
0 hardware described in this ECM.

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0 10.4 REAL TIME IMPACT

0 None.

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0 11.0 International Cabinet LGE/DTE/LTE ISDN

0 The Australian DMS-300 International Gateway Switch is based on
0 the DMS-300 supplied to Turkey with the following enhancements:

- 0 - Signalling systems necessary to introduce the product
0 into the Australian National Network.
- 0 - Enhancements to the Call Detail Recording, Operational
0 Measurements and Call Progression tone systems.

0 Similarly, the DMS-300 Gateway Switch for Madley-B Digital Inter-
0 national Switching Centre (DISC) in the United Kingdom is based
0 on existing technology, adapted for that market.

0 The NTFX33CA International Cabinet LGE/DTE/LTE ISDN houses one or two
0 International PCM-30 LGC/DTC/LTC ISDN or not dual shelf modules in a
0 cabinet configuration for applications not requiring fiber network
0 interfaces.

0 11.1 HARDWARE PROVISIONING

0

0 11.1.1 HARDWARE USAGE RESTRICTIONS

0 Not applicable.

0 11.1.2 HARDWARE DEPENDENCIES

0 Not applicable.

0

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0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable0 11.1.3 PROVISIONING CONSIDERATIONS0
0 The NTFX33CA International Cabinet LGE/DTE/LTE ISDN is provi-
0 sioned as follows:0 The shelves within the LTEM cabinet are provisioned in the same
0 way as the domestic ISDN frame NT6X01AB, except that PCM-30

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0 interfaces are used instead of DS-1 and some circuit pack vin-
0 tages are different for the Offshore market.

0 Refer to the Engineering Manual sections for details on circuit
0 pack vintages and cabinet hardware provisioning.

0 Common Circuit Pack:

0 Provision up to two (2) NT6X02UB PCM-30 LGC/DTC Common Circuit
0 Pack (Offshore) per LTEM.

0 PCM-30 Interface:

0 Provision up to eight (8) NT6X27AC/BB PCM-30 Interface CP per
0 PCM-30 LGC/DTC module, to interface up to sixteen PCM-30 links (2
0 links per CP).

0 The NT6X27BB Enhanced PCM-30 Interface circuit pack is backward
0 compatible with the NT6X27AC/BA circuit packs. It is also a re-
0 placement for the NT6X27AA/AB circuit packs, although it cannot
0 be mixed with the NT6X27AA/AB in the same frame or cabinet.

0 The NT6X27BB includes enhancements over the NT6X27AA/AB such as:

- 0 - Full compliance to CCITT,
0 - Improved alarm handling, and
0 - Support for DCME.

0 The initial application for the NT6X27BB is all the frames and
0 cabinets where the NT6X27AC/BA are provisioned. The manufacture
0 of the NT6X27AC/BA is being discontinued.

0 PCM-30 Signaling Interface:

0 For each equipped LGC/DTC which supports PCM30 links or for each
0 equipped LGC module which supports links to an LCM which is
0 equipped with a PCM30 line drawer such as the NT6X05CA, provide:

0 two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 CND Feature:

0 When the Calling Number Delivery/Calling Number Display (CND)
0 feature is required, provision two (2) NT6X78AB CLASS Modem Re-
0 source CPs for each PCM-30 LGC/DTC module.

0 Network Interface:

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0 In an office with the Enhanced Network (ENET) provide a fiber
0 interface per module as follows:

0 two (2) NT6X40FA DS-512 Link Control CPs,
0 two (2) NT6X40GA DS-512 Link Control Paddleboards,
0 two (2) NT6X69LB DS-512 CPP Protocol & Downld CPs, and
0 one (1) P0736273 Fiber Cable Warning Label.

0 And for each cabinet

0 one (1) NTN33SD DS-512 Fiber Interface to Network Kit.

0 Depending on availability, NT6X40CA and NT6X40DA functional pair
0 may be used in place of the preferred NT6X40FA and NT6X40GA func-
0 tional pair. The paddleboards and circuit packs cannot be mixed
0 because they do not function in mismatched pairs.

0 In a non-ENET office, provide a copper interface as follows:

0 two (2) NT6X40AC DS30 Network Interface CPs
0 two (2) NT6X69LA/LB CPP Protocol & Downld CPs.

0 The NT6X69LA may be used for non-fiberised peripherals when the
0 preferred NT6X69LB is not available.

0 11.1.4 OFFICE LAYOUT INFORMATION

0 Please refer to Northern Telecom Practice 555-4001-103 Integrated
0 Services Network Meridian SL-100 Cabinetized General Description.

0 11.1.5 TRAFFIC TABLES

0 Not applicable.

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0 11.2 PRODUCT/SYSTEM SPECIFICATION

0

0 11.2.1 PHYSICAL CHARACTERISTICS

0

0 Fusing and current drain information for the four cabinets intro-
0 duced specifically for Australia is not available at this time.

0 11.2.2 EMI/EARTHQUAKE INFORMATION

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EMI COMPLIANT	PEC	ABBREVIATED NAME
YES	NTNX33GA	FCTM-ISDN

0 For resistance to earthquake damage, Anchor Kits are required.
0 When installing cabinet in ATC Zone 6 or 7, NEBS Zone 4 or UBC
0 Zone R, provision NTNX2540 kit for slab-type flooring or NTNX2578
0 for computer flooring.

0 In non-earthquake zones, a Frame Mounting Kit is sufficient.
0 Provision NTNX2579 kit for slab-type flooring or NTNX2580 for
0 computer flooring.

0 11.2.3 SPARING INFORMATION

0 Standard sparing algorithms apply.

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0 11.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 The following fuses and feeds are required:

0 11.2.5 CURRENT DRAIN INFORMATION

0
0 Current Drain for the circuit packs are:

0 11.3 SOFTWARE PROVISIONING

0
0 11.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 11.3.2 SOFTWARE USAGE RESTRICTIONS

0 Not applicable.

0 11.3.3 MEMORY PROVISIONING

0 Refer to MEMCALC for memory provisioning.

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0 11.4 REAL TIME IMPACT

0 There is no real-time impact as a result of products introduced
0 by this ECM.

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0 12.0 International Cabinet LGE/DTE Fiber ISDN

0 The Australian DMS-300 International Gateway Switch is based on the
0 DMS-300 supplied to Turkey with the following enhancements:

- 0 - Signalling systems necessary to introduce the product
0 into the Australian National Network.
- 0 - Enhancements to the Call Detail Recording, Operational
0 Measurements and Call Progression tone systems.

0 Similarly, the DMS-300 Gateway Switch for Madley-B Digital Interna-
0 tional Switching Centre (DISC) in the United Kingdom is based on ex-
0 isting technology, adapted for that market.

0 The FCTM-ISDN houses one or two International ISDN LGC/DTC dual shelf
0 modules in a cabinet configuration supporting both copper and fiber
0 network interfaces.

0 12.1 HARDWARE PROVISIONING

0

0 12.1.1 HARDWARE USAGE RESTRICTIONS

0 Not applicable.

0 12.1.2 HARDWARE DEPENDENCIES

0 Not applicable.

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0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

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0 12.1.3 PROVISIONING CONSIDERATIONS

0
0 The NTN33GA International Cabinet LGE/DTE Fiber ISDN (FCTM-ISDN)
0 is provisioned as follows:

0 The shelves within the FCTM-ISDN cabinet are provisioned the same
0 as the domestic ISDN frame (NT6X01AB), except that PCM-30 inter-
0 faces are used instead of DS-1, and some circuit pack vintages
0 are different for the International market. Maximum eight (8)
0 PCM-30 Interface CP (supporting 16 PCM-30 links) may be equipped.
0 Refer to the Engineering Manual sections for details on circuit
0 pack vintages and cabinet hardware provisioning.

0 Provision up to two (2) NTN33GB LGCI/DTCI Fiber Common CP
0 (International) per FCTM-ISDN.

0 Provision up to eight (8) NT6X27AC/BB PCM-30 Interface CP per
0 PCM-30 LGC/DTC module, to interface up to sixteen PCM-30 links (2
0 links per CP).

0 The NT6X27BB Enhanced PCM-30 Interface circuit pack is backward
0 compatible with the NT6X27AC/BA circuit packs. It is also a re-
0 placement for the NT6X27AA/AB circuit packs, although it cannot
0 be mixed with the NT6X27AA/AB in the same frame or cabinet.

0 The NT6X27BB includes enhancements over the NT6X27AA/AB such as:

- 0 - Full compliance to CCITT,
0 - Improved alarm handling, and
0 - Support for DCME.

0 The initial application for the NT6X27BB is all the frames and
0 cabinets where the NT6X27AC/BA are provisioned. The manufacture
0 of the NT6X27AC/BA is being discontinued.

0 When the Calling Number Delivery/Calling Number Display (CND)
0 feature is required, provision two (2) NT6X78AB CLASS Modem Re-
0 source CPs for each PCM-30 LGC/DTC module.

0 For each equipped LGC/DTC which supports PCM30 links or for each
0 equipped LGC module which supports links to an LCM which is

0

0| equipped with a PCM30 line drawer such as the NT6X05CA, provide:
0 two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 12.1.4 OFFICE LAYOUT INFORMATION

0 Please refer to Northern Telecom Practice 555-4001-103 Integrated
0 Services Network Meridian SL-100 Cabinetized General Description.

0 12.1.5 TRAFFIC TABLES

0 Not applicable.

0 12.2 PRODUCT/SYSTEM SPECIFICATION

0

0 12.2.1 PHYSICAL CHARACTERISTICS

0
0 Fusing and current drain information for the four cabinets intro-
0 duced specifically for Australia is not available at this time.

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0 12.2.2 EMI/EARTHQUAKE INFORMATION

EMI COMPLIANT	PEC	ABBREVIATED NAME
YES	NTNX33GA	FCTM-ISDN

0 For resistance to earthquake damage, Anchor Kits are required.
0 When installing cabinet in ATC Zone 6 or 7, NEBS Zone 4 or UBC
0 Zone R, provision NTNX2540 kit for slab-type flooring or NTNX2578
0 for computer flooring.

0 In non-earthquake zones, a Frame Mounting Kit is sufficient.
0 Provision NTNX2579 kit for slab-type flooring or NTNX2580 for
0 computer flooring.

0 12.2.3 SPARING INFORMATION

0 Standard sparing algorithms apply.

0 12.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 12.2.5 CURRENT DRAIN INFORMATION

0

0

0

0 12.3 SOFTWARE PROVISIONING

0

0 12.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30
0 Interface Circuit Pack.

0 12.3.2 SOFTWARE USAGE RESTRICTIONS

0 Not applicable.

0 12.3.3 MEMORY PROVISIONING

0 Refer to MEMCALC for memory provisioning.

0 12.4 REAL TIME IMPACT

0 There is no real-time impact as a result of products introduced
0 by this ECM.

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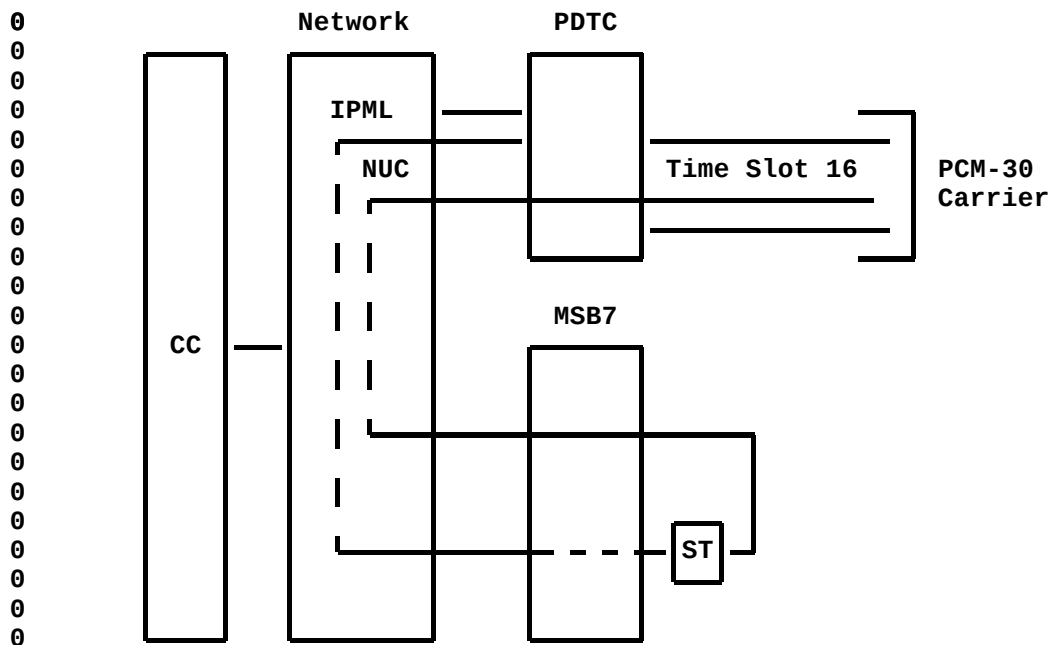
The diagram illustrates the CCS7 STP architecture. It shows the flow of signaling information from the NETWORK to the MSB7 (Master Signaling Block 7). The MSB7 contains a TIME and a SWITCH. The SWITCH is connected to a Signaling Link, which is covered by C7BERT coverage. The SWITCH is also connected to a DTC (Data Transfer Control) block. The DTC is connected to the IPML (Inter-Process Message Link) and the CALL (Call) block. The DTC outputs CCS7 (ISUP) and TRUNKS to the PROCESSING CONTROL block.

FIGURE 1. CCS7 CONFIGURATION MODEL

0 Digital Private Network Switching System #1

0 Digital Private Network Signalling System #1 (DPNSS #1) is a UK
0 common channel signalling standard for a network of digital
0 PBX's. DPNSS allows advanced network features to be supported in
0 a multi-vendor private network.

0 The hardware implementation of DPNSS is almost identical to do-
0 mestic CCS7 see Figure 2.



0 IPML - Inter Peripheral Message Link

0 NUC - Nailed Up Connection

0 Figure 2. DPNSS #1 MODEL

0

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0 In the DPNSS configuration, Time Slot 16 of the incoming PCM-30
0 span carries the associated signalling information for the thirty
0 channels in the PCM-30 span. Therefore, the Signalling Terminal
0 (ST) and Signalling Data Link (SDL) will handle only thirty
0 trunks.

0 The maximum number of DPNSS signalling data links is 255, there-
0 fore, the DPNSS configuration is limited to a maximum of 30 x 255
0 = 7650 trunks.

0 Provision one (1) NT6X66CA DPNSS Signalling Terminal CP for each
0 PCM-30 span. Note that the DPNSS signalling terminals are not
0 provisioned in pairs as is the case in domestic CCS7.

0 The MSB7 Common CP fill for DPNSS is NT6X32BA. Provide one (1)
0 NT6X32BA to equip each MSB7. Each MSB7 can accommodate up to 72
0 ST's. The maximum number of DPNSS MSB7's on a DMS switch is
0 five. Each MSB7 can support up to thirty-five PDTC modules.

0 The IDTC (PDTC) circuit pack fill that should be ordered for
0 DPNSS applications is NT6X02BN. This includes new messaging pro-
0 tocol and tones circuit pack NT6X69DA and NT6X40AC, DS30 Network
0 Interface CP.

0 13.1 HARDWARE PROVISIONING

0

0 13.1.1 HARDWARE USAGE RESTRICTIONS

0
0 When utilizing CCS7, the following restrictions must be consid-
0 ered:

- 0 1) CCS7 trunks must terminate on DTCs ONLY. Signaling Links can
0 terminate on LTCs, DTCs or DCMs. Signaling links and CCS7
0 trunks can be assigned to the same DTC.
- 0 2) CCS7 trunks can be mixed with PTS trunks on the same DTC,
0 however both cannot be in the same trunk group.

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- 0 3) DTC modules supporting CCS7 trunks must be equipped with Ex-
0 tended Memory and Enhanced Messaging.
- 0 4) Currently, a maximum of four MSB7s is allowed per office.

0 13.1.2 HARDWARE DEPENDENCIES

0
0 CCS7 trunk signaling requires Message Signaling 7 and DTC hard-
0 ware.

0 Message Signaling 7 Equipment

0 The MS7E Frame is composed of one MSB7 and up to one signaling
0 terminal 7 Group Shelf to house up to 24 signaling terminals.

0 The Signaling Terminal Extension Frame (NT6X09AA) is required
0 when the number of Signaling Terminals (ST) exceeds 24. This
0 frame accommodates an additional 48 STs.

0 The MSB7, which contains enhanced messaging circuit packs, must
0 be updated in BCS27 for expanded memory. The NT6X32CA, which con-
0 tains the NT6X46BA, satisfies this requirement. New MSB7s should
0 be provisioned with NT6X32CC. The PC Kit NT6X02ZJ is used to up-
0 grade existing NT6X32AA to the NT6X32AB for BCS27 expanded memory
0 requirement.

0 Digital Trunk Controllers (DTC)

0 Maximum number of DTCs utilizing CCS7, is 60 per office based on
0 each DTC requiring 2 IPMLs per MSB7.

0 In an LPP based office, there is a maximum of 140 DTCs utilizing
0 CCS7.

0 DTCs utilizing CCS7, must be equipped with Enhanced Messaging
0 (NT6X69), Extended Signal Processor Memory (NT6X46) and in BCS 27
0 Extended Master Processor Memory (NT6X47). Refer to ECMS 211, 241
0 and 373 for more detailed information on the DTCs.

0 Product change kits must be ordered for existing offices to up-
0 grade the DTCs with Enhanced Messaging and Extended Memory. Refer

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0

0 to the following ECMs for more detailed information on DTC provi-
0 sioning;

0 1) ECM 211 New Circuit Pack Fills for DTC,LTC,LGC

0 2) ECM 241 PC Kit for New Circuit Pack Fills

0 3) ECM 373 Peripheral Controller Module
0 Initials (NT6X02IA,LA,MA)
0 Extensions (NT6X02AS,AT,AU)

0 For applications in BCS23 and earlier, each DTC utilizing CCS7
0 requires two NT6X70AA Continuity Tone Detector CP for continuity
0 checking on ISUP trunks. In BCS24 and later, the software re-
0 quirement for Continuity Cards was removed so that customers re-
0 questing the cost reduction when testing is not required are not
0 required to order the cards.

0 For U.S. applications only, since the NT6X70-- is required for
0 the COT test, it is recommended that continuity cards continue to
0 be provisioned in most cases. Provisioning Continuity Cards on
0 SS7 DTCs should be considered standard. Only per customer request
0 can they be omitted.

0 For Canadian applications only, many customers have a high pene-
0 tration of digital trunk facilities and do not require the Conti-
0 nuity card. Provision these cards only on DTCs whose trunks
0 support analog facilities at some point in the end-to-end con-
0 nection of the trunk.

0 P AND C SIDE PORT REQUIREMENTS

0
0 N/A

0 DMS BUS PORT REQUIREMENTS

0
0 N/A

0
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0 CIRCUITS PER CARD

0
0 N/A

0 DISCRIMINATION NUMBERING

0
0 N/A

0 13.1.3 PROVISIONING CONSIDERATIONS

0
0 The NT6X66AC replaces NT6X66AA for all applications of the MS7E
0 frame and also has the C7BERT capability.

0 13.1.4 PROVISIONING CONSIDERATIONS

0
0 The following information is used to provision CCS7 and the asso-
0 ciated components of the network.

0 | The new NT6X32DB MS7B (DPNSS) packfill which uses the NT6X69LB
0 | Message Interface circuit pack to allow the module to function in
0 | ENET applications. The NT6X32DB packfill is provisioned to the
0 | NT6X31AA Message Switching 7 Equipment (MS7E) frame.

0 | In order for customers with existing NT6X32DA packfills (which
0 | use the NT6X69AA Message pack) to upgrade to the new NT6X32DB
0 | packfill, a new NT6X32ZA Product Change (PC) Kit has been created
0 | and introduced in this ECM. This will allow the packfill to be
0 | used in ENET applications.

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0 Finally, this engineering change provisions the NT6X69LB Message
0 Interface to the existing NT6X32CC (CCS7) common packfill. This
0 packfill previously used either NT6X69MA or NT6X69AC circuit
0 packs. Allowing the use of the NT6X69LB pack will reduce cus-
0 tomer spares by them not having to stock NT6X69ACs.

0 MDC LINE/CCS7 TRUNK INTERCONNECTION

0
0 Calls originating from or terminating on standard and/or featured
0 MDC POTS lines can be interconnected directly with CCS7 trunks
0 without utilizing loop-back trunks. Most MDC line features are
0 directly supported. There are a few exceptions which require
0 loop-back trunks between the MDC line and the CCS7 trunk. Those
0 features may include the following, depending on BCS:

0 1) POTS lines equipped with basic 3-Way Calling feature
0 require loop-back trunks for interconnection with CCS7
0 trunks.

0 2) Coin lines with the Local Coin Overtime (LCO) option
0 require loop-back trunks for interconnection with CCS7
0 trunks. Coin lines without this option will interconnect
0 directly.

0 3) Calls originating from POTS lines equipped with Auto
0 Identified Outward Dialing (AIOD) require loop-back trunks
0 to interconnect with CCS7 outgoing trunks. Incoming calls
0 from CCS7 trunks terminating on AIOD lines interface di-
0 rectly without loop-back.

0 4) Calls incoming from CCS7 trunks terminating on POTS
0 coin lines with the Free Number Termination (FNT) option
0 require loop-back trunks for interconnection. Calls origi-
0 nating from FNT lines may be interconnected directly with
0 CCS7 trunks without utilizing loop-back.

0 5) Calls terminating on Emergency Service Lines (ESL) from
0 CCS7 trunks require loop-back trunks for interconnection.

0 6) Calls terminating on Direct Inward System Access (DISA)
0 directory numbers over a CCS7 trunk require loop-back
0 trunks at the terminating office.

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0 Provisioning calculations for loop-back trunks are as follows:

$$\begin{array}{l} 0 \quad (A+B+C+D+E+F \text{ calls/hour}) \times \text{Average Hold Time (sec)} \\ 0 \quad \text{-----} = \text{CCS Loop-Back} \\ 0 \quad \quad \quad 100 \end{array}$$

0 Where:

0 A = HDBH calls utilizing CCS7 trunks that originate from
0 and terminate on POTS and/or MDC lines equipped with
0 Basic Three Way Call.

0 B = HDBH calls utilizing CCS7 trunks that originate from
0 coin lines with LCO feature.

0 C = HDBH calls utilizing CCS7 trunks that originate on
0 POTS lines with AIOD.

0 D = HDBH calls utilizing CCS7 trunks that terminate on
0 POTS and/or MDC lines with FNT.

0 E = HDBH calls utilizing CCS7 trunks that terminate on
0 MDC lines via DISA.

0 F = HDBH calls utilizing CCS7 trunks that terminate on
0 ESL lines

0 Refer to traffic provisioning tables for trunk capacities to to
0 determine the required trunk quantities for POTS/MDC loop-back
0 trunks.

0 LOOP-BACK TRUNK REQUIREMENT (BCS-24)

0 The following MDC features are incompatible with CCS7 trunks in
0 BCS-24 and will require loop-back trunks between the MDC line and
0 the CCS7 trunk:

0 1) Basic 3-Way Calling (3WC)

0 2) Free Number Termination (FNT)

0
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0 3) Direct Inward System Access (DISA)

0
0 LOOP-BACK TRUNK REQUIREMENT (BCS-25)

0
0 Loop-back trunking is required for the following conditions;
0 1) ISUP to DISA (trunk is released after digits are collected)
0 2) ISUP to LCO
0 3) ISUP to AIOD

0 LOOP-BACK TRUNK REQUIREMENT (BCS-26)

0
0 Loop-back trunking is required for the following conditions;
0 1) ISUP to DISA (trunk is released after digits are collected)
0 2) ISUP to LCO
0 3) ISUP to AIOD

0 LOOP-BACK TRUNK REQUIREMENT (BCS-27+)

0
0 Loop-back trunking is required for the following conditions;
0 1) ISUP to DISA (trunk is released after digits are collected)
0 2) ISUP to LCO

0

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0 LOOP-BACK TRUNK REQUIREMENT (BCS-31)

0
0 Loop-back trunking is required for the following conditions;
0 1) ISUP to DISA (trunk is released after digits are collected)
0 only if there are no UTRs provisioned on the DTC
0 terminating the ISUP trunk.

0
0 INTERCONNECTIONS NOT SUPPORTED

0
0 Only two call types are not supported with CCS7 signaling or
0 loop- back trunking. They are as follows;
0 1) CCS7 trunks/Emergency Service Bureau (ESB) line intercon-
0 nection is not supported.
0 2) Circuit Switched Digital Data Service (CSDDS) calls are not
0 supported (Note: CSDDS is not the same as Datapath. Datapath
0 and the CCS7 network are compatible).

0 INCOMPATIBLE CONSOLE FEATURE

0
0 When a console feature that is not compatible with an Integrated
0 Services Network User Part (ISUP) trunk is activated, a loop-back
0 trunk is required.

0

0

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0 CONSOLE LOOP-BACK TRUNK PROVISIONING (BCS-24)

0
0 Loop-Back trunks must be provisioned for all ISUP trunks which
0 require access to the console. These can be divided into four
0 categories;

- 0 1) ISUP trunk to console requiring call extension
0 2) ISUP trunk to console not requiring call extension
0 3) Console extended to an ISUP trunk
0 4) Console originated to an ISUP trunk

0 The call rate for console calls can be calculated based on the
0 number of attendant consoles (AC) in the office , the average
0 length of all console queues in the office (QL) and the average
0 time required for a console to process a call (T), by using the
0 following formulas;

0
$$\text{Terminating Call Rate} = \frac{\#AC \times QL}{T}$$

0
$$\text{Originating Call Rate} = \frac{\#AC}{T}$$

0 These call rates can be multiplied by the percentage of calls in
0 each of the four categories to determine the call rate for each
0 category.

0 The holding times may be different for each of the four call
0 types.

- 0 1) For ISUP Trunk to console calls that do require extending,
0 the holding time is equivalent to the average holding time of
0 the call plus the average console call handling time (T).

0 2) For ISUP trunk to console calls that do not require extend-
0 ing, the holding time is equivalent to the average console
0 call handling time (T).

0 3) For console extending to an ISUP trunk, the holding time is
0 equivalent to the average holding time of an ISUP trunk to
0 console call that requires extension less the average console
0 call handling time.

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0 4) For console originating to an ISUP trunk, the holding time
0 is equivalent to the average holding time of the call plus the
0 average console call handling time (T).

0 The total console loop-back load required can be calculated by
0 adding the required load for each of the four categories. The
0 loop-back load for each category can be calculated using the fol-
0 lowing;

0 Loop-Back Trunk Load per Category = Call Rate X Holding Time

0 Total Loop-Back Load = Category 1 + Category 2 + Category 3
0 + Category 4

0 After the total console loop-back load is determined, the total
0 number of trunks can be calculated using the Poisson Tables. The
0 number of loop-back trunks should not exceed the number of ISUP
0 trunks.

0 CONSOLE LOOP-BACK TRUNK PROVISIONING (BCS-25)

0
0 For BCS 25, all attendant calls and features require loop-back
0 treatment only when the calls are being extended. The loop-back
0 trunk requirement is reduced because the loop-back trunk is re-
0 leased after the call is extended.

0 CONSOLE LOOP-BACK TRUNK PROVISIONING (BCS-26 to BCS-31)

0
0 For BCS 26 to BCS 31, the loop-back requirement is reduced. The
0 Code Calling feature, the Conference Hold & Release feature
0 (AD0363) (AD0363), and the End-to-End Signaling feature (AD0363)
0 is the only requirement for loop-back treatment.

0

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0 LOOP-BACK SPAN PROVISIONING

0

0 # Console # POTS-MDC
0 Loop-back Trunks + Loop-back Trunks
0 # Loop-back T1 spans = ----- (ROUND
0 24 UP)

0 #TOTAL T1 Spans Required = #Loop-back T1 Spans X 2

0 MSB7 PROVISIONING INFORMATION

0

0
0 DS30 Ports (MSB7)

0
0 The MSB7 Peripheral communicates with the Central Control (CC)
0 and other peripherals via DS30 ports to the network.

0 The number of MSB7 DS30 ports to the Network is determined by the
0 following calculation;

0 (No.DTC's terminating CCS7 trks X 2) + (No. Signaling links)
0 -----
0 30 Channels/Port

0 A minimum of three DS30 ports are required and eight ports
0 are maximum.

0

0

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0 MULTIPLE MSB7 PROVISIONING

0
0 The maximum number of MSB7s per office is 4. The required number
0 of MSB7s can be determined using the following calculations.

0 A) ISUP HDBHCA ----- X (6 or 12) =
0 ISUP msg/sec 3600

0 NOTE: When calculating the ISUP msg/sec in an Access Tandem
0 office, 12 msg/CA must be used due to the incoming and
0 outgoing portions of the message for the MSB7 in the
0 Access Tandem office. For an end office, 6 msg/sec must
0 be used.

0 B) DB Query HDBHCA ----- X 2
0 = DB Query msg/sec 3600

0 NOTE: Types of DB Query messages may include the following:

0 E800/800+/E008 ACCS BNS

0 C) PVN wo PIN HDBHCA ----- X 2
0 = PVN wo PIN msg/sec 3600

0 D) PVN with PIN HDBHCA ----- X 4
0 = PVN with PIN msg/sec 3600

0 E) RAG HDBHCA ----- X 4 =
0 RAG msg/sec 3600

0

0

0

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0 93 12 030 F) ACB HDBHCA ----- X (13 or 8) =
0 ACB msg/sec 36000 NOTE: Use 13 for U.S. applications, or 8 for Canadian
0 applications.0 G) AR HDBHCA ----- X 2 = AR
0 msg/sec 36000 H) CLI HDBHCA ----- X 2 =
0 CODP msg/sec 36000 I) NMS HDBHCA ----- X 4 =
0 NMS msg/sec 36000 J) DN Validation HDBHCA ----- X 2
0 = DN Validation 3600 msg/sec

0 K) B + C + D + E + F + G + H + I + J = TCAP msg/sec

0 L) 1. If A + 2*K <= 135 and K <= 31,
0 # MSB7s required = 1.0 2. If A + 2*K <= 205 and K <= 46,
0 # MSB7s required = 2.0 3. If A + 2*K <= 340 and K <= 76,
0 # MSB7s required = 3.0 4. If A + 2*K <= 460 and K <= 107,
0 # MSB7s required = 4.

0

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0 SIGNALING DATA LINKS (SDL)

0
0 A Signaling Link (SL) is a bi-directional transmission path for
0 transferring trunk signaling information from an end-office Ser-
0 vice Switching Point (SSP) to another SSP or a Signal Transfer
0 Point (STP). Each SL is comprised of a Signaling Data Link (SDL)
0 and a Signaling Terminal (ST) (NT6X66). A linkset is a set of
0 links to be used as a group, each equally capable of carrying
0 traffic between the origination point and a destination point.

0 For redundancy, a pair of SLs is composed of two Signaling Termi-
0 nal (ST) cards and two T1 links. The maximum number of STs per
0 MSB7 is 72. Therefore, the maximum number of redundant Signaling
0 Links is 36.

0 A single pair of CCS7 links can handle the throughput of an MSB7.
0 Therefore, link quantities can be determined by the quantity of
0 MSB7s (minimum one pair of links/MSB7) and the number of nodes
0 associated with the DMS 100 and/or DMS 200.

0 Signaling Links (Terminals) must be provided as redundant pairs,
0 therefore the number of ST cards (NT6X66AC) equals the number of
0 Signaling Links times 2.

0 CCS7 signaling links utilize digital T1 trunks as the physical
0 transmission medium to the CCS7 Signaling Network. These T1's
0 may terminate on either a DTC, LTC, or DCM.

0 The number of DS1 circuits required =

0 No. of calculated Signaling links (terminals) X 2 (redundancy)
0 -----
0 24 Channels

0 NOTE: Refer to SEB 89-05-001 (U.S. applications) or SEL
0 89-01-014 (Canadian applications) for CCS7/MSB7 throughput
0 and capacity data.

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0 NAILED-UP CONNECTIONS

0
0 Inter-Peripheral Message Links (IPML) are nailed-up connections
0 that allow the DTCs to communicate with the MSB7s through the
0 network. Each DTC utilizing CCS7, requires two IPMLs to each
0 MSB7. The maximum number of Interperipheral Message Links (IPML)
0 per MSB7 is 120 based on the maximum number of channels on the
0 enhanced messaging card being 128. (8 ports reserved for future
0 use)

0 Each ST requires one nailed-up connection.

0 The total number of nailed-up connections required is calculated
0 as follows;

0 $(\# \text{ of DTCs} \times 2 \times \# \text{ of MSB7s}) + (\text{Total } \# \text{ of STs (all MSB7s)})$

0 The maximum number of nailed-up connections is 768. To ensure
0 that degradation of network throughput does not occur, no more
0 than 100 nailed-up connections per network module should be uti-
0 lized.

0 ROUTING INFORMATION

0
0 Routing information for calls utilizing a CCS7 trunk is trans-
0 ferred between Switching Offices via the CCS7 Signaling Data
0 Links rather than via the actual voice trunk as with PTS. The-
0 oretically, the average hold time for CCS7 trunk calls should be
0 slightly less than for PTS trunk calls. However, theoretical
0 studies and actual measurements have not been performed to quan-
0 tify the reduction. Therefore, existing PTS circuit provisioning
0 should be used in the interim. Actual CCS7 trunk circuit provi-
0 sioning information will be published as soon as studies are per-
0 formed.

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0 13.1.5 OFFICE LAYOUT INFORMATION

0
0 Not applicable

0 13.1.6 TRAFFIC TABLES

0
0 For traffic calculations, use the Credit System (ECM 350) or
0 equivalent standard traffic provisioning method.

0 13.2 PRODUCT/SYSTEM SPECIFICATION

0

0 13.2.1 PHYSICAL CHARACTERISTICS

0

0 POWER REQUIREMENTS

0
0 Power consumption for the ST module is 228 watts. Power consump-
0 tion for the ST7E frame (3 ST modules) is 684 watts.

0 Power consumption for the MSB7 module is 211 watts. Power con-
0 sumption for the MS7E frame (ST module and 2 MSB7s) is 650 watts.

0 HEAT DISSIPATION

0 An MS7E frame dissipates 650 watts/hr.

0 CURRENT DRAIN

0

0 The current drain for an MS7E frame is 15 amps.

0 REQUIREMENTS

0 An MS7E frame requires six 20 amp fuses and two 5 amp fuses.

0 13.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Provide earthquake equipment per customer requirements.

0 13.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms shall apply.

0 13.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 N/A

0 13.2.5 CURRENT DRAIN INFORMATION

0
0 N/A

0

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0 13.3 SOFTWARE PROVISIONING

0

0 13.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 If this section is inapplicable or the information is unavail-
0 able, use one of the following:

0 Not applicable.

0 This information is unavailable at this time.

0 13.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 The following basic packages provide CCS7 functionality. In ad-
0 dition, there are many optional CCS7 features. Refer to the ap-
0 propriate Software ECM or Marketing publications for the latest
0 information.

0 Required Packages

0 NTX041AA - CCS7 MTP/SCCP (Rated A+M with BCS26)

0 OR

0 NTX041AB - CCS7 MTP/SCCP

0 Optional Packages

0 NTX167AB - CCS7 - TRUNK SIGNALING

0 NTX550AA - CCS7 TRANSACTION SERVICE SUPPORT

0 NTX554AA - CCS7 - ENHANCED 800/SERVICE SWITCHING POINT

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0 13.3.3 MEMORY PROVISIONING

0
0 For memory provisioning, use the MEMCALC tool.

0 13.4 REAL TIME IMPACT

0 Processing is distributed over the Central Processing Unit (CPU)
0 and the Peripheral Processors (PP) in the peripheral modules.
0 Real Time is one of the measurement that is utilized to determine
0 the loading characteristics of these devices for specific appli-
0 cations. Real Time is the amount of time required for these
0 processors to perform a function such as establish a call or ac-
0 tivate a feature.

0 For a detailed calculation of CPU real time, use the REAL::TIME
0 program issue 4A or later. Refer to System Engineering Bulletin
0 (SEB) 87-02-004 for more details on REAL::TIME and operational
0 instructions. For a detailed calculation of PP real time, use
0 the PRTCALC program issue 1C or later. Refer to SEB 86-10-004 for
0 more details on PRTCALC and operational instructions.

0 To measure the CPU real time for an inservice switch, use the AC-
0 TIVITY TOOL. Refer to SEB 86-11-005 for more details on the AC-
0 TIVITY TOOL and operational instructions. To measure the PP real
0 time for an inservice switch, use the NEW PERIPHERAL ACTIVITY and
0 PERFORMANCE TOOL for the new peripherals. Refer to SEB 87-02-004
0 for more details in the NEW PERIPHERAL ACTIVITY and PERFORMANCE
0 TOOL.

0 Refer to SEB 86-11-001 (U.S. applications) or SEL 88-01-015 and
0 SEL 88-10-018 (Canadian applications) for a complete listing of
0 CPU call timings.

0 Refer to SEB 88-06-001 (U.S. applications) for a complete listing
0 of BCS 25 call timings for the new peripherals. Refer to SEL
0 89-01-23 (Canadian applications) for CCS7 DTC/LTC call timings.

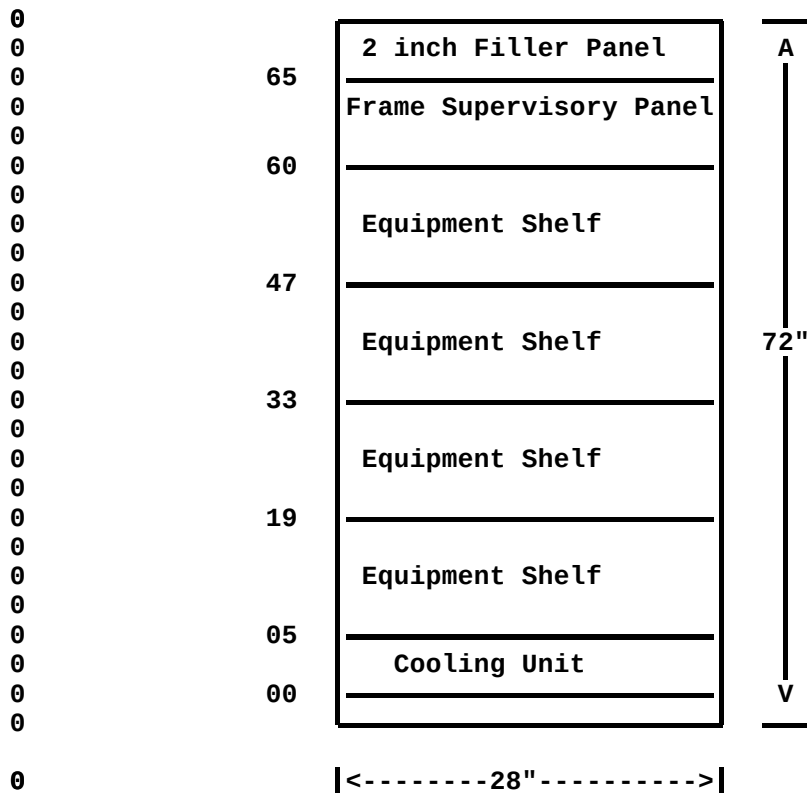
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0 14.0 International Cabinetized Message Switch 7

0 This document describes engineering and provisioning considerations
0 for the International Cabinetized Message Switch 7 (CMS7 NTRX48AA) in-
0 troduced for the European Community and Australian markets, where the
0 power supply is 48VDC, to meet safety and global electromagnetic radi-
0 ation EN Class A requirements.

0 The Dimensions of the CIPE cabinet, DMS-100 C28, are shown in Figure
0 1.



0 |<-----28"----->|

0 Cabinet is 28" deep.

0 FIGURE 1

0 DMS-100 C28 CABINET LAYOUT

0

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0 14.1 HARDWARE PROVISIONING

0

0 14.1.1 HARDWARE USAGE RESTRICTIONS

0
0 The international DMS-100 cabinetized equipment is intended to
0 replace the existing international DMS-100 product lines includ-
0 ing frames and Meridian cabinets.

0 14.1.2 HARDWARE DEPENDENCIES

0
0 To maintain the EMI capability of the cabinetized system, DMS-100
0 Cabinetized cabinets should not be mixed with frames or Meridian
0 cabinets.

0 14.1.3 HARDWARE DEPENDENCIES

0
0 Not applicable.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0

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0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

0 14.1.4 PROVISIONING CONSIDERATIONS

0
0 The NTRX48AA cabinet houses a dual-shelf Message Switch Buffer 7
0 (MSB7) module and two STG7 shelves. The MSB7 shelves are con-
0 nected to each plane of the CDSN Network through the CSLC via
0 bulkhead DS30 cabling. Each of the MSB7 and STG7 shelves sup-
0 ports 4 and 16 NT6X66 Signaling Terminal (ST) circuit packs re-
0 spectively, for a total of 40 STs per cabinet.

0 NT6X66AA and NT6X66CA STs are provisionable for CCS7 and DPNSS7
0 respectively.

0 In the top of the cabinet is the FSP which distributes power,
0 control and alarms to the cabinet.

0 The cabinet is forced air cooled with a fan unit integrated into
0 the base of the cabinet.

0 The NTRX48AA is always provided in building block NTZZ37HA Inter-
0 national CMS7.

0 14.1.5 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 14.1.6 TRAFFIC TABLES

0
0 Standard traffic provisioning algorithms apply.

0 14.2 PRODUCT/SYSTEM SPECIFICATION

0

0 14.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 14.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0

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0 14.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply.

0 14.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 The following fuses and feeds are required:

0 14.2.5 CURRENT DRAIN INFORMATION

0
0 Current Drain for the circuit packs are:

0 14.3 SOFTWARE PROVISIONING

0

0 14.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Not applicable.

0

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0 14.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

0 14.3.3 MEMORY PROVISIONING

0
0 Not applicable.

0 14.4 REAL TIME IMPACT

0 Not applicable.

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0 15.0 Building Block Engineering - MS7E

0 The purpose of this ECM is to document Building Block Engineering
0 for the MS7E frame

0 There are three main components to this ECM:

- 0 1. MS7E Customer Questions
- 0 2. MS7E Calculations
- 0 3. MS7E Configuration

0 MS7E Customer Question: Worksheet of Telco inputs required at the
0 time of order capture.

0 MS7E Calculations: Worksheet of provisioning algorithms driven
0 from the results of the Customer Question
0 section to determine the number of MSB7s
0 required, based on messaging.

0 MS7E Configuration: Signaling Terminals required for customer
0 application are spread across the MSB7s
0 determined above and configured on each
0 MSB7 per algorithms provided.

0 15.1 HARDWARE PROVISIONING

0

0 15.1.1 HARDWARE USAGE RESTRICTIONS

0
0 Not applicable.

0 15.1.2 HARDWARE DEPENDENCIES

0
0 Not applicable.

0
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0 15.1.3 PROVISIONING CONSIDERATIONS

0
0 The Message Switch and Buffer (MSB) building block concept deals
0 with a higher level of Product Engineering Code (PEC) engineering
0 order process. Optional to the basic MSB equipped with two (2)
0 Signalling Terminals (ST), additional ST's can be provided.

0 The ST7E Frame has not been re-issued in the Building Block for-
0 mat due to the lack of a practical need for this frame due to the
0 real time limitations of the MSB7.

0 NTZZ05AA (Message Signalling 7 Frame)

0 The NTZZ05AA contains the basic MS7E frame components and one (1)
0 pair of Signalling Terminal CP's. Each NTZZ05AA includes all
0 Power Converters, Processors, Filler Panels, etc. to make a fully
0 functional MSB. The MSB frame will be ISG compliant and contain
0 a universal framework. The MSB will always be provided with
0 three (3) ports to the Network. An office can contain a maximum
0 of four (4) MSB's. Additional ST's can be provided on an op-
0 tional basis.

0 NTZZ05BA (CCS7 Signalling Terminal)

0 The NTZZ05BA contains the circuit packs to provide two (2) addi-
0 tional Signalling Terminals and designation strips. These will
0 be provided on an as needed basis when the requirements exceed
0 the two (2) always provided STs in the NTZZ05AA building block.

0 NTZZ05CA (Signalling Terminal 7 Group Shelf)

0 The NTZZ05CA contains the shelf required when the number of sig-
0 nalling terminals exceed 8 or 4 pairs. The shelf comes equipped
0 with one pair of ST's and all functionally required equipment. It
0 can contain up to 16 or 8 pairs of STs.

0 NTZZ05DA (Signalling Terminal I/F with Terminator)

0 The NTZZ05DA contains the pair of ST Interface packs required on
0 the last shelf that contains Signalling Terminals.

0 NTZZ05EA (Signalling Terminals for STG7 Shelf)

0

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0 The NTZZ05EA contains a pair of ST packs for use on the STG7
0 shelf (position 51).

0 NTZZ05FA (Signalling Terminal I/F)

0 The NTZZ05FA contains a pair of ST Interface packs for use on the
0 next to last shelf containing Signalling Terminals.

0 NTZZ05GA (ST Filler Faceplates)

0 The NTZZ05GA contains filler faceplates for use on unequipped ST
0 positions.

0 NTZZ05HA (Message Signalling 7 Frame (US))

0 The NTZZ05HA contains the basic MS7E frame components and one (1)
0 pair of Signalling Terminal CP's. Each NTZZ05HA includes all
0 Power Converters, Processors, Filler Panels, etc. to make a fully
0 functional MSB. The MSB frame will be ISG compliant and contain
0 a common framework. The MSB will always be provided with three
0 (3) ports to the Network. An office can contain a maximum of
0 four (4) MSB's. Additional ST's can be provided on an optional
0 basis.

0 NTZZ05JA (Earthquake MS7E Frame (US))

0 The NTZZ05JA contains the same components as the NTZZ05HA except
0 for the common framework. NTZZ05JA contains the NT0X2AH earth-
0 quake framework.

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0 RELEASE 28.01
0 93 12 030 MS7E CALCULATIONS0 There can be a maximum of four (4) MSB7s per office. The following
0 calculations establish the number required.

0 $A = (Q1 / 3600) * 6$ _____

0 $B = (Q2 / 3600) * 12$ _____

0 $C = (Q3 / 3600) * 6$ _____

0 $D = (Q4 / 3600) * 2$ _____

0 $E = (Q5 / 3600) * 2$ _____

0 $F = (Q6 / 3600) * 2$ _____

0 $G = (Q7 / 3600) * 4$ _____

0 $H = (Q8 / 3600) * 4$ _____

0 $I = (Q9 / 3600) * 13$ _____

0 $J = (Q10 / 3600) * 2$ _____

0
0 $ISUP = A + B + C \quad OR \quad Q11$ _____

0 $TCAP = D + E + F + G + H + I + J \quad OR \quad Q12$ _____

0 Total ISUP msg/sec. + (2*TCAP msg/sec.) < = 135 AND
0 Total TCAP Messages per second < = 30 requires one MSB7.0 Total ISUP msg/sec. + (2*TCAP msg/sec.) < = 205 AND
0 Total TCAP Messages per second < = 46 requires two MSB7s.0 Total ISUP msg/sec. + (2*TCAP msg/sec.) < = 340 AND
0 Total TCAP Messages per second < = 76 requires three MSB7s.0 Total ISUP msg/sec. + (2*TCAP msg/sec.) < = 460 AND
0 Total TCAP Messages per second < = 107 requires four MSB7s.

0 P = Number of MSB7s Required (determined above) _____

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0

0 CUSTOMER CONFIGURATION

0 5A: Number of STs required per MS7E = $Q13 / P$ (Round up) _____
0 (Maximum 12 pairs per MS7E)

0 (If $Q13/P$ was rounded up, the result shall determine
0 the configuration of all the frames required except
0 the last which shall be configured as $5A - 1$).

0 Example: $Q13 = 23$ (23 CCS7 links required) and $P = 3$
0 (3 MS7E frames required).

0 $Q13/P = 23/3 = 7.66$ (Round up) = 8

0 With $5A = 8$, the first two MS7E frames would
0 be configured as $5A = 8$, as shown below, but
0 the last MS7E frame would be configured as
0 $5A = 7$, as shown below ($5A - 1$).

0 If $5A = 1$, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, six
0 NTZZ05GA, one NTZZ05DA, and one NT0X84AA.

0 If $5A = 2$, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, one
0 NTZZ05BA, four NTZZ05GA, one NTZZ05DA, and one NT0X84AA.
0 (For U.S. applications provide 2 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA).

0 If $5A = 3$, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, two
0 NTZZ05BA, two NTZZ05GA, one NTZZ05DA, and one NT0X84AA.
0 (For U.S. applications provide 4 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA).

0 If $5A = 4$, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, three
0 NTZZ05BA, one NTZZ05DA, and one NT0X84AA.
0 (For U.S. applications provide 6 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA).

0 IF $5A = 5$, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, three
0 NTZZ05BA, one NTZZ05CA, one NTZZ05FA, and fourteen
0 NTZZ05GA.
0 (For U.S. applications provide 6 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA).

0 If $5A = 6$, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, three
0 NTZZ05BA, one NTZZ05CA, one NTZZ05EA, one NTZZ05FA,
0 and twelve NTZZ05GA.

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0 (For U.S. applications provide 8 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA and NTZZ05EA).

0 If 5A = 7, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, three
0 NTZZ05BA, one NTZZ05CA, two NTZZ05EA, one NTZZ05FA,
0 and ten NTZZ05GA.
0 (For U.S. applications provide 10 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA and NTZZ05EA).

0 If 5A = 8, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, three
0 NTZZ05BA, one NTZZ05CA, three NTZZ05EA, one NTZZ05FA, and
0 eight NTZZ05GA.
0 (For U.S. applications provide 12 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA and NTZZ05EA).

0 If 5A = 9, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, three
0 NTZZ05BA, one NTZZ05CA, four NTZZ05EA, one NTZZ05FA, and
0 six NTZZ05GA.
0 (For U.S. applications provide 14 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA and NTZZ05EA).

0 If 5A = 10, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, three
0 NTZZ05BA, one NTZZ05CA, five NTZZ05EA, one NTZZ05FA, and
0 four NTZZ05GA.
0 (For U.S. applications provide 16 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA and NTZZ05EA).

0 If 5A = 11, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, three
0 NTZZ05BA, one NTZZ05CA, six NTZZ05EA, one NTZZ05FA, and
0 two NTZZ05GA.
0 (For U.S. applications provide 18 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA and NTZZ05EA).

0 If 5A = 12, provide one NTZZ05AA, NTZZ05HA, or NTZZ05JA, three
0 NTZZ05BA, one NTZZ05CA, seven NTZZ05EA, and one NTZZ05FA.
0 (For U.S. applications provide 20 NT6X66AA or NT6X66AC
0 rather than the NTZZ05BA and NTZZ05EA).

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0 MS7E CUSOMER QUESTIONS

0 Office MSB7 Messaging Requirement

0 Office provisioning must be based on either estimated call at-
0 tempts or actual office measurements but not both. Answer
0 questions under either Section I or II, depending on the basis
0 for provisioning which applies.

0 SECTION I:

0 If an estimate of the High Day Busy Hour call attempts will be
0 the basis for office provisioning, the following questions must
0 be answered:

0 Q1 : Line to CCS7 Trunk HDBH Call Attempts _____

0 Q2 : CCS7 Trunk to CCS7 Trunk HDBH Call Attempts _____

0 Q3 : MF/DP Trunk to CCS7 Trunk HDBH Call Attempts _____

0 Q4 : E800 HDBH Call Attempts _____

0 Q5 : Exchange Alternate Billing Service HDBH Call Attempts _____

0 Q6 : PVN w/o PIN HDBH Call Attempts _____
0 (PIN is Personal Identification Number)

0 Q7 : PVN w/ PIN HDBH Call Attempts _____

0 Q8 : RAG (Network Ring Again) HDBH Call Attempts _____

0 Q9 : Automatic Call Back HDBH Call Attempts _____

0 Q10: Automatic Recall HDBH Call Attempts _____

0 SECTION II:

0 Actual message counts can be obtained on an inservice system by
0 reading registers from OM groups ISUPUSAG and TCAPUSAG.

0 If office Operational Measurements are to be the basis for provi-
0 sioning, the following questions must be answered:

0 Q11: Total ISUP messages per second

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0 (ISMSGOUT + ISMSGOT2 + ISMSGIN + ISMSGIN2)
0 ----- = _____
0 3600

0 Q12: Total TCAP messages per second

0 (TCMSGOUT + TCMGOU2 + TCMSGIN + TCMSGIN2)
0 ----- = _____
0 3600

0
0 Q13: Signaling Terminal pairs required per office _____

0 15.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 15.1.5 TRAFFIC TABLES

0
0 Not applicable.

0 15.2 PRODUCT/SYSTEM SPECIFICATION

0

0 15.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0

0 Host - Signalling Interface Equipment
0 Chapter 7

0 15.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 15.2.3 SPARING INFORMATION

0
0 Not applicable.

0 15.3 SOFTWARE PROVISIONING

0

0 15.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Not applicable.

0 15.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

0 15.3.3 MEMORY PROVISIONING

0
0 Not applicable.

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0 15.4 REAL TIME IMPACT

0 Not applicable.

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0 16.0 DMS Building Block - SLC Engineering

0 This ECM provides references to the existing documentation for SLC
0 equipment. Since this equipment has been orderable for many years, no
0 effort to describe product function will be made.

0 16.1 HARDWARE PROVISIONING

0

0 16.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 16.1.2 HARDWARE DEPENDENCIES

0

0 Not applicable.

0 P AND C SIDE PORT REQUIREMENTS

0

0 Not applicable.

0 DMS BUS PORT REQUIREMENTS

0

0 Not applicable.

0

0
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0 CIRCUITS PER CARD

0
0 Not applicable.

0 DISCRIMINATION NUMBERING

0
0 Not applicable.

0 16.1.3 PROVISIONING CONSIDERATIONS

0
0 The following SLC Building Blocks are available:

0 NTZZ21AA: SLC Frame for U.S. and Canadian applications. This
0 Building Block provides the SLC with the NT0X25AH Universal
0 framework.

0 NTZZ21BA: SLC Frame for U.S. applications. This Building Block
0 has been declared Manufacture Discontinued due to the MD status
0 of the NT0X25AA framework. NTZZ21BA is replaced by NTZZ21AA. Re-
0 fer to section EMC3-05-004 of the Engineering Manual for refer-
0 ence information.

0 NTZZ21DA: EQ Frame SLC Building Block. This Building Block has
0 been declared Manufacture Discontinued since it duplicates the
0 NTZZ21AA Building Block. NTZZ21DA is replaced by NTZZ21AA. Refer
0 to section EMC3-05-005 of the Engineering Manual for reference
0 information.

0 The NT0X25AV framework is A&M and it is replaced by NT0X25AH.

0

0

0 16.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 16.1.5 TRAFFIC TABLES

0
0 Not applicable.

0 16.2 PRODUCT/SYSTEM SPECIFICATION

0

0 16.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

0 16.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 16.2.3 SPARING INFORMATION

0
0 Not applicable.

0
0
0

0 16.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 Not applicable.

0 16.2.5 CURRENT DRAIN INFORMATION

0
0 Not applicable.

0 16.3 SOFTWARE PROVISIONING

0

0 16.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Not applicable.

0 16.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

0 16.3.3 MEMORY PROVISIONING

0
0 Not applicable.

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0 NORTHERN TELECOM
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PRACTICE 297-1001-450

0 16.4 REAL TIME IMPACT

0 Not applicable.

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0 17.0 NT6X50EC - DS1 Interface with Echo Cancellation

0 The NT6X50EC is to provide echo cancellation inside the DMS envi-
0 ronment. This function is now being done outside of the switch
0 using equipment not provided by NORTHERN TELECOM. Integration of
0 echo cancellation is required due to the high cost of operation
0 and maintenance of these external devices.

0 The NT6X50EC cancels the echo created by the impedance mismatch
0 in the near end hybrid. The cancellation prevents the far end
0 talker from hearing the echo of their own voice. Echo cancellers
0 are useful only where the delay is long enough for the echo to be
0 noticed.

0 17.1 HARDWARE PROVISIONING

0

0 17.1.1 HARDWARE USAGE RESTRICTIONS

0
0 The NT6X50EC does not perform the permanent loop back for an in-
0 active port, therefore it cannot be used in the remote line con-
0 centrating module (RLCM)

0 This circuit pack cannot be installed on a trunk that is provi-
0 sioned with an echo suppressor.

0 17.1.2 HARDWARE DEPENDENCIES

0
0 If the NT6X50EC is to be installed in a DTE frame, an Auxiliary
0 Fuse Panel (AFP, NT6X0131) must be used. The AFP will allow -48V
0 power to be run up to the card slot of the NT6X01AA frame. The
0 NT6X0130 will include all cabling needed to power the card slots.

0

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0 17.1.3 POWER/HEAT DISSIPATION

0
0 This circuit pack connects to 5V, +/- 12V and -48V power sup-
0 plies. The majority of the power is derived from the -48V supply,
0 thereby reducing the demand on the existing 5V supply.

0 There will be a kit developed to run -48V up to the CP slots.
0 There is no pec code for this kit as of this release.

0 17.1.4 PROVISIONING CONSIDERATIONS.

0
0 The DTC and DTCI can be provisioned with up to 10 NT6X50EC cp's.

0 The NT6X50EC and NT6X50AB can be mixed on the same shelf. This
0 will allow the customer to chose wich trunks will have the echo
0 cancellation feature.

0 17.1.5 OFFICE LAYOUT INFORMATION

0
0 Not Applicable

0 17.1.6 TRAFFIC TABLES

0
0 The NT6X50EC traffic studies are the same as the NT6X50AB. The
0 only difference is that the NT6X50EC has echo cancellation.

0

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0 17.2 PRODUCT/SYSTEM SPECIFICATION

0

0 17.2.1 PHYSICAL CHARACTERISTICS

0

0 Not Applicable

0 17.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not Applicable

0 17.2.3 SPARING INFORMATION

0

0 Standard algorithms for sparing apply.

0 17.3 SOFTWARE PROVISIONING

0

0 17.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCY

0

0 The software for the NT6X50EC will be incorporated into the BCS
0 30 software load.

0

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0 17.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Integrated echo cancellation is supported by BCS30 and later re-
0 leases. The new CC and XPM software required for use and control
0 of the NT6X50EC trunk interface will be integrated into the ex-
0 isting software structure with minimal impact. The software will
0 be backwards compatible, such that it will operate with either
0 the NT6X50AB/EC trunk interface cards. The table control modifi-
0 cations and new tables will be consistent with existing DMS-250
0 table control interface. New MAP displays will be built upon the
0 existing MAP hierarchy. The LOGS, alarm, and OM'S will all con-
0 form to the existing standards.

0 17.3.3 MEMORY PROVISIONING

0
0 Not Applicable

0 17.4 REAL TIME IMPACT

0 To perform echo cancellation, in each frame (125 usec) a single
0 DSP must perform 64 multiplies of 100ns each 8 channels.
0 $64 \times 100 \times 8 = 51.2 \text{ usec}$
0 51.2 usec is required for multiply/accumulate operations for echo
0 cancellation alone. Coefficient adaption requires another 51.2
0 usec for multiply accumulate operations. This leaves 22.6 usec
0 (18%) of each frame for overhead and other tasks. In order to
0 achieve this level of performance, the echo canceller is limited
0 to processing a maximum of two hybrids on a DS0 line at the same
0 time. Thus, the echo canceller can cancel echos for three-way
0 calling, but not for larger conference groups.

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0 18.0 Dialable Wideband Service Phase I

0 Dialable Wideband Service (DWS) is a multi-rate, switched service
0 aimed at satisfying end-user needs for flexible, wideband connectivity
0 in the public switched network. It offers a dialable, real-time
0 switched service that allows the end-user to establish network con-
0 nections with rates from 128 kbps to 1.536 Kbps in 64 kbps increments.
0 Rates higher than 1536 Kbps currently are not supported. DWS provides
0 the end-user with the convenience of dialing a directory number to es-
0 tablish a digital Wideband connection across the switched network to
0 any other bandwidth-compatible and protocol compliant DWS subscriber.
0 This network connection is transparent to user information (e.g.
0 voice, data, video or image), and is established in real-time by the
0 originating, terminating, and tandem switching nodes. The rate, or
0 bandwidth, is user-selectable on a per-call basis.

0 DWS is being introduced on Northern Telecom's DMS-100 Family of public
0 network switches. DWS creates a new class of subscribers - wideband
0 subscribers - identified uniquely by the North American Numbering Plan
0 to the Public Switched Telephone Network (PSTN). Intercompany com-
0 munications at wideband speeds is thus facilitated for key applica-
0 tions such as videoconferencing and data communications. DWS provides
0 a new revenue opportunity to both Local Exchange Carriers (LECs) and
0 Interexchange Carriers (IECs) as wideband subscribers call each other
0 at bandwidths from 128 kbps to 1.536 Kbps. Since the North American
0 Numbering Plan folds directly into the World Numbering Plan, DWS sub-
0 scribers may connect beyond North America into Japan, the United
0 Kingdom, Germany, and other countries where high-bandwidth communi-
0 cation is needed.

0 18.1 HARDWARE PROVISIONING

0

0 18.1.1 HARDWARE USAGE RESTRICTIONS

0
0 For new installations, the Enhanced Network is required; the DTC7
0 and/or the DTCI must have the Enhanced Time Switch as well.

0

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0 18.1.2 HARDWARE DEPENDENCIES

0
0 DWS requires that the DMS-100 configuration be SuperNode based,
0 including ENET, which provides the non-blocking constant delay
0 matrix, and DTCI and/or DTC7 peripherals which will require the
0 Enhanced Time Switch and will also provide the constant delay.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not Applicable

0 CIRCUITS PER CARD

0
0 Not Applicable

0 DISCRIMINATION NUMBERING

0
0 Not Applicable

0

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0 18.1.3 PROVISIONING CONSIDERATIONS

0

0 GENERAL INFORMATION

0
0 The switch hardware necessary to implement DWS is as follows: for
0 PRI access, the DTCI with the Enhanced Time Switch; for constant
0 delay switching, the ENET (Enhanced Network); and for outbound
0 trunks, the DTC7 with the Enhanced Time Switch. The Enhanced Time
0 Switch guarantees constant delay across the peripherals (DTC7 and
0 DTCI) and trunks, and ENET guarantees constant delay across the
0 switch matrix.

0 Each DTC7 and DTCI which will control wideband trunks, will be
0 provided with the Enhanced Time Switch for constant delay. In de-
0 termining the quantity of DTC7 modules and DTCI modules which
0 will be equipped with the Enhanced Time Switch, several traffic
0 factors must be taken into consideration: traffic will be highly
0 peaked due to reserved videomeet rooms, very long holding times
0 (hours vs minutes), per call bandwidth, and that all channels
0 which comprise an instance of wideband call termination must be
0 located on the same physical carrier facility and in the same
0 trunk group.

0 Access to the central office from the customer premises will be
0 ISDN Primary Rate Interface (PRI) with Q.931 signaling with ex-
0 tensions for Dialable Wideband Service. The physical interface
0 offered to the customer's premises may be copper (T-1) or fiber
0 transport facilities, but must employ the DS-1 protocol. For T-1,
0 the connection to the Channel Service Unit (CSU) is a 4 wire DS-1
0 appearance. The T-1 will terminate on an upgraded Digital Trunk
0 Controller, ISDN (DTCI) of the DMS-100 Family Switch.

0 The DTCI, in turn, connects the PRI access into the Enhanced Net-
0 work (ENET). ENET is an NxDS0 switching fabric which provides
0 channel switching greater than 64kbps through the DMS SuperNode.
0 Wideband calls are switched through ENET to the outgoing wideband
0 trunk on a modified Digital Trunk Controller CCS7 (DTC7). Both
0 the DTCI and DTC7 are upgraded with the Enhanced Time Switch

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0 which ensures channel order in the peripherals and trunks for the
0 wideband call.

0 While ENET provides the base switch matrix functionality, the
0 DTCI and DTC7 connect to the ENET at one end and provide the
0 connectivity to the PRI access loops and wideband trunks at the
0 other end. Current DTCI and DTC7 models must be modified in order
0 to implement the DWS capability. The Enhanced Time Switch is
0 needed to provide constant time delay for the peripherals as ENET
0 does for the Switch matrix. Together the ENET, DTCI and the DTC7
0 ensure time slot sequence integrity so the channel order from the
0 origination end user to the destination end user is not changed
0 by the DMS-100 Family Switch. DTCI and DTC7 each serve 10 T-1s
0 per shelf, 20 T-1s per module. Shelves are grouped into pair mod-
0 ules for sparing purposes.

0 For DWS, the DTCI is modified by the replacement of the standard
0 Time Switch with the Enhanced Time Switch. Field modifications
0 may be done. While DWS requires the DTCI to be upgraded with the
0 Enhanced Time Switch, regular PRI interfaces will also interwork
0 on this peripheral with the ETS. This allows more services to
0 utilize the DTCI.

0 The basic functions of the DTCI and the DTC7 are not altered in
0 any way by DWS. The Master Processor still provides the periph-
0 eral call processing for DWS as well as other DTCI and DTC7 sup-
0 ported services.

0 When adding DWS to an existing office, the cards in the Periph-
0 eral may need to be changed in order to maximise the ENET utili-
0 zation of ports. Extended Peripheral Modules (XPM: LGC, DTC,
0 DTCI ect) interface the Enhanced Network using DS-512 fiber
0 speech links or using existing DS-30 speech links. Due to the
0 underutilization of the cross-point circuit pack with the DS-30
0 speech link interface, it is expected that most Extended Periph-
0 eral Modules will be equipped for the DS-512 fiber speech link
0 interface to the Enhanced Network.

0 HARDWARE PROVISIONING INFORMATION

0
0 The NT6X44AA Time Switch and the NTAX78AA Enhanced Time Switch
0 are now both provisionable on the NT6X01AB. For DWS applications,

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0

0 the NT6X01AB that contains DTCI modules that will handle DWS
0 traffic, should be configured with the NT6X02NA packfill and the
0 NTAX78AA Enhanced Time Switch. For non-DWS applications, the
0 NT6X02NA packfill will still be provided along with the NT6X44AA
0 Time Switch.

0 The NT6X01AA will not be provided on initial DWS applications but
0 can be upgraded in the field to support DWS. Initial applica-
0 tions will utilize the NT6X01AD frame.

0 HARDWARE UPGRADE PROVISIONING INFORMATION

0
0 The following information applies to field upgrades only.

0 NT6X01AA Common peripheral Controller Equipment Frame

0 The DTC on an NT6X01AA Common Peripheral Controller Equipment
0 Frame must be upgraded with the NT6X02YS Product Change Kit to
0 allow the NTAX78AA ETS to function on the DTC7 modules. The
0 NT6X02YS Product Change Kit converts the current NT6X02IC DTC
0 Packfill to an NT6X02IG DTC Packfill.

0 The NT6X02YS Product Change Kit adds approximately 22 wiring
0 straps to the backplane of the NT6X02 modules. This Product
0 Change Kit also replaces the NT6X44AA Time Switch with the
0 NTAX78AA Enhanced Time Switch in slot 14.

0 The NTZZ22AA / NTZZ22BA / NTZZ22DA Common Peripheral Controller
0 Equipment Frame (NT6X01AA) must also be upgraded with the
0 NT6X02YS Product Change Kit to allow the NTAX78AA ETS to function
0 on the DTC7 modules. The NT6X02YS Product Change Kit converts the
0 current NTZZ04BA DTC Packfill to an NTZZ04BB DTC Packfill.

0 NT6X01AB Common peripheral Controller Equipment Frame

0 The NT6X01AB ISDN Common Peripheral Controller Equipment Frame
0 must be upgraded with the NT6X01WC Wiring Options Kit to allow
0 for non-ISDN applications to support DWS.

0 The NT6X01WC Wiring Options Kit enables a wire strap to be added
0 to the backpanel (NT6X0223) Slot XX-12 between pins 7A and 8A to

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0 allow for non-ISDN applications. The Kit includes a jumper which
0 is installed on the backplane and is required to support DWS.

0 The NTAX78AA Enhanced Time Switch Packs must then be provisioned
0 to replace the NT6X44AA Time Switch Packs.

0 The NTZZ17AA / NTZZ17KA / NTZZ17LA Common Peripheral Controller
0 Equipment Frame (NT6X01AB) must be upgraded with the NTZZ99AM
0 Product Change Kit.

0 The NTZZ99AM Product Change Kit removes the NT6X44AA Time Switch
0 Packs and the Designation Labels from the NTZZ17GB ISDN CPCI Com-
0 mon Peripheral Control Module and adds the NTAX78AA Enhanced Time
0 Switch Packs which converts the NTZZ17GB to an NTZZ17DA ISDN Com-
0 mon Peripheral Control Module.

0 Only the Modules which are going to handle DWS traffic will be
0 required to be updated per the above information. Again, the
0 above information applies to field upgrades only.

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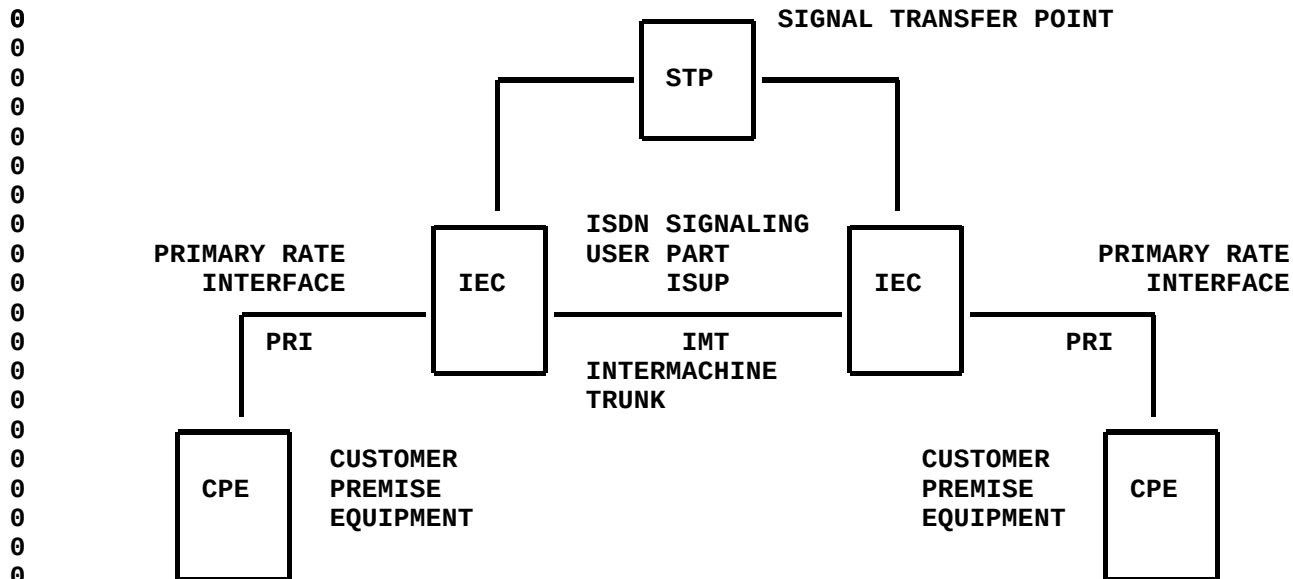
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0 Phase I DWS development application for typical fractional DS-1
0 connectivity via SS#7 ISUP trunking and CPE access via ISDN PRI
0 within the IEC.

0 Typical Fractional DS-1 Interconnectivity

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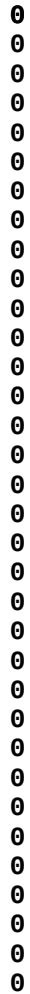
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0 18.1.4 OFFICE LAYOUT INFORMATION

0
0 Not Applicable

0 18.1.5 TRAFFIC TABLES

0
0 Refer to ECM-497 for Traffic Tables and Traffic provisioning con-
0 siderations.

0 18.2 PRODUCT/SYSTEM SPECIFICATION

0

0 18.2.1 PHYSICAL CHARACTERISTICS

0
0 Not Applicable

0 18.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not Applicable

0 18.2.3 SPARING INFORMATION

0
0 Standard sparing algorithms apply.

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0 18.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 Not Applicable

0 18.2.5 CURRENT DRAIN INFORMATION

0
0 Not Applicable

0 18.3 SOFTWARE PROVISIONING

0 DWS fills the gap in digital communication services by providing
0 users with dialable, constant-delay, multi-rate transmission sup-
0 ported by the public network. It makes transmission at speeds
0 greater than 64 kbps (e.g. 6 x 64 kbps = 384 kbps) as easy as a
0 standard phone call. Users may make a wideband call by simply
0 dialing the other party's telephone number and a code to indicate
0 the desired bandwidth.

0 The selection of channels which are combined to provide the de-
0 sired rate or bandwidth may also vary. The channel selection
0 schemes are fixed, floating, and flexible and are defined as fol-
0 lows:

0 * Fixed - channel selection normally applies to rates of 384
0 Kbps or 1536 Kbps, but could be extended to include other
0 rates. This scheme involves grouping contiguous channels and
0 partitioning these groups into logical, higher bandwidth
0 channels. Only these logical channels may be selected. For
0 example, for the 384 Kbps rate the logical channels are
0 formed by grouping channels 1-6, 7-12, 13-18 and 19-24 on a
0 DS-1 to form 4 logical channels, (6 channels each).

0 * Floating channel selection allows for the selection of any
0 contiguous channels and applies to all rates.

0

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0 * Flexible channel selection lifts all restrictions and pro-
0 vides for selection of any channel on a given carrier facil-
0 ity.

0 18.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 The following S/W packages are required to support DWS. Refer to
0 SMS or SOLID for information on the interdependencies of the
0 software packages.

0 NTXR49AA - Dialable Wideband Service
0 NTXS28AA - DWS Intertoll ISUP
0 NTXS26AA - DWS PRI Base
0 NTX09AAC - DWS ISUP Base
0 NTXS25AA - DWS Base

0 The following S/W packages are optional for DWS.

0 NTXS27AA - DWS PRI Test Tool
0 NTXR65AA - Flexible DWS Access
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0 18.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not Applicable

0 18.3.3 MEMORY PROVISIONING

0
0 Refer to MEMCALC for memory provisioning.

0 This product introduces no additional data store requirements. An
0 estimated 300 Kbytes of program store will be consumed in the
0 DMS-Core. In addition to this, 500 words will be consumed by
0 each Wideband Extension Block allocated (determined by the value
0 of MAX_WIDEBAND_CALLS in Table OFCENG). This value determines the
0 maximum number of simultaneous active wideband calls.

0 Data store requirements on DMS SuperNode are imposed by tables
0 TRKSIG, TRKFEAT, and TRKDIAL which are necessary for support of
0 wideband trunk types. Memory is allocated dynamically for these
0 tables in blocks of 320 words which can store up to 16 entries.
0 Once this number of entries is exceeded for a given block, an-
0 other block is allocated. The total consumption is dependent upon
0 the number of different signaling or feature set or dialing plan
0 entries required for TRKSIG, TRKFEAT, and TRKDIAL, respectively.
0 Note that many trunk groups may use the same signalling entry,
0 ect.

0 An estimated 1 kbytes will be consumed in the DTC7 by the DWS
0 product.

0 An estimated 1 kbytes will be consumed in the DTCI by the DWS
0 product.

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0 18.4 REAL TIME IMPACT

0

0 18.4.1 DMS-core

0

0 The impact of DWS on a given call is expected to be approximately
0 30 milliseconds for a 384 kbps call and approximately 70 milli-
0 seconds for a 1.536 kbps call (Series 20 processor).

0 The impact of enabling DWS for a given trunk is approximately 200
0 microseconds for a narrowband call. The impact of DWS
0 developement on narrowband calls is less than 50 microseconds.

0 18.4.2 Digital Trunk Controller (DTC7)

0

0 The impact of DWS on a given CCS7 ISUP call in the Master
0 Processor (MP) is expected to be approximately 128 milliseconds
0 for a 384 kbps call and approximately 188 milliseconds for a
0 1.536 Mbps call. These figures are based upon POWER development.

0 18.4.3 Digital Trunk Controller (DTCI)

0

0 The impact of DWS on a given PRI call in the Master Processor
0 (MP) is expected to be approximately 244 milliseconds for a 384
0 Kbps call and approximately 399 milliseconds for a 1536 Kbps
0 call. These figures are based upon Sprint development.

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0 19.0 Dialable Wideband Service Phase II

0 Dialable Wideband Service (DWS) is a multi-rate, switched service
0 aimed at satisfying end-user needs for flexible, wideband connectivity
0 in the public switched network. It offers a dialable, real-time
0 switched service that allows the end-user to establish network con-
0 nections with rates from 128 kbps to 1.536 Mbps in 64 kbps increments.
0 Rates higher than 1536 Kbps currently are not supported. DWS provides
0 the end-user with the convenience of dialing a directory number to es-
0 tablish a digital Wideband connection across the switched network to
0 any other bandwidth-compatible and protocol compliant DWS subscriber.
0 This network connection is transparent to user information (e.g.
0 voice, data, video or image), and is established in real-time by the
0 originating, terminating, and tandem switching nodes. The rate, or
0 bandwidth, is user-selectable on a per-call basis.

0 DWS is being introduced on Northern Telecom's DMS-100 Family of public
0 network switches. DWS creates a new class of subscribers - wideband
0 subscribers - identified uniquely by the North American Numbering Plan
0 to the Public Switched Telephone Network (PSTN). Intercompany com-
0 munications at wideband speeds is thus facilitated for key applica-
0 tions such as videoconferencing and data communications. DWS provides
0 a new revenue opportunity to both Local Exchange Carriers (LECs) and
0 Interexchange Carriers (IECs) as wideband subscribers call each other
0 at bandwidths from 128 kbps to 1.536 Mbps. Since the North American
0 Numbering Plan folds directly into the World Numbering Plan, DWS sub-
0 scribers may connect beyond North America into Japan, the United
0 Kingdom, Germany, and other countries where high-bandwidth communi-
0 cation is needed.

0 19.1 HARDWARE PROVISIONING

0

0 19.1.1 HARDWARE USAGE RESTRICTIONS

0

0 No changes from DWS Phase I.

0

0

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0 19.1.2 HARDWARE DEPENDENCIES

0
0 No changes from DWS Phase I.

0 P AND C SIDE PORT REQUIREMENTS

0
0 Not Applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not Applicable

0 CIRCUITS PER CARD

0
0 Not Applicable

0 DISCRIMINATION NUMBERING

0
0 Not Applicable

0

0

0 19.1.3 PROVISIONING CONSIDERATIONS

0
0 DWS Phase II with XPM Plus will only be offered as an upgrade on
0 the NT6X01AA and NT6X01AB frames. No initial jobs for DWS Phase
0 II should use the NT6X01AA or the NT6X01AB frames.

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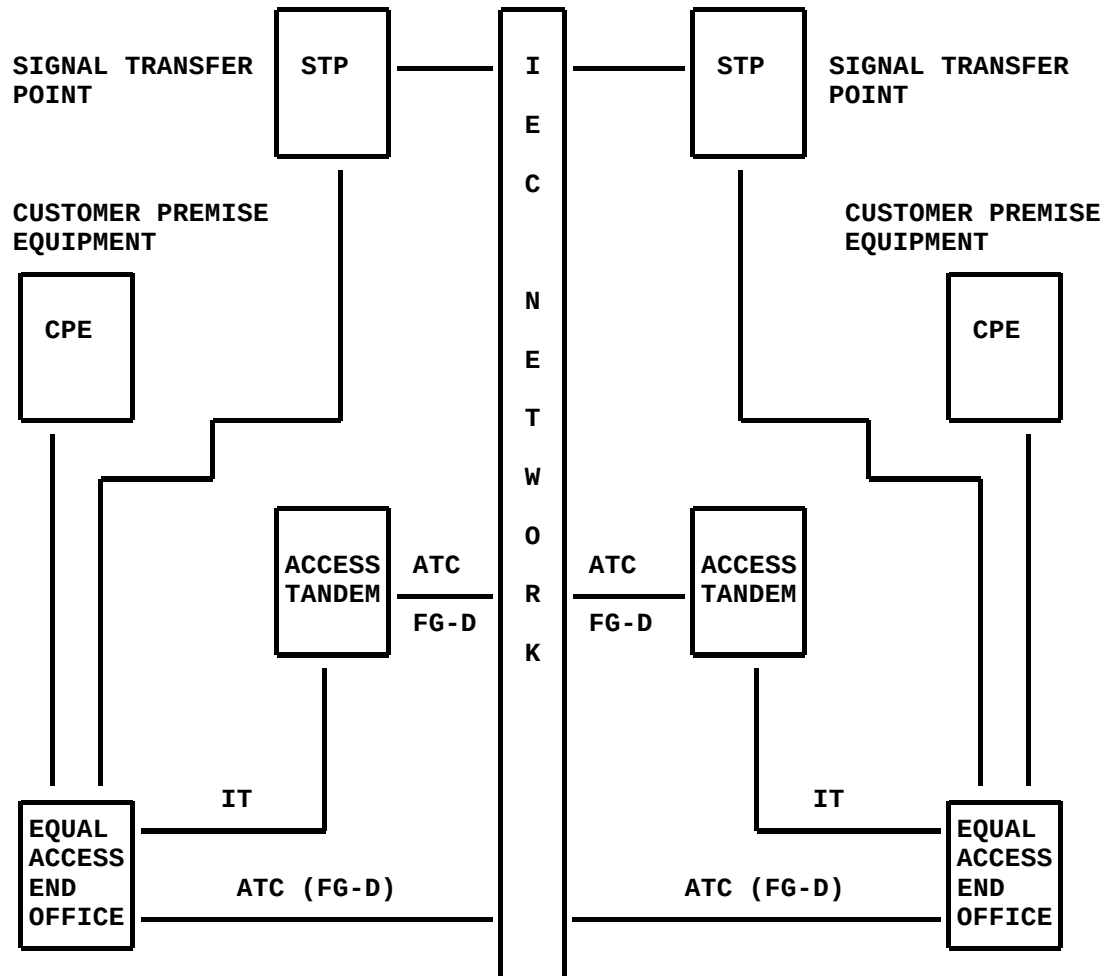
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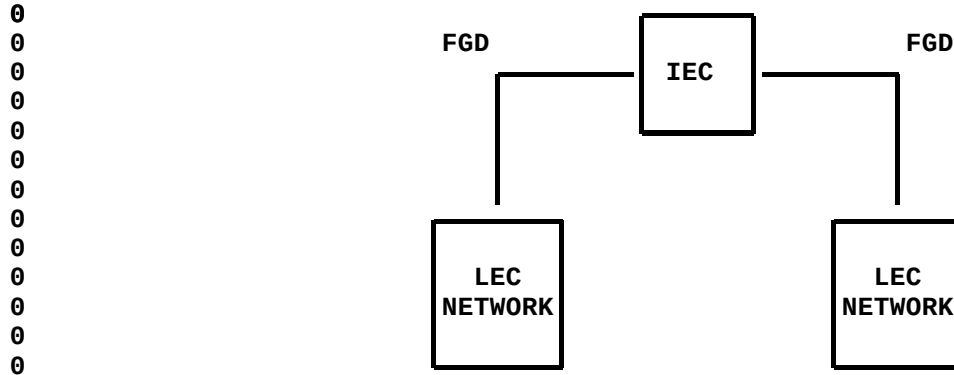
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0 IEC Phase II Network Configuration



0 19.1.4 OFFICE LAYOUT INFORMATION

0
0 Not Applicable

0 19.1.5 TRAFFIC TABLES

0
0 Not Applicable

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0 19.2 PRODUCT/SYSTEM SPECIFICATION

0

0 19.2.1 PHYSICAL CHARACTERISTICS

0

0 Not Applicable

0 19.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not Applicable

0 19.2.3 SPARING INFORMATION

0

0 Standard sparing algorithms apply.

0 19.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 Not Applicable

0

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0 19.2.5 CURRENT DRAIN INFORMATION

0
0 Not Applicable

0 19.3 SOFTWARE PROVISIONING

0

0 19.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 The following S/W package is required to support DWS in Phase II
0 in addition to the S/W packages required to support Phase I. Re-
0 fer to SMS or SOLID for software package interdependencies.

0
0 NTXR66AA - DWS Access to Carrier

0 19.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not Applicable

0 19.3.3 MEMORY PROVISIONING

0
0 Refer to MEMCALC for memory provisioning.

0

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0 19.4 REAL TIME IMPACT

0

0| 19.4.1 DMS-core

0

0| The impact of DWS on a given call is expected to be approximately
0| 32 milliseconds for a 384 kbps call and approximately 76 milli-
0| seconds for a 1.536 kbps call (Series 20 processor). Refer to SEB
0| 93-03-001.

0| The impact of enabling DWS for a given trunk is approximately 200
0| microseconds for a narrowband call. The impact of DWS
0| developement on narrowband calls is less than 50 microseconds.

0| 19.4.2 Digital Trunk Controller (DTC7)

0

0| The impact of DWS on a given CCS7 ISUP call in the Master
0| Processor (MP) is expected to be approximately 150 milliseconds
0| for a 384 kbps call and approximately 219 milliseconds for a
0| 1.536 Mbps call. These figures are based upon POWER development.

0| 19.4.3 Digital Trunk Controller (DTC7 - XPM+)

0

0| The impact of DWS on a given CCS7 ISUP call in the Master
0| Processor (MP) is expected to be approximately 125 milliseconds
0| for a 384 kbps call and approximately 235 milliseconds for a
0| 1.536 Mbps call. These figures are based upon POWER development.

0

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0 | 19.4.4 Digital Trunk Controller (DTCI)

0
0 | The impact of DWS on a given PRI call in the Master Processor
0 | (MP) is expected to be approximately 576 milliseconds for a 384
0 | Kbps call and approximately 2050 milliseconds for a 1536 Kbps
0 | call. These figures are based upon Sprint development.

0 | 19.4.5 Digital Trunk Controller (DTCI - XPM+)

0
0 | The impact of DWS on a given PRI call in the Master Processor
0 | (MP) is expected to be approximately 330 milliseconds for a 384
0 | Kbps call and approximately 1060 milliseconds for a 1536 Kbps
0 | call. These figures are based upon Sprint development.

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0 20.0 IEC Billing Server using APC Cabinet

0 The SuperNode Multicomputing Base (SMB) provides the platform to
0 create a Billing Server which will relieve the DMS-Core of the
0 formatting, storing and teleprocessing of billing data. Also, it
0 will provide a means to replace two different hardware products;
0 Distributed Peripheral Processor (DPP) and Enhanced Input/Output
0 Controller (EIOC) with a single hardware platform. S/DMS Billing
0 Server (SBS) will provide the same billing functions provided by
0 the EIOC and DPP.

0 The initial configuration of the Billing Server will utilize a
0 File Processor, DMS-Core/DMS-Bus and an Ethernet Interface Unit
0 (EIU). Billing Server will be the platform used to gather (from
0 many sources), format, save to disk and teleprocess billing data.

0 Some of the capabilities provided by the Billing Server are:

- 0 - Distributed billing to relieve the DMS-Core of
- 0 formatting, storing and teleprocessing
- 0 - High capacity billing data storage
- 0 - Disk shadowing (duplicating)
- 0 - Fault tolerance
- 0 - Modular, flexible architecture
- 0 - Digital Audio Tape (DAT) backup of billing
- 0 - File Transfer Access and Management (FTAM)

0 This document describes the Base and IEC Billing Server software
0 and functionality, and hardware developed in the SMB program
0 (APC) which the Billing Server uses.

0 20.1 HARDWARE PROVISIONING

0

0 20.1.1 HARDWARE USAGE RESTRICTIONS

0 Refer to API 294 for restrictions in Application Processor Cabi-
0 net (APC) configuration.

0 Billing Server will not operate on NT40 switches.

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0 The Billing Server does not use devices which belong to IOC or
0 the SLM/SLMII file systems. It will only utilize FTFS (Fault
0 Tolerant File System) devices (dedicated SDs on the APC/Billing
0 Server Cabinet for Billing Server use only).

0 An EIU (Ethernet Interface Unit) running FTAM will not handle an-
0 ything except Billing Server. The EIU's provided for the Billing
0 Server will be dedicated to it.

0 20.1.2 HARDWARE DEPENDENCIES

0
0 Billing Server application of Applications Processor Cabinet can
0 only be provisioned in a SuperNode office.

0 Billing Server application requires the 8MEG EIU which is planned
0 for availability in BCS34.

0|

0 20.1.3 PROVISIONING CONSIDERATIONS

0
0 The Billing Server will be the processing and storage vehicle for
0 billing data in large SuperNode switches. This will be imple-
0 mented using FP (File Processor located at top of Billing Server
0 APC cabinet), DMS-Core/DMS-Bus and EIU (mounted on LPP) to
0 offload the formatting and teleprocessing of the billing data
0 from the call processing engine. Billing Server will use the
0 common SMB hardware - APC cabinet NT9X80BA.

0 Operating software for the File Processor (FP) of the Billing
0 Server will be downloaded from the Computing Module. The Billing
0 Server FP is a SOS (Sonet Operating System) based processor.

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0 File Processor (FP) & SDs mounted on APC

0
0 The File Processor (FP) and storage devices (SDs) are housed in
0 the Application Processor Cabinet (APC). The FP is linked to SDs
0 through Small Computer Standard Interface (SCSI) links. One DAT
0 drive allows backing up of the billing data to tape. Refer to
0 API 294 for more information on Application Processor Cabinet.

0 The Billing Server will use the FP's capability to store data to
0 a set of two disks simultaneously. This feature is called disk
0 shadowing. Disk shadowing provides a means to keep 2 disk drives
0 in sync. Each drive will have an exact copy of the same data.
0 Volumes allocated for use by the Billing Server must reside on
0 shadowed sets of 2 members (disks). The standard for the Billing
0 Server will be 5 shadowed sets of 2 disks per set in the APC cab-
0 inet.

0 SCSI CABLES

0
0 In the Billing Server configuration of the APC, all storage de-
0 vices are cabled to File Processor 00 by SCSI cables. SCSI cables
0 required (per API 294-1, International Applications Processor
0 Cabinet) for the Billing Server configuration (illustrated in
0 Figure 2) are as follows:

0	Qty	PEC	Length
0	3	NT9X0443	55 "
0	4	NT9X0444	60 "
0	3	NT9X0445	65 "
0	5	NT9X0446	70 "
0	1	NT9X0447	75 "

0 Refer to API 294, Section 2.4 for further information about SCSI
0 Bus cabling and connections to File Processor.

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0 DMS-Core/DMS-Bus

0
0 The DMS SuperNode equipment consists of the DMS-Core and the
0 DMS-Bus housed in a single cabinet:

0 The DMS-Core consists of a Computing Module (contains dupli-
0 cated DMS SuperNode CPUs) and System Load Module (SLMII).

0 The DMS-Bus is a Message Switch (MS), which performs the rout-
0 ing of messages for the Billing Server.

0 MS Port assignments are undefined at this time and as further in-
0 formation becomes available, this document will be updated. We
0 do know that the Billing Server standard configuration will call
0 for a single FP (which, duplicated, takes up a half shelf)
0 mounted on shelf position 39 on the APC. Each plane of the FP 00
0 has a port 0 & a port 1. The two ports of the two planes of the
0 FP (total of four FP ports) will require four MS ports; two on MS
0 00 and two on MS 01.

0 EIU (Ethernet Interface Unit) Mounted On LPP

0
0 The S/DMS Billing Server protocol software will reside on the
0 Ethernet interface Unit. The EIU required is an eight megabyte
0 peripheral which resides on the Link I/F Shelf (LIS) of the Link
0 Peripheral Processor (LPP) cabinet. By changing the software load
0 on the EIU to run the S/DMS Billing Server protocol, we have
0 changed the functionality of the EIU and can now refer to the
0 software-modified EIU as an Open System Interconnection Unit
0 (OSIU). This EIU (or OSIU) is dedicated to Billing Server use
0 only.

0 The number of EIUs required for Billing Server is two. The second
0 EIU is required for redundancy.

0 An EIU consists of the following:

0 Qty 1 NTEX22BB Integrated Processor & FBUS I/F Ckt Pack
0 Qty 1 NT9X84AA Ethernet I/F Pack

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0 Qty 1 NT9X85AA Ethernet Access Unit I/F Paddleboard
0 Also;
0 Qty 1 NT9X0190 Ethernet Cable Assy (from EIU Paddleboard
0 NT9X85AA to Link I/F Shelf (LIS) bulkhead)
0 Qty 1 P0711662 EIU Ident'n Label-Front (EX22BA & 9X84AA)
0 Qty 1 P0711661 Designation Label (NT9X85AA)

0 Please refer to ECM 505 for assignment details and further infor-
0 mation on the LPP, LIS and EIU.

0 HUB/MAU Interface

0
0 MAU - Media Access Unit (A0378106)

0 Hub - Multi-port repeater unit permitting attachment of multiple
0 LAN devices. (A0378105)

0 Adapter on Hub (A0380807)

0 Information on the precise configuration of the MAU and the Hub
0 is yet to be determined for IEC customers. When customer input
0 determines the configuration, that confirmed information will be
0 added to an update of this document.

0 Refer to ECM 408 for more information.

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APPLICATIONS PROCESSOR CABINET (APC) NT9X80BA

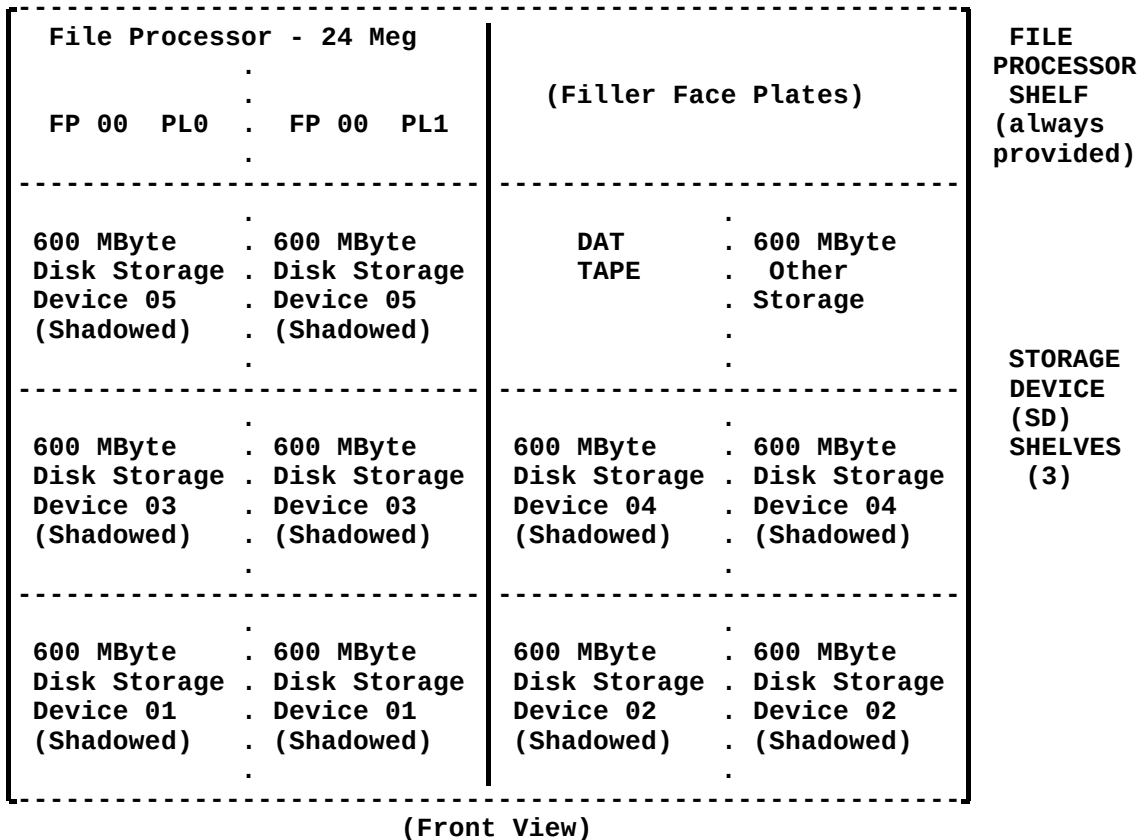


Figure 2 S/DMS - Billing Server Configuration on APC

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0 20.1.4 OFFICE LAYOUT INFORMATION

0
0 There are no unique equipment layout restrictions in a Billing
0 Server office.

0 20.1.5 TRAFFIC TABLES

0
0 Not applicable

0 20.1.6 SYSTEM SPECIFICATION

0

0
0 20.1.7 PHYSICAL CHARACTERISTICS

0
0 Refer to API 294 Applications Processor Cabinet.

0 20.1.8 EMI/EARTHQUAKE INFORMATION

0
0 The APC Cabinet is designed to be EMI/Earth Quake Compliant.

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Refer to API 294.0 20.2 SOFTWARE PROVISIONING

0

0 20.2.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

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0

The following represents BCS34 feature packaging for the Billing Server. The first list represents Non-Billing Server base features that are required in all Billing Server Configurations.

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0 PREREQUISITE S/W PACKAGES:

Package	Title
NTX940AA	Supernode Base
NTXF06AA	Application Processor Base
NTXF04AA	File Processor
NTXF07AA	Fault Tolerant File System (FTFS)
	AD3579 Fault Tolerant File System (FTFS)
	AD3363 Distributed Recording Manager (DRM)
NTXP94AA	Disk Shadowing
NTXD44AA	LPP Master Package
NTX944AA	INM

0 REQUIRED S/W PACKAGES - BILLING SERVER

Package	Title
NTXF07AA	Fault Tolerant File System (FTFS)
	AD3579 Fault Tolerant File System (FTFS)
	AD3363 Distributed Recording Manager (DRM)
NTXF05AA	Ethernet Interface Unit (EIU)
NTXP17AA	Billing Server Base Capabilities
NTXP18AA	Near Real Time Transfer of Billing Data
NTXP21AA	CDR Search
NTXP23AA	OSI File Transfer Protocol - FTAM
NTXP19AA	802.3 LAN
NTXQ32AA	DAT TAPE
NTXP25AA	MCI CDR Formatter on Billing Server
OR	
NTXP26AA	US SPRINT CDR Formatter on Billing Server

0 20.2.2 SOFTWARE USAGE RESTRICTIONS

0
0 Minimum base load requirement is BCS34.

0

0

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0 20.2.3 MEMORY PROVISIONING

0
0 Memory requirements for Billing Server are detailed in ECM 294,
0 section 2.4.5a.

0 20.3 REAL TIME IMPACT

0 Not known at this time.

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0 The SS7 Network can be configured in two ways; the FULLY ASSOCI-
0 ATED NETWORK and the QUASI ASSOCIATED NETWORK. The Fully Associ-
0 ated Network has every Service Switching Point (SSP - End Office)
0 connected directly to the SCP(s). The Quasi Associated Network
0 has every SSP connected to the SCP through a Signaling Transfer
0 Point (STP).



0 The first generation DMS-SCP is based on the Data Voice System (DVS)
0 hardware platform, and is documented in ECM-426. This ECM describes

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0 provisioning of the second generation DMS-SCP II, which is based on
0 the SuperNode Multicomputing Base (SMB) platform. Physical hardware
0 configuration is detailed in ECM-512 and API-202.

0 The DMS-SCP II is comprised of DMS SuperNode equipment, including one
0 or more Application Processor Cabinets. It performs the actual query
0 processing and real time functions by responding to incoming database
0 queries from the network. OAM functions such as database adminis-
0 tration will be handled by terminals connected to the Input/Output
0 Equipment in BCS-34. Beginning in BCS-34 the telco will interface
0 their Service Management System (SMS) to the DMS-SCP II via Ethernet
0 links and routers.

0 21.1 HARDWARE PROVISIONING

0

0 21.1.1 HARDWARE USAGE RESTRICTIONS

0
0 Refer to ECM512 for restrictions in Application Processor Cabinet
0 (APC) configuration.

0 21.1.2 HARDWARE DEPENDENCIES

0
0 None.

0 21.1.3 PROVISIONING CONSIDERATIONS

0

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0 LPP PROVISIONING GUIDELINES

0
0 Each LPP physically supports 36 Interface units. For the
0 DMS-SCPII these can be the LIU7 or EIU Interfaces.

0 The NT9X70BA LIM can be equipped with up to 36 LIU7s or EIUs in
0 any combination. It replaces the NT9X70AA LIM which can hold 24
0 LIU7s or EIUs in any combination.

0 Due to the nature of this predominantly software driven project,
0 there are no hardware modifications required. As a result this
0 document will provide the user the means to determine the re-
0 quired quantities of hardware necessary for DMS-SCP II. To avoid
0 redundancy reference will be made to the respective APIs and
0 ECMS.

0 EIU PROVISIONING

0 The EIU is required on the DMS-SCPII to provide the communi-
0 cations interface to the SMS. Two (2) EIUs provide sufficient
0 bandwidth and redundancy for the DMS-SCPII to SMS Interface re-
0 quirements.

0 Provision two (2) EIU on the LPP. Refer also to ECM505 for EIU
0 Provisioning information.

0 LIU7 PROVISIONING

0 LIU7s are required on the DMS-SCPII to provide the communi-
0 cations interface to the CCS7 Network. The number of LIU7 re-
0 quired depends on a number of factors such as:
0 | - CCS7 Network Signalling Config. (Associated or Quasi-Assoc)
0 - CCS7 Network Traffic
0 - LIU7 Capacity
0 - Query and Response Messages Length
0 - Number of Messages Per Query
0 - CCS7 Link Speed

0 LINK PROVISIONING

0 a.) Associated CCS7 Network

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0 In an Associated CCS7 Network, all SSP's communicate with SCP's via
0 direct CCS7 links (F-Links).

0 For Associated CCS7 Network, F-Links need to be provisioned from
0 each SSP to all the SCPs in the CCS7 Network.

0 In normal mode of operation each F-Link should not exceed 40%
0 occupancy or 0.4 Erlangs.

0 Thus the number of F-Links required at the SSP end is:

0 Number of F-LINKS= Total SSP HDBH TRAFFIC
0 at SSP ----- (round up
0 F-Link Capacity at 0.4 Erlangs to next integer)

0 Where :

0 F-Link Capacity = 0.4 Erlang x Link Speed x 2 Directions
0 -----
0 # Bits per Octet x Msgs Length x Msgs per Query

0 At the DMS-SCP II end, the number of F-Links required is:

0 Number of F-Links at SCP = Sum of total number of F-Links being
0 directed to the SCP from each SSP in
0 the Network.

0 For LPPs each F-Link represents a LIU7 Card

0 Therefore:

0 Total Number of LPP's = Total number of LIU7 Cards (round up to
0 ----- next integer)
0 36

0 If the number LIU7s calculated from the above formula is 8 then:

0 For a Fully Associated Network

0 +-----+ 4 +-----+ # of LIU7s
0 | SSP |-----| SCP 1 | required at
0 +-----+ +-----+ SCP1 is 4.
0 # LIU7s = 8 | 4 +-----+ # of LIU7s

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0 |_____| SCP 2 | required at
0 +-----+ SCP2 is 4.

0 Note: On the first LPP only 34 LIU7 Interfaces are available due to
0 2 Interface slots required for the EIU Interface.

0 b.) Quasi-Associated CCS7 Network

0 In a Quasi-Associated CCS7 Network, all SSP's communicate with
0 SCP's via regional STP's. Thus each SCP type will assume to have
0 A-Links to its regional STP pairs.
0 For Quasi-Associated CCS7 Network, A-Links need to be provisioned
0 from STP pair to all SCPs in the CCS7 Network. In normal mode of
0 operation each A-Link should not exceed 40% occupancy or 0.4
0 Erlangs.

0 For an application type, we will assume that the STP backbone of a
0 Quasi-Associated CCS7 Network can evenly distribute the Application
0 Traffic over all the SCP for that Application when operating
0 normally.

0 CCS7 defines a single and mated NODE configurations for STPs and SCP.
0 For reliability purposes, both SCPs and STPs are typically deployed
0 in the mated pair configuration so that, in the event of a complete
0 CCS7 Node Outage, the mate can take over and handle the entire CCS7
0 traffic load without impacting service.

0 For provisioning purposes, each A-link should be provisioned so that
0 it is operating at 80% occupancy(0.8 Erlang) when 1 SCP Node is down.
0 Thus for an DMS-SCPII Node, the number of A-Links required is:

0 Total Number = Total Network HDBH Traffic
0 of A-Links ----- (round up to next
0 A-Link Capacity at 80% Occupancy even integer)

0 Where :

0 |
0 LIU7 A-Link Capacity = 0.8 Erlang x Link Speed x 2 Directions
0 at 80 % -----
0 # Bits per Octet x Msgs Length x Msgs per Query

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0
0 For LPPs each A-Link represents a LIU7 Card

0 Therefore:

0 Total Number of LPP's = Total number of LIU7 Cards
0 -----
0 36

0 Note: On the first LPP only 34 LIU7 Interfaces are available due to
0 2 Interface slots required for the EIU Interface.

0 STP LINKS

0 All the links on the DMS-SCPII are directed to a regional STP pair.
0 Therefore each STP Node receives only half the number of A-Links
0 from each DMS-SCP II Node.

0 Thus for an STP Node, the number of A-Links required is:

0 Total Number of A-Links = 2 x A-Links from each SCP Node
0 at STP Node
0 = Total of A-Links at each SCP Node

0 Therefore:

0 Total Number of LPP's = Total number of LIU7 Cards
0 at STP -----
0 36

0 EXAMPLE:

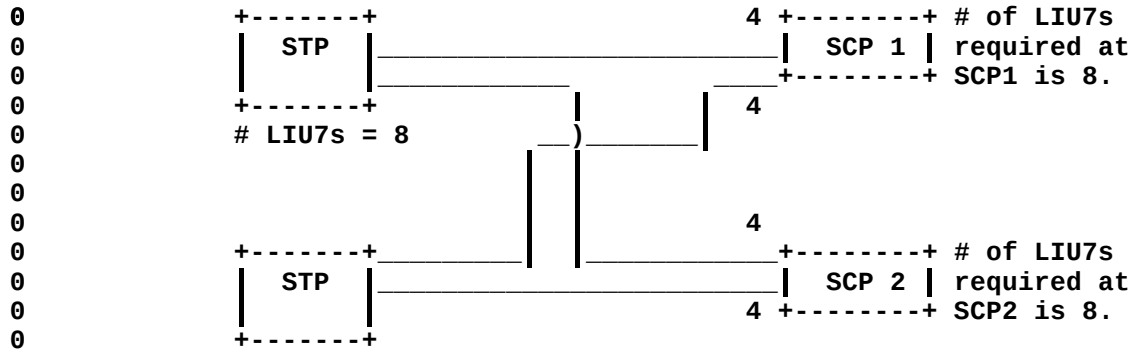
0 The following chart illustrates the LIU7 Capacity with some variable
0 parameters.

0	0	LINK SPEED	LINK USAGE	MESSAGE LENGTH in BYTES			
				50	100	150	279
0	0	56 KBit/S	0.4 Erlang	56 Q/sec	28 Q/sec	18 Q/sec	10 Q/sec
0	0	56 KBit/S	0.8 Erlang	112 Q/sec	56 Q/sec	37 Q/sec	20 Q/sec

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0 64 KBit/S 0.4 Erlang 64 Q/sec 32 Q/sec 21 Q/sec 11 Q/sec
0 64 KBit/S 0.8 Erlang 128 Q/sec 64 Q/sec 42 Q/sec 22 Q/sec

0 For a Quasi Associated Network



0 Service Management System (SMS)

0 The telco is to provide the SMS and related Ethernet hardware.
0 This section describes the general requirements for the inter-
0 face.

0 The Ethernet Local Area Network (LAN) can be implemented using
0 either 10Base5 (Thick Coax) or IEEE 802.3 10BaseT (Unshielded
0 Twisted Pair/UTP) standard. The latter is preferred.

0 When using IEEE 802.3 10BaseT standard, a Medium Access Unit
0 (MAU) and Hub are required. The MAU provides a connection be-
0 tween the EIU and the UTP, while the Hub is a multi-port repeater
0 unit permitting attachment of multiple LAN devices. MAUs and
0 Hubs from various vendors may be used provided that they conform
0 to the IEEE 802.3 10BaseT standard. The Hewlett Packard
0 EtherTwist Hub and MAU set have been tested to operate with the
0 EIU.

0 To connect a distant LAN to the EIU (Wide Area Network or WAN ap-
0 plication), a synchronous serial link can be used. A router
0 should be used in the connection to provide range extension over

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0 standard communication facilities and to provide fault isolation
0 between the LAN segments. Routers from various vendors may be
0 used provided that they support TCP/IP (Transmission Control Pro-
0 tocol/ Internet Protocol) and provide link speeds within the 56
0 kbit/s to 1.544 Mbit/s range. The Cisco AGS router, equipped
0 with the Multi-port Communication Interface (MCI) card, has been
0 tested to connect a distant 10BaseT LAN to the EIU.

0 Refer to Figure 2 for a diagram of these configurations.

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0 DMS SuperNode Equipment

0
0 DMS-SCP will use a dedicated Dual Plane Combined Core Cabinet
0 (DPCC) NT9X01JB. This cabinet contains two MS shelves and one CM
0 shelf. One (1) DPCC is required per DMS-SCP II.

0 PER UNIT COMPONENT CAPACITY:

0 Each MS: 9,000 Q/S
0 Each CM: 225 Q/S (800+ service)

0 The MS is provisioned with NT9X17AC Port cards and associated
0 paddleboards. There are three types of paddleboards, selected
0 based on the type of equipment to be interfaced to the MS:

0 PEC	Description	Used to Interface:
0 -----	-----	-----
0 NT9X23AA	4-port DS-30 PB	IOC, DSN
0 NT9X23BA	4-port DS-30 PB	LIM
0 NT9X62BA	4-port Subrate DS-512 PB	File Processors in
0		Application Processor Cabinet
0	On the Message Switch of the SuperNode Core you MUST have Inter	
0	MS Links. (refer to ECM 626 for provisioning details)	

0 The number of NT9X17AA 4-port CPs is equivalent to the total num-
0 ber of NT9X23__ paddleboards. Refer to ECM-512 for NT9X17AD Port
0 CP provisioning with the NT9X62BA paddleboard, (for BCS36) and
0 NT9X17DA with the NT9X62BA for BCS 36 and below. Refer to
0 ECM-626, ECM-386, and ECM-512 for port provisioning and assign-
0 ment considerations for each type of paddleboard.

0 If the DMS Synchronizable Clock / Stratum is employed in the
0 DMS-SCP system, related equipment must be provisioned on the IOE
0 (see IOE section below).

0 System Load Module Provisioning

0 Provision two (2) SLM II units.

0 Refer to ECM-626 for more details on DMS SuperNode Provisioning.

0

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0 Trunk Module Equipment (TME)

0
0 In each DMS-SCP provide one TME equipped with at least two MTM
0 shelves. Refer to Engineering Manual Section EMA2-01-000 for en-
0 gineering information for the MTM/AXU. Refer also to ECM-386
0 Signal Transfer Point "Office Alarm System" section for recom-
0 mended provisioning of MTM cards in a dedicated SS7 node.

0 Double Shelf Network

0
0 Provide minimum one (1) Double Shelf Network (DSN) to interface
0 the MTMs.

0 | Refer to ECM604 for provisioning rules for the DSN. Depending on
0 the number of network modules provided, a Digital Network Inter-
0 connect (DNI) frame may also be required.

0 Input/Output Equipment

0
0 Provide Input/Output Equipment (IOE) as required. Refer to the
0 Engineering Manual section EMA5-01-000 for provisioning informa-
0 tion for the IOE. Two IOCs per DMS-SCP are required along with
0 their associated disk, tape and terminal requirements. If Stratum
0 clock synchronization (Stratum II or Stratum 2.5) is required for
0 the DMS-SCP, a Remote Oscillator Shelf and associated circuit
0 packs are required. Refer to ECM-317 Synchronization for DMS-Core
0 Offices for further information.

0

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0 Power Distribution Center

0
0 | Refer to ECM631 for provisioning rules for the PDC to power the
0 DMS equipment.

0 Miscellaneous Equipment Frame

0
0 Provide MIS frames as required for housing modems, power
0 inverters, and other miscellaneous equipment as required. Refer
0 to Engineering Manual section EMA13-01-000 for more details on
0 the MIS frame.

0 Maintenance Spares Storage

0
0 | Provide as required for storage of spare DMS SuperNode circuit
0 packs. Refer to ECM-614 for provisioning information.

0 Application Processor Cabinet

0
0 |
0 Application Processor Cabinets (APCs) are to be provisioned with
0 File Processors (FPs) and associated Storage Devices (SDs) con-
0 nected via a SCSI bus. All FPs are to be provisioned with a full
0 complement of Memory CPs. Enhanced 800+ Service supports up to a
0 eleven (11) File Processors on the DMS-SCPII Platform.

0 There are two functions performed by the File Processors in a
0 DMS-SCP II system. One or more FPs are designated as Query

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0 Processors (QPs); these FPs support the SCP query processing ser-
0 vices. The other FPs are designated as Update Processors (UPs).
0 The UP validates database updates, distributes them to the Query
0 Processors, and supports database maintenance functions such as
0 backup and restore from disk or tape.

0 Query Processor (QP) Provisioning

0 The QP performs the SCP database query transaction processing.

0 Provisioning Update Processors(UPs)

0 1. Provisioning Update Processors(UPs)

0 Each UP maintains a local master copy of one SCP application da-
0 tabase. Provision one UP per application. The following are ex-
0 amples of different applications: 800+, Automated Calling Card
0 Service (ACCS), and Billing Number Screening (BNS). Services
0 within these applications (for example, 800+ Variable Call Rout-
0 ing) are not considered to be different applications.

0 Provision one (1) File Processor per UP.
0 # of Update Processors = _____

0 2. Provisioning of Storage Devices.

0 The quantity of Disk Storage Devices in each UP depends on the
0 size of the application database each supports. Each UP is al-
0 ways equipped with an online copy of the master database. Op-
0 tionally, a backup copy of the master database can be equipped by
0 providing a second equivalent set of Storage Devices. Although
0 the online database copy employs duplicated ("shadowed") disk de-
0 vices for reliability, the backup copy allows fast recovery in
0 the event of serious database corruption and failure of the on-
0 line copy. In addition, one shadowed Disk SD is configured as a
0 support disk to store update batch files, update response files,
0 and transaction logs. Database records are not stored on this
0 disk, to ensure data reliability.

0 Use the following to calculate the number of 600 MByte Disk Stor-
0 age Devices per UP:

0

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$$\begin{array}{l} 0 \\ 0 \quad \# \text{ Online Disks} = \quad \frac{((\text{Application Database Size in MBytes}))}{(\quad \quad \quad 600 \quad \quad \quad)} \\ 0 \end{array}$$

0 (Round UP to next higher integer)

0 Where : Application Database Size = Service Database Storage +
0 Update File Storage +
0 Response File

0 DAT drives are provided to support database backup and restore
0 functions. Use the following to calculate the number of 1.3
0 GByte DAT Storage Devices per UP:

$$\begin{array}{l} 0 \\ 0 \quad \# \text{ DAT Storage Devices} = \frac{(\text{Application Database Size in MBytes})}{1300} \\ 0 \end{array}$$

0 (Round UP to next higher integer)

0 Total # of Storage Devices = TOTAL DISKS + # DAT Storage Devices

0 Refer to ECM512 for provisioning of the circuit packs.

0 Provisioning Query Processors(QPs)

0 The Number of Query Processors Required is:

$$\begin{array}{l} 0 \quad \text{Query Processors Required} = \frac{\text{Total Service HDBH Query Capacity}}{\text{Query Capacity}} \\ 0 \end{array}$$

0 (Round UP)

0 Where : Total Service HDBH(High Day Busy Hour) Query Capacity.
0 (maximum traffic of the CCS7 Network Interconnected to
0 DMS-SCP II Nodes)

0 Number of Storage Devices.

0

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0 Use the following to calculate the number of 600 MByte Disk Stor-
0 age Devices per QP:

$$\begin{array}{l} 0 \quad \quad \quad ((\text{Application Database Size in MBytes})) \\ 0 \quad \# \text{ Online Disks} = \left(\frac{\quad}{\quad} \right) \\ 0 \quad \quad \quad (\quad \quad \quad 600 \quad \quad \quad) \end{array}$$

0 (Round UP to next higher integer)

0 To provide optional shadow (duplicate) disks for added reliabil-
0 ity, double the above quantity.

0 If Shadowing is required then

0 Total # of Disks = 2 * #Online Disks

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0 Enhanced 800 + Services Provisioning

0

0 Service Provisioning Steps.

0

0 TELCO Required Information

- 0 1. Network Configuration and Link Speed.
0 2. Maximum Network Query Traffic = T1
0 3. Total Number of E800+ Service Records = R1
0 4. Records Update Traffic = U1
0 5. Individual E800+ Services Query Traffic

0	+-----+-----+-----+
0	SERVICE TYPE % Usage % Usage Y
0	of T1 of R1
0	+-----+-----+-----+
0	Domestic
0	Basic Service A1 B1
0	+-----+-----+-----+
0	Domestic
0	Single Number A2 B2
0	+-----+-----+-----+
0	Domestic
0	Flexroute A3 B3
0	+-----+-----+-----+
0	Domestic
0	Exchange Route A4 B4
0	+-----+-----+-----+
0	Domestic
0	Overflow Call
0	Routing A5 B5
0	+-----+-----+-----+
0	Northbound
0	Single Number A6 B6
0	+-----+-----+-----+
0	Northbound
0	Flexroute A7 B7
0	+-----+-----+-----+

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0	Northbound		
0	Overflow Call		
0	Routing	A8	B8
0	+-----+		
0	Southbound		
0	A9	B9	
0	+-----+		

0
0 Query Capacity Multipliers

0 The Query Capacity Multipliers provide a workload factor(relative
0 to STD QRY) on the Query processor for a specific Service type.

0	+-----+		
0	SERVICE TYPE	Query Capacity	Reference
0	+-----+		
0	Domestic		
0	Basic Service	1.00	M1
0	+-----+		
0	Domestic		
0	Single Number	1.00	M2
0	+-----+		
0	Domestic		
0	Flexroute	3.13	M3
0	+-----+		
0	Domestic		
0	Exchange Route	1.39	M4
0	+-----+		
0	Domestic		
0	Overflow Call		
0	Routing	1.12	M5
0	+-----+		
0	Northbound		
0	Single Number	1.06	M6
0	+-----+		
0	Northbound		
0	Flexroute	3.70	M7
0	+-----+		
0	Northbound		
0	Overflow Call		
0	Routing	1.16	M8
0	+-----+		

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0	Southbound			
0	(6 Digit)	1.85	M9	
0	+-----+			
0	Southbound			
0	(10 Digit)	1.54	M10	
0	+-----+			

0
0 Update Processor Provisioning

0 1. Provision one (1) UP per service application.

0 2. Determine Total Number of Record Storage Blocks
0 (complete the table below)

0	+-----+	
0	SERVICE TYPE	Number of Storage
0		Blocks
0	+-----+	
0	Domestic	
0	Basic Service	(R1 * B1) / 81
0	+-----+	
0	Domestic	
0	Single Number	(R1 * B2) / 61
0	+-----+	
0	Domestic	
0	Flexroute	(R1 * B3) / 48
0	+-----+	
0	Domestic	
0	Exchange Route	(R1 * B4) / 38
0	+-----+	
0	Domestic	
0	Overflow Call	
0	Routing	(R1 * B5) / 65
0	+-----+	
0	Northbound	
0	Single Number	(R1 * B6) / 11
0	+-----+	
0	Northbound	
0	Flexroute	(R1 * B7) / 10
0	+-----+	
0	Northbound	
0	Overflow Call	
0	Routing	(R1 * B8) / 11

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```

0 +-----+-----+-----+
0 |Southbound | (R1 * B9) / 130 |
0 +-----+-----+-----+
0 +-----+-----+-----+
0 |Total Number|          SB1          |
0 |of Storage  |          |
0 |Blocks      |          |
0 +-----+-----+-----+

```

0 3. Determine Total Database Size

0 Total Database Size = Supporting Data + (800 Data & Overhead)

```

0 TS1 = 12000000 + (U1 * 1536)
0       + (round to integer(SB1/4096 + 0.05) * 33554432
0       + (round to integer(SB1/5120 + 0.5) * 65536
0       + (round to integer(R1/207336 + 0.5) * 4194304

```

0 4. Determine Number of UP Disks

0 Number of Online = Total Database Size / Disk Size

0 Number of Online = TS1 600 MByte (Round Up)

0 Where Disk Size = 600 MByte.

0 For each online Disk on the UP, provision a Shadow Disk.

0 Query Processor Provisioning

0 1. Determine Maximum Query Processing Traffic

```

0 Maximum Query      = T2 = T1 * (A1*M1 + A2*M2 + A3*M3....An*Mn)
0 Processing Traffic

```

0 where n = number of services

0 An = % of usage on T1 for a given service(n)

0 Mn = Query Capacity Multiplier for a given service(n)

0 T1 = Maximum Network Query Traffic

0 2. Calculate Query processing Capacity of each QP at the appropriate
0 CHR.(cache hit ratio)

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0
0 CHR = Maximum CACHE Size / Total Record Storage Size

0 where Maximum Cache Size = 24 Mbytes
0 Total Record Storage Size = SB1 * 8192

0 CHR = C1 = (24 * 1048576)/(SB1 * 8192)

0 QP capacity at C1 = 20 + (25 * C1)

0 Query Processor Traffic Capacity

0 The table below depicts QP Query handling Capacity based on a single
0 Database access (Cache or Disk).

0	Cache Hit RATIO	Query Capacity	QP Query Response
0	CHR	(queries/sec.)	TIME
0	-----	-----	-----
0	0%	20 Q/Sec	250 msec
0	15%	24 Q/Sec	250 msec
0	40%	30 Q/Sec	250 msec
0	60%	35 Q/Sec	250 msec
0	100%	45 Q/Sec	250 msec

0 3. Calculate number of QPS required to handle traffic at the
0 appropriate CHR(C1)

0 Number of QPs = Maximum Query Processing Traffic/QP Capacity
0 = T2 / (20 + (25 * C1)) Round UP

0 where T2 = Maximum Query Processing Traffic

0 EIU and LIU7 Provisioning

0 (See section 2.4.1)

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0 Enhanced 800+ Service Example

0 TELCO Required Network Information

- 0 1. Network Configuration and Link Speed.
0 = Quasi-Associated Network with STP and SCP pairs for redundancy
0 = Link Speed = 56Kb/s
0 2. Maximum Network Query Traffic = T1 = 250 Q/s
0 3. Total Number of E800+ Service Records = R1 = 300000
0 4. Records Update Traffic = U1 = 1000 Updates/day
0 5. Average Query and Rspnse message size = 100 Bytes
0 6. Individual E800+ Services Query Traffic

SERVICE TYPE	% Usage of T1	% Usage Y of R1
Domestic Basic Service	36.0	24.0
Domestic Single Number	4.0	4.0
Domestic Flexroute	0.5	0.25
Domestic Exchange Route	0.5	0.25
Domestic Overflow Call Routing	1.0	0.50
Northbound Single Number	1.5	0.50
Northbound Flexroute	0.5	0.25
Northbound Overflow Call Routing	1.0	0.25

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0 |Southbound | 55.0 | 70.0 |
0 +-----+-----+-----+

0 Update Processor Provisioning

0 1. Provision one (1) UP per service application.
0 = 1 UP.

0 2. Determine Total Number of Record Storage Blocks
0 (complete the table below)

SERVICE TYPE	Number of Storage Blocks
Domestic Basic Service	$(300000 * 0.24) / 81$
Domestic Single Number	$(300000 * 0.04) / 61$
Domestic Flexroute	$(300000 * 0.0025) / 48$
Domestic Exchange Route	$(300000 * 0.0025) / 38$
Domestic Overflow Call Routing	$(300000 * 0.005) / 65$
Northbound Single Number	$(300000 * 0.005) / 11$
Northbound Flexroute	$(300000 * 0.0025) / 10$
Northbound Overflow Call Routing	$(300000 * 0.0025) / 11$
Southbound	$(300000 * 0.70) / 130$
Total Number	

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0 of Storage SB1 = 3044
0 Blocks
0 +-----+-----+-----+-----+

0 3. Determine Total Database Size

0 Total Database Size = Supporting Data + (800 Data & Overhead)

0 TS1 = 12000000 + (U1 * 1536)
0 + (round to integer(SB1/4096 + 0.05) * 33554432
0 + (round to integer(SB1/5120 + 0.5) * 65536
0 + (round to integer(R1/207336 + 0.5) * 4194304

0 TS1 = 12000000 + (1000 * 1536)
0 + (round to integer(3044/4096 + 0.05) * 33554432
0 + (round to integer(3044/5120 + 0.5) * 65536
0 + (round to integer(300000/207336 + 0.5) * 4194304

0 TS1 = 55544576

0 4. Determine Number of UP Disks

0 Number of Online = Total Database Size / Disk Size

0 Where Disk Size = 600 MByte.

0 Number of Online = 55544576 / 600 MByte / 1048576 (Round Up)

0 Number of Online = 1

0 For each online Disk on the UP, provision a Shadow Disk.

0 Query Processor Provisioning

0 1. Determine Maximum Query Processing Traffic

0 Maximum Query = T2 = T1 * (A1*M1 + A2*M2 + A3*M3....An*Mn)
0 Processing Traffic

0 where n = number of services

0 An = % of usage on T1 for a given service(n)

0 Mn = Query Capacity Multiplier for a given service(n)

0 T1 = Maximum Network Query Traffic

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0 Maximum Query = T2 = 250* ((0.36*1.00) + (0.04*1.0) +
0 Processing Traffic (0.005*3.13) + (0.005*1.39) + (0.01*1.12)
0 + (0.015*1.06)+(0.005*3.70)+(0.01*1.16)
0 + (0.55*1.54))

0 Maximum Query = T2 = 328.61 STD QRY/sec
0 Processing Traffic

0 2. Calculate Query processing Capacity of each QP at the appropriate
0 CHR.(cache hit ratio)

0 CHR = Maximum CACHE Size / Total Record Storage Size

0 where Maximum Cache Size = 24 Mbytes
0 Total Record Storage Size = SB1 * 8192

0 CHR = C1 = (24 * 1048576)/(3044 * 8192)
0 = 1.01 = 100 % CHR

0 QP capacity at C1 = 20 + (25 * 1.00)
0 = 45 STD QRY/sec

0 3. Calculate number of QPS required to handle traffic at the
0 appropriate CHR(C1)

0 Number of QPs = Maximum Query Processing Traffic/QP Capacity
0 = T2 / (20 + (25 * C1)) Round UP

0 where T2 = Maximum Query Processing Traffic

0 = 328.61 / (20 + (25 * 1.00)) Round UP
0 = 7.3 (round up)
0 = 8 QPs

0 EIU and LIU7 Provisioning

0 Number of EIUs = 2

0 For Quasi Associated Network Configuration:

0

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0 Total Number = Total Network HDBH Traffic
0 of A-Links ----- (round up)
0 A-Link Capacity at 80% Occupancy

0 A-Link Capacity at 80% occupancy = 56 Q/sec. with 100 MByte message
0 length.

0 Therefore:

0 Total Number of A-Links = $250/56 = 4.46 = 6$ Links

0 Total Number of LIU7s required = 6

0 Total Interfaces req'd at each DMS-SCPII LPP = 8 (2 EIU, 6 LIU7)

0 Number of LPPs required at each DMS-SCPII = 1

0 Total A-Links required at each STP = 6 (3 from each SCP)

0
0 21.1.4 OFFICE LAYOUT INFORMATION

0
0 There are no unique equipment layout restrictions in a
0 DMS-SCP II office.

0 21.1.5 TRAFFIC TABLES

0
0 Not applicable

0

0

0

0 21.2 PRODUCT/SYSTEM SPECIFICATION

0

0 21.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable

0 21.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 21.2.3 SPARING INFORMATION

0
0 Not applicable.

0 21.3 SOFTWARE PROVISIONING

0

0 21.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 SCP BASE

0 Required Packages:

0
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0
0 Package Title
0 -----
0 NTXN21AA SCP BASE MASTER PACKAGE
0 NTXQ47AA SCP GENERIC BASE INTERFACE
0 NTXQ46AA SCP DATA MANAGEMENT

0 SSP 800+ SERVICES

0 Required Packages:

0 Package Title
0 -----
0 NTNX24AA SCP BASIC 800 SERVICE
0 NTXQ36AA SCP 800 ENHANCED

0
0 21.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 None.

0 21.3.3 MEMORY PROVISIONING

0
0 To determine the amount of memory required for the DMS-Core, use
0 the MEMCALC program.

0

0

0

0

0 21.4 REAL TIME IMPACT

0 Not applicable. The DMS-SCP II DMS-Core is dedicated to the SCP
0 node, so there is no call processing activity.

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0 22.0 Application Processor Cabinet

0 22.1 HARDWARE PROVISIONING

0

0 22.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The Application Processor Cabinet is highly flexible by virtue of
0 its provisionable shelves, devices and SCSI cabling. To facili-
0 tate system installation and field maintenance, and to avoid
0 weight distribution and heat dissipation problems, several rules
0 MUST be followed in configuring the cabinet:

0 1. Assign maximum four (4) FPs beginning from shelf 39 (top of
0 cabinet) moving downwards, and left to right across each
0 shelf. Allot space for SDs from shelf 00 (bottom of cabinet)
0 moving upwards, and left to right across each shelf. Within
0 the constraints of Rule 3, leave no gaps (eg. for "growth") in
0 the assignment sequence.

0 2. Assign SCSI buses in order from the longest to the shortest,
0 beginning at the bottom of the cabinet. In other words, the
0 SCSI bus with the greatest number of devices must be assigned
0 first, followed by the next largest bus, and so on.

0 3. Provision the Storage Devices according to the permissible
0 configurations outlined in the ECM. SCSI cabling cannot leave
0 the cabinet.

0 4. Within each SD space allotment, Power Converters, SCSI Device
0 Interface Paddleboards, and SCSI cables must be equipped ini-
0 tially. The Storage Devices themselves can be provisioned in
0 a future extension. Any type of SD may be provisioned in an
0 allotted quadrant, or a quadrant may be left unequipped. How-
0 ever, it is recommended to position the two members of a shad-
0 owed pair side by side within a half shelf.

0 5. Disk storage devices are more sensitive to vibration than DAT
0 storage devices. Where possible, disk drives should be lo-
0 cated lower in the cabinet than DAT drives.

0

Figure 3 shows some of the configurations permitted by the rules. The first digit in the device number indicates the SCSI bus to which it is connected; the second digit indicates the device number on that bus. For example, SD2 0 is the first storage device on the SCSI bus connected to FP2.

AP	AP	FP0	FP1	FP0	FP1	FP0	FP1	FP0	Blank
AP	AP	FP2	FP3	SD1 0	SD1 1	AP	AP	SD0 4	SD0 5
AP	AP	SD2 0	SD3 0	SD0 2	SD0 3	SD1 0	SD1 1	SD0 2	SD0 3
AP	AP	SD0 0	SD1 0	SD0 0	SD0 1	SD0 0	SD0 1	SD0 0	SD0 1

22.1.2 HARDWARE DEPENDENCIES

22.1.3 PROVISIONING CONSIDERATIONS

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- 0 1. Determine the space allotment for SDs as required by the ap-
0 plication, using the space allotment increments allowed by the
0 Usage Restrictions. For example, if three SDs are required
0 for an application, allot a 4-quadrant SD space. Also deter-
0 mine the number of APs required.
- 0 2. Assign into cabinets the Application Processor Shelves and
0 Storage Device Shelves to house the APs, FPs, and SD space al-
0 lotments in accordance with the Hardware Usage Restrictions.
- 0 3. Provision the AP and FP circuit packs, and the actual number
0 of storage devices required by this particular job. Provision
0 SD circuit packs to support all allotted SD quadrants. This
0 allows devices to be added to the chain later without disrupt-
0 ing service. Provision Filler Face Plates or Filler Panels
0 for all unallotted quadrants and unequipped shelf spaces.
- 0 4. Provision the required SCSI cable lengths to interconnect the
0 FPs and all SD space allotments (whether equipped with devices
0 or not) in each chain. Note that SCSI cabling cannot pass
0 from one cabinet to another.
- 0 5. Provision the fiber links between the AP/FPs and the DMS-Core
0 Message Switch (MS), and the circuit packs in the MS.

0 Application Processor (AP) Provisioning

0
0 APs are assigned to the NT9X8101 Application Processor Shelf. A
0 maximum of two (2) APs may be provisioned per shelf. APs and FPs
0 may be mixed on a single shelf.

0 Currently, the only available CPU is the NT9X13LA 68030 40 MHz
0 CPU CP. Provision two (2) per AP to equip both planes.

0 Provision minimum one (1) maximum four (4) NT9X14DB 24 MByte Mem-
0 ory CP per plane to fulfil the memory requirements of the appli-
0 cation. Maximum memory available is 96 Mbytes per plane. The
0 application may designate one of the memory cards as a hot spare;
0 this is optional.

0 Provision two (2) NT9X26AB RTIF CP, of the same type that are
0 currently equipped on the DMS-Core in the office (this avoids

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0 stocking more than one vintage of spare). New core applications
0 should use NT9X26AB.

0 Provision common circuit packs and filler faceplates as detailed
0 in the Engineering Manual sections.

0 File Processor (FP) Provisioning

0
0 FPs are assigned to the NT9X8101 Application Processor Shelf. A
0 maximum of two (2) FPs may be provisioned per shelf. FPs and APs
0 may be mixed on a single shelf.

0 FP provisioning is almost identical to that of the AP. One (1)
0 of the Memory CPs in each plane is replaced by an NT9X87AA Dual
0 Access Buffer Memory CP, thus reducing the maximum memory avail-
0 able to 72 MBytes per plane. Two of the rear filler faceplates
0 in each plane are replaced by two (2) NT9X88AA Dual SCSI Inter-
0 face Processor (SIP) paddleboards. These paddleboards provide
0 two (2) SCSI ports each, one for the outgoing SCSI link to the
0 first SD and one for the incoming SCSI link from the last SD in
0 the chain. The two SIPs in a plane are designated as the primary
0 SIP and the secondary SIP for that plane. Separate SCSI con-
0 nections are made from the primary and secondary SIPs to the cor-
0 responding primary and secondary paddleboards of the storage
0 device. This ensures maximum reliability.

0 Storage Device (SD) Provisioning

0
0 SDs are assigned to the NT9X8301 Storage Device Shelf. A maximum
0 of four (4) SDs may be provisioned per shelf. APs and FPs are
0 not permitted on Storage Device Shelves.

0 A quadrant on the SD shelf may be assigned any type of SD, or it
0 can be unequipped. Provision NT9X90AA 600 MByte Disk Storage
0 Units and/or NT9X90BA 1.3 GByte DAT Storage Units in the SD as
0 required. Provision DG60M blank tape cartridges for the DAT SD

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0 as needed. Each removable cartridge can store up to 1.3 GBytes
0 of data.

0 Provision four (4) SCSI Device Interface Paddleboards (SDIPs) and
0 two (2) Storage Device Power Converters for each half-shelf that
0 supports allotted SD space. The two SDIPs associated with an SD
0 are designated as the primary SDIP and the secondary SDIP. Sepa-
0 rate SCSI connections are made to the primary and secondary
0 SDIPs, so there are always four SCSI links running to and from
0 each SD for maximum reliability.

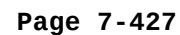
0 There are two types of SDIP: The NT9X89AA SCSI Device Interface
0 (Shelf) PB, and the NT9X89BA SCSI Device Interface (Half-Shelf)
0 PB. The differences between these are the key to understanding
0 how the SCSI bus is physically configured.

0 The NT9X89BA is equipped when an SD space allotment of 2 quad-
0 rants is required. It has two SCSI connectors; one to accept the
0 incoming SCSI link from the FP and one to send the returning SCSI
0 link back to that FP. All connections to the NT9X89BA are made
0 with provisionable SCSI cabling.

0 The NT9X89AA is equipped when an SD space allotment of 4, 8, or
0 12 quadrants is required. It has one SCSI connector and a back-
0 plane SCSI connection. The connector is used in one of four ways
0 depending where the SD is in the SCSI bus and where it is phys-
0 ically located:

- 0 - Accepts the incoming SCSI link from the FP if it is the first
0 SD in the chain; or,
- 0 - Accepts the SCSI link from the previous SD in the chain, lo-
0 cated in the shelf below; or,
- 0 - Sends a link to the next SD in the chain, located in the shelf
0 above; or,
- 0 - Sends the returning link to the FP if it is the last SD in the
0 chain.

0 The backplane SCSI connection links the two halves of the Storage
0 Device Shelf together to complete the chain. The various possi-
0 ble links between paddleboards are illustrated in Figure 4. For
0 clarity, only one connection in one plane is shown. In reality,
0 there are identical connections between primary and secondary
0 paddleboards in plane 0 and in plane 1.



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0
0 Figure 4 - SCSI Connections to Paddleboards in FP and SD
0 (High Reliability configuration)

0 SCSI Cable Provisioning

0 SCSI cables are selected based on the physical length from one
0 SIP or SDIP paddleboard connector to the next. Figure 4 illus-
0 trates how the cables are connected. Table 1 shows all possible
0 configurations of FPs and SDs based on the assignment rules. Each
0 diagram in the table depicts a cabinet configuration with shelves
0 39, 26, 13 and 00 shown from top to bottom. "FP" represents a
0 File Processor, "SD" a space allotted for a Storage Device, and
0 "-" a blank space or Application Processor. The digit following
0 FP or SD indicates which SCSI bus the device belongs to (eg. SD0
0 is a Storage Device on SCSI bus 0. It is connected to all other
0 SD0 devices and FP0.)

0 Select the configuration with the desired quantity of FPs and
0 SDs, and provision the quantity of cable PECs indicated.

0 Table 1 - SCSI Cable Provisioning

QTY OF FPs	CABINET CONFIGURATION	CABLE LENGTH (INCHES)	QTY	PEC
-----	-----	-----	---	-----
1	FP0 -	55	3	NT9X0443
	SD0 SD0	60	4	NT9X0444
	SD0 SD0	65	3	NT9X0445
	SD0 SD0	70	5	NT9X0446
	SD0 SD0	75	1	NT9X0447

0 FRAME ID : 1 FP/12 SD Large

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

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0

0
0 NT9X88AA 39 - 11R J2 NT9X89AA 00 - 08R J1 NT9X0445 RIGHT 65
0 NT9X89AA 00 - 20R J1 NT9X89AA 13 - 08R J1 NT9X0446 LEFT 70
0 NT9X89AA 13 - 20R J1 NT9X89AA 26 - 08R J1 NT9X0446 LEFT 70
0 NT9X89AA 26 - 20R J1 NT9X88AA 39 - 11R J1 NT9X0445 LEFT 65
0 NT9X88AA 39 - 10R J2 NT9X89AA 00 - 14R J1 NT9X0446 RIGHT 70
0 NT9X89AA 00 - 26R J1 NT9X89AA 13 - 14R J1 NT9X0444 LEFT 60
0 NT9X89AA 13 - 26R J1 NT9X89AA 26 - 14R J1 NT9X0444 LEFT 60
0 NT9X89AA 26 - 26R J1 NT9X88AA 39 - 10R J1 NT9X0444 LEFT 60
0 NT9X88AA 39 - 17R J2 NT9X89AA 00 - 15R J1 NT9X0447 RIGHT 75
0 NT9X89AA 00 - 27R J1 NT9X89AA 13 - 15R J1 NT9X0443 LEFT 55
0 NT9X89AA 13 - 27R J1 NT9X89AA 26 - 15R J1 NT9X0443 LEFT 55
0 NT9X89AA 26 - 27R J1 NT9X88AA 39 - 17R J1 NT9X0443 LEFT 55
0 NT9X88AA 39 - 16R J2 NT9X89AA 00 - 09R J1 NT9X0446 RIGHT 70
0 NT9X89AA 00 - 21R J1 NT9X89AA 13 - 09R J1 NT9X0445 LEFT 65
0 NT9X89AA 13 - 21R J1 NT9X89AA 26 - 09R J1 NT9X0446 LEFT 70
0 NT9X89AA 26 - 21R J1 NT9X88AA 39 - 16R J1 NT9X0444 LEFT 60

0
0
0
0
0 1
0
0
0
0

FP0	-
-	-
SD0	SD0
SD0	SD0

55 1 NT9X0443
60 1 NT9X0444
65 2 NT9X0445
70 3 NT9X0446
75 4 NT9X0447
80 1 NT9X0448

0 FRAME ID : 1 FP/8 SD Large

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

0 NT9X88AA 39 - 11R J2 NT9X89AA 00 - 08R J1 NT9X0445 RIGHT 65
0 NT9X89AA 00 - 20R J1 NT9X89AA 13 - 08R J1 NT9X0446 LEFT 70
0 NT9X89AA 13 - 20R J1 NT9X88AA 39 - 11R J1 NT9X0448 LEFT 80
0 NT9X88AA 39 - 10R J2 NT9X89AA 00 - 14R J1 NT9X0446 RIGHT 70
0 NT9X89AA 00 - 26R J1 NT9X89AA 13 - 14R J1 NT9X0444 LEFT 60
0 NT9X89AA 13 - 26R J1 NT9X88AA 39 - 10R J1 NT9X0447 LEFT 75

0 NT9X88AA 39 - 17R J2 NT9X89AA 00 - 15R J1 NT9X0447 RIGHT 75
0 NT9X89AA 00 - 27R J1 NT9X89AA 13 - 15R J1 NT9X0443 LEFT 55
0 NT9X89AA 13 - 27R J1 NT9X88AA 39 - 17R J1 NT9X0445 LEFT 65
0 NT9X88AA 39 - 16R J2 NT9X89AA 00 - 09R J1 NT9X0447 RIGHT 75
0 NT9X89AA 00 - 21R J1 NT9X89AA 13 - 09R J1 NT9X0446 LEFT 70
0 NT9X89AA 13 - 21R J1 NT9X88AA 39 - 16R J1 NT9X0447 LEFT 75

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0

0			55	3	NT9X0443
0		FP0 -	60	2	NT9X0444
0			65	4	NT9X0445
0		- -	70	2	NT9X0446
0	1		75	2	NT9X0447
0		SD0 -			
0					
0		SD0 SD0			
0					

0 FRAME ID : 1 FP/6 SD Large

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|

0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

0 NT9X88AA 39 - 11R J2 NT9X89AA 00 - 08R J1 NT9X0445 RIGHT 65

0 NT9X89AA 00 - 20R J1 NT9X89BA 13 - 08R J2 NT9X0445 LEFT 65

0 NT9X89BA 13 - 08R J1 NT9X88AA 39 - 11R J1 NT9X0443 RIGHT 55

0 NT9X88AA 39 - 10R J2 NT9X89AA 00 - 14R J1 NT9X0446 RIGHT 70

0 NT9X89AA 00 - 26R J1 NT9X89BA 13 - 14R J2 NT9X0443 LEFT 55

0 NT9X89BA 13 - 14R J1 NT9X88AA 39 - 10R J1 NT9X0444 RIGHT 60

0 NT9X88AA 39 - 17R J2 NT9X89AA 00 - 15R J1 NT9X0447 RIGHT 75

0 NT9X89AA 00 - 27R J1 NT9X89BA 13 - 15R J2 NT9X0444 LEFT 55

0 NT9X89BA 13 - 15R J1 NT9X88AA 39 - 17R J1 NT9X0445 RIGHT 60

0 NT9X88AA 39 - 16R J2 NT9X89AA 00 - 09R J1 NT9X0446 RIGHT 70

0 NT9X89AA 00 - 21R J1 NT9X89BA 13 - 09R J2 NT9X0445 LEFT 65

0 NT9X89BA 13 - 09R J1 NT9X88AA 39 - 16R J1 NT9X0444 RIGHT 60

QTY		CABINET		CABLE	
OF FPS		CONFIGURATION		LENGTH	
-----		-----		-----	
0	1	FP0 -		65	1 NT9X0445
				70	2 NT9X0446
				75	1 NT9X0447
				80	1 NT9X0448
				85	3 NT9X0449
0		- -			
0					
0		SD0 SD0			
0					

0 FRAME ID : 1 FP/4 SD Large

0

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0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

0	NT9X88AA	39	-	11R	J2	NT9X89AA	00	-	08R	J1	NT9X0445	RIGHT	65
0	NT9X89AA	00	-	20R	J1	NT9X88AA	39	-	11R	J1	NT9X0449	LEFT	85
0	NT9X88AA	39	-	10R	J2	NT9X89AA	00	-	14R	J1	NT9X0446	RIGHT	70
0	NT9X89AA	00	-	26R	J1	NT9X88AA	39	-	10R	J1	NT9X0449	LEFT	85
0	NT9X88AA	39	-	17R	J2	NT9X89AA	00	-	15R	J1	NT9X0447	RIGHT	75
0	NT9X89AA	00	-	27R	J1	NT9X88AA	39	-	17R	J1	NT9X0448	LEFT	80
0	NT9X88AA	39	-	16R	J2	NT9X89AA	00	-	09R	J1	NT9X0446	RIGHT	70
0	NT9X89AA	00	-	21R	J1	NT9X88AA	39	-	16R	J1	NT9X0449	LEFT	85

0		60	1	NT9X0444
0	FP0 -	65	3	NT9X0445
0	- -	70	2	NT9X0446
0	- -	75	1	NT9X0447
0	1	80	1	NT9X0448
0	- -			
0	SD0 -			

0 FRAME ID : 1 FP/2 SD SYSTEM

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

0	NT9X88AA	39	-	10R	J1	NT9X89BA	00	-	14R	J1	NT9X0446	RIGHT	70
0	NT9X88AA	39	-	10R	J2	NT9X89BA	00	-	14R	J2	NT9X0445	RIGHT	65
0	NT9X88AA	39	-	11R	J1	NT9X89BA	00	-	08R	J1	NT9X0445	RIGHT	65
0	NT9X88AA	39	-	11R	J2	NT9X89BA	00	-	08R	J2	NT9X0444	RIGHT	60
0	NT9X88AA	39	-	17R	J1	NT9X89BA	00	-	15R	J1	NT9X0448	RIGHT	80
0	NT9X88AA	39	-	17R	J2	NT9X89BA	00	-	15R	J2	NT9X0447	RIGHT	75
0	NT9X88AA	39	-	16R	J1	NT9X89BA	00	-	09R	J1	NT9X0446	RIGHT	70
0	NT9X88AA	39	-	16R	J2	NT9X89BA	00	-	09R	J2	NT9X0445	RIGHT	65

0		60	1	NT9X0444
0	FP0 -	65	3	NT9X0445
0	- -	70	5	NT9X0446
0	FP1 -	75	5	NT9X0447
0	2	80	2	NT9X0448
0	- -			
0	SD0 SD1			

0 FRAME ID : 2 FP/4 SD

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0 NT9X88AA 26 - 17R J2 NT9X89AA 13 - 15R J1 NT9X0442 RIGHT 50
0 NT9X89AA 13 - 27R J1 NT9X88AA 26 - 17R J1 NT9X0443 LEFT 55
0 NT9X88AA 26 - 16R J2 NT9X89AA 13 - 09R J1 NT9X0420 RIGHT 45
0 NT9X89AA 13 - 21R J1 NT9X88AA 26 - 16R J1 NT9X0444 LEFT 60

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FP0	FP1
SD1	SD1
SD0	SD0
SD0	SD0

2

45	1	NT9X0420
50	3	NT9X0442
55	4	NT9X0443
60	2	NT9X0444
65	2	NT9X0445
70	3	NT9X0446
75	4	NT9X0447
80	1	NT9X0448

0 FRAME ID : 2 FP/12 SD Large

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

0 NT9X88AA 39 - 11R J2 NT9X89AA 00 - 08R J1 NT9X0445 RIGHT 65
0 NT9X89AA 00 - 20R J1 NT9X89AA 13 - 08R J1 NT9X0446 LEFT 70
0 NT9X89AA 13 - 20R J1 NT9X88AA 39 - 11R J1 NT9X0448 LEFT 80
0 NT9X88AA 39 - 10R J2 NT9X89AA 00 - 14R J1 NT9X0446 RIGHT 70
0 NT9X89AA 00 - 26R J1 NT9X89AA 13 - 14R J1 NT9X0444 LEFT 60
0 NT9X89AA 13 - 26R J1 NT9X88AA 39 - 10R J1 NT9X0447 LEFT 75

0 NT9X88AA 39 - 17R J2 NT9X89AA 00 - 15R J1 NT9X0447 RIGHT 75
0 NT9X89AA 00 - 27R J1 NT9X89AA 13 - 15R J1 NT9X0443 LEFT 55
0 NT9X89AA 13 - 27R J1 NT9X88AA 39 - 17R J1 NT9X0445 LEFT 65
0 NT9X88AA 39 - 16R J2 NT9X89AA 00 - 09R J1 NT9X0447 RIGHT 75
0 NT9X89AA 00 - 21R J1 NT9X89AA 13 - 09R J1 NT9X0446 LEFT 70
0 NT9X89AA 13 - 21R J1 NT9X88AA 39 - 16R J1 NT9X0447 LEFT 75

0 NT9X88AA 39 - 23R J2 NT9X89AA 26 - 08R J2 NT9X0420 RIGHT 45
0 NT9X89AA 39 - 23R J1 NT9X88AA 26 - 08R J1 NT9X0442 RIGHT 50
0 NT9X88AA 39 - 22R J2 NT9X89AA 26 - 14R J2 NT9X0442 RIGHT 50
0 NT9X89AA 39 - 22R J1 NT9X88AA 26 - 14R J1 NT9X0443 RIGHT 55

0 NT9X88AA 39 - 29R J2 NT9X89AA 26 - 15R J2 NT9X0444 RIGHT 60
0 NT9X89AA 39 - 29R J1 NT9X88AA 26 - 15R J1 NT9X0445 RIGHT 65
0 NT9X88AA 39 - 28R J2 NT9X89AA 26 - 09R J2 NT9X0442 RIGHT 50
0 NT9X89AA 39 - 28R J1 NT9X88AA 26 - 09R J1 NT9X0443 RIGHT 55

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0	2	FP0 FP1	45	1	NT9X0420
			50	3	NT9X0442
			55	3	NT9X0443
		SD1 -	60	2	NT9X0444
			65	3	NT9X0445
		SD0 SD0	70	3	NT9X0446
0			75	4	NT9X0447
0		SD0 SD0	80	1	NT9X0448
0					

0 FRAME ID : 2 FP/10 SD Large

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

0	NT9X88AA	39	-	11R	J2	NT9X89AA	00	-	08R	J1	NT9X0445	RIGHT	65
0	NT9X89AA	00	-	20R	J1	NT9X89AA	13	-	08R	J1	NT9X0446	LEFT	70
0	NT9X89AA	13	-	20R	J1	NT9X88AA	39	-	11R	J1	NT9X0448	LEFT	80
0	NT9X88AA	39	-	10R	J2	NT9X89AA	00	-	14R	J1	NT9X0446	RIGHT	70
0	NT9X89AA	00	-	26R	J1	NT9X89AA	13	-	14R	J1	NT9X0444	LEFT	60
0	NT9X89AA	13	-	26R	J1	NT9X88AA	39	-	10R	J1	NT9X0447	LEFT	75
0	NT9X88AA	39	-	17R	J2	NT9X89AA	00	-	15R	J1	NT9X0447	RIGHT	75
0	NT9X89AA	00	-	27R	J1	NT9X89AA	13	-	15R	J1	NT9X0443	LEFT	55
0	NT9X89AA	13	-	27R	J1	NT9X88AA	39	-	17R	J1	NT9X0445	LEFT	65
0	NT9X88AA	39	-	16R	J2	NT9X89AA	00	-	09R	J1	NT9X0447	RIGHT	75
0	NT9X89AA	00	-	21R	J1	NT9X89AA	13	-	09R	J1	NT9X0446	LEFT	70
0	NT9X89AA	13	-	21R	J1	NT9X88AA	39	-	16R	J1	NT9X0447	LEFT	75
0	NT9X88AA	39	-	23R	J2	NT9X89AA	26	-	08R	J2	NT9X0420	RIGHT	45
0	NT9X89AA	39	-	23R	J1	NT9X88AA	26	-	08R	J1	NT9X0442	RIGHT	50
0	NT9X88AA	39	-	22R	J2	NT9X89AA	26	-	14R	J2	NT9X0442	RIGHT	50
0	NT9X89AA	39	-	22R	J1	NT9X88AA	26	-	14R	J1	NT9X0443	RIGHT	55
0	NT9X88AA	39	-	29R	J2	NT9X89AA	26	-	15R	J2	NT9X0444	RIGHT	60
0	NT9X89AA	39	-	29R	J1	NT9X88AA	26	-	15R	J1	NT9X0445	RIGHT	65
0	NT9X88AA	39	-	28R	J2	NT9X89AA	26	-	09R	J2	NT9X0442	RIGHT	50
0	NT9X89AA	39	-	28R	J1	NT9X88AA	26	-	09R	J1	NT9X0443	RIGHT	55

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0 Table 1 - SCSI Cable Provisioning (continued)

QTY OF FPS	CABINET CONFIGURATION	CABLE LENGTH (INCHES)	QTY	PEC
-----	-----	-----	---	-----
2	FP0 FP1 - - SD1 SD1 SD0 SD0	55	1	NT9X0443
		60	1	NT9X0444
		65	5	NT9X0445
		70	3	NT9X0446
		75	2	NT9X0447
		80	1	NT9X0448
		85	3	NT9X0449

0 FRAME ID : 2 FP/8 SD Large

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

NT9X88AA	39 - 11R J2	NT9X89AA 00 - 08R J1	NT9X0445	RIGHT	65
NT9X89AA	00 - 20R J1	NT9X88AA 39 - 11R J1	NT9X0449	LEFT	85
NT9X88AA	39 - 10R J2	NT9X89AA 00 - 14R J1	NT9X0446	RIGHT	70
NT9X89AA	00 - 26R J1	NT9X88AA 39 - 10R J1	NT9X0449	LEFT	85
NT9X88AA	39 - 17R J2	NT9X89AA 00 - 15R J1	NT9X0447	RIGHT	75
NT9X89AA	00 - 27R J1	NT9X88AA 39 - 17R J1	NT9X0448	LEFT	80
NT9X88AA	39 - 16R J2	NT9X89AA 00 - 09R J1	NT9X0446	RIGHT	70
NT9X89AA	00 - 21R J1	NT9X88AA 39 - 16R J1	NT9X0449	LEFT	85
NT9X88AA	39 - 23R J2	NT9X89AA 13 - 08R J1	NT9X0444	RIGHT	60
NT9X89AA	13 - 20R J1	NT9X88AA 39 - 23R J1	NT9X0446	LEFT	70
NT9X88AA	39 - 22R J2	NT9X89AA 13 - 14R J1	NT9X0445	RIGHT	65
NT9X89AA	13 - 26R J1	NT9X88AA 39 - 22R J1	NT9X0445	LEFT	65
NT9X88AA	39 - 29R J2	NT9X89AA 13 - 15R J1	NT9X0447	RIGHT	75
NT9X89AA	13 - 27R J1	NT9X88AA 39 - 29R J1	NT9X0443	LEFT	55
NT9X88AA	39 - 28R J2	NT9X89AA 13 - 09R J1	NT9X0445	RIGHT	65
NT9X89AA	13 - 21R J1	NT9X88AA 39 - 28R J1	NT9X0445	LEFT	65

2	FP0 FP1 SD1 SD1 SD0 SD1	45	1	NT9X0420
		50	4	NT9X0442
		55	5	NT9X0443
		60	6	NT9X0444
		65	5	NT9X0445
		70	2	NT9X0446

0 |

SD0	SD0

 75 1 NT9X0447
0 |
0 |

0 | FRAME ID : 2 FP/12 SD

0 | REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 | PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH
0 | INCH

0	NT9X88AA 39 - 11R J2	NT9X89AA 00 - 08R J1	NT9X0445	RIGHT 65
0	NT9X89AA 00 - 20R J1	NT9X89BA 13 - 08R J2	NT9X0449	LEFT 65
0	NT9X89BA 13 - 08R J1	NT9X88AA 39 - 11R J1	NT9X0446	RIGHT 55
0	NT9X88AA 39 - 10R J2	NT9X89AA 00 - 14R J1	NT9X0446	RIGHT 70
0	NT9X89AA 00 - 26R J1	NT9X89BA 13 - 14R J2	NT9X0443	LEFT 55
0	NT9X89BA 13 - 14R J1	NT9X88AA 39 - 10R J1	NT9X0444	RIGHT 60
0	NT9X88AA 39 - 17R J2	NT9X89AA 00 - 15R J1	NT9X0447	RIGHT 75
0	NT9X89AA 00 - 27R J1	NT9X89BA 13 - 15R J2	NT9X0443	LEFT 55
0	NT9X89BA 13 - 15R J1	NT9X88AA 39 - 17R J1	NT9X0445	RIGHT 65
0	NT9X88AA 39 - 16R J2	NT9X89AA 00 - 09R J1	NT9X0446	RIGHT 70
0	NT9X89AA 00 - 21R J1	NT9X89BA 13 - 09R J2	NT9X0445	LEFT 65
0	NT9X89BA 13 - 09R J1	NT9X88AA 39 - 16R J1	NT9X0444	RIGHT 60
0	NT9X88AA 39 - 22R J2	NT9X89BA 13 - 26R J2	NT9X0444	LEFT 60
0	NT9X89BA 13 - 26R J1	NT9X89AA 26 - 14R J1	NT9X0444	RIGHT 60
0	NT9X89AA 26 - 26R J1	NT9X88AA 39 - 22R J1	NT9X0442	LEFT 50
0	NT9X88AA 39 - 23R J2	NT9X89BA 13 - 20R J2	NT9X0445	LEFT 65
0	NT9X89BA 13 - 20R J1	NT9X89AA 26 - 08R J1	NT9X0442	RIGHT 50
0	NT9X89AA 26 - 20R J1	NT9X88AA 39 - 23R J1	NT9X0443	LEFT 55
0	NT9X88AA 39 - 28R J2	NT9X89BA 13 - 21R J2	NT9X0444	LEFT 60
0	NT9X89BA 13 - 21R J1	NT9X89AA 26 - 09R J1	NT9X0442	RIGHT 50
0	NT9X89AA 26 - 21R J1	NT9X88AA 39 - 28R J1	NT9X0442	LEFT 50
0	NT9X88AA 39 - 29R J2	NT9X89BA 13 - 27R J2	NT9X0443	LEFT 55
0	NT9X89BA 13 - 27R J1	NT9X89AA 26 - 15R J1	NT9X0444	RIGHT 60
0	NT9X89AA 26 - 27R J1	NT9X88AA 39 - 29R J1	NT9X0440	LEFT 45

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FP0	FP1
-	-

 60 1 NT9X0444
0 | 65 4 NT9X0445
0 | 70 5 NT9X0446
0 | 75 2 NT9X0447

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0 2

SD1	-
SD0	SD0

0 80 1 NT9X0448
0 85 3 NT9X0449

0 FRAME ID : 2 FP/6 SD

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH
0 INCH

NT9X88AA	39	-	11R	J2	NT9X89AA	00	-	08R	J1	NT9X0445	RIGHT	65
NT9X89AA	00	-	20R	J1	NT9X88AA	39	-	11R	J1	NT9X0449	LEFT	85
NT9X88AA	39	-	10R	J2	NT9X89AA	00	-	14R	J1	NT9X0446	RIGHT	70
NT9X89AA	00	-	26R	J1	NT9X88AA	39	-	10R	J1	NT9X0449	LEFT	85
NT9X88AA	39	-	17R	J2	NT9X89AA	00	-	15R	J1	NT9X0447	RIGHT	75
NT9X89AA	00	-	27R	J1	NT9X88AA	39	-	17R	J1	NT9X0448	LEFT	80
NT9X88AA	39	-	16R	J2	NT9X89AA	00	-	09R	J1	NT9X0446	RIGHT	70
NT9X89AA	00	-	21R	J1	NT9X88AA	39	-	16R	J1	NT9X0449	LEFT	85
NT9X88AA	39	-	22R	J1	NT9X89BA	13	-	14R	J1	NT9X0446	RIGHT	70
NT9X88AA	39	-	22R	J2	NT9X89BA	13	-	14R	J2	NT9X0445	RIGHT	65
NT9X88AA	39	-	23R	J1	NT9X89BA	13	-	08R	J1	NT9X0445	RIGHT	65
NT9X88AA	39	-	23R	J2	NT9X89BA	13	-	08R	J2	NT9X0444	RIGHT	60
NT9X88AA	39	-	29R	J1	NT9X89BA	13	-	15R	J1	NT9X0447	RIGHT	75
NT9X88AA	39	-	29R	J2	NT9X89BA	13	-	15R	J2	NT9X0446	RIGHT	70
NT9X88AA	39	-	28R	J1	NT9X89BA	13	-	09R	J1	NT9X0446	RIGHT	70
NT9X88AA	39	-	28R	J2	NT9X89BA	13	-	09R	J2	NT9X0445	RIGHT	65

0 60 1 NT9X0444
0 65 4 NT9X0445
0 70 2 NT9X0446
0 75 5 NT9X0447
0 80 3 NT9X0448
0 85 1 NT9X0449

FP0	FP1
-	-
SD0	SD1

0 FRAME ID : 2 FP/4 SD SYSTEM

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

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0      FRAME ID :      3 FP/8 SD
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0	REF.	<-----FROM----->				<-----TO----->				<-----CABLE----->		
0		PCB	SHELF	SLOT	CONN	PCB	SHELF	SLOT	CONN	PCB.	ROUTE	LENGTH
0		INCH										
0	NT9X88AA	39	-	11R	J2	NT9X89AA	00	-	08R	J1	NT9X0445	RIGHT 65
0	NT9X89AA	00	-	20R	J1	NT9X88AA	39	-	11R	J1	NT9X0449	LEFT 85
0	NT9X88AA	39	-	10R	J2	NT9X89AA	00	-	14R	J1	NT9X0446	RIGHT 70
0	NT9X89AA	00	-	26R	J1	NT9X88AA	39	-	10R	J1	NT9X0449	LEFT 85
0	NT9X88AA	39	-	17R	J2	NT9X89AA	00	-	15R	J1	NT9X0447	RIGHT 75
0	NT9X89AA	00	-	27R	J1	NT9X88AA	39	-	17R	J1	NT9X0448	LEFT 80
0	NT9X88AA	39	-	16R	J2	NT9X89AA	00	-	09R	J1	NT9X0446	RIGHT 70
0	NT9X89AA	00	-	21R	J1	NT9X88AA	39	-	16R	J1	NT9X0449	LEFT 85
0	NT9X88AA	39	-	22R	J1	NT9X89BA	13	-	14R	J1	NT9X0446	RIGHT 70
0	NT9X88AA	39	-	22R	J2	NT9X89BA	13	-	14R	J2	NT9X0445	RIGHT 65
0	NT9X88AA	39	-	23R	J1	NT9X89BA	13	-	08R	J1	NT9X0445	RIGHT 65

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0	NT9X88AA	39	-	23R	J2	NT9X89BA	13	-	08R	J2	NT9X0444	RIGHT	60
0	NT9X88AA	39	-	29R	J1	NT9X89BA	13	-	15R	J1	NT9X0447	RIGHT	75
0	NT9X88AA	39	-	29R	J2	NT9X89BA	13	-	15R	J2	NT9X0446	RIGHT	70
0	NT9X88AA	39	-	28R	J1	NT9X89BA	13	-	09R	J1	NT9X0446	RIGHT	70
0	NT9X88AA	39	-	28R	J2	NT9X89BA	13	-	09R	J2	NT9X0445	RIGHT	65

0	NT9X88AA	26	-	10R	J1	NT9X89BA	13	-	26R	J1	NT9X0444	LEFT	60
0	NT9X88AA	26	-	10R	J2	NT9X89BA	13	-	26R	J2	NT9X0443	LEFT	55
0	NT9X88AA	26	-	11R	J1	NT9X89BA	13	-	20R	J1	NT9X0445	LEFT	65
0	NT9X88AA	26	-	11R	J2	NT9X89BA	13	-	20R	J2	NT9X0444	LEFT	60
0	NT9X88AA	26	-	17R	J1	NT9X89BA	13	-	27R	J1	NT9X0443	LEFT	55
0	NT9X88AA	26	-	17R	J2	NT9X89BA	13	-	27R	J2	NT9X0442	LEFT	50
0	NT9X88AA	26	-	16R	J1	NT9X89BA	13	-	21R	J1	NT9X0444	LEFT	60
0	NT9X88AA	26	-	16R	J2	NT9X89BA	13	-	21R	J2	NT9X0443	LEFT	55

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0 Table 1 - SCSI Cable Provisioning (continued)

QTY OF FPS	CABINET CONFIGURATION	CABLE LENGTH (INCHES)	QTY	PEC
-----	-----	-----	---	-----
3	FP0 FP1 FP2 - SD2 - SD0 SD1	35	1	NT9X0416
		40	3	NT9X0419
		45	2	NT9X0420
		50	1	NT9X0442
		55	1	NT9X0443
		60	1	NT9X0444
		65	5	NT9X0445
		70	2	NT9X0446
		75	5	NT9X0447
		80	2	NT9X0448
		85	1	NT9X0449

0 FRAME ID : 3 FP/6 SD SYSTEM

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

0	NT9X88AA	39 - 10R J1	NT9X89BA 00 - 14R J1	NT9X0446	RIGHT	70
0	NT9X88AA	39 - 10R J2	NT9X89BA 00 - 14R J2	NT9X0445	RIGHT	65
0	NT9X88AA	39 - 11R J1	NT9X89BA 00 - 08R J1	NT9X0445	RIGHT	65
0	NT9X88AA	39 - 11R J2	NT9X89BA 00 - 08R J2	NT9X0444	RIGHT	60
0	NT9X88AA	39 - 17R J1	NT9X89BA 00 - 15R J1	NT9X0448	RIGHT	80
0	NT9X88AA	39 - 17R J2	NT9X89BA 00 - 15R J2	NT9X0447	RIGHT	75
0	NT9X88AA	39 - 16R J1	NT9X89BA 00 - 09R J1	NT9X0446	RIGHT	70
0	NT9X88AA	39 - 16R J2	NT9X89BA 00 - 09R J2	NT9X0445	RIGHT	65
0	NT9X88AA	39 - 22R J1	NT9X89BA 00 - 26R J1	NT9X0448	LEFT	80
0	NT9X88AA	39 - 22R J2	NT9X89BA 00 - 26R J2	NT9X0447	LEFT	75
0	NT9X88AA	39 - 23R J1	NT9X89BA 00 - 20R J1	NT9X0449	LEFT	85
0	NT9X88AA	39 - 23R J2	NT9X89BA 00 - 20R J2	NT9X0447	LEFT	75
0	NT9X88AA	39 - 29R J1	NT9X89BA 00 - 27R J1	NT9X0447	LEFT	75
0	NT9X88AA	39 - 29R J2	NT9X89BA 00 - 27R J2	NT9X0445	LEFT	65
0	NT9X88AA	39 - 28R J1	NT9X89BA 00 - 21R J1	NT9X0448	LEFT	80
0	NT9X88AA	39 - 28R J2	NT9X89BA 00 - 21R J2	NT9X0447	LEFT	75
0	NT9X88AA	26 - 11R J2	NT9X89BA 13 - 08R J2	NT9X0446	RIGHT	35
0	NT9X88AA	26 - 11R J2	NT9X89BA 13 - 08R J1	NT9X0445	RIGHT	40
0	NT9X88AA	26 - 10R J2	NT9X89BA 13 - 14R J2	NT9X0445	RIGHT	40
0	NT9X88AA	26 - 10R J1	NT9X89BA 13 - 14R J1	NT9X0444	RIGHT	45
0	NT9X88AA	26 - 17R J2	NT9X89BA 13 - 15R J2	NT9X0448	RIGHT	50
0	NT9X88AA	26 - 17R J1	NT9X89BA 13 - 15R J1	NT9X0447	RIGHT	55

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0

0 NT9X88AA 26 - 16R J2 NT9X89BA 13 - 09R J2 NT9X0446 RIGHT 40
0 NT9X88AA 26 - 16R J1 NT9X89BA 13 - 09R J1 NT9X0445 RIGHT 45

4	FP0 FP1	35	1	NT9X0416
		40	4	NT9X0419
		45	5	NT9X0420
	FP2 FP3	50	4	NT9X0442
		55	1	NT9X0443
	SD2 SD3	60	2	NT9X0444
		65	4	NT9X0445
	SD0 SD1	70	2	NT9X0446
	75	5	NT9X0447	
	80	3	NT9X0448	
	85	1	NT9X0449	

0 FRAME ID : 4 FP/8 SD Large

0 REF. |<-----FROM----->| |<-----TO----->| |<-----CABLE----->|
0 PCB SHELF-SLOT CONN PCB SHELF-SLOT CONN PCB. ROUTE LENGTH

0	NT9X88AA	39 - 10R	J1	NT9X89BA	00 - 14R	J1	NT9X0446	RIGHT	70
0	NT9X88AA	39 - 10R	J2	NT9X89BA	00 - 14R	J2	NT9X0445	RIGHT	65
0	NT9X88AA	39 - 11R	J1	NT9X89BA	00 - 08R	J1	NT9X0445	RIGHT	65
0	NT9X88AA	39 - 11R	J2	NT9X89BA	00 - 08R	J2	NT9X0444	RIGHT	60
0	NT9X88AA	39 - 17R	J1	NT9X89BA	00 - 15R	J1	NT9X0448	RIGHT	80
0	NT9X88AA	39 - 17R	J2	NT9X89BA	00 - 15R	J2	NT9X0447	RIGHT	75
0	NT9X88AA	39 - 16R	J1	NT9X89BA	00 - 09R	J1	NT9X0446	RIGHT	70
0	NT9X88AA	39 - 16R	J2	NT9X89BA	00 - 09R	J2	NT9X0445	RIGHT	65

0	NT9X88AA	39 - 22R	J1	NT9X89BA	00 - 26R	J1	NT9X0448	LEFT	80
0	NT9X88AA	39 - 22R	J2	NT9X89BA	00 - 26R	J2	NT9X0447	LEFT	75
0	NT9X88AA	39 - 23R	J1	NT9X89BA	00 - 20R	J1	NT9X0449	LEFT	85
0	NT9X88AA	39 - 23R	J2	NT9X89BA	00 - 20R	J2	NT9X0447	LEFT	75
0	NT9X88AA	39 - 29R	J1	NT9X89BA	00 - 27R	J1	NT9X0447	LEFT	75
0	NT9X88AA	39 - 29R	J2	NT9X89BA	00 - 27R	J2	NT9X0445	LEFT	65
0	NT9X88AA	39 - 28R	J1	NT9X89BA	00 - 21R	J1	NT9X0448	LEFT	80
0	NT9X88AA	39 - 28R	J2	NT9X89BA	00 - 21R	J2	NT9X0447	LEFT	75

0	NT9X88AA	26 - 10R	J1	NT9X89BA	13 - 14R	J1	NT9X0420	RIGHT	45
0	NT9X88AA	26 - 10R	J2	NT9X89BA	13 - 14R	J2	NT9X0419	RIGHT	40
0	NT9X88AA	26 - 11R	J1	NT9X89BA	13 - 08R	J1	NT9X0419	RIGHT	40
0	NT9X88AA	26 - 11R	J2	NT9X89BA	13 - 08R	J2	NT9X0416	RIGHT	35
0	NT9X88AA	26 - 17R	J1	NT9X89BA	13 - 15R	J1	NT9X0443	RIGHT	55
0	NT9X88AA	26 - 17R	J2	NT9X89BA	13 - 15R	J2	NT9X0442	RIGHT	50
0	NT9X88AA	26 - 16R	J1	NT9X89BA	13 - 09R	J1	NT9X0420	RIGHT	45
0	NT9X88AA	26 - 16R	J2	NT9X89BA	13 - 09R	J2	NT9X0419	RIGHT	40

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0	NT9X88AA	26	-	22R	J1	NT9X89BA	13	-	26R	J1	NT9X0442	LEFT	50
0	NT9X88AA	26	-	22R	J2	NT9X89BA	13	-	26R	J2	NT9X0420	LEFT	45
0	NT9X88AA	26	-	23R	J1	NT9X89BA	13	-	20R	J1	NT9X0444	LEFT	60
0	NT9X88AA	26	-	23R	J2	NT9X89BA	13	-	20R	J2	NT9X0442	LEFT	50
0	NT9X88AA	26	-	29R	J1	NT9X89BA	13	-	27R	J1	NT9X0420	LEFT	45
0	NT9X88AA	26	-	29R	J2	NT9X89BA	13	-	27R	J2	NT9X0419	LEFT	40
0	NT9X88AA	26	-	28R	J1	NT9X89BA	13	-	21R	J1	NT9X0442	LEFT	50
0	NT9X88AA	26	-	28R	J2	NT9X89BA	13	-	21R	J2	NT9X0420	LEFT	45

0 Connectorized power cabling is always provided with the cabinet
0 for all shelf positions.

0 Message Switch (MS) and Port Provisioning

0

0 MEMORY PROVISIONING on the MESSAGE SWITCH

0 The memory on the Message Switch of the SuperNode can be provi-
0 sioned ACCORDING TO THE TYPE OF APPLICATION being used. The fol-
0 low are permissible.

0 a.) For 7MEG of Memory on the Message Switch:

0 Provision two (2) NT9X13DB CPU 16MHZ CP Shelf (26,39) slot 9F
0 Provision two (2) NT9X14BB 6 MB Memory Shelf (26,39) slot 10F

0 b.) For 10MEG of Memory on the Message Switch:

0 Provision two (2) NT9X13DC CPU 16MHZ CP Shelf (26,39) slot 9F
0 Provision two (2) NT9X14BB 6 MB Memory Shelf (26,39) slot 10F

0 c.) For 25MEG of Memory on the Message Switch:

0 Provision two (2) NT9X13DB CPU 16MHZ CP Shelf (26,39) slot 9F
0 Provision two (2) NT9X14DB 24MB Memory Shelf (26,39) slot 10F

0 d.) For 28MEG of Memory on the Message Switch:

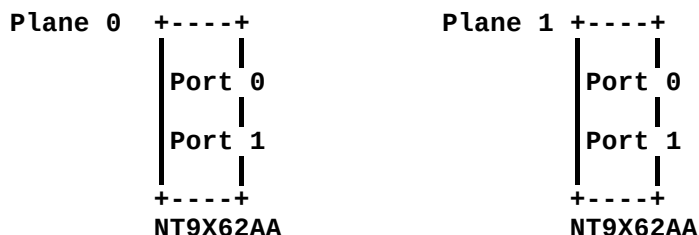
0
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0
0 Provision two (2) NT9X13DC CPU 16MHZ CP Shelf (26,39) slot 9F
0 Provision two (2) NT9X14DB 24MB Memory Shelf (26,39) slot 10F

0
0 Message Switch and File Processor Link Provisioning

0
0 Each AP and FP is provisioned with two (2) NT9X62AA 2-Port Sub-
0 rate DS-512 paddleboards(one per plane). There are two fiber link
0 connections(port 0 and port 1) on each NT9X62AA.

0 Therefore one (1) File or Application Processor has:



0 On the DMS Core Message Switch, NT9X62BA 4-Port Subrate DS-512
0 paddleboards are provisioned. In BCS-33, only two connections
0 (ports 0 and 1) are available. Also, the only subrates available
0 in BCS-33 are 256 on the NT9X62AA and 256,512 on the NT9X62BA. In
0 BCS-34 or higher there are 4 connections (ports 0,1,2,3) avail-
0 able on each NT9X62BA.

0 One (1) MS Port CP is provisioned at the front of the MS shelf in
0 the same CP position as the rear NT9X62BA PB. Provision NT9X17AD
0 MS 4-port CP when available. Prior to NT9X17AD availability,
0 provision NT9X17DA MS 64-port CP. Each port card only supports
0 one channels-per-link configuration; that is, you cannot mix 64-,
0 128- and 256-channel links on a single port card.

0 To Summarise the Use of NT9X17DA/AD CARD

0
0
0

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33	34	35	36

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0
0 NT9X17DA valid valid valid valid
0 NT9X17AD invalid invalid invalid valid

0 The maximum total number of APs and FPs that may be assigned to
0 THE MS IS 11. This fanout is reduced by the number of networks,
0 LIMs and other devices assigned to the MS, dependent upon the ap-
0 plication.

0

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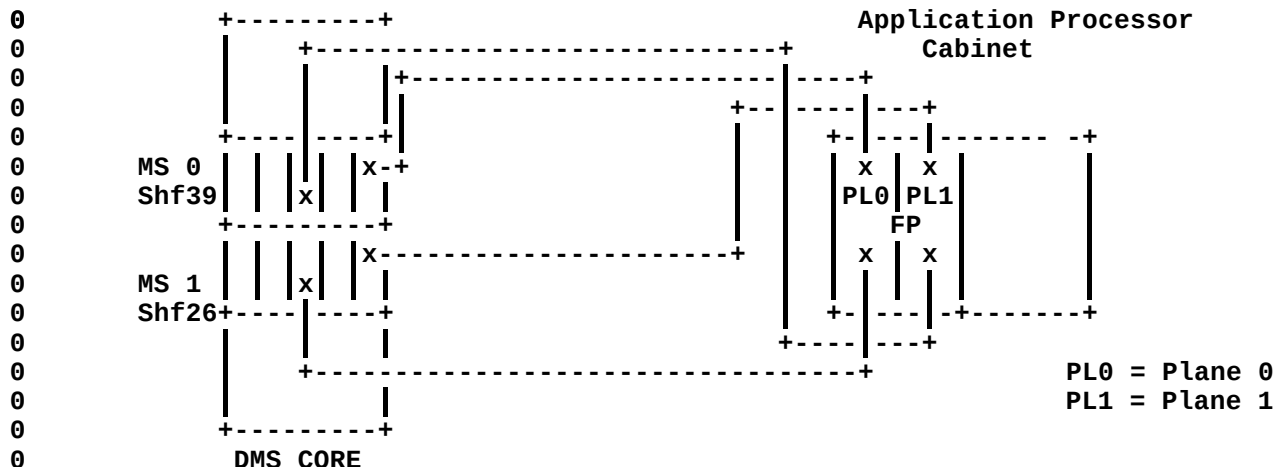
0

0

0

0

0
0 General Overview of the MS and FP Link Layout
0 -----



0
0 Determining MS Slot Assignments on the DMS-CORE

0 The following table is used to determine the slot assignments
0 on the DMS-Core for the Memory Switch cards.

0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0

From NT9X62AA PB		To NT9X62BA PB		
AP/FP Plane	Port	MS plane	CP pos'n	Port
0	0	0	X	Y
0	1	1	W	Y
1	0	1	X	Y
1	1	0	W	Y

Where: X, W are any CP position in the MS. 'X' and 'W'

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0

0 can be the same but should be different for
0 increased robustness.
0
0

0
0 Where: Y depends on the number of channels per link
0 required by the application.
0

0 Channels
0 per Link

Y =

0 -----
0 256
0 128

0 -----
0 0 , 1
0 0 , 1, 2, 3

0

0 Inter MS Links(on the DMS-CORE)

0

0 In APC applications IT IS NECESSARY to provision Inter-MS Links
0 (IMLs) for reliability. These links connect MS plane 0 to MS
0 plane 1 and provide a path for messages in event of a failure.
0

0

0 For DS-512 Inter-Ms Fiber links, provision two (2) NT9X17DA Port
0 Card and two (2) NT9X20BB Fiber Paddleboard for each Message
0 Switch. Card position is not restricted, but the cards residing
0 in each message switch must be connected to its counterpart in
0 the opposite message switch in the same slot. For example,
0 Inter-MS link 0 could use slot 21 with NT9X17DAs in both Message
0 Switches, slot 21F and NT9X20BB in slot 21R and connecting fibres
0 between them.

0

0 For Fiber inter-MS links, provision two (2) A0352268 Fiber Cables
0 (62") per link.

0

0

0

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0 22.1.4 DMS SuperNode Equipment

0
0 The DMS SuperNode MUST BE provisioned with the two (2) NT9X49CB
0 MS P-BUS Terminator CP (Tracer Cards). This is to allow for trac-
0 ing of messages and aid in fault dignostics and MS maintenance.

0 The DMS SuperNode MUST BE provisioned with the one (1) NT9X53AC
0 Combined Clock CP. If there are previous vintages (ie.
0 NT9X53AB,NT9X53AA) then replace the old one with the NT9X53AC.
0 The NT9X53AC has clock robustness and downloadable FW capability
0 which are not available on previous vintages.

0 See ECM 331 DMS-CORE for further information.

0 22.1.5 OFFICE LAYOUT INFORMATION

0
0 The Application Processor Cabinet is a standard SuperNode style
0 cabinet. Refer to ECM331 DMS-Core for details of office layout
0 considerations.

0 22.1.6 TRAFFIC TABLES

0
0 Not applicable. Individual provisioning documents for software
0 applications of the APC will define traffic engineering parame-
0 ters as appropriate.

0

0

0

0
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0

0 22.2.1 PHYSICAL CHARACTERISTICS

0

0 Current drain and power dissipation of each major half-shelf com-
0 ponent in the APC are as follows:

0 COMPONENT	0 MAXIMUM CURRENT 0 DRAIN (AMPS)	0 POWER 0 DISS. (WATTS)
0 -----	0 -----	0 -----
0 Application Processor	0 5	0 240
0 File Processor	0 6	0 288
0 600 MByte Disk SD	0 7	0 336
0 1.3 GByte DAT SD	0 6	0 288

0 22.2.2 EMI/EARTHQUAKE INFORMATION

0

0 The APC cabinet is designed to be EMI compliant.

0 22.2.3 SPARING INFORMATION

0

0 Spares are calculated based on predicted Mean Time Between Fail-
0 ure (MTBF) values, given as follows:

0 PEC	0 MTBF (years)
0 =====	0 =====
0 NT9X13LA	0 11.4
0 NT9X21AB	0 163.1
0 NT9X62AA	0 38.1
0 NT9X62BA	0 39.4

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0	NT9X86AA	19.0
0	NT9X87AA	12.7
0	NT9X88AA	63.4
0	NT9X89AA	81.5
0	NT9X89BA	81.5
0	NT9X90AA	3.2
0	NT9X90BA	4.5
0	NT9X91AA	57.1
0	NTDX15AA	57.1

0 22.3 SOFTWARE PROVISIONING

0

0 22.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 Refer to the provisioning document for the specific software ap-
0 plication of the APC for software provisioning information.

0 22.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

0 22.3.3 MEMORY PROVISIONING

0
0 Provisioning of memory cards in the AP and FP units is dependent
0 upon the specific application. Refer to the appropriate provi-
0 sioning document for information.

0

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0 22.4 REAL TIME IMPACT

0 The addition of AP and FP components should have minimal impact
0 on call processing. Additional background time, at a lower pri-
0 ority than call processing, is required to maintain the addi-
0 tional components.

0 22.5 APC CUSTOMER QUESTIONS

0 1. CABINET QUESTIONS

0 a. Number of Application Processor Cabinets(APC) required ? _____

0 For each APC required answer the following questions:

0 b. Is it a new core installation ? _____

0 c. Is this the last cabinet in the lineup ? _____

0 d. Is the spare cabinet(NT9X01FA) located between _____
0 the NT9X80BA and end of lineup ?

0 e. Is the color of the exterior cabinet brown ? _____

0 f. Is the color of the exterior cabinet grey ? _____

0 g. Is overhead cabling used ? _____

0 2. SHELF and CIRCUIT PACK Questions(for each APC Cabinet)

0 For each APC required repeat the Shelf and Circuit PACK questions

0 Q1. Is the APC to contain Application Processors ? _____

0 Amount of memory required for application processor ? _____
0 (this will depend on the type of application)

0 Q2. Is the APC to contain File Processors ? _____

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0 Amount of memory required for file processor ? _____
0 (this will depend on the type of application)

0 Q3. Is the APC to contain Storage Devices ? _____

0 Q4. If Q2 is 'YES' then,

0 Enter the number of File Processors required ? _____
0 (Maximum allowed is four (4) per APC)

0 Q5.If Q1 is 'YES' then,

0 Enter the number of Application Processors required ? _____

0 Q6.If Q3 is 'YES' then,

0 a.If one (1) File Processor(FP) is specified in Q4 then
0 enter the following:

File Processor (FP)	#Hard Disk	#Digital Audio Tape	#Blanks for future use	
FP0				Total #Devices for FP0 SD0 = _____
	Total # Hard Disk HDISK = _____	Total # Audio Tape DDISK = _____		

0 b.If two (2) File Processor is specified in Q4 then
0 enter the following:

File Processor (FP)	#Hard Disk	#Digital Audio Tape	#Blanks for future use	
FP0				Total #Devices for FP0 SD0 = _____

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0	+	-----	+	+	+	+	+
0		FP1					Total #Devices for FP1 SD1 = _____
0	+	+	+	+	+	+	+
0			Total # Hard Disk	Total # Audio Tape			
0			HDISK = _____	DDISK = _____			
0	+	+	+	+	+	+	+

0 c.If three (3) File Processor is specified in Q4 then
0 enter the following:

0	+	-----	+	+	+	+	+
0		File Processor (FP)	#Hard Disk	#Digital Audio Tape	#Blanks for future use		
0	+	+	+	+	+	+	+
0		FP0				Total #Devices for FP0 SD0 = _____	
0	+	+	+	+	+	+	+
0		FP1				Total #Devices for FP1 SD1 = _____	
0	+	+	+	+	+	+	+
0		FP2				Total #Devices for FP2 SD2 = _____	
0	+	+	+	+	+	+	+
0			Total # Hard Disk	Total # Audio Tape			
0			HDISK = _____	DDISK = _____			
0	+	+	+	+	+	+	+

0 d.If four(4) File Processor is specified in Q4 then
0 enter the following:

0	+	-----	+	+	+	+	+
0		File Processor	#Hard Disk	#Digital Audio	#Blanks for future		
0	+	+	+	+	+	+	+

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(FP)		Tape	use	
FP0				Total #Devices for FP0 SD0 = _____
FP1				Total #Devices for FP1 SD1 = _____
FP2				Total #Devices for FP2 SD2 = _____
FP3				Total #Devices for FP3 SD3 = _____
Total # Hard Disk HDISK = _____		Total # Audio Tape DDISK = _____		

0 Q8. Use the following table to fill in the remaining shelves on
0 the APC cabinet.

0 1. If FP = 1 and SD0 = 1,2,3, or 4 then

0 Note:

0 #empty shelves left = #empty equipped shelves required
0 + empty unequip shelves left

	If	If	If	If	If	If
	AP = 0	AP = 1	AP = 2	AP = 3	AP = 4	AP = 5
#empty shelves left	2	2	1	1	0	0
#empty equiped						

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0	shelves					
0	required					
0	+-----+					
0	#empty					
0	unequip					
0	shelves					
0	left					
0	+-----+					

0 FILLER = # empty equipped shelves required

0 BLANK = # empty unequip shelves left

0 2. If FP = 1 and SD0 = 5,6,7, or 8 then

0 Note:

0 #empty shelves left = #empty equipped shelves required
0 + empty unequip shelves left

0		+-----+					
0		If	If	If	If	If	If
0		+-----+					
0		AP = 0	AP = 1	AP = 2	AP = 3	AP = 4	AP = 5
0	+-----+						
0	#empty						
0	shelves	1	1	0	0	0	0
0	left						
0	+-----+						
0	#empty						
0	equipped						
0	shelves						
0	required						
0	+-----+						
0	#empty						
0	unequip						
0	shelves						
0	left						
0	+-----+						

0 FILLER = # empty equipped shelves required

0 BLANK = # empty unequip shelves left

0

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0 3. If FP = 1 and SD0 = 9,10,11 or 12 then

0 Note:

0 #empty shelves left = #empty equipped shelves required
0 + empty equipped shelves left

	If	If	If	If	If	If
	AP = 0	AP = 1	AP = 2	AP = 3	AP = 4	AP = 5
#empty shelves left	0	0	0	0	0	0

0 FILLER = # empty equipped shelves required

0 BLANK = # empty unequip shelves left

0 4. If FP = 2 and (1 <= SD0 <= 2) and (1 <= SD1 <= 2)

0 Note:

0 #empty shelves left = #empty unequip shelves required
0 + empty unequip shelves left

	If	If	If	If	If	If
	AP = 0	AP = 1	AP = 2	AP = 3	AP = 4	AP = 5
#empty shelves left	2	1	1	0	0	0
#empty equipped shelves required						

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```

0 | #empty |   |   |   |   |
0 | equipd |   |   |   |   |
0 | shelves|   |   |   |   |
0 | left   |   |   |   |   |
0 +-----+-----+-----+-----+

```

0 FILLER = # empty equipped shelves required

0 BLANK = # empty unequip shelves left

0 5. If FP = 2 and (2 < SD0 <= 4) and (2 < SD1 <= 4)

0 Note:

0 #empty shelves left = #empty equipped shelves required
0 + empty unequip shelves left

```

0 +-----+-----+-----+-----+-----+-----+
0 | If | If | If | If | If | If | If |
0 +---+---+---+---+---+---+---+
0 | AP = 0 | AP = 1 | AP = 2 | AP = 3 | AP = 4 | AP = 5 |
0 +-----+-----+-----+-----+-----+-----+
0 | #empty | 2 | 1 | 1 | 0 | 0 | 0 |
0 | shelves|   |   |   |   |   |   |
0 | left   |   |   |   |   |   |   |
0 +-----+-----+-----+-----+-----+-----+
0 | #empty |   |   |   |   |   |   |
0 | equipd |   |   |   |   |   |   |
0 | shelves|   |   |   |   |   |   |
0 | required|   |   |   |   |   |   |
0 +-----+-----+-----+-----+-----+-----+
0 | #empty |   |   |   |   |   |   |
0 | unequip|   |   |   |   |   |   |
0 | shelves|   |   |   |   |   |   |
0 | left   |   |   |   |   |   |   |
0 +-----+-----+-----+-----+-----+-----+

```

0 FILLER = # empty equipped shelves required

0 BLANK = # empty unequip shelves left

0 6. If FP = 2 and (2 <= SD0 <= 4) and (1 <= SD1 <= 2)

0 Note:

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0
0 #empty shelves left = #empty equipped shelves required
0 + empty unequip shelves left

	If	If	If	If	If	If
	AP = 0	AP = 1	AP = 2	AP = 3	AP = 4	AP = 5
#empty shelves left	1	0	0	0	0	0
#empty equipped shelves required						
#empty unequip shelves left						

0 FILLER = # empty equipped shelves required

0 BLANK = # empty unequip shelves left

0 7. If FP = 2 and ((4 < SD0 <= 6) and (1 <= SD1 <= 2) or
0 (6 < SD0 <= 8) and (1 <= SD1 <= 2) or
0 (6 < SD0 <= 8) and (2 < SD1 <= 4))

0 Note:

0 #empty shelves left = #empty equipped shelves required
0 + empty unequip shelves left

	If	If	If	If	If	If
	AP = 0	AP = 1	AP = 2	AP = 3	AP = 4	AP = 5
#empty shelves left	0	0	0	0	0	0

0 There are zero (0) empty shelves left.

0
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0
0 BLANKS = 0

0 FILLER = 0

0 8. If FP = 3 Then

0 There are zero (0) empty shelves left.

0 BLANKS = 0

0 FILLER = 0

0 9. If FP = 4 Then

0 There are zero (0) empty shelves left.

0 BLANKS = 0

0 FILLER = 0

0

0 APC CALCULATIONS and PROVISIONING

0 CABINET(APC) PROVISIONING

0 1. Order the required quantities of APCs

0 # NT9X80BA = 1a.

0 2. If 1b. is 'YES' then provide one (1) NT9X26AB.

0 3. If 1c. is 'YES' then provide one (1) NT9X0146.

0 4. If 1d. is 'YES' then provide one (1) NT9X0172

0 5. If 1e. is 'YES' then provide one (1) NT0X2430.

0 6. If 1f. is 'YES' then provide one (1) NT0X2516.

0

0
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0 7. If 1g. is 'YES' then provide one (1) NTEX5001.

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0 SHELF and CIRCUIT PACK PROVISIONING

0 C1. If Q1 is 'YES' then depending on the type of application provide
0 the required amount of NT9X14DB (24 MByte Memory CP)

0 #NT9X14DB = $Q1/24$ (Round Up)
0 (max. of four (4) NT9X14DB per plane)

0 C2. If Q2 is 'YES' then depending on the type of application provide
0 the required amount of NT9X14DB (24 MByte Memory CP)

0 #NT9X14DB = $Q2/24$ (Round UP)
0 (max. of three (3) NT9X14DB per plane)

0 C3.If Q1 is 'YES' then AP = Q5.

0 C4.If in Q6. , AP = 8 then

0 Order four (4) NTZZ35BA.

0 Order four (4) NTZZ35DA.

0

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0 C5.If Q4 = 1, (one (1) File Processor)

0 Depending upon the number of Storage Devices(SD0) and
0 Application Processors(AP) required use the following
0 tables 1 and 3 to calculate the quantities needed.

0 Table 1 : use for Shelf Provisioning

0 Table 2 : use for Circuit Pack Provisioning

0 SHELF PROVISIONING:

0 1. Order one (1) NT9X8101 Application Processor Shelf.

0 2. Order the required quantity of NT9X01FB.

0 # NT9X01FB = FILLER

0 3. Order the required quantity of NT0X24BD.

0 # NT0X24BD = BLANK

0 Notes for Table 1:

0 APS = NT9X8101 Application Processor Shelf

0 SDS = NT9X8301 Storage Device Shelf

0 FIL = NT9X01FB Filler Packfill

0 UNQ = NT0X24BD Blank Shelf

0 Table 1:

	If	If	If	If	If	If
#SD0	AP = 1	AP = 2	AP = 3	AP = 4	AP = 5	AP = 0
1	(0)APS (1)SDS	(1)APS (1)SDS	(1)APS (1)SDS	(2)APS (1)SDS	(2)APS (1)SDS	(0)APS (1)SDS

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0	2	(0)APS (1)SDS	(1)APS (1)SDS	(1)APS (1)SDS	(2)APS (1)SDS	(2)APS (1)SDS	(0)APS (1)SDS
0	+-----+						
0	3	(0)APS (1)SDS	(1)APS (1)SDS	(1)APS (1)SDS	(2)APS (1)SDS	(2)APS (1)SDS	(0)APS (1)SDS
0	+-----+						
0	4	(0)APS (1)SDS	(1)APS (1)SDS	(1)APS (1)SDS	(2)APS (1)SDS	(2)APS (1)SDS	(0)APS (1)SDS
0	+-----+						
0	5	(0)APS (2)SDS	(1)APS (2)SDS	(1)APS (2)SDS	NA	NA	(0)APS (2)SDS
0	+-----+						
0	6	(0)APS (2)SDS	(1)APS (2)SDS	(1)APS (2)SDS	NA	NA	(0)APS (2)SDS
0	+-----+						
0	7	(0)APS (2)SDS	(1)APS (2)SDS	(1)APS (2)SDS	NA	NA	(0)APS (2)SDS
0	+-----+						
0	8	(0)APS (2)SDS	(1)APS (2)SDS	(1)APS (2)SDS	NA	NA	(0)APS (2)SDS
0	+-----+						
0	9	(0)APS (3)SDS	NA	NA	NA	NA	(0)APS (3)SDS
0	+-----+						
0	10	(0)APS (3)SDS	NA	NA	NA	NA	(0)APS (3)SDS
0	+-----+						
0	11	(0)APS (3)SDS	NA	NA	NA	NA	(0)APS (3)SDS

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0							
0	+-----+	+-----+	+-----+	+-----+	+-----+	+-----+	+-----+
0							
0	12	(0)APS	NA	NA	NA	NA	(0)APS
0		(3)SDS					(3)SDS
0							
0	+-----+	+-----+	+-----+	+-----+	+-----+	+-----+	+-----+

0 CIRCUIT PACK PROVISIONING

- 0 1. Order one (1) NTZZ35CA.
- 0 2. Order two (2) NT9X87AA Dual Access Buffer Memory.
- 0 3. Order four (4) NT9X88AA Dual SCSI Interface PB.
- 0 4. Order the required quantities of NT9X90AA.
- 0 #NT9X90AA = HDISK
- 0 5. Order the required quantities of NT9X90BA.
- 0 #NT9X90BA = DDISK

0 Notes for Table 2:

0 #SD0 = the number of storage devices.(See Q15a)

0 SD = Storage Devices
0 SDL = NTZZ35FA
0 SDR = NTZZ35GA
0 SDF = NTZZ35HA

0 AP = Application Processor
0 AP-L = NTZZ35BA
0 AP-R = NTZZ35DA

0 PK = Filler Package
0 FP-R = NTZZ35JA
0 FS-A = NTZZ35KA

0 NA = Not Applicable

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Example: (1) SDL means, order one (1) NTZZ35FA.

Table 2:

#SD0	SD	If AP = 0	If AP = 1	If AP = 2	If AP = 3	If AP = 4	If AP = 5
1	(1)SDL	(2)FP-R	(1)AP-R (1)FP-R	(1)AP-L (1)AP-R (2)FP-R	(1)AP-L (2)AP-R (1)FP-R	(2)AP-L (2)AP-R (2)FP-R	(2)AP-L (3)AP-R (2)FP-R
2	(1)SDL	(2)FP-R	(1)AP-R (1)FP-R	(1)AP-L (1)AP-R (1)AP-R (2)FP-R	(1)AP-L (2)AP-R (2)AP-R (1)FP-R	(2)AP-L (2)AP-R (2)AP-R (2)FP-R	(2)AP-L (3)AP-R (3)AP-R (1)FP-R
3	(1)SDF	(1)FP-R	(1)AP-R	(1)AP-L (1)AP-R (1)FP-R	(1)AP-L (2)AP-R	(2)AP-L (2)AP-R (1)FP-R	(2)AP-L (3)AP-R
4	(1)SDF	(1)FP-R	(1)AP-R	(1)AP-L (1)AP-R (1)FP-R	(1)AP-L (2)AP-R	(2)AP-L (2)AP-R (1)FP-R	(2)AP-L (3)AP-R
5	(1)SDL (1)SDF	(2)FP-R	(1)AP-R (1)FP-R	(1)AP-L (1)AP-R (2)FP-R	(1)AP-L (2)AP-R (1)FP-R	NA	NA
6	(1)SDL (1)SDF	(2)FP-R	(1)AP-R (1)FP-R	(1)AP-L (1)AP-R (2)FP-R	(1)AP-L (2)AP-R (1)FP-R	NA	NA
7	(2)SDF	(1)FP-R	(1)AP-R	(1)AP-L (1)AP-R (1)FP-R	(1)AP-L (2)AP-R	NA	NA

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0 C15.If Q4 = 2, (two (2) File Processor)

0 Depending upon the number of Storage Devices(SD0) and
0 Application Processors(AP) required use the following
0 tables 3 and 4 to calculate the quantities needed.

0 Table 3 : use for Shelf Provisioning

0 Table 4 : use for Circuit Pack Provisioning

0 SHELF PROVISIONING:

0 1. Order one (1) NT9X8101 Application Processor Shelf.

0 2. Order the required quantity of NT9X01FB.

0 # NT9X01FB = FILLER

0 3. Order the required quantity of NT0X24BD.

0 # NT0X24BD = BLANK

0 Notes for Table 3:

0 APS = NT9X8101 Application Processor Shelf

0 SDS = NT9X8301 Storage Device Shelf

0 Table 3:

		If	If	If	If	If
#SD0	#SD1	AP = 1	AP = 2	AP = 3	AP = 4	AP = 0
If 1<= SD0 <= 2	If 1<= SD1 <= 2	(1)APS (1)SDS	(1)APS (1)SDS	(2)APS (1)SDS	(2)APS (1)SDS	(0)APS (1)SDS
If 2< SD0 <= 4	If 1<= SD1 <= 2	(1)APS (2)SDS	(1)APS (2)SDS	NA	NA	(0)APS (2)SDS

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0	+	-----	+	+	+	+	+	+	+	+	+	+
0		If		If								
0		4< SD0		1<= SD1		NA		NA		NA		(0)APS
0		<= 6		<= 2								(3)SDS
0												
0	+	-----	+	+	+	+	+	+	+	+	+	+
0		If		If								
0		6< SD0		1<= SD1		NA		NA		NA		(0)APS
0		<= 8		<= 2								(3)SDS
0												
0	+	-----	+	+	+	+	+	+	+	+	+	+
0		If		If								
0		6< SD0		2< SD1		NA		NA		NA		(0)APS
0		<= 8		<= 4								(3)SDS
0												
0	+	-----	+	+	+	+	+	+	+	+	+	+
0		If		If		(1)APS		(1)APS		NA		(0)APS
0		2< SD0		2< SD1		(2)SDS		(2)SDS		NA		(2)SDS
0		<= 4		<= 4								
0												
0	+	-----	+	+	+	+	+	+	+	+	+	+

0 CIRCUIT PACK PROVISIONING

- 0 1. Order one (1) NTZZ35CA.
- 0 2. Order one (1) NTZZ35EA.
- 0 3. Order four (4) NT9X87AA Dual Access Buffer Memory.
- 0 4. Order eight (8) NT9X88AA Dual SCSI Interface PB.
- 0 5. Order the required quantities of NT9X90AA.
- 0 #NT9X90AA = HDISK
- 0 6. Order the required quantities of NT9X90BA.
- 0 #NT9X90BA = DDISK

0 Notes for Table 4:

0 SD0 = number of storage devices on Bus0.(See Q15b)

0 SD1 = number of storage devices on Bus1.(See Q15b)

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0 SD = Storage Devices
0 SDL = NTZZ35FA
0 SDR = NTZZ35GA
0 SDF = NTZZ35HA

0 PK = Filler Package
0 FP-R = NTZZ35JA
0 FS-A = NTZZ35KA

0 AP = Application Processor
0 AP-L = NTZZ35BA
0 AP-R = NTZZ35DA

0 NA = Not Applicable

0 Example: (1) SDL means, order one (1) NTZZ35FA.

0 Table 4:

			If	If	If	If	If
#SD0	#SD1	SD	AP = 0	AP = 1	AP = 2	AP = 3	AP = 4
If 1<= SD0 <= 2	If 1<= SD1 <= 2	(1)SDF	NA	(1)AP-L (1)FP-R	(1)AP-L (1)AP-R	(2)AP-L (1)AP-R (1)FP-R	(2)AP-L (2)AP-R
If 2< SD0 <= 4	If 1<= SD1 <= 2	(1)SDL (1)SDF	(1)FP-R	(1)AP-L (2)FP-R	(1)AP-L (1)AP-R (1)FP-R	NA	NA
If 4< SD0 <= 6	If 1<= SD1 <= 2	(1)SDL (2)SDF	(1)FS-A (1)FP-R	NA	NA	NA	NA
If 6< SD0 <= 8	If 1<= SD1 <= 2	(1)SDL (2)SDF	(1)FP-R	NA	NA	NA	NA

0	If	If						
0	6< SD0	2< SD1	(3)SDF	NA	NA	NA	NA	NA
0	<= 8	<= 4						
0								
0	+-----+							
0	If	If						
0	2< SD0	2< SD1	(2)SDF	NA	(1)AP-L	(1)AP-L	NA	NA
0	<= 4	<= 4			(1)FP-R	(1)AP-R		
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0								
0	+-----+							

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0 C16.If Q4 = 3, (three (3) File Processor)

0 Depending upon the number of Storage Devices(SD0) and
0 Application Processors(AP) required use the following
0 tables 5 and 6 to calculate the quantities needed.

0 Table 5 : use for Shelf Provisioning

0 Table 6 : use for Circuit Pack Provisioning

0 SHELF PROVISIONING:

0 1. Order two (2) NT9X8101 Application Processor Shelf.

0 2. Order the required quantity of NT9X01FB.

0 # NT9X01FB = FILLER

0 3. Order the required quantity of NT0X24BD.

0 # NT0X24BD = BLANK

0 Notes for Table 5:

0 APS = NT9X8101 Application Processor Shelf

0 SDS = NT9X8301 Storage Device Shelf

0 Table 5:

			If	If
#SD0	#SD1	#SD2	AP = 0	AP = 1
If 1<= SD0 <= 2	If 1<= SD1 <= 2	If 1<= SD2 <= 2	(0)APS (2)SDS	(0)APS (2)SDS
If 2< SD0 <= 4	If 1<= SD1 <= 2	If 1<= SD2 <= 2	(0)APS (2)SDS	(0)APS (2)SDS

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0 CIRCUIT PACK PROVISIONING

- 0 1. Order two (2) NTZZ35CA.
0 2. Order one (1) NTZZ35EA.
0 3. Order six (6) NT9X87AA Dual Access Buffer Memory.
0 4. Order twelve (12) NT9X88AA Dual SCSI Interface PB.
0 5. Order the required quantities of NT9X90AA.

0 #NT9X90AA = HDISK

- 0 6. Order the required quantities of NT9X90BA.

0 #NT9X90BA = DDISK

0 Notes for Table 6:

0 SD0 = number of storage devices on Bus0. (See Q15c)

0 SD1 = number of storage devices on Bus1. (See Q15c)

0 SD2 = number of storage devices on Bus2. (See Q15c)

0 SD = Storage Devices

0 SDL = NTZZ35FA

0 SDR = NTZZ35GA

0 SDF = NTZZ35HA

0 PK = Filler Package

0 FP-R = NTZZ35JA

0 FS-A = NTZZ35KA

0 AP = Application Processor

0 AP-L = NTZZ35BA

0 AP-R = NTZZ35DA

0 NA = Not Applicable

0 Example: (3) SDL means, order three (3) NT9X89BA.

0 Table 6:

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				If	If	
	#SD0	#SD1	#SD2	SD	AP = 0	AP = 1
If	1<= SD0	1<= SD1	1<= SD2	(1)SDL		(1)AP-R
<= 2	<= 2	<= 2	<= 2	(1)SDF	(2)FP-R	(1)FP-R
If	2< SD0	1<= SD1	1<= SD2	(2)SDF		(1)AP-R
<= 4	<= 4	<= 2	<= 2		(1)FP-R	

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0 C17.If Q4 = 4, (four (4) File Processor)

0 Depending upon the number of Storage Devices(SD0,SD1,SD2,SD3) and
0 Application Processors(AP) required use the following
0 tables 7 and 8 to calculate the quantities needed.

0 Table 7 : use for Shelf Provisioning

0 Table 8 : use for Circuit Pack Provisioning

0 SHELF PROVISIONING:

0 1. Order two (2) NT9X8101 Application Processor Shelf.

0 2. Order the required quantity of NT9X01FB.

0 # NT9X01FB = FILLER

0 3. Order the required quantity of NT0X24BD.

0 # NT0X24BD = BLANK

0 Notes for Table 8:

0 APS = NT9X8101 Application Processor Shelf

0 SDS = NT9X8301 Storage Device Shelf

0 Table 8:

#SD0	#SD1	#SD2	#SD3	AP = 0
If 1<= SD0 <= 2	If 1<= SD1 <= 2	If 1<= SD2 <= 2	If 1<= SD3 <=2	(0)APS (2)SDS

0 CIRCUIT PACK PROVISIONING

0 1. Order two (2) NTZZ35CA.

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0 2. Order two (2) NTZZ35EA.
0
0 3. Order eight (8) NT9X87AA Dual Access Buffer Memory.
0
0 4. Order sixteen (16) NT9X88AA Dual SCSI Interface PB.
0
0 5. Order the required quantities of NT9X90AA.
0 #NT9X90AA = HDISK
0
0 6. Order the required quantities of NT9X90BA.
0 #NT9X90BA = DDISK

0 Notes for Table 8:

0 Application Processors cannot be provided on this configuration.

0 SD0 = number of storage devices on Bus0. (See Q15d)
0 SD1 = number of storage devices on Bus1. (See Q15d)
0 SD2 = number of storage devices on Bus2. (See Q15d)
0 SD3 = number of storage devices on Bus3. (See Q15d)

0 SD = Storage Devices
0 SDL = NTZZ35FA
0 SDR = NTZZ35GA
0 SDF = NTZZ35HA

0 PK = Filler Package
0 FP-R = NTZZ35JA
0 FS-A = NTZZ35KA

0 Example: (2) SDF means, order two (2) NTZZ35HA.

0 Table 8:

#SD0	#SD1	#SD2	#SD3	SD
If 1<= SD0 <= 2	If 1<= SD1 <= 2	If 1<= SD2 <= 2	If 1<= SD3 <=2	(2)SDF

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0 Notes for Table 8:

0 APS = NT9X8101 Application Processor Shelf

0 SDS = NT9X8301 Storage Device Shelf

0 SDP = NT9X91AA Storage Device Power Converters

0 Table 8:

#SD0	#SD1	#SD2	#SD3	AP = 0
If 1<= SD0 <= 2	If 1<= SD1 <= 2	If 1<= SD2 <= 2	If 1<= SD3 <=2	(0)APS (2)SDS

0 APPLICATION PROCESSOR CABINET BUILDING BLOCK DEFINITION

0 The Application Processor Cabinet building block concept deals with a
0 higher level of Product Engineering Code (PEC) ordering and simplifies
0 the engineering ordering process.

0 NTZZ35BA (APC Application Processor Left)

0 Each NTZZ35BA contains CPU Processors, Power Converter, Faceplates,
0 Paddleboards, Bus Terminators to be inserted on the left half shelf of
0 the cabinet to equip one (1) Application Processor.

0 NTZZ35CA (APC File Processor Left)

0 Each NTZZ35CA contains CPU Processors, Power Converter, Faceplates,
0 Paddleboards, Bus Terminators to be inserted on the left half shelf of
0 the cabinet to equip one (1) File Processor.

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0 NTZZ35DA (APC Application Processor Right)

0 Each NTZZ35DA contains CPU Processors, Power Converter, Faceplates,
0 Paddleboards, Bus Terminators to be inserted on the right half shelf
0 of the cabinet to equip one (1) Application Processor

0 NTZZ35EA (APC File Processor Right)

0 Each NTZZ35EA contains CPU Processors, Power Converter, Faceplates,
0 Paddleboards, Bus Terminators to be inserted on the right half shelf
0 of the cabinet to equip one (1) File Processor

0 NTZZ35FA (APC Storage Device Left)

0 NTZZ35FA contains the circuit packs such as Power Converters,
0 Paddleboards, Faceplates necessary for the storage devices. This is
0 placed on the left half shelf of the cabinet.

0 NTZZ35GA (APC Storage Device Right)

0 NTZZ35GA contains the circuit packs such as Power Converters,
0 Paddleboards, Faceplates necessary for the storage devices. This is
0 placed on the right half shelf of the cabinet.

0 NTZZ35HA (APC Storage Device Full)

0 NTZZ35HA contains the circuit packs such as Power Converters,
0 Paddleboards, Faceplates necessary for the storage devices on a full
0 shelf in the cabinet.

0 NTZZ35JA (APC Pack Fill Right)

0 NTZZ35JA contains the circuit packs such as Filler Faceplates,
0 Paddleboards, etc. necessary for the right side of the cabinet. It is
0 used only on the right half side of a application processor shelf and
0 only when that right half shelf is empty.

0 NTZZ35KA (Storage Device Pack Fill Right With Paddleboard)

0 NTZZ35KA contains the circuit packs such as Filler Faceplates,
0 Paddleboards, etc. necessary for the right side of the cabinet. It is
0 used in tandem with the NTZZ35HA(Storage Device Full).

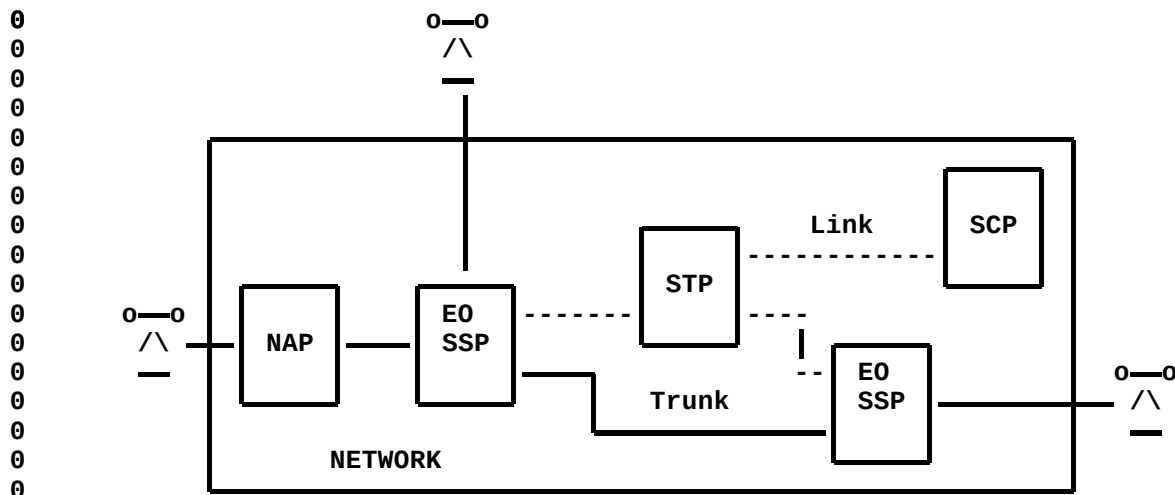
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0 23.0 Advanced Intelligent Networking (AIN) Rel. 0.0

0 Advanced Intelligent Networking (AIN) is an application on the Service
0 Switch Point (SSP) in a CCS7 Network. The AIN software provides the
0 ability to send, receive, process, and bill for queries/responses
0 from/to a Service Control Point (SCP) database depending upon specific
0 triggering events. AIN will also offer deployment of services in a
0 centralized database accessible from all switches via standard inter-
0 faces and better provisioning, operations, and administration capabil-
0 ities.



0 The AIN Network architecture is comprised of the Network Access Point
0 (NAP), the Service Switch Point (SSP), the Signal Transfer Point
0 (STP), and the Service Control Point (SCP).

0 The NAP is an End Office (EO) which supports AIN functionality but
0 does not have the capability to access the SCP using the CCS7 Trans-
0 action Capability Application Part (TCAP) messages. Therefore, it
0 must pass all AIN calls to the SSP either by way of Multi-Frequency
0 (MF) Equal Access or CCS7 ISDN User Part (ISUP) trunk signalling. The
0 SSP is the EO responsible for formulating the TCAP query to the SCP
0 for subscribers connected directly to it or connected to subtending
0 NAPs. Upon receiving a response from the SCP, the SSP routes the call
0 to its appropriate destination based on information received from the
0 SCP in the response message.

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0 The STP is responsible for routing the CCS7 TCAP messages to the appropriate SCP, based on Global Title Translations(GTT).

0 The SCP contains all the information required to provide the services to the customer. Once it receives the query from the SSP, it determines the service to be provided to the subscriber and provides the information required by the SSP to proceed with the call.

0 23.1 HARDWARE PROVISIONING

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0 23.1.1 HARDWARE USAGE RESTRICTIONS

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0 The NT1X75BA DRAM controller card for AIN announcement delivery must be used in any offices that contain BCS 34 and above. The NT1X75AA controller card cannot support AIN 0.0 announcement delivery in BCS 34 and beyond.

0 AIN will be implemented using the DMS SuperNode only.

0 AIN CCS7 Messaging:

0 AIN will have an affect on the messaging capabilities of DMS CCS7 messaging peripherals (LIU7/LPP - Link Interface Unit No. 7 on Link Peripheral Processor and MSB7 - Message Switch and Buffer No. 7). The LPP is a Series 3 SOS-based peripheral whose performance characteristics have been documented in System Engineering Bulletin No. 90-06-001. The MSB7 is a Series 2 XPM peripheral whose performance characteristics have been documented in System Engineering Bulletin No. 90-08-001. These SEBs discuss the real time and messaging performance limitations/characteristics of both peripherals. They describe how to account for PVN messaging traffic when provisioning or analyzing the product. Since PVN is the forerunner/associate to AIN, the inputs to all engineering guidelines which call for PVN also apply to AIN. Specifically, the MSB7 has critical TCAP messaging capabilities/limitations which must be analyzed in conjunction with any AIN CM real time analysis. Please reference these SEBs for further specific LIU7 and MSB7 performance calculations.

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0 23.1.2 HARDWARE DEPENDENCIES

0
0 Not applicable.

0 23.1.3 PROVISIONING CONSIDERATIONS

0
0 AIN does not include any new or specific hardware. It is
0 strictly software only and uses hardware already available in the
0 DMS.

0 The following describes the technical performance characteristic
0 to support the near-term goals of Advanced Intelligent Network
0 (AIN). The NT AIN project is primarily targetted to Ameritech
0 and detailed specifications produced by them. The only develop-
0 ment work under- taken by BNR/NT is in the SSP (Service Switching
0 Point). The development in the DMS SSP allows Ameritech's tele-
0 phone companies the ability to formulate, send, and receive in-
0 formation to/from an SCP (Service Control Point). The purposes
0 of these transactions would typically be one of the following:
0 request instructions, receive and process routing instructions,
0 receive instructions to play announcements, and receive special
0 billing instructions.

0 The product that NT is delivering for the AIN Release 0.0 project
0 is a DMS SSP with enhanced software to support the required AIN
0 functionality. An overview of the functionality is as follows:

0 Triggers: The DMS SSP will support a number of "triggers" that
0 are points in the processing of a call where the SSP formulates a
0 TCAP (Transaction Capabilities Application Part) message to be
0 sent to the SCP. Typical information sent in a query are: call-
0 ing number and called number (among others) that are required to
0 drive service logic in the SCP. The SCP typically responds to
0 these queries with appropriate instructions or further requests
0 for information regarding the disposition of the call in
0 progress.

0 Routing Instruction Processing: The usual response to a query is
0 one to route the call somewhere. The SCP can specify the TCAP

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0 interface that the call be routed over either public or private
0 facilities. The former is achieved by specifying an appropriate
0 carrier and routing number, the latter is achieved by specifying
0 a routing index and an outpulse number. It is the SSP's respon-
0 sibility to act on either of these recommendations.

0 Announcements: The SCP can instruct the SSP to play an announce-
0 ment for the user, for the purposes of terminating the call, or
0 for collecting a piece of information from the user via the DTMF
0 dialpad. It is the SSP's responsibility to play the announcement
0 as instructed and report back any information collected to the
0 SCP for further processing.

0 Billing: Upon completion of a call, the SCP can instruct the SSP
0 how to bill the call, in terms of what BellCore AMA Call Code to
0 be used when generating the billing record.

0 Termination Notification: The SCP can instruct the SSP to send
0 what is known as termination information once the call is com-
0 pleted. Typical information is connect time, answer indication,
0 etc., and is sent to the SCP from the SSP only when the call is
0 completed. The SCP can use this information for whatever purpose
0 it desires.

0 Call Gapping: As a form of overload control, the SCP can in-
0 struct the SSP to restrict calls from a particular NPA-NXX for a
0 specified time. This mechanism allows the SCP a method by which
0 to flow-control queries from particular central offices or ge-
0 ographic locations.

0 Error Handling: As a general statement, the SSP is responsible
0 for handling all errors in messages that may be sent by the SCP.
0 This includes protocol error handling (mis-encoded parameters,
0 missing mandatory parameters, timeouts, out-of-sequence messages,
0 etc.), and application level error handling. Also, the SSP must
0 handle internal failures at the protocol and application level.

0 The background of the existing DMS SSP to support AIN
0 functionality goes back to the days prior to the awarding of the
0 contract for the U.S. Federal General Service Administration.
0 This project was called FTS-2000. The DMS implementation of
0 capabilities in the SSP to support the functionality required for
0 this bid was the Private Virtual Networking (PVN) project and its
0 associated BCS 24 - BCS 28 software. The PVN project was never
0 taken to V0. Subsequently, in BCS 32, features are being intro-
0 duced built upon that PVN platform.

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0 Refer to the following documents for provisioning of existing
0 hardware required for AIN:

0 ECM426 - Service Control Point (SCP)

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0 ECM271 - Common Channel Signaling System #7

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0

0 ECM620 - Building Block/Detail Engineering - LIM

0 23.1.4 OFFICE LAYOUT INFORMATION

0
0 Not Applicable

0 23.1.5 TRAFFIC TABLES

0
0 Not applicable.

0 23.2 PRODUCT/SYSTEM SPECIFICATION

0

0 23.2.1 PHYSICAL CHARACTERISTICS

0
0 Not applicable.

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0 23.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Not applicable.

0 23.2.3 SPARING INFORMATION

0
0 Not applicable.

0 23.3 SOFTWARE PROVISIONING

0

0 23.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 For AIN Rel.0.0 four different packages will be provided:

0	NTX983AB	Service Switching Point Private Virtual Networking
0	NTXP01AA	Intelligent Network 0.0 Base
0	NTXM26AA	Announcements Enhancements
0	NTXN28AA	Intelligent Network Billing Attributes

0 It should also be noted that AIN depends on the existing SS7
0 Software and Hardware as well as multiple Meridian Digital
0 Centrex (MDC) packages.

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0 23.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

0 23.3.3 MEMORY PROVISIONING

0
0 No significant CC DS or PS memory impacts have been noted to date
0 for PVN or AIN.

0 23.4 REAL TIME IMPACT

0 The following generic performance information is for AIN Rel 0.0
0 triggering. Specific AIN capabilities/features will be evaluated
0 as applicable.

0 The AIN SSP-SCP query/response messaging functionality is the
0 critical DMS performance criterion when analyzing AIN offices be-
0 cause of its' additional real time impact to the base Super Node
0 Compute Module (CM) Central Processing Unit (CPU) call timings.
0 For AIN Release 0.0, the estimated SuperNode MC68020 (SR20) CM
0 CPU real time additive for processing the AIN portion for any ap-
0 plicable call type is approximately +7.0 ms per TCAP message
0 added to any base call timing. For example, a two message TCAP
0 query/response AIN messaging exchange would mean an additional
0 +14 ms.

0 Refer to SEA 91-03-002 for further information

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0 24.0 CCIS, CCITT No. 6 Equipment - MS6E, ST6E, DME

0 The Message Switching 6 Equipment (MS6E) houses DMS Common Channel
0 Interoffice Signalling (CCIS) hardware and DMS CCITT #6 Signalling
0 (for DMS-300 application) hardware. The MS6E is composed of the Mes-
0 sage Switch and Buffer 6 (MSB6), Signalling Terminals (ST), modems
0 and inverters. The Signalling Terminals and associated modems are
0 setup into two groups of eight (8) on the MS6E frame. The MSB6 commu-
0 nicates with the Digital Trunk Controllers (DTC) via up to 8 net-
0 work ports per plane. The MSB6 switches signalling messages between
0 the ST's and the CCIS or CCITT #6 trunks on the DTC's via the
0 Inter-Peripheral Message Links (IPML's). The signalling terminal
0 provides the interface function between the DMS and the signalling
0 network.

0 The Signalling Terminal Extension Frame houses CCITT
0 No.6/CCIS6/CCS7 signalling terminals. The ST6E/ST7E provides the ca-
0 pacity to add up to 48 ST's (on 3 ST extension shelves) in addition
0 to the 16 ST's on the MS6E (NT6X06AB) frame or the 24 ST's on the MS7E
0 (NT6X31AA) frame. The Data Modem Extension Frame (DME) NT6X29
0 must always be provisioned with the ST6E frame.

0 24.1 HARDWARE PROVISIONING

0

0 24.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 24.1.2 HARDWARE DEPENDENCIES

0

0 Not applicable.

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0 P AND C SIDE PORT REQUIREMENTS

0
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0
0 Not applicable

0 CIRCUITS PER CARD

0
0 Not applicable

0 DISCRIMINATION NUMBERING

0
0 Not applicable

0 24.1.3 PROVISIONING CONSIDERATIONS

0
0 The Signalling Terminal 6 Equipment (ST6E) frame is used in CCITT
0 #6 when more than 16 links are required. The Data Modem Ex-
0 tension (DME) frame houses a 2400 baud modem which
0 modulates/demodulates serial binary data to/from Phase Shift
0 Keying (PSK). The DME frame is provisioned in conjunction with
0 the ST6E frame.

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0 24.1.4 OFFICE LAYOUT INFORMATION

0
0 Not applicable.

0 24.1.5 TRAFFIC TABLES

0
0 Refer to ECM-350.

0 24.2 PRODUCT/SYSTEM SPECIFICATION

0

0 24.2.1 PHYSICAL CHARACTERISTICS

0
0 The following describes the physical dimension of NT6X06AC.

0 MECHANICAL DIMENSIONS

0 Height 72in. Width 27in. Depth 18in.

0 24.2.2 EMI/EARTHQUAKE INFORMATION

0
0 Refer to Engineering Manual Section EMA15-01-000 Common Framework
0 and provision the appropriate framework for the appropriate
0 Earthquake Zone.

0

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0 24.2.3 SPARING INFORMATION

0
0 Not applicable.

0 24.2.4 POWER FEED AND FUSING REQUIREMENTS

0
0 The following fuses and feeds are required:

0 24.2.5 CURRENT DRAIN INFORMATION

0
0 The following information are for NT6X06AC.

0 Input Voltage.....-48VDC
0 Power Consumption.....1150 watts.
0 Current Drain.....23.0Amps
0 Fusing Requirements.....4 20 Amp fuses (2 A-Feed, 2 B-Feed)

0 24.3 SOFTWARE PROVISIONING

0

0 24.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0
0 The following software master package and feature packages are
0 required for the MS6E frame. Please check the SOLID or SMS (Soft-
0 ware Management Systems) for any change in requirements since
0 the last release of this document.
0 NTX171BA.....RTM MCCS CCIS6 (Master Package)

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0 The following feature packages are contained within the NTX171BA
0 master package:

0 NTX040AA..... Common Channel Interoffice Signalling
0 NTX171CA..... MCCS Call Processing
0 NTX197AA..... CCIS Direct Signalling

0 24.3.2 SOFTWARE USAGE RESTRICTIONS

0
0 Not applicable.

0 24.3.3 MEMORY PROVISIONING

0
0 Refer to MemCalc for the appropriate memory requirements.

0 24.4 REAL TIME IMPACT

0 Refer to RealQuick or PRTCALC for the Real Time Impact.

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0 25.0 Building Block Engineering - OAM Workstation

0 OA&M workstation provisioning is accomplished using various configura-
0 tions of the following building blocks:

0 | * Simplex Workstation

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0 Host - Signalling Interface Equipment

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0 25.1 Hardware Provisioning

0

0 25.1.1 Hardware Usage Restrictions

0

0 The following limitations and engineering rules apply to OA&M ap-
0 plications:

0 Currently, only 4 EIU's can be provisioned per switch.

0 Mount the MAUs directly to the bulkhead of the LPP and directly
0 to the HP 710 workstation base. The cable from the EIU to the
0 bulkhead, NT9X0190, is included in the EIU Building Block.

0 The MAU to Hub cable is limited to 100 metre. This cable length
0 is custom engineered to length in the range 1 to 100 metre.

0 Ethernet Hubs and MAUs from different vendors shall not be mixed
0 on the same LAN.

0 The HP 710 workstation operates reliably when powered directly
0 from commercial power. However an AC UPS power supply may be
0 used, for greater reliability, if required.

0 The Patching Modem must be located within 10 feet of the work-
0 station because the 1CATSM8 cable is limited to 10 feet.

0 In applications in which the Workstation or any other devices
0 connected to the same Ethernet Hub are not used directly in call
0 processing functions, e.g. as in the ADAS application, the
0 Ethernet Hub should be co-located with the HP 710 workstation and
0 should be placed on a desktop if the distance from the EIU to the
0 workstation is 100 metres or less.

0 Mounting the Ethernet Hub on a desk top allows the use of very
0 short cables between the Hub and additional X-terminals or work-
0 stations. Mounting the Hub in this manner eliminates the need
0 for a separate mounting frame. Note the 12 Port Hub includes
0 miscellaneous mounting hardware for an EIA 19 inch width frame
0 and rubber feet for desktop mounting. This hardware is used with
0 a Hub Mounting bracket for mounting the Hub in a LAN Bay shelf.

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0 | Cable Length Restrictions

0
0 NT9X8510 (CPC: B0237649) Crossover Cable (MAU to MAU or Hub to
0 Hub) is restricted to between 1 meter and 225 meters in length.
0 This cable can be up to 225 meters only when used as a MAU to MAU
0 cable with HP28685B MAU's, with the "long cable" switch on the
0 MAU's selected. The cable length restriction is 100 meters in
0 any other configuration.

0 NT9X8511 (CPC: B0237650) MAU to Hub Cable is restricted from 1
0 meter to 100 meter length. These Cables are engineered according
0 to the CARX15 drawing.

0 25.1.2 Hardware Dependencies

0
0 None identified.

0 P and C Side Port Requirements

0

0 DMS Bus Port Requirements

0

0 Circuits Per Card

0

0

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0 Discrimination Numbering

0

0 25.1.3 Provisioning Considerations

0

0 25.1.4 Office Layout Information

0

0 25.1.5 Traffic Tables

0

0 25.2 Product/System Specification

0

0 25.2.1 Physical Characteristics

0

0 25.2.2 EMI/Earthquake Information

0

0

0

0

0

0 25.2.3 Sparing Information

0
0 Standard sparing algorithms apply.

0 25.2.4 Power Feed and Fusing Requirements

0

0 25.2.5 AC Current Drain Information

0
0 25.3 Software Provisioning

0

0 25.3.1 Required Software Packages and Interdependencies

0

0 25.3.2 Software Usage Restrictions

0
0 None identified.

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0 25.3.3 Memory Provisioning

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0 25.4 Real Time Impact

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0 CHAPTER 8

0 HOST - INPUT/OUTPUT EQUIPMENT

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0 1.0 Meridian Business Services (MBS)

0 1.1 Introduction

0 Meridian Business Services utilize the data handling capabilities
0 of a DMS-100 Family office to provide a centralized telephone
0 communications exchange service. Telephone lines from a customer
0 group subscribing to MBS are connected directly to a DMS-100
0 switch. The functions performed by the DMS-100 switch are deter-
0 mined by MDC feature programs which in turn determine the treat-
0 ment the customer group lines receive. One DMS-100 switch can be
0 devoted to the use of one very large customer group or up to 4095
0 different customer groups can be served by one DMS-100 switch.

0 Line Concentrating Device Provisioning

0 Prior to BCS28, the maximum number of LCDs allowed in an office
0 was 254 with the maximum number of real LCDs limited to 200.
0 Changes in BCS 28 allow up to 254 real LCDs. The use of virtual
0 LCDs will lower the number of real LCDs allowed. For BCS30 and
0 above, the calculation of LCDs per SLC will be changed to 8 SLCs
0 per real LCD.

0 Virtual IDs are assigned to Business Sets. Refer to the Line
0 Concentrating Module, Section 3.5 Peripheral Modules - Host, for
0 more information on how the virtual IDs are assigned to effect
0 the LCD provisioning.

0 1.2 Features

0 Attendant Consoles
0 Electronic Business Set
0 VMX Interface
0 BNM Interface
0 Miscellaneous
0 - DOC certification sticker
0 - assignment of digital modems

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0 1.3 Equipment Provisioning

0 1.3.1 Business Service Attendant Console (BSAC)

0 (a) General Description

0 The Business Service Attendant Console is used in Business Ser-
0 vices applications. It is used to answer calls placed to the
0 listed directory number, don't answer recalls, intercepted calls,
0 station dial "0" calls, etc. The attendant can both complete in-
0 coming calls and originate calls. The attendant can also dial
0 the access code to a trunk group for a station who is waiting
0 off-hook, release from the call and permit the station to dial
0 the called number.

0 (b) References

0 Chapter 2 Traffic Criteria & Capacities
0 Section 3.5 Peripheral Modules - Host
0 NTP 297-2001-100 Integrated Business Network Services
0 - General Description

0 NTP 297-2001-101 Integrated Business Network Services
0 - Attendant Console Description

0 NTP 297-2001-102 Integrated Business Network Services
0 - Console Attendant's Manual

0 NTP 297-2001-103 Integrated Business Network Services
0 - Features Description

0 (c) Provisioning Considerations

- 0 (i) The provisioning method used for determining the number
0 of attendant consoles is based on the CCS method derived
0 from the Erlang C formula.
- 0 (ii) The number of attendant consoles to be provisioned should
0 be based on the following criteria:
- 0 (a) the attendant console activated CCS
 - 0 (b) the speed of answer objectives
 - 0 (c) and the average attendant work time (AWT)

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0 Each attendant subgroup will have its own queue of idle
0 occupied positions and its own call queue. Calls will be
0 queued on the FIFO (first in first out) basis.

0 (iii) The attendant console activated CCS can then be referred
0 to Table S, Attendant Console Traffic Capacity Table, in
0 Chapter 2 to obtain the attendant console requirements.
0 The formula from which this table was constructed in-
0 cludes the proper variation in available time for the ac-
0 tual team size and attendant work time per call
0 encountered to meet a certain grade of service (speed of
0 answer) objective.

0 (iv) As team size becomes larger, attendant occupancy rises.
0 Occupancy is that portion of an hour during which the at-
0 tendant in a team can be occupied handling calls and
0 still be available for enough of the hour to provide the
0 speed of answer objective. Attendant occupancy will be
0 limited to 92 percent.

0 (v) The grade of service objectives will be stated in terms
0 of average speed of answer or probability of delay
0 greater than t seconds. These objectives are useful or
0 of meaning only up to the point (team size) where the
0 limiting occupancy is reached. Beyond that point occu-
0 pancy must be the guide.

0 (a) Average speed of answer objective:

0 $d = 4$ seconds

0 (b) Probability of delay greater than t
0 seconds objective:

0 $P(\text{delay} > 10 \text{ sec}) = 8\%$

0 (vi) If the average attendant work times for various types of
0 calls are unknown, such as is the usual case on an ini-
0 tial job, it may be obtained from a similar installation
0 or determined by using Table R, Console Attendant Work
0 Times In Seconds, in Chapter 2 and an estimate of the
0 number of each type of call expected to be processed by
0 the attendant. Table R lists the more common types of
0 average attendant work times. Call types not listed
0 should be estimated by comparison to similar types
0 listed.

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0 Following is the detailed calculation for determining the
0 number of Attendant Consoles required:

- 0 1. Determine the number of calls by call type. Re-
0 fer to Table R.
- 0 2. Determine average attendant work time (AWT) per
0 call type. Refer to Table R.
- 0 3. Calculate the attendant console activated CCS by
0 using the following formula:

$$\begin{array}{lcl} \text{Attendant console} & \text{No. of calls/call type X AWT/call type} & \\ \text{activated CCS} & = \frac{\text{-----}}{100} & \end{array}$$

- 0 4. Calculate the Total number of calls (ie. the
0 total of all calls in item 1.)
- 0 5. Calculate the total attendant console activated
0 CCS (ie. total of step 3 for all call types)
- 0 6. Divide the total attendant console activated CCS
0 by 36.
- 0 7. Calculate the average attendant work time for
0 the attendant consoles using the following for-
0 mula:

$$\begin{array}{lcl} \text{AWT} & = \frac{\text{Attendant console activated CCS X 100}}{\text{Total number of calls}} & \end{array}$$

0 Refer to Table S and pick the closest appropri-
0 ate value to AWT.

- 0 8. Based on the total attendant console activated
0 CCS divided by 36, a speed of answer objective
0 of four (4) seconds, and an average attendant
0 work time, refer to Table S and derive the at-
0 tendant console value. Interpolation may be re-
0 quired.
- 0 9. The number of attendant consoles required is
0 equal to the total attendant console activated
0 CCS divided by 36 plus the attendant console

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0 value derived from step 8. The number is
0 rounded up to the next higher integer.

0 With an upper limit for attendant console occu-
0 pancies of no greater than 92% (or 33.12
0 CCS/attendant), the number of attendant consoles
0 required (for values of attendant console acti-
0 vated CCS/36 to the left of the line in Table S)
0 is equal to the total attendant console CCS di-
0 vided by 33.12. The number is rounded up to the
0 next higher integer.

0 (vii) The attendant console can be ordered as an English ver-
0 sion (NT4X09BB) or as a French version (NT4X09BC).

0 (viii) If required, Canadian offices shall order one of the fol-
0 lowing headsets/headset accessories per BSAC:

0	PEC	DESCRIPTION
0	QSR2F2	Hset w/T Mark Std w/o Acc
0	QSR2G1	Hset Std w/15 ft cord
0	QKP1A	Headset Acc Kit

0 If required, U.S. offices shall order one of the follow-
0 ing headsets per BSAC:

0	PEC	DESCRIPTION
0	HS0552-1	Supra Monaural Headset
0	HS0554-1	Supra Binaural Headset

0 (ix) The attendant console is connected to an LCM/RLCM/RLM/LM
0 via three (3) Type A Line Cards, one (1) for voice and
0 two (2) for Frequency Shift Keying data. These cards
0 must be assigned in the same line drawer. Standard 1300
0 ohm loops are to be used. Attendant consoles should be
0 spread over all line modules.

0 Provide three (3) Type A Line Cards for each BSAC.

0 (x) Each attendant console requires a digital modem circuit.
0 Two circuit packs, NT3X02AA and NT3X03AA, provided to-
0 gether (called a DMODEM pair) provide four (4) digital
0 modem circuits. A maximum of two (2) DMODEM pairs can be
0 assigned to one MTM.

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0 (xi) Provide a minimum of one (1) Call Waiting Tone Generator
0 card per Central Office equipped with Meridian Business
0 Services. A second card may be provided for increased
0 reliability. Each card contains four (4) circuits. Ref-
0 erence Section 3.5 for provisioning details.

0 (xii) Provide one (1) Six Port Conference Circuit (NT3X67AA)
0 per one (1) or two (2) attendant consoles. When the
0 NT3X67AA card is to be used as two three-port conference
0 circuits, then provide one card per two attendant con-
0 soles, otherwise provide one card per one BSAC. Each card
0 contains two (2) three-port circuits. The circuits to be
0 used is selected from a pool.

0 Three Port Conference Circuits associated with the At-
0 tendant console Digital Modems may be provisioned on the
0 same MTM. Conference circuit packs utilized for six port
0 or 3 way call chaining must not be provisioned on the
0 same MTM as the Attendant console Digital Modems. Refer
0 to Section 3.5 for more provisioning details.

0 (xiii) One NT3X68AB DTMF Sender CP is optionally required when
0 the Attendant Console must output DTMF to some other
0 switching system. Note this circuit is provisionable on
0 a one per office basis two maximum for redundancy.

0 (xiv) Currently the attendant receives messages on the alphanu-
0 meric display in response to call processing and feature
0 processing events. These are system defined English mes-
0 sages. For a listing of these standard messages, see NTP
0 297-2101-451 DMS-100 Local Customer Data Schema, Section
0 169.

0 The optional flexible Display Language feature which is
0 part of software package NTX175AA (see NTP 297-1001-80
0 Software Feature Package Reference Manual) will provide
0 the ability to input equivalent messages for the standard
0 English messages in other languages. With this feature,
0 the customer can order 1, 4 or 7 additional language al-
0 ternatives to the standard English display.

0 For example, if the customer requires three (3) addi-
0 tional languages, then he would have to choose the option
0 that provides four (4) additional languages. Hence, he
0 would have the standard English messages plus the ability
0 to provide equivalent messages in four (4) additional
0 languages.

0 The number of additional language alternatives (i.e.
0 1,4,7) can be changes only at the software load build
0 time.

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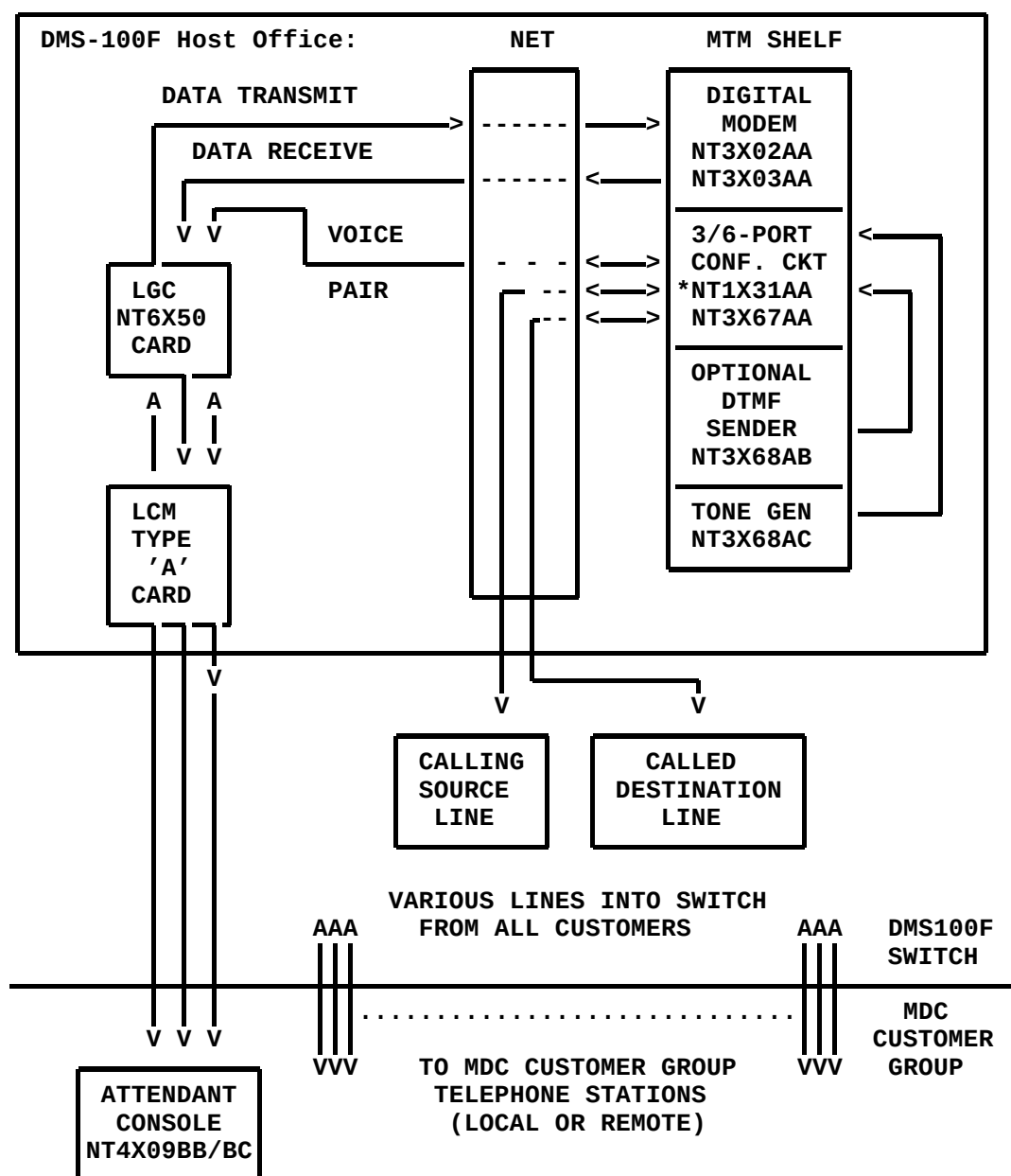


Figure 34.1 Attendant Console Current Configuration Using LGC/LCM



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0 1.3.2 Power Supply For BSAC

0 (a) General Description

0 The BSAC is powered by -48V DC. Power may be obtained from the
0 switch through a cable connection or from a local power supply.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 (i) The attendant console is powered from -48V office bat-
0 tery. It draws a nominal .45A at -52V and a worst case
0 of .64A at -36V. The console comes equipped with a six
0 (6) foot connectorized cable that has leads for voice,
0 data and power. The wiring beyond the six foot cable is
0 to be engineered according to the CA4X09 drawing, Digital
0 Multiplex Switching System DMS-100 Cabling Information
0 For Business Service Attendant Console.

0 (ii) The maximum power cable length from the FSP fuse to the
0 console is 266.7 M (875 ft).

0 (iii) For cases where the console is more than 875 feet from
0 the power source or fuse, a local 120V AC/-48V DC power
0 supply unit must be provided at the BSAC site.

0 (iv) For these cases, the maximum cable length from this aux-
0 iliary power supply unit to the console is 137.2 M (450
0 ft).

0 (v) For these cases, the power supply unit to be used is a
0 Pylon system.

0 (vi) The Pylon Power Supply Unit can provide power to up to
0 two (2) BSAC's.

0 (vii) The input to the power supply is from a regular AC out-
0 let. The power supply comes equipped with a six (6) foot
0 AC cord.

0 (viii) The BSAC power system with battery back up is to be or-
0 dered as the "Pylon NF-3 System". This consists of:

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- 0 (a) The Pylon KTS-3 power supply
- 0 (b) The Pylon NF-3 interface unit
- 0 (c) The Pylon LB-3 battery holder
- 0 (less batteries).

0 The optional battery back up is to be used in conjunction
0 with the power supply, in case of AC power failures.

- 0 (ix) The BSAC power system without battery back up shall con-
0 sist of the following:

- 0 (a) The Pylon KTS-3 power supply
- 0 (b) The Pylon NF-3 interface unit.

- 0 (x) For the optional battery back up, the type of battery to
0 be used with the Pylon NF-3 System is:

0 Qty of four (4) Gates "X" Cells No. 0800-0008.

- 0 (xi) Both the BSAC power system with battery back up and the
0 BSAC power system without battery back up can be in-
0 stalled on the wall or on a 19" or 23" relay rack. The
0 former will require 17.5" of mounting space on the relay
0 rack, the latter will require 9" of mounting space on the
0 relay rack.

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0 1.3.3 Electronic Business Set (EBS)

0 (a) General Description

0 The DMS-100 Electronic Business Set (EBS), designed to operate
0 with Northern Telecom's Meridian Digital Centrex (MDC) software,
0 provides subscribers with pushbutton access to a host of business
0 features. The software assignable keys and the modular add-on
0 units of the EBS allow users to customize the set with the fea-
0 tures that best suit their particular needs. Feature assignment
0 is completely flexible because features are programmable in the
0 DMS-100 Family system software.

0 (b) References

0 NTP 297-2011-100 Business Set Feature Description
0 and Operation
0 NTP 297-2011-180 Business Set Line Engineering
0 NTP 297-2011-200 Business Set General Description,
0 Installation, Maintenance and
0 Ordering Information

0 (c) Provisioning Considerations

0 (i) Two models of DMS-100 Electronic Business Set are avail-
0 able:

- 0 (1) A Basic Business Set
0 (2) A Display Business Set

0 (ii) The Basic Business Set is equipped with the following:

- 0 1) a standard 12-button telephone key pad
0 2) eight assignable feature keys with
0 associated Liquid Crystal Display (LCD)
0 indicators
0 3) one assignable feature key without an LCD
0 indicator
0 4) dedicated volume up feature key
0 5) dedicated volume down feature key
0 6) dedicated hold feature key
0 7) dedicated release feature key

0 (iii) The Basic Business Set provides voice and "above voice
0 band" signalling transmission over a 2-wire line. Voice
0 and signalling are frequency division multiplexed, with

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0 binary data transmitted via absence or presence of an 8
0 KHz carrier. All feature activation is via this trans-
0 mission.

0 (iv) The Display Business Set has all the features of the
0 Basic Business Set plus a 32 character alphanumeric digit
0 LCD display. The display, made up of two lines of 16
0 characters centered above the key pad, is controlled by
0 an internal microprocessor and shows information such as
0 the following:

- 0 1) called number
0 2) calling number
0 3) time
0 4) feature programming

0 (v) To further enhance a customer's Business Set, a hands
0 free speakerphone and 20 key/16 LCD add-on modules are
0 available.

0 (vi) Up to three 20 key or button add-on modules may be at-
0 tached to the right side of the Business Set providing up
0 to 69 keys (56 of which have associated LCD indicators)
0 which can be programmed with any combination of features
0 and directory numbers. LCD indicators are used to mini-
0 mize power consumption.

0 (vii) The Hands Free Unit may be attached to the left side of
0 the Business Set.

0 (viii) With the Hands Free Unit, the following features are
0 available:

- 0 1) accepting incoming calls on either the
0 Hands Free Unit or the associated
0 telephone set
- 0 2) transferring calls between the Hands Free
0 Unit and the associated telephone set
- 0 3) dialing outgoing calls with the handset
0 either on-hook or off-hook
- 0 4) automatic cutoff of the Hands Free Unit
0 when the handset is lifted off-hook for
0 handset operation

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0 (ix) The Auto Answer Back feature is provided via a module
0 which plugs into the Business Set. The Business Set must
0 be equipped with a Hands Free Unit when this feature is
0 assigned.

0 (x) The available versions of the Business Set are as fol-
0 lows:

0 1) NT4X20AA/AL Basic Business Set,
0 no digit display
0 - cord equipped with Teladapt
0 connectors

0 2) NT4X20AE/AR Basic Business Set, no digit
0 display
0 - cord equipped with spade
0 tips

0 3) NT4X20AB/AM Display Business Set equipped
0 with digit display
0 - cord equipped with Teladapt
0 connectors

0 4) NT4X20AT Display Business Set equipped
0 with digit display
0 - cord equipped with Teladapt
0 connectors
0 - used with Automatic Call
0 Distribution (ACD) feature

0 5) NT4X20AF Display Business Set equipped
0 with digit display
0 - cord equipped with spade
0 tips

0 (xi) The Teladapt connector is a connectorized jack (at the
0 wall outlet side).

0 (xii) The spade tip is a horseshoe shaped connector which is
0 screwed down (at the wall outlet side).

0 (xiii) NT4X20AG 20 Button Add-On Module

0 The NT4X20AG is a 20 button add-on module which extends
0 the capability of a Business Set by adding more feature
0 keys. It features two rows of 10 buttons; the top two
0 buttons in each row are not equipped with LCD and are

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0 used for features which do not require LCD display. The
0 add-on module attaches to the right side of the Business
0 Set. Up to three modules may be used with each Business
0 Set.

0 In cases where the NT4X20AC add-on unit exists in the of-
0 fice and the EBS feature capability must be extended,
0 provide a maximum of two (2) NT4X20AGs. Use the NT4X20AC
0 as the last add-on module for a maximum of three (3)
0 add-on modules per EBS.

0 (xiv) NT1L00AA Hands Free Unit

0 The NT1L00AA Hands Free Unit is an optionally available
0 module which may be connected to the left side of the
0 Business Set.

0 (xv) NT4X20AJ Auto Answer Back Module

0 The NT4X20AJ Auto Answer Back Module is an optionally
0 available module which may be plugged into the Business
0 Set to give it the Auto Answer Back feature. As a pre-
0 requisite, the Business Set must be equipped with a Hands
0 Free Unit.

0 (xvi) ETS Line Card, NT6X21AB

0 The Electronic Telephone Set (ETS) Line Card, NT6X21AB,
0 is required to receive and interpret the Business Set
0 signalling information and is supported by the DMS-100
0 advanced peripherals (i.e. Line Concentrating Module, Re-
0 mote LCM and Remote Switching Center). It will only sup-
0 port the Business Set.

0 (xvii) The Business Set operates over a 2-wire (single pair) un-
0 loaded loop connected to an ETS Line Card located in ei-
0 ther a DMS-100/MDC host office or a DMS-100 remote.

0 (xviii) Each loop (ETS line card) can support a Business Set hav-
0 ing the capability of carrying a maximum of three 20 but-
0 ton add-on modules and a Hands Free Unit.

0 (xix) NTX822AA - EBS As A Message Center: As of BCS-23 S/W
0 package NTX822AA became generally available. Upon acti-
0 vation Incoming Trunk or Internal Calls are automatically
0 routed to the EBS assigned the Message Center function,
0 if they are not answered at the original station. The EBS

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0 1.3.4 Power Requirements For Business Sets

0 (a) General Description

0 The Electronic Telephone Set and associated add-ons can be loop
0 powered or locally powered, depending on the type of ETS, type
0 and number of add-ons, and the cable resistance.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 (i) The Basic Electronic Telephone Set is loop powered in all
0 cases.

0 (ii) The Display Set requires local DC power if the loop re-
0 sistance is greater than 250 Ohms.

0 (iii) The Handsfree Unit will require local AC power in all
0 cases. The required AC transformer and T adapter are in-
0 cluded with the Handsfree Unit. The Handsfree power sup-
0 ply may also be used to power add-on units.

0 (iv) Various Electronic Telephone Set and Add-On Module con-
0 figurations are possible, and the associated power supply
0 requirements are outlined in Table 34.1 below:

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CONFIGURATION						LOOP IMPEDANCE		POWER OPTIONS			
H	B	D	A1	A2	A3	<=250	> 250	LOOP	HFU	24VDC	STRAP
	X					X	X	X			
	X		X			X		X			
	X		X				X			X	
	X		X	X	X	X	X			X	
X	X					X	X		X		
X	X		X	X	X	X	X		X	X	
X	X		X			X		X	X		X
X	X		X				X		X		X
		X				X		X			
		X					X			X	
		X	X			X		X			
		X	X				X			X	
X		X				X			X		
X		X					X		X		X
X		X	X			X			X		X
X		X	X				X		X	X	
X		X	X	X	X	X	X		X	X	

HEADING LEGEND:

Configuration Definitions:

H - Handsfree Unit
B - Basic ETS
D - Display ETS
A1 - 1st 20 Button Add-On
A2 - 2nd 20 Button Add-On
A3 - 3rd 20 Button Add-On

Power Options:

LOOP - Power Derived From ETS DC Loop
HFU - Handsfree Unit 16VAC Power Supply Transformer
24VDC - Ault 24Vdc Power Supply (5324-000-401A)
STRAP - Power strapping options defined in ETS Installation Manual

POWER SUPPLY REQUIREMENTS FOR VARIOUS ETS CONFIGURATIONS

TABLE 34.1

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0 1.3.5 Cable Characteristics For Electronic Business Sets

0 (a) General Description

0 The Electronic Business Set operates over a 2-wire (single pair)
0 loop to an ETS line card (NT6X21) controlled by the DMS-100 Fam-
0 ily system.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 (i) In order for the Business Set to perform satisfactorily,
0 the outside plant cable must meet certain requirements.

0 (ii) The cable to the Business Set should be non-loaded.

0 (iii) The operational range for the ETS, with or without add-
0 ons, is determined by one of two factors - either the DC
0 Loop Range or the Signal attenuation at 8Khz.

0 For successful EBS operation, the following limits cannot
0 be exceeded:

0 Loop Resistance: 1230 Ohms Maximum

0 Signal Attenuation at 8 Khz: 24 db Maximum

0 The factor which reaches the maximum limit first will de-
0 termine the loop range for the Electronic Telephone Set
0 (ETS).

0 (iv) The above DC loop resistance limit assumes that the cen-
0 tral office battery voltage is between 42.75 volts and 56
0 volts. The associated cable and cabling distances used
0 within the resistance limits above are:

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<u>GAUGE</u>	<u>LENGTH(Feet/Meters)</u>	<u>RESISTANCE (OHMS)</u>
22	7500/2300	250
24	4800/1500	250
26	3000/1000	250
28	2000/600	250

0 (v) The maximum allowable insertion loss is 24 dB which is
0 equivalent to 4.8 Km (15000 ft) of 26 gauge cable at 8000
0 Hz and 21 degrees C (the business carrier frequency is
0 8000 Hz).

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0 1.3.6 NTX411AA VMX Interface

0 (a) General Description

0 The NTX411AA VMX Interface package provides an interface between
0 the DMS-100 and a Voice Message Exchange (VMX) system. It is
0 only available to Meridian Business Services subscribers.

0 The VMX is a system manufactured by the VMX Corporation for stor-
0 ing spoken messages and providing the called party with the abil-
0 ity of playing these messages back at a later time. Voice
0 messages are sent, stored and retrieved using a microprocessor
0 which is interfaced to the host DMS-100 through 2-way, 4-wire E&M
0 trunks.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 (i) A VMX system is available in 8, 16, 24, 32, 48 or 64
0 voice port configurations. Each voice port is
0 bidirectional and interfaces with a 4-wire E&M NT2X72AA
0 trunk circuit or a digital through a channel bank. One
0 (1) trunk circuit is required for each voice port.

0 (ii) In addition, two (2) physical trunk circuits are required
0 for each voice port as loop around trunks to isolate the
0 VMX calls to only the Meridian Business Services trunk
0 group.

0 (iii) The VMX interface when configured with an external alarm
0 interface provides major and minor alarm indications by a
0 relay contact closure. Provide two (2) scan points for
0 VMX alarm detection.

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0 1.3.7 Business Network Management (BNM) Interface

0 (a) General Description

0 Business Network Management (BNM) is a networks product that sup-
0 plements the DMS-100F Meridian Digital Centrex (MDC) by providing
0 MDC analysis and control features. Specifically, a BNM system
0 collects information from DMS-100 Business switches, processes
0 the information collected and controls the Centrex network. Major
0 BNM features are:

0 (1) Data Collection

- 0 - Station Message Detail Recording (SMDR) Data
- 0 - Operational Measurements
- 0 - Automatic Trunk Testing Reports
- 0 - Killer Trunk Reports

0 (2) Data Analysis

0 (3) Station moves and changes

0 A DNC-500 BNM system interfaces with several DMS-100F MDC
0 switches via Network Operations Protocol (NOP) data links to
0 gather and process data relevant to MDC customers subscribing to
0 the BNM services. In addition, end user access can be extended
0 by utilizing remote dial up links to the DNC-500 or by utilizing
0 and end user premise DNC-100 system. A DNC-100 is dedicated to a
0 particular MDC customer and collects data from the DNC-500. Also
0 available is the DNC-50 BNM system which provides SMDR capabili-
0 ties only. Data types requiring transfer to the BNM DNC-500 sys-
0 tem include:

- 0 - Station Message Detail Recording (SMDR)
- 0 - Killer Trunk (KT) Reports
- 0 - Automatic Trunk Testing (ATT) Reports
- 0 - Operational Measurements (OM's)

0 All of the above data types must be stored on disk in the DMS-100
0 where upon request the data is transmitted to the DNC.

0 Data may be transferred to the DNC-500 system using one of three
0 methods:

0 Continuous Collection - Upon receipt of a request from the
0 DNC-500 the DMS-100 sends data records as soon as they are re-

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0 ceived by DIRP. Data transmission will continue until a request
0 to stop is received.

0 Polling - The DNC-500 will poll the DMS-100 at a specified time
0 requesting data transmission. This method can be used to defer
0 data transfer until low traffic periods.

0 Demand Transfer - The DMS-100 responds to a request from the
0 DNC-500 system to retransmit a particular data record.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 (i) Data is transferred to the BNM DNC-500 system via X.25
0 based Network Operations Protocol (NOP) data links. The
0 number of data links required is based on the data trans-
0 fer rate and link speed/throughput. The number of links
0 is also based on the type of Input/Output Terminal Con-
0 troller Card (NT1X67DB or NT1X89AA) used.

0 (ii) The data transfer rate must include the following:

0 (a) High Day Busy Hour SMDR data transfer

$$\begin{aligned} & \text{HDBH entries} * 39 \text{ bytes/call} \\ & = \frac{\quad}{3600 \text{ seconds}} \end{aligned}$$

0 (b) Operational Measurements data transfer

$$\begin{aligned} & = \text{No. of Trunk Groups transferred} \times \\ & \quad 200 \text{ bytes/second} \end{aligned}$$

0 (c) Passthru MAP data transfer (if Passthru
0 MAP feature (NT5N39AA) is present).

$$\begin{aligned} & = \text{No. of simultaneously active MAP} \\ & \quad \text{sessions} \times 140 \text{ bytes/second} \end{aligned}$$

0 Killer Trunk and Automatic Test data is considered negli-
0 gible.

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0 After calculating the data transfer rates for each data
0 type, sum all transfer rates to determine the total BNM
0 data transfer required.

0 (iii) The total BNM transfer rate for NT1X67BD at 9600
0 bits/second is 120 bytes/second. Therefore,

0 Total NT1X67DBs = Total BNM Transfer Rate
0 (bytes/second)
0
0

120 bytes/second

0 (iv) The NT1X89AA Multiprotocol Controller has the following
0 BNM data transfer rates:

0 9600 bits/seconds = 770 bytes/sec throughput
0 19.2 Kbits/seconds = 1078 bytes/sec throughput

0 Therefore,

0 No. NT1X89AA Data = Total BNM Transfer Rate
0 (bytes/second)
0
0

Data Transfer Thruput
0 (bytes/second)

0 Using the NT1X89AA MPC greatly increases data link effi-
0 ciency and subsequently increases thruput in comparison
0 to the NT1X67DB.

0 (v) When more than one (1) MPC port is required, provision a
0 minimum of two (2) NT1X89AA's. The MPC cards are spread
0 evenly across the Input/Output Control Modules with sepa-
0 rate power feeds.

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0 1.3.8 BNM Data Transmission

0 (a) General Description

0 Data Transmission between the DMS-100 and the DNC-500 may utilize
0 dedicated or switched facilities as detailed in the following
0 provisioning considerations.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 (i) Dedicated point to point transmission options that may be
0 used are listed below:

0 1) 4-wire analog point to point - Provision one (1) ana-
0 log private line modem per data line. The maximum
0 bit rate of a Northern Telecom approved analog pri-
0 vate line modem is 9600 bits/second. If bit rates
0 above 9600 BPS are used the Telco must provide the
0 modem.

0 2) Point to point digital facility utilizing Data Path
0 and Data Path and back to back DU's - back to back
0 DU's - Provision one (1) NT4X25 low speed data unit
0 for each data line. The maximum loop length between
0 Data Units is 3 miles.

0 3) Point to point digital facility utilizing Data Path,
0 DataPath Extension (DPX) and NT4X25 low speed data
0 units to extend the loop length beyond 3 miles.
0 DataPath Extension (DPX) uses D4 Channel Banks
0 equipped with NTQPP628A DPX channel units to extend
0 the loop length via DS-1 carrier. The DPX channel
0 unit is a specialized 4W E&M card equipped with an
0 NT6X71AB Data Line Card (DLC) that converts the Time
0 Compression Multiplexing (TCM) signal transmitted by
0 the Data Unit into a DS-0 channel on a DS-1 link.
0 Provision one (1) NT4X25 low speed data unit for each
0 data line and software package NTX250AA (Data Path).
0 The TELCO is responsible for providing the channel
0 bank and one (1) NTQPP628A per data line.

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0 4) Other options are available such as using Digital
0 Data Service, etc. Data modems must be supplied as
0 required based on transmission characteristics.

0 (ii) Switched facilities may also be deployed using NT4X25 low
0 speed data units and the DMS-100. Provision one (1)
0 NT4X25 and one (1) NT6X71AB Data Line Card for each data
0 link. Other switched facilities such as a Packet Network
0 may also be used. The data modems must be provisioned
0 according to transmission characteristics.

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0 1.3.9 Meridian Business Services Miscellaneous

0 (a) General Description

0 Detailed below are several miscellaneous provisioning consider-
0 ations for MBS offices.

0 (b) References

0 Chapter 3, Section 3.9 DMS Supernode and Network Subsystem

0 (c) Provisioning Considerations

0 (i) All DMS-100 and SL-100 Canadian systems with Meridian
0 Business Services software are to order a CS03-1315 DOC
0 Certification Sticker which shows that offices have met
0 Government of Canada Department of Communications CS03
0 standards for PBX applications.

0 The CPC code for the sticker is: P0663265.

0 Only one sticker per system is to be ordered. It will go
0 on the FSP panel of the CCC and will not obscure any ex-
0 isting labels, logos or indicators.

0 (ii) Offices equipped with Meridian Business Services should
0 have a maximum of two pairs (NT3X02AA, NT3X03AA) of dig-
0 ital modem cards per MTM, providing a maximum of eight
0 modem circuits per MTM.

0 (iii) Synchronizable offices equipped with MBS consoles must
0 have the NT3X14BC Synchronizable Master Clock Counter
0 equipped on the CCC frame. If the office is equipped
0 with an earlier vintage NT3X14 circuit pack, it must be
0 retrofit with a NT3X14BC when the MBS extension is ap-
0 plied.

0 For further information, refer to Central Control Complex
0 of DMS SuperNode and Network Subsystems, Section 3.9 of
0 this NTP.

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0 1.3.10 Simplified Message Desk Interface (SMDI)

0 (a) General Description

0 The Simplified Message Desk Interface (SMDI) will provide a Telco
0 with a system integration between the DMS-100 and a customer's
0 message desk. Thus providing end user's with the appearance of a
0 single communications system. (Figure 34.3)

0 Utilizing the SMDI feature and a message center (automated or
0 manual) message service can be provided to lines served by a host
0 or remote office (i.e. Remote Switching Center (RSC) or Remote
0 Line Concentrating Module (RLCM)), however, the message service
0 will not be available under Emergency Stand Alone (ESA) condi-
0 tion.

0 A typical SMDI example consists of three (3) major steps:

- 0 . Call Forwarding
- 0 . Datalink Interface
- 0 . Message Waiting

0 Call Forwarding

0 A user of the SMDI service will forward his calls to the
0 Message Desk.

0 Datalink Interface

0 The DMS-100 utilizes the datalink as a communication bus to
0 send/receive acknowledgements on the user's status at the
0 Message Desk.

0 Message Waiting

0 The Message Desk will accept the called party's message and
0 turn on the message indicator (i.e. message waiting lamp or
0 stuttered dial tone) via a request over the datalink (which
0 interacts with the message center software feature
0 NTX119AA). The called party will accept his messages by di-
0 aling the Call Request Retrieve feature access code.

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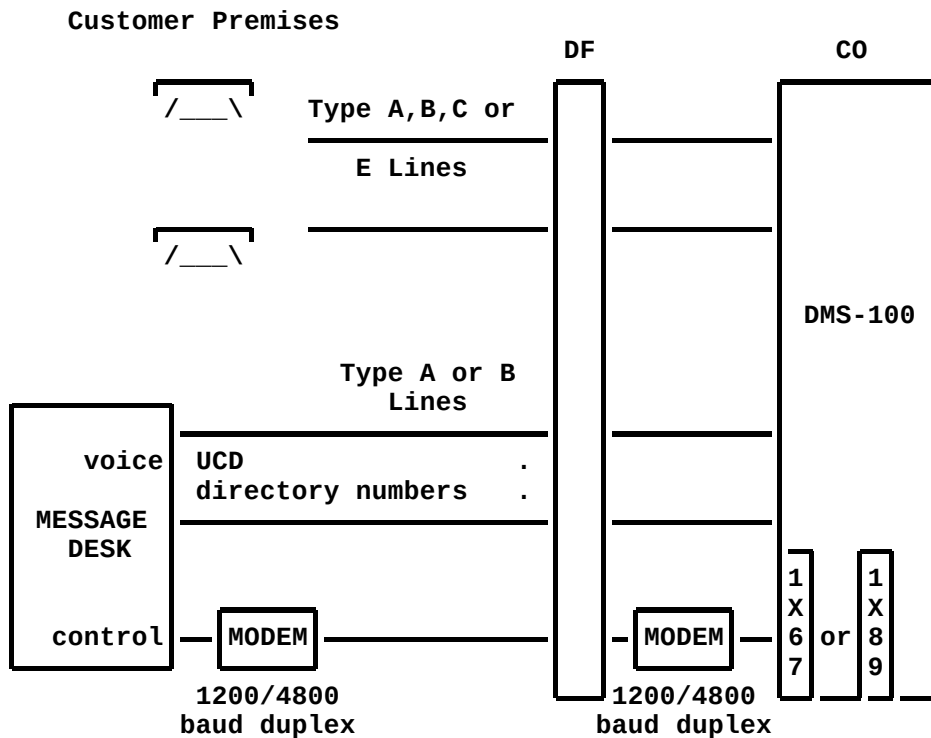


Figure 34.3 Simplified Message Desk I/F

Message Desk

The Message Desk is customer provided equipment that must meet the interface requirements Bell System Technical Reference PUB 61100 and Bell Communications Research TR-TSY-000283. The Message Desk must send/receive ASCII protocol. The Message Desk stations will be identified as part of a Uniform Call Distribution (UCD) group to evenly distribute incoming calls. The Message Desk will have two (2) interface types, voice and data.

The voice line cards will be arranged in a Uniform Call Distribution (UCD) group and will be loop or ground start subscriber lines.

The data interface is used to transfer messaging information from the DMS-100 and the Message Desk. The data link will be dedicated 1200 or 4800 baud RS-232 full duplex.

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0 (b) References

0 None

0 (c) Provisioning Considerations

0 (i) Existing DMS-100 hardware will be utilized to activate
0 the SMDI feature as follows:

- 0 - NT1X67FA - IOC Terminal Control
0 (one port per Message Desk)
- 0 - NT1X89AA - Multi-Protocol Controller (MPC)
0 (two ports per Card)
- 0 - Modem - Dedicated 1200 baud full duplex (w/
0 NT1X67FA) or up to 4800 baud full duplex
0 (w/ NT1X89AA)
- 0 - Type 'A', 'B', 'C' or 'E' line cards for user stations
- 0 - Type 'A' or 'B' line cards for the Message Desk

0 The NT1X67FA is equipped with two (2) C-Side ports to the
0 DMS CPU and one (1) P-Side port to interface with a Voice
0 Message System (VMS). One of the C-Side ports is dedi-
0 cated to processing outgoing SMDI messages while the
0 other is dedicated to processing incoming SMDI messages.
0 The NT1X67FA is only for use in SMDI applications.

0 The NT1X89AA (MPC) is equipped with two (2) C-Side ports
0 to the DMS CPU and two (2) asynchronous P-Side port to
0 interface with a VMS. The MPC CP will provide a higher
0 bandwidth (up to 4800 baud), reduced real time in the
0 DMS, and additional performance and reliability
0 capabilities over the NT1X67FA CP.

0 The SMDI application is compatible with the NT1X67FA and
0 the NT1X89AA CPs - both are simultaneously supported.

0 (ii) The SMDI message handling software and the NT1X67FA I/O
0 Terminal Controller is capable of transferring data si-
0 multaneously in both directions (incoming and outgoing)
0 over a single link at a bit rate of 960 bits per second
0 full duplex. The offered Busy Hour SMDI message load for
0 a single NT1X67FA data link should not exceed this capac-
0 ity.

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0 The following is a comparison of the link capacities for
0 the NT1X67BD and the NT1X67FA CPs:

0 NT1X67FA	NT1X67BD
0 -----	-----

0 Calls/Hr - 11,520 (per link)	1860 (per link)

0 Bit Rate - 960 bps (per link)	225 bps (per link)

0 (iii) The software feature package for SMDI is as follows:

0 NTX732AA - Simplified Message Desk Interface

0 (Refer to Section 3.2 - Software in this document for
0 feature package interdependencies.)

0 1.3.11 DMS Integrated Access Local Area Network (DIALAN)0 (a) General Description

0 DIALAN service allows the telco to provide Integrated Voice and
0 Data (IVD) service to Meridian Digital Centrex customers over ex-
0 isting voice lines and the public switched telephone network.
0 DIALAN service offers the telcos easy, cost-effective IVD imple-
0 mentation, integration with existing DMS operations, adminis-
0 tration and maintenance capabilities and full interworking with
0 ISDN and all DMS-100 DATAPATH products.

0 The DIALAN implementation uses a customer-supplied Integrated
0 Voice Data Modem (IVDM), which is available from a variety of
0 vendors. This allows the telcos the flexibility to choose a pre-
0 ferred vendor from the many which offer DIALAN compatible IVDMs.
0 These modules use a single two wire loop to transmit both voice
0 and data.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations

0 (i) Integrated Voice Data Modems are available with various
0 features and formats. The DIALAN feature uses the
0 NT6X76AA Asynchronous Interface Line Card or the NT6X76AC
0 Enhanced Asynchronous Intergrated Line Card to terminate
0 the data portion of the integrated voice/data and this
0 card utilizes the RS422 data format. As a result, the
0 choice of IVDM can cause compatibility problems unless
0 this is considered. If the IVDM selected for use with
0 DIALAN has an RS422 output, it may be connected directly
0 to the NT6X76AA as shown in Figure 34.4. If the data
0 output of the selected IVDM is in RS232 format, it must be
0 converted to RS422 format by a customer-supplied con-
0 verter. Refer to Figure 34.5.

0 The NT6X76AA/AC is used to provide the DIALAN system with
0 the data connection to the telephone network, and a voice
0 line card is used to provide the voice connection. The
0 Enhanced Asynchronous Interface Line Card NT6X76AC con-
0 tains all of the basic functionality of the original
0 AILC, NT6X76AA, plus support for the following:

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- 0 1. DIALAN Messaging Protocol
- 0 2. Profile Download Enhancement for DIALAN
- 0 3. DATAPATH Closed User Group
- 0 4. Idle Timeout for Call Disconnection

0 Note that these enhancements are only available with
0 BCS-29 and subsequent software releases.

0 The NT6X76AC is completely compatible with the NT6X76AA.
0 If the NT6X76AC is not configured for the additional
0 functions mentioned above, it is functionally equivalent
0 to an NT6X76AA.

- 0 (ii) The NT6X76AA AILC is a two slot line card similar to reg-
0 ular data unit line cards except that it draws more of
0 the 15V current supply per slot than normally allowed.
0 The total 15V power capability of a line drawer would be
0 consumed by twenty-one (21) NT6X76AAs.

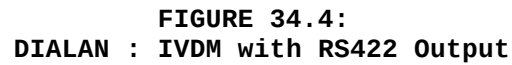
- 0 (iii) If data penetration in an office is equal to or less than
0 10% (total NT6X71 and NT6X76AA cards = or < 10% of total
0 lines), then the NT6X76AA can be treated as a regular 2
0 slot circuit pack and all remaining line card slots can
0 be provisioned as required. If data penetration exceeds
0 10%, the NT6X76AA must be treated as a three (3) slot
0 circuit pack to prevent overextending the power supply in
0 a partial failure mode.

0 This line card mix rule is based on 15V power consumption
0 only and further consideration must be given to traffic
0 factors.

- 0 (iv) The RS422 driver in the NT6X76AC has been changed to a
0 low power CMOS unit so that the circuit pack can be pro-
0 visioned as a standard two-slot line card. The NT6X76ACs
0 should be spread evenly across the available line drawers
0 but special power restrictions no longer apply.

- 0 (v) Use the DMS-100 Traffic Provisioning "The Credit System"
0 to determine appropriate traffic provisioning for all
0 DIALAN applications.

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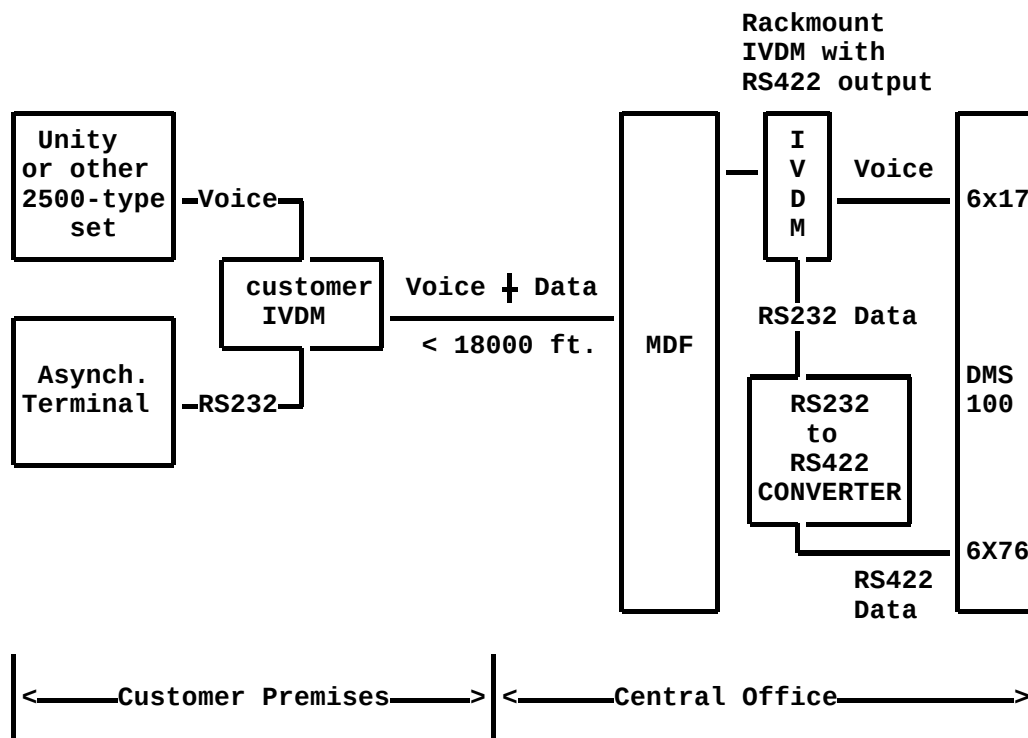
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0 FIGURE 34.5:
0 DIALAN : IVDM with RS232 Output

- 0 (vi) The DIALAN application requires software feature package
- 0 NTX426AA.
- 0 (vii) Refer to Section 3.5 Peripheral Modules - Host for more
- 0 information on the AILC Line Card.

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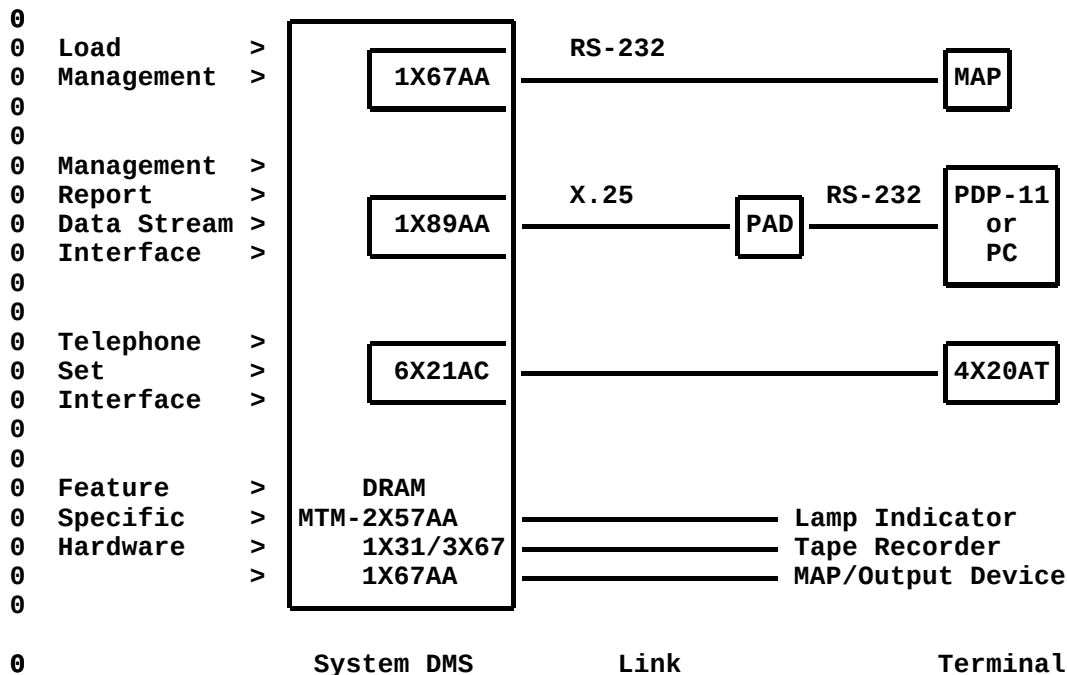
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0 1.3.12 Automatic Call Distribution (ACD)

0 (a) General Description

0 Automatic Call Distribution (ACD) is an optional feature in the
0 DMS-100/MSL-100 that provides an equal distribution of calls to a
0 predesignated set of answering positions referred to as agent po-
0 sitions. This feature permits businesses to handle large volume
0 of incoming calls. All calls are handled on a first-in first-out
0 basis and the agent that has remained idle the longest period of
0 time receives the next available call. If all agents are busy,
0 the calls are queued in their order of arrival in an incoming
0 queue that has programmable priority.



0 Figure 34.6 - ACD System Configuration

0 As illustrated, the various components are discussed under the
0 headings:

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0 ACD Telephone Set Interface
0 ACD Feature Specific Hardware
0 ACD Management Report Data Stream
0 ACD Load Management.

0 ACD contains the enhancements for Management Information Systems
0 (MIS) reporting. These features are controlled by the Supervisor
0 and the Senior Supervisor. The parameters are programmable such
0 that the system can be custom-tailored for specific customer ap-
0 plications. (MIS is applicable in the U.S. only.)

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host
0 NTP 297-4101-100 Automatic Call Distribution (ACD)
0 General Description
0 NTP 297-4101-101 Automatic Call Distribution (ACD)
0 Management Reports Data Stream I/F
0 NTP 297-4101-102 Automatic Call Distribution (ACD)
0 Load Management
0 NTP 297-4101-300 Automatic Call Distribution (ACD)
0 Feature Operation and Testing

0 (c) Provisioning Considerations

0 (i) When provisioning an ACD system, there are specific
0 guidelines that must be considered. These guidelines are
0 as follows:

0 Maximum Number of ACD Groups	- 256 per DMS-100
0 Maximum Number of Subgroups	- 255 per ACD Group
0 Maximum Number of ACD Directory Numbers (DN)	- 17 per ACD Group
0 Maximum Number of Supervisor Sets	- 255 per ACD Group
0	- 1 Supervisor per
0	Subgroup
0 Maximum Number of Agents	- 4000
0 Maximum Number of Groups an Agent can be a	- 1
0 member of	
0 Maximum Number of Agent Keys or Status Lamps	- 48 per Supervisor
0	Set
0 Maximum Number of Calls in Queue	- 511 per ACD Group
0 Maximum Number of Queue Status Lamps	- 1 per ACD Group
0 Range of incoming call priorities	- 0-3
0	(0 is the highest
0	& 3 is the lowest)

0 ACD Telephone Set Interface

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0 (ii) Although any Business Set (i.e. NT4X20 series, M5000 se-
0 ries) can be used, the recommended telephone set is the
0 NT4X20AT. Each ACD set requires a NT6X21AC line card.
0 Refer to Electronic Business Sets, found in this section,
0 for further information.

0 The ACD feature is not currently available on the
0 500/2500 type telephone sets.

0 These telephone sets are to be obtained by the customer
0 on a merchandise order basis only.

0 (iii) The 20 Button Add-On Module NT4X20AG extends the capabil-
0 ity of an Electronic Telephone Set by adding more feature
0 keys. The 20 button add-on module is required so that
0 the supervisor position can be equipped with supervisory
0 features such as ACD agent status lamps.

0 This module attaches to the right side of the Electronic
0 Telephone Set. Up to three modules may be used with each
0 ETS by plugging the second or third module into the pre-
0 vious one.

0 These modules are to be obtained by the customer on a
0 merchandise order basis only.

0 ACD Feature Specific Hardware

0 (iv) An ACD customer can provide an announcement to callers
0 queued in an incoming call queue to explain the delay
0 they are experiencing or reroute ACD calls received while
0 in a night service mode to an announcement that specifies
0 the customer's hours of operation. There are no pre-
0 programmed announcements for the ACD feature. The cus-
0 tomer must program each announcement for their specific
0 application. The ACD announcement traffic is added to the
0 total office announcement traffic. To determine the ad-
0 ditional circuits required for the ACD announcement, di-
0 vide the ACD announcement time (seconds) by 31 seconds.

0 The hardware used to store these announcements is a DRA
0 (i.e. MTM DRA NT2X58CB/AK/AG, DRA Controller CP
0 NT1X75AA/BA, DRA Recordable Memory Cards NT1X77AA, DRA
0 Recordable Memory Cards NT1X79AA).

0 (v) The ACD Queue Status Lamp (QSL) feature enables supervi-
0 sors and/or agents to determine which ACD groups need ad-

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0 additional agents or redistribution of existing agents.
0 This allows calls to be handled more efficiently.

0 The QSL feature provides a visual indication, approxi-
0 mately once a minute, for calls that are being deflected
0 because the incoming ACD call queue has overflowed. An
0 overflow occurs when the maximum number of calls are
0 queued and/or maximum call queued wait time has been ex-
0 ceeded. If an overflow condition exists, a lamp is lit
0 on an external display panel. Each lamp is associated
0 with one ACD group. All ACD groups with the QSL option
0 can be monitored, up to a maximum of 256 groups.

0 One Signal Distributor (SD) point is required for each
0 ACD group that utilizes the Queue Status Lamp feature.
0 Each SD card (NT2X57AA) has 14 points that can be provi-
0 sioned. Each SD Card requires one slot in the Maintenance
0 Trunk Module (MTM).

0 The Central Alarm Display Panel (NT5X72AA) can be used as
0 an external display panel for ACD groups requiring the
0 QSL option in a local arrangement. Each NT5X72AA has 15
0 lamps and can accommodate 15 groups. One Central Alarm
0 Applique Circuit (NT5X72AB) is required for each
0 NT5X72AA.

- 0 (vi) The Observe Agent feature enables an observer to obtain a
0 monitoring path between the ACD agent and the caller or
0 join in the conversation by depressing CALL AGENT key.
0 This feature enables an ACD supervisor to control the
0 quality of service offered to callers or to provide
0 training. The Observe Agent feature can only be assigned
0 to supervisor sets.

0 The agent position to be observed must be in the ACD
0 group that the Observe Agent key is associated with.

0 The Observe Agent feature can optionally have a warning
0 tone to notify the agent that the ACD call is being moni-
0 tored. This warning tone will be heard by the ACD agent
0 at the beginning of each call that the supervisor ob-
0 serves.

0 The Call Waiting Tone Generator CP, NT3X68AC, provides
0 the observe agent warning tone. Since the traffic re-
0 quirements for the warning tone for this feature are con-
0 sidered to be minimal, any existing NT3X68AC cards in the

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0 DMS office will be sufficient to handle the requirements
0 for this feature. Otherwise, provide one (1) NT3X68AC
0 card per office.

0 (vii) The ACD Emergency Key feature enables an ACD agent to
0 conference in an ACD supervisor and/or an auxiliary de-
0 vice (eg. tape recorder) via a single key depression. The
0 ACD supervisor would receive the call on his ACD Answer
0 Emergency Key (AEMK) and the auxiliary device would be
0 called like any single line oriented device.

0 If both emergency lines are datafilled and a six port
0 conference circuit is available (NT3X67), both lines will
0 be called. If both lines are datafilled but only a three
0 port conference circuit is available (NT1X31), the AEMK
0 will be called. If it is unavailable, the auxiliary de-
0 vice will be called.

0 If only one emergency line is datafilled and a three port
0 conference circuit is not available, a six port confer-
0 ence circuit is used.

0 When performing traffic provisioning calculations, the
0 ACD conference traffic should be considered as part of
0 the overall DMS requirements.

0 ACD Management Report Data Stream

0 (viii) The ACD Management Report Data Stream Interface enables
0 the Down Stream Processor (DSP) to provide the ACD cus-
0 tomer with timely and accurate statistics relevant to the
0 ACD operation. These statistics allow the customer to
0 monitor changing ACD traffic loads and levels of service
0 being provided.

0 Agent position event messages and ACD call-related data
0 are reported as they occur. These messages will be sent
0 to the DSP via a X.25 datalink. This information is then
0 used by the DSP to generate realtime screens and histor-
0 ical reports concerning ACD calls.

0 The ACD Management Reports Data Stream Interface only en-
0 ables the passing of ACD related data over a datalink to
0 the DSP.

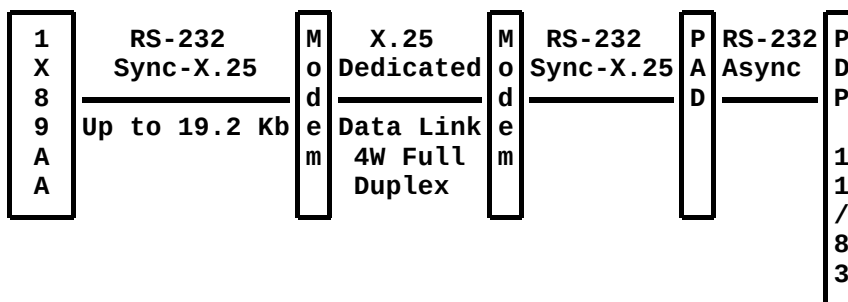
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0 The transmission speed of the datalink is limited by the
0 capacity of the NT1X89AA multi-protocol controller card
0 (i.e. NT1X89AA for X.25 interface).

0 A maximum of fifteen (15) datalinks are supported per ACD
0 application.

0 It is currently intended for the ACD Management Report
0 Data Stream Interface to be a dedicated X.25 link to a
0 DSP as illustrated below:



0 With this configuration, each DSP will require one (1)
0 port on a Multi-Protocol Controller card, NT1X89AA. Each
0 card has four (4) ports or circuits, however, only ports
0 2 and 3 can be used. Each card mounts on an IOC module,
0 NT1X61AB.

0 Since the Remote Operations (RO) service interface of the
0 NOP (Network Operations Protocol) structure, limits the
0 number of simultaneous application sessions to 15, then
0 up to eight (8) controller cards can be provided. How-
0 ever, this limitation is per switch and therefore, the
0 number of MPC cards to be provisioned must be considered
0 in light of any other applications that require an MPC
0 interface (i.e. DMS Passthrough Map Application on a
0 DNC).

0 DEC PDP 11/83

0 The ACD Down Stream Processor required for the Management
0 Reports System will be a Digital Equipment Corporation
0 Micro PDP 11/83 processor.

0 This equipment must be obtained by the customer from Dig-
0 ital Equipment Corporation (DEC).

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0 The equipment configuration will be as follows:

0	QTY.	DESCRIPTION	ORDER NUMBER
0	1	11/83 CPU, H9642 and 2 Mbyte Memory	183QE-D2
0	1	2 Mb Memory Card	MSV11-JE
0	1	Tape Controller	TQK50-AA
0	1	95 Mb Tape Drive	TK50-AA
0	1	Disk Controller	RQDX3-AA
0	1	32 Mb Disk Drive	RD32A-AA
0	1-3	8 Line Asynch MUX	DHV11-M
0	1	40 Port RS232 Panel	70-23239-01
0	1-16	VT220 Video Display Terminals	VT220-D2/D3
0	1	LA210 Reports Printer	LA210-AA
0	1	LA210 System Console	LA210-AA

0 MEMOTEC PAD SP830

0 A Packet Assembler Disassembler (PAD) device is required
0 to interface the NT1X89AA to the PDP 11/83 processor. One
0 MEMOTEC PAD SP830 is required for each PDP 11/83.

0 The MEMOTEC PAD SP830 is a desk top unit that will be
0 colocated with the PDP 11/83. It has the following char-
0 acteristics:

0 Physical Dimensions: Height - 3.5"
0 Width - 9.5"
0 Depth - 9.0"

0 Input Ports - asynchronous 1-4 ports
0 - EIA RS-232 interface

0 Output Line - 1 synchronous port
0 - EIA RS-232/V.24 interface
0 - up to 19.2 Kbps connection to X.25 network.

0 This PAD will be ordered by the Customer Engineer.

0 IBM AT Compatible PC

0 The ability of the ACD Management Reports System to
0 interface to an IBM AT compatible Personal Computer (PC)
0 Down Stream Processor is currently under development. The
0 interface link will be an X.25 datalink.

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0 ACD Load Management.

- 0 (ix) ACD Load Management is an administrative feature which
0 allows senior ACD personnel (Senior Supervisors) to tai-
0 lor their own ACD configuration. ACD Load Management is
0 comprised of the following features:

0 ACDSHOW - which provides Command Interpreter (CI) com-
0 mands that

0 allow the Senior Supervisor to display various
0 ACD
0 specific information.

0 LOADMGMT - which provides CI commands that allow the Sen-
0 ior

0 Supervisor to modify various ACD configuration
0 parameters.

0 The ACD Load Management interface will be to a MAP (eg.
0 DEC VT220 VDU or DEC LA120 Printer).

0 Each VDU or printer device will require one (1) port on
0 an I/O Terminal Controller card, NT1X67BC/BD. Each card
0 has four (4) ports or circuits and mounts on IOC Module,
0 NT1X61AB.

0 Restrictions on the MAP interface are as follows:

0 1) An EIA RS-232 interface can be used if the MAP is lo-
0 cated within 50 feet of the terminal controller card.

0 2) A loop current interface is required when this dis-
0 tance exceeds 50 feet, but is less than 1200 feet.

0 3) In order to provide sufficient flexibility in locat-
0 ing MAPs, loop current interface is recommended for
0 all local MAPs (i.e. co-located with the DMS ma-
0 chine) which are within 1200 feet of the terminal
0 controller card.

0 4) If this distance exceeds 1200 feet, modems (data
0 sets) must be used.

- 0 (x) The ACD MANAGEMENT INFORMATION SYSTEM (MIS) (U.S. Appli-
0 cations only) provides the ACD customer with timely and
0 accurate statistics relevant to the ACD operation. These

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0 statistics allow the customer to monitor changing ACD
0 traffic loads and levels of service being provided.

0 The Management Information System consists of a Compaq
0 386 or NT386 Personal Computer (PC), which is connected
0 to a Memotec SP830 Asynchronous Packet
0 Assembler/Disassembler (PAD) via an RS232 interface. The
0 PAD is connected to a Data Unit via an RS232 interface.
0 The two Data Units (NT4X25AF or NT4X25AH) are connected
0 by a Network Operations Protocol (NOP) X.25 link (two-
0 wire circuit). The second Data Unit is connected to the
0 switch via an RS232 interface to a Multi-Protocol Con-
0 troller (MPC) Card NT1X89AA located in the IOC shelf. The
0 Data Units operate at 4800 baud. Although the second
0 port on the NT1X89AA card can be used at the same time as
0 the first port, it is recommended that a second NT1X89AA
0 card be used to connect a second Data Unit.

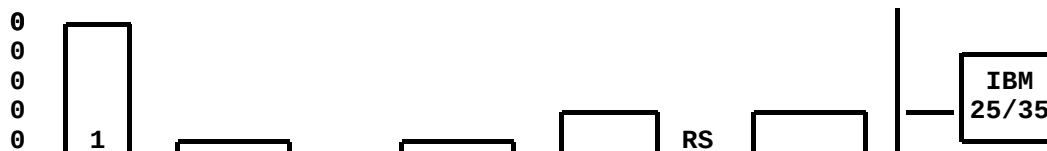
0 The PC can have up to eleven (11) color screen monitors
0 extended to other locations. These monitors are the IBM
0 PS/2 Model 25/35. These require Data Units when they are
0 located more than 50 feet from the PC.

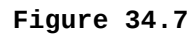
0 Currently, the Compaq 386 or NT386 with Xenix Operating
0 System version 2.2 is the recommended PC. The recommended
0 software for this PC is the RT100 which is manufactured
0 by Perimeter Technology. If the IBM monitors are used,
0 each monitor must have the RT100T software supplied.

0 The PC, PAD and IBM PS/2 Units are customer provided
0 equipment. The MPC card, RT100 software, RT100T software
0 and one Data Unit are supplied by NTI. The second Data
0 Unit (CPE end) must be provided by either the customer or
0 NTI (customer option).

0 It is HIGHLY recommended that the host PC be equipped
0 with an Uninterruptable Power Supply (UPS) to provide se-
0 veral minutes of system operation during power failures.

0 Refer to Figure 34.7 for more configuration details on
0 this system.





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0 1.3.13 NTX101AA - Feature ACD Music on Delay

0 (a) General Description

0 The ACD Music on Delay (or Music on Hold - MOH) feature is used
0 in conjunction with the Attendant Console to connect calls on
0 hold to announcements or music while they are waiting.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations

0 (i) A minimum of one of the following must be provided for
0 MOH:

0 - The MTM mounted Digital Recorded Announce Machine
0 (See Section 3.5)

0 - Audiochron Recorded Announcement Machine, and/or

0 - Broadcast Trunk Interface.

0 (ii) NT supports hardware provisioning of the broadcast trunk
0 interface card (NT2X88AA) only. However, if the telco
0 requires this configuration, the following must be pro-
0 vided by the Telco:

0 - A 900 Ohm Interface approved by the FCC/CS03 for
0 US/CDN jobs respectively

0 - A music or announcement source such as an FM radio
0 approved by UL/CSA for US/CDN jobs respectively.

0 NOTE: The guaranteed nominal input range for the
0 NT2X88AA trunk card is -12 dbm to +3 dbm.

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0 2.0 DATAPATH

0 2.1 Introduction

0 DATAPATH is a family of products and a set of features which pro-
0 vide advanced end-to-end digital full-duplex asynchronous and
0 synchronous circuit switched data transmission at various user-
0 selectable speeds (300-19,200 bps asynchronous; 1200-64,000 bps
0 synchronous) on the DMS-100.

0 Standard voice frequency modems merely transform the data into
0 voice frequency signals which appear to the telephone switch as a
0 standard voice call. However, DATAPATH provides enhanced loop
0 access technology so that the bandwidth and feature power inher-
0 ent in the digital switch can be brought to the subscriber.

0 DATAPATH uses standard A & B bit signaling on the trunk side, and
0 industry standard RS232C and V.35 interfaces to the end user's
0 Data Terminal Equipment (DTE).

0 The principal products in the DATAPATH family are the Data Line
0 Card, the Data Unit, and the Coax Eliminator.

0 2.2 Features

0 NTX250AA DATAPATH Basic
0 NTX253AA DATAPATH - Coax Eliminator (BCS-18)
0 NTX251AA DATAPATH Supplement - Modem Pooling

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0 2.3 Equipment Provisioning

0 2.3.1 Data Unit

0 (a) General Description

0 The Data Unit provides an all digital switched path connecting
0 subscriber data communications equipment to a DMS-100 host or re-
0 mote office. It will be the physical termination of the data ac-
0 cess loop at the subscriber end of the loop.

0 The standard data unit is equipped with a keypad with two verti-
0 cal rows of four feature keys, and a loudspeaker for call
0 progress tone feedback. User controls are under a lift-up flap
0 on the cover of the data unit.

0 Feature Enhanced Elastomer Keyboard data units are equipped with
0 two extra keypad keys and an array of LED indicators for setting
0 operating parameters.

0 (b) References

0 NTP 297-1101-003 General Feature Description
0 NTX250AA DATAPATH

0 NTP 297-2121-101 DMS-100 Family Datapth Unit
0 General Description

0 NTP 297-2121-226 Data Unit Installation
0 and Maintenance

0 (c) Provisioning Considerations

0 (i) The following Enhanced Elastomer Keyboard Data Units are
0 available:

0 NT4X25AF Low Speed - Grey
0 NT4X25AH Low Speed - Chameleon Grey
0 NT4X25AG High Speed - Grey
0 NT4X25AK High Speed - Chameleon Grey

0 (ii) The Low speed model data unit offers transmission speeds
0 of up to 19200 bits per second synchronous or asynchro-
0 nous.

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0 (iii) The high speed model data unit offers transmission speeds
0 from 48000 to 64000 bits per second.

0 (iv) The line card required to interface with the Data Unit is
0 a Type D data line card NT6X71. One line card supports
0 one Each data unit requires one Type D line card. One
0 line card supports one data unit. It occupies two slots
0 in the line drawer.

0 Feature Enhanced Elastomer Keyboard data units require
0 the enhanced data line card NT6X71AB in order to provide
0 the Profile and Speed Restriction features. Otherwise,
0 the NT6X71AA line card may be used.

0 (v) Different data unit types can coexist on a switch.

0 (vi) The Data Units are to be ordered on a merchandise order
0 basis.

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0 2.3.2 Coax Eliminator Data Unit

0 (a) General Description

0 The official name for the NT4X25DA/NT4X25DB Coax Eliminator Data
0 Unit system is 3194 Network Switched Access (3194 NSA).

0 The official name for the NT4X25AL/NT4X25AM Coax Eliminator Data
0 Unit system is 3270 Network Switched Access (3270 NSA).

0 The function of the Coax Eliminator Data Unit system is to pro-
0 vide a means of connecting IBM 3194 DFT and IBM 3270 CUT type
0 terminals to IBM 3174 and IBM 3270 type control units respec-
0 tively via twisted pair cable and the DMS/SL-100 switched net-
0 work. Hence, the coax eliminator system is a combined data unit
0 and coax terminal adaptor system. This system also allows for
0 back-to-back (dedicated) as well as DMS/SL-100 switched-circuit
0 (dialup) operation.

0 Normally, such connections are made by directly connecting the
0 IBM terminal and control unit with up to 1500 meters (5000 feet)
0 of coaxial cable. See Figure 34.8.

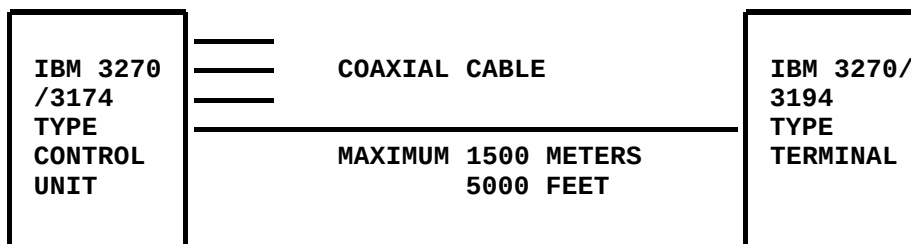
0 The concept of the Coax Eliminator is to break the coax run and
0 replace it with special purpose interface devices which are con-
0 nected via twisted pair and the DMS/SL-100. The interface de-
0 vices are two separate data units: one to interface to the IBM
0 3194/3270 type terminal called the Coax Eliminator Terminal
0 Interface, NT4X25DB/AL, and one to interface to an IBM 3174/3270
0 type control unit called the Coax Eliminator Control Unit Inter-
0 face, NT4X25DA/AM. See Figure 34.9.

0 The NT4X25AL TIF supports Control Unit Terminal (CUT) devices.
0 Such devices include 3178 monochrome, 3278 mod 2-5 monochrome
0 terminals. Other CUT mode terminals are listed in the Provision-
0 ing Considerations section. The NT4X25AL TIF coupled with a
0 NT4X25AM CUIF replace a dedicated type "A" (BISYNC) coax link be-
0 tween terminal and controller.

0 The NT4X25DB TIF supports CUT mode devices just as the NT4X25AL
0 does. In addition, the NT4X25DB supports Distributed Function
0 Terminal (DFT) devices. These include the IBM 3194 Intelligent
0 Display Station and the 3270 PC in the DFT operating mode. The
0 NT4X25DB TIF must be paired with the NT4X25DA CUIF in order to
0 support DFT devices.

[illegible]

The interface at the DMS/SL-100 is the standard data line card, line card type D, NT6X71AA/AB. See Figure 34.8



Standard IBM 3270 Control Unit to IBM 3270 Terminal Connection



Typical Coax Eliminator Data Unit Configuration

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0 (b) References

0 NTP 297-2121-228 DMS-100 Family DATAPATH
0 3270 Network Switched Access With 3194
0 Distributed Function Terminals Support
0 Installation and Maintenance

0 (c) Provisioning Considerations:

- 0 (i) The NT4X25DB/AL is a device which emulates a control unit
0 in communication with the terminal. It functionally con-
0 verts the protocols associated with the twisted pair TCM
0 loop to a format on coax which is accepted by the termi-
0 nal.
- 0 (ii) The NT4X25DB/AL connects via coax to the terminal and is
0 normally co-located with the terminal, although a coax
0 separation of up to 1500 meters can technically be real-
0 ized.
- 0 (iii) The connection between NT4X25DB/AL and the IBM terminal
0 is made via a length of customer provided coaxial cable
0 (RG62A/U).
- 0 (iv) The NT4X25DB/AL is compatible with the following IBM ter-
0 minal types:
- 0 * 3278 mod 2-5 monochrome
 - 0 * 3279 colour display without convergence
 - 0 * 3178 monochrome
 - 0 * 3191 and 3192 display stations
 - 0 * 3194 Intelligent Display Station (CUT mode)
 - 0 * IBM PC with IRMA (up/downloading is not supported)
- 0 (v) The NT4X25DB is also compatible with the following termi-
0 nal types:
- 0 * 3194 Intelligent Display Station (DFT mode)
 - 0 * 3270 PC (DFT mode)
- 0 (vi) The following features are also supported on the above
0 mentioned terminals:
- 0 * Extended Attributes (eg. 7 colours on 3279)
 - 0 * Light Pen Interface

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- 0 (vii) NT4X25DB/AL comes with an external power supply which
0 plugs into a standard 110 VAC wall outlet.
- 0 (viii) The Coax Eliminator Control Unit Interface, NT4X25DB/AM,
0 is a device which emulates a terminal in communication
0 with the control unit. It functionally converts the pro-
0 tocols associated with the control unit to the TCM link
0 format and message set.
- 0 (ix) The NT4X25DA/AM connects via coax to the control unit and
0 is normally located in the host computer room to allow
0 local attachment of the control units.
- 0 (x) The connection between NT4X25DA/AM and the control unit
0 is made via a length of customer provided coaxial cable
0 (RG62A/U).
- 0 (xi) The NT4X25DA/AM is compatible with the IBM 3174, 3274 and
0 3276 type control units configured for one of the ac-
0 cepted terminal types.
- 0 (xii) The NT4X25DA/AM is a circuit pack which mounts on the
0 Coax Eliminator Shelf, NT4X25BS. It receives power from
0 the shelf back plane. It requires one slot per card. It
0 has one logical circuit per card.
- 0 (xiii) Each NT4X25DA/AM requires one line card type D,
0 NT6X71AA/AB.
- 0 (xiv) The Coax Eliminator Shelf, NT4X25BS, may be mounted with
0 up to 16 NT4X25DA/AM cards; i.e. slot positions 01 to 16.
0 A minimum of two (2) NT4X25DA/AM cards must be installed
0 in the shelf to satisfy the minimum load requirements of
0 the shelf power supply.
- 0 (xv) The NT4X25BS shelf is a 19 inch rack mount shelf which is
0 to be mounted on a customer provided standard 19 inch bay
0 (relay rack). The shelf is 14 inches high. The rack
0 must be a minimum of 22 inches deep to accommodate the
0 shelf.
- 0 (xvi) To reduce the length of coaxial cable required, locate
0 the rack that houses the NT4X25BS as close to the IBM
0 control unit as possible.
- 0 (xvii) If the NT4X25BS shelf is mounted with another NT4X25BS
0 shelf or other equipment, customer provided cooling

0 baffles or fans must be installed to allow for sufficient
0 ventilation and cooling. If inclined cooling baffles are
0 used, a minimum allowance of 4.5 inches must be provided
0 between each NT4X25BS shelf and other equipment shelves.
0 If forced air cooling is used, a minimum of 65 cfm air
0 flow, evenly distributed throughout the shelf, is re-
0 quired to restrict the maximum internal temperature rise
0 to 15 Celsius degrees (27 Fahrenheit degrees).

0 (xviii) The NT4X25BS plugs into a standard 110 VAC wall outlet.

0 (xix) An alternate connection configuration is allowed with
0 coax eliminator hardware in which the NT4X25DB/AL and the
0 NT4X25DA/AM are connected directly by twisted pair in a
0 "back to back" (dedicated) configuration.

```

0      This is suitable for dedicated lines where no switching
0      is required and it is desirable to simply replace the
0      coax run with twisted pair.

```

```
0      This configuration is set up by setting the appropriate
0      switches on the NT4X25DA/AM. The NT4X25DB/AL automat-
0      ically adjusts to this mode.
```

```
0      There are two reasons to run a coax eliminator in back to
0      back mode.  The first is to replace the relatively bulky
0      coax cable with twisted pair.
```

```
0      The other reason is to increase the separation between
0      control unit and terminal from the 1500 meter coax maxi-
0      mum to the standard loop length range; i.e.
```

0	26 Awg. - 4.0 km. (13120 ft.)
0	24 Awg. - 5.5 km. (18040 ft.)
0	22 Awg. - 5.7 km. (18696 ft.)

0
0 RELEASE 28.01
0 93 12 030 2.3.3 Data Unit Rackmount Shelf0 (a) General Description

0 The Data Unit Rackmount Shelf is designed to house Data Units in
0 a rackmounted configuration. It is suitable for use in applica-
0 tions that require a high physical concentration of data circuits
0 such as computer rooms.

0 (b) References

0 None

0 (c) Provisioning Considerations:

0 (i) The NT4X25BH Data Unit Rackmount Shelf is designed to
0 house up to sixteen (16) rackmount Data Units or Loop Ex-
0 tension Line Interface Cards in any configuration. The
0 Rackmount Shelf may be used in a customer premise or cen-
0 tral office application where a high concentration of
0 datapath equipment is required. Systems Application Engi-
0 neering should only order this shelf for central office
0 applications.

0 (ii) The Rackmount Shelf will house up to sixteen cards. The
0 following card types are available for mounting in the
0 shelf (mixing allowed):

0 Rackmount Low Speed Data Unit (DU)	NT4X25AD
0 Rackmount High Speed DU	NT4X25AV
0 Loop Ext. Low Speed Line I/F Unit	NT4X25AR
0 Loop Ext. High Speed Line I/F Unit	NT4X25AS
0 Rackmount Low Speed EIA Controlled	NT4X25CH
0 Loop Back DU	
0 Filler Face Plate	NT0X50AL

0 (iii) The NT4X25AD Rackmount Low Speed Data Unit is a func-
0 tional replacement to the stand-alone Low Speed Data Unit
0 and is designed to fit into the Rackmount Shelf. The
0 Rackmount Low Speed Data Unit can be ordered by the cus-
0 tomer for customer premise datapath applications or it
0 may be ordered by the Telco for DATAPATH Modem Pooling
0 applications. This unit is replaced by NT4X25CH.

0 (iv) The NT4X25AV Rackmount High Speed Data Unit is a func-
0 tional replacement to the stand-alone High Speed Data

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0 Unit and is designed to fit into the Rackmount Shelf. The
0 Rackmount High Spped Data Unit may be ordered by the cus-
0 tomer for customer premise datapath applications.

0 (v) The NT4X25AR Loop Extension Low Speed Line Interface Unit
0 (LIU) is part of a DATAPATH Data Unit loop extension sys-
0 tem that increases the loop length beyond the 4.6 km lim-
0 itation. The LIU is located at the central office
0 providing the data services and operates in conjunction
0 with a Data Terminating Unit at the customer premise. The
0 Loop Extension Low Speed LIU is designed for use with a
0 Low Speed DTU and mounts in the Rackmount Shelf. Pro-
0 vision one (1) Loop Extension Low Speed LIU for each Low
0 Speed DATAPATH loop requiring loop extension beyond 4.6
0 km. It is the responsibility of the customer to provide
0 the Data Terminating Unit. Refer to Figure 34.10.

0 (vi) The NT4X25AS Loop Extension High Speed Line Interface
0 Unit is the high speed equivalent to the NT4X25AR.

0 (vii) The NT4X25CH Rackmount Low Speed EIA Controlled Loop Back
0 Data Unit is a functional replacement for the NT4X25AD
0 and is designed to fit into the Rackmount Shelf. The ad-
0 ditional capabilities of the Rackmount Loop Extension EIA
0 Controlled Loop Back DU over the Rackmount Low Speed Data
0 Unit is the EIA controlled loop back (V.54) and the syn-
0 chronous automatic call (V.25) features. This is prima-
0 rily a non switched maintenance capability.

0 The EIA Data Unit can be ordered by the customer for cus-
0 tomer premise datapath applications or it may be ordered
0 by the Telco for DATAPATH Modem Pooling applications.

0 (viii) Dimensions of the Rackmount Shelf are as follows:

0 Width = 19"
0 Height = 8" Depth = 13.25"

0 (ix) In Canada, the Rackmount Shelf is mounted into a Modem
0 Equipment (MOE) frame, NT0X43BA. In the United States,
0 the Rackmount Shelf is mounted into a Miscellaneous (MIS)
0 frame equipped with Isolated System Grounding topology.

0 (x) The Rackmount Shelf requires 117V AC, 60Hz power.

0 In C.O. applications, the Rackmount Shelf should be pow-
0 ered via a NT0X87AA 200 watt inverter. One 200 watt

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0 inverter can accomodate the power requirements for two
0 (2) Rackmount shelves. Provide the LaMarche Model
0 Inverter A0367433 instead of the NT0X87AA for U.S. appli-
0 cations only.

0 (xi) One screw terminal block per slot location (TB1 - TB16)
0 is provided to connect the T&R pairs and MI/MIC leads
0 from the Data Unit. The screw size on the terminal block
0 is 6-32. These terminal blocks are for modem pooling ap-
0 plications only.

0 One RS232 25 pin female connector per slot location (odd
0 no. P3-P33) is provided for Data Terminal Equipment (DTE)
0 input. This connection is for low speed interface only.

0 T&R pairs for each slot are also available on two 50 pin
0 telephone connectors(C0,C1). These connectors are used
0 to cable the voice and data pairs to the Main Distribut-
0 ing Frame. Refer to CA0X15 01 14.

0 Always provided with the Rackmount Shelf is a V.35 2X18
0 connector adapter that plugs into the RS232 connector.
0 This V.35 adapter is required to convert the 25 pin con-
0 nector to the 36 pin 2X18 V.35 interface.

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0 2.3.4 Modem Pooling

0 (a) General Description

0 DATAPATH uses the End-to-End Data Unit communication protocol to
0 transmit and receive data over digital facilities. When trans-
0 mitting data between two data units over analog facilities, mod-
0 ems must be inserted into the call path. This is accomplished via
0 the Outbound Modem Pooling (OMP) and the Inbound Modem Pooling
0 (IMP) features.

0 Modem pools are groups of similiar modems which are individually
0 wired to a Data Unit (DU). In reaction to the DU, the modem func-
0 tions as if it were connected to the Data Terminal Equipment
0 (DTE). The DU also reacts to the modem as if it was the DTE.

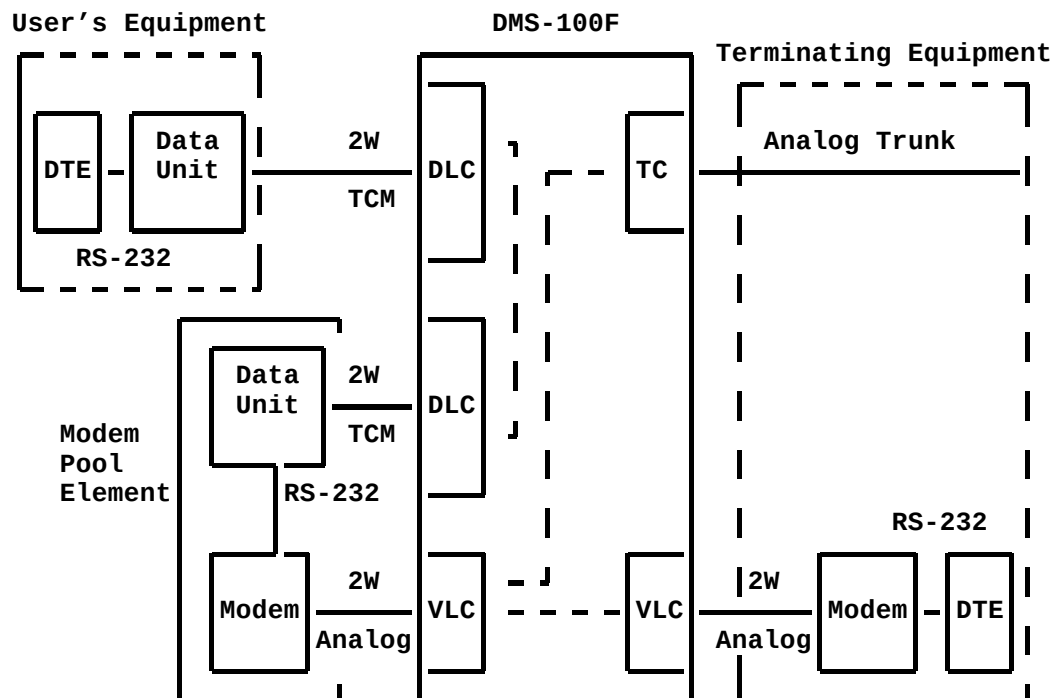
0 An entire modem pool may be divided into groups of one or more
0 modem/DU pairs and each group is uniquely identified by a Common
0 Language Location Identifier (CLLI). The pools may be inbound or
0 outbound depending upon whether they are used at the originating
0 or terminating end of the data call. The outbound modem pooling
0 facility allows the originator to select from a variety of modem
0 pools with different speeds and/or modes to match the specific
0 customer requirements. The inbound modem pooling facility pro-
0 vides an analog modem when a DU is called by a modem, or is
0 called over analog facilities. The terminating DMS-100 activates
0 the inbound modem pool feature when it determines that the termi-
0 nator is a DU and that a modem or some analog facility is used at
0 any point in the data call.

0 Figure 34.11 shows the transmission path between a customer's DU
0 and a modem or analog trunk, through a single element of a modem
0 pool (one modem/DU pair).

0 Modem pooling can be used for interoffice and intraoffice appli-
0 cations.

0 The Data Unit user gets access to the outbound modem pool either
0 by being dedicated to a specific modem pool or by dialing prefix
0 digits to select a pool. There is no prefix type modem pooling
0 for inbound modem pooling. More than one MDC customer group can
0 access a specific modem pool.

0 A modem pool member at different times is connected to different
0 trunk groups. Different modem pool members of a specific modem
0 pool may be connected to different trunk groups.



Legend:

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TCM - Time Compression Multiplexing DLC - Data Line Card
DTE - Data Terminal Equipment VLC - Voice Line Card
TC - Trunk Card

Figure 34.11: Transmission Path Through a Modem Pool Element

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0 Types Of Modem Pools:

0 There are four (4) types of modem pools which are: Inbound, Out-
0 bound, Bidirectional, and Maintenance. These modem pool types are
0 defined as follows (Refer to Figure 34.12 for a pictorial repre-
0 sentation of Inbound, Outbound, and Bidirectional MPs, or Figure
0 34.13 for all type of Maintenance Modem Pools (MPs).

0 TYPE	DESCRIPTION
0 INBOUND	0 The analog side of the connection path originates 0 the data call, and the digital side answers. In- 0 bound Modem Pooling (IMP) inserts an appropriate 0 IMP element (modem/DU pair) in the call path when 0 a terminating DU is called by either an analog 0 modem, or by another DU over an analog trunk. 0 IMPs may consist of one (1) or more modem/Data 0 Unit (DU) pairs.
0 OUTBOUND	0 The digital (subscriber DU) originates the data 0 call. Outbound Modem Pooling (OMP) inserts a 0 modem pool element (modem/DU pair) into the con- 0 nection path when a DATAPATH user calls either an 0 analog modem, or the call is routed over analog 0 facilities.
0 BI-DIRECTIONAL	0 If the modems in a modem pool are capable of 0 switching automatically between 'originate' and 0 'answer' mode, the modem pool can be designated 0 as both Inbound and Outbound. The elements 0 within such a pool are automatically assigned on 0 an individual basis by the DMS as either inbound 0 or outbound. The direction assigned to a give 0 element at any time is determined by subscriber 0 requirements at that time.
0 MAINTENANCE	0 The known-working modem pool elements are re- 0 served for maintenance purposes by the Telco. 0 They are grouped together to form a Maintenance 0 Modem Pool (MMP). The hardware used in MMPs are 0 identical to that used in a regular modem pool. 0 However, MMP elements are reserved for testing 0 and are not used for regular call processing. A 0 number of MMPs can be established. Each MMP must 0 be configured with the same transmission charac- 0 teristics as the pools it will be testing. An in-

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0 bound modem pool is tested by an outbound MMP and
0 visa versa. MMPs may be configured for Bi-
0 Directional operation. Refer to Figure 34.14 an
0 illustration of the Maintenance Modem Pool trans-
0 mission path.

0 Refer to Figure 34.12 which shows an example of the basic con-
0 nection difference between the Inbound, Outbound and
0 Bidirectional modem pools, namely the use of MI (Mode Indicator)
0 and MIC (Mode Indicator Common) control leads.

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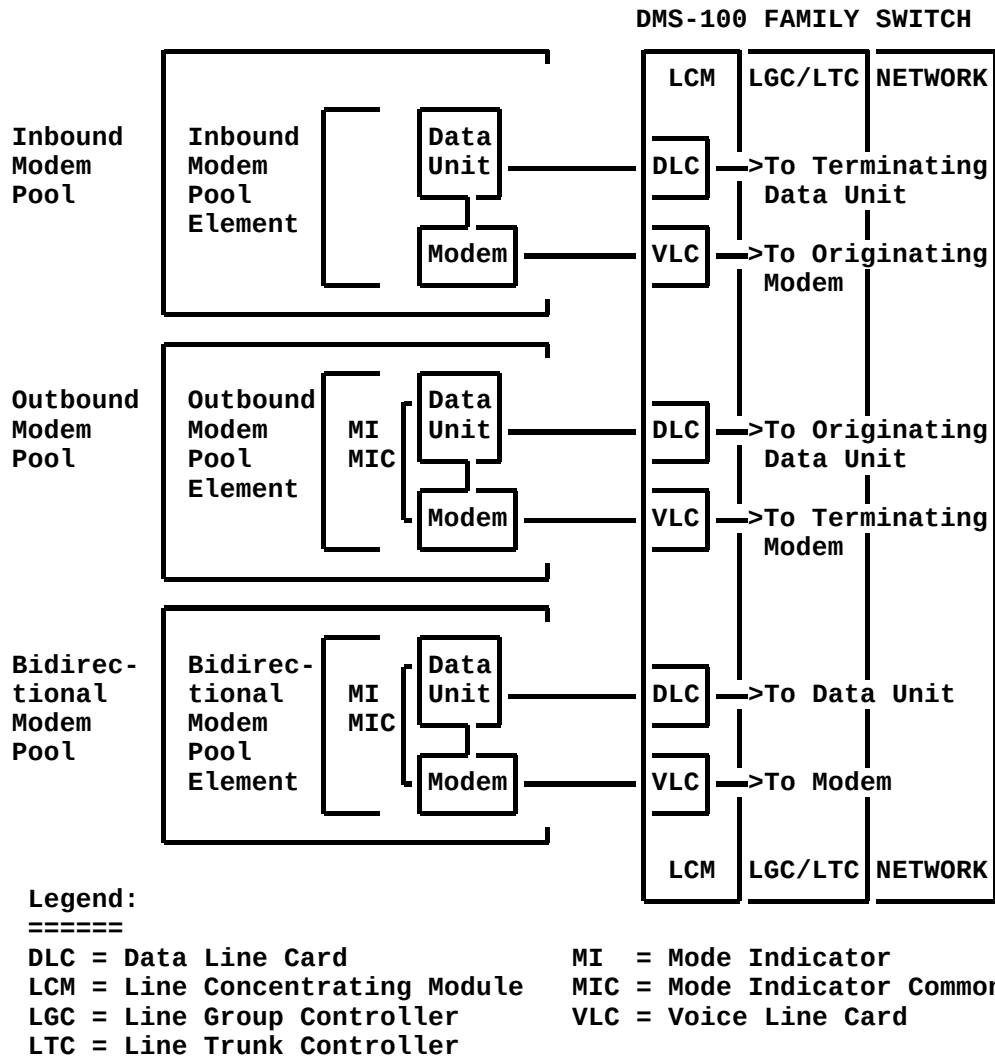


Figure 34.12: Inbound, Outbound and Bidirectional Modem Pools

Refer to Figure 34.13 which illustrates Inbound, Outbound, and Bidirectional MAINTENANCE Modem Pools. In addition it shows Maintenance Modem Pool connections for the three types of Maintenance Modem Pools.

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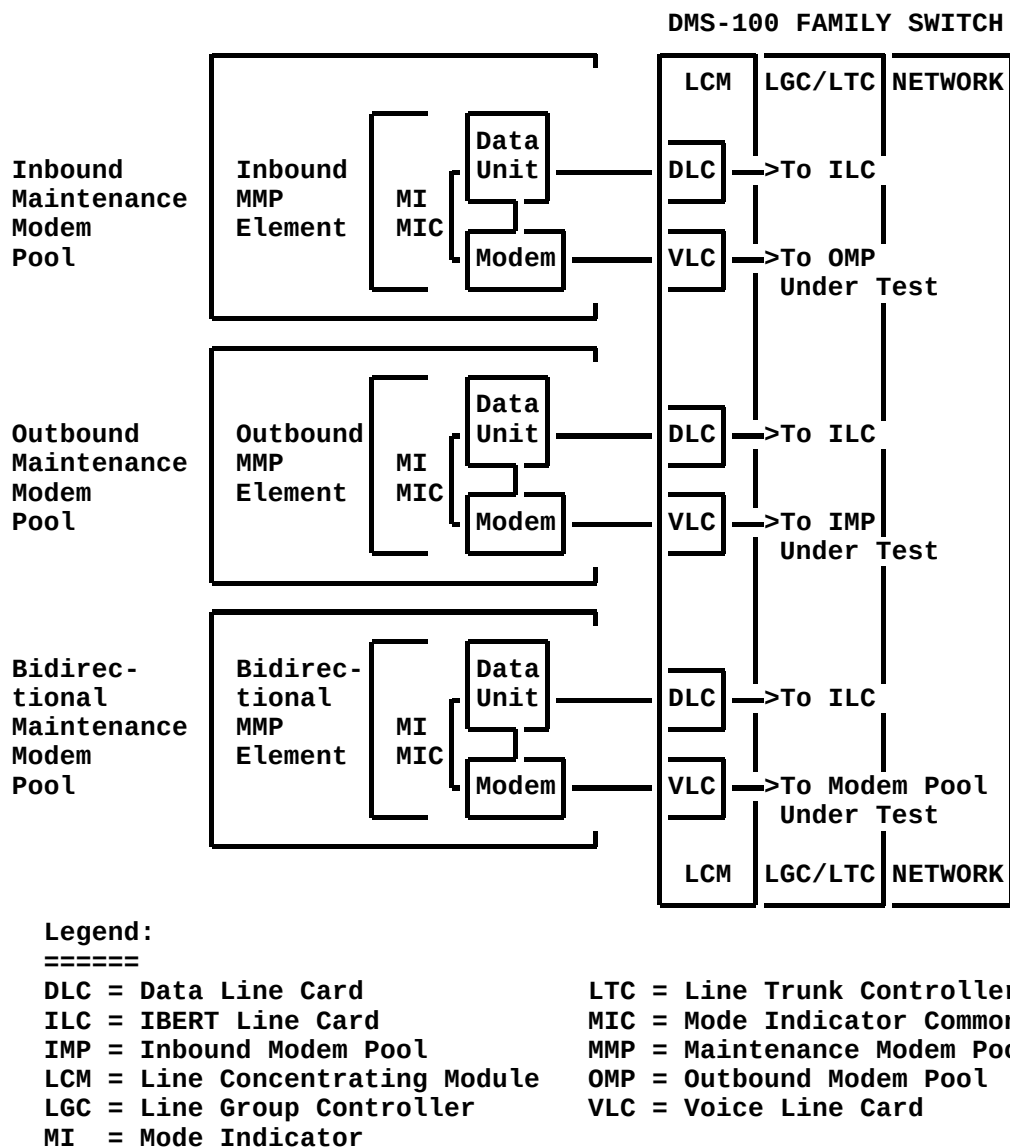


Figure 34.13: Inbound, Outbound and Bidirectional Maintenance Modem Pool configuration.

Modem pool testing may be performed from the MAP. Two types of integrated maintenance are available to the tester, which are Diagnostic Testing and Bit Error Rate Testing (BERT).

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0 Refer to Figure 34.14 which shows the Inbound and Outbound Main-
0 tenance Modem Pool connections.

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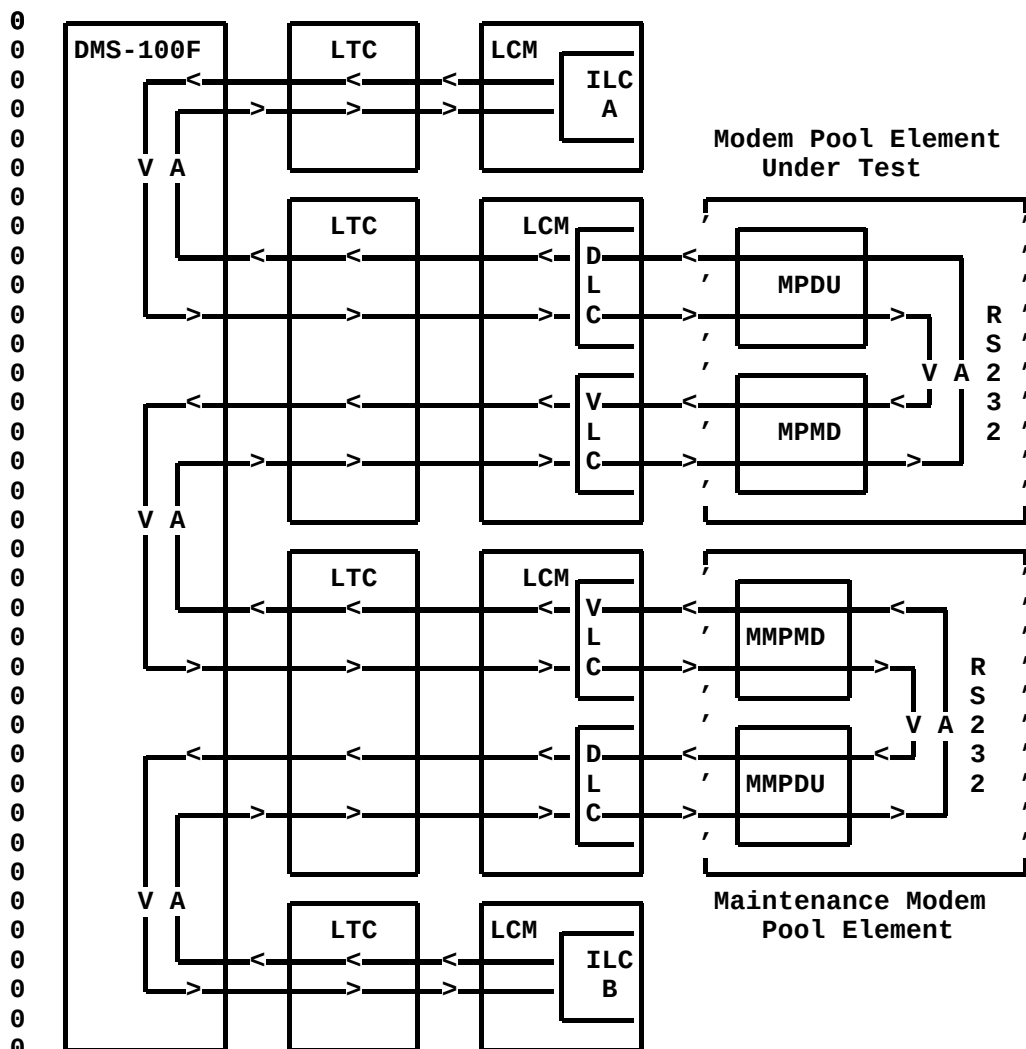
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0 Legend:

0 =====

0 DLC = Data Line Card

0 DU = Data Unit

0 ILC = IBERT Line Card

0 LCM = Line Concentrating Module

0 LTC = Line Trunk Controller

MD = Modem

MMP = Maintenance Modem Pool

MP = Modem Pool

VLC = Voice Line Card

0 Figure 34.14: Inbound/Outbound Maintenance Modem Pool Connection

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0 (b) References

0 Chapter 3, Section 3.8 Office Miscellaneous

0 (c) Provisioning Considerations:

0 (i) The following table summarizes when modem pooling is re-
0 quired and when it is not:

0 Table 34.2 - Modem Pooling Requirements

0 CALL TYPE	0 ORIGINATOR	0 TERMINATOR	0 ANALOG	0 MODEM
0 INTRA/INTER	0 DU/MODEM	0 DU/MODEM	0 TRUNKING	0 POOLING
0 OFFICE			0 YES/NO	0 OMP/IMP
0 -----	0 -----	0 -----	0 -----	0 -----
0 INTRA	0 DU	0 DU	0 N/A	0 NONE
0 INTRA	0 DU	0 MODEM	0 N/A	0 OMP
0 INTRA	0 MODEM	0 DU	0 N/A	0 IMP
0 INTER	0 DU	0 DU	0 NO	0 NONE
0 INTER	0 DU	0 DU	0 YES	0 OMP+IMP
0 INTER	0 DU	0 MODEM	0 NO	0 OMP
0 INTER	0 DU	0 MODEM	0 YES	0 OMP
0 INTER	0 MODEM	0 DU	0 NO	0 IMP
0 INTER	0 MODEM	0 DU	0 YES	0 IMP

0 (ii) Each modem pool is of a specific baud rate (speed), spe-
0 cific direction (inbound, outbound) and uses specific
0 modems compatible with the originating end in the case of
0 OMP, and with the terminating end in the case of IMP.

0 (iii) The modem pool is composed of modem pool members. Each
0 modem pool member consists of one data line card Type D,
0 one low speed data unit, one modem and one voice line
0 card Type A. The number of modem pool members in a modem
0 pool is equal to the maximum number of simultaneous calls
0 handled by that modem pool.

0 (iv) Data line card Type D can only be in an LCM. However, the
0 voice line card Type A can be either in the LCM or
0 LM/RLM. Each modem pool member hardware type used for a
0 specific modem pool must be spread over as many
0 LCM/LM/RLM/LC as possible. The data line card and voice
0 line card must be located on the same LGC in the
0 DMS-100F. The data unit/data line card originating or
0 terminating the call must also be on the same LGC.

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0 (v) The Line Cards Type A residing in LM/RLM and belonging to
0 specific modem pool must be assigned such that about half
0 are A powered and about half are B powered.

0 (vi) Provide the IBERT Line Card (NT6X99AA) as required for
0 Maintenance Modem Pools only; however, a minimum of two
0 is required.

0 (vii) In Canadian applications only, modem pooling equipment
0 (DUs/modems) will be mounted on the Modem Equipment
0 Frame. (Refer to Modem Equipment Frame in this section
0 of the 450.)

0 (viii) In United States applications only, the use of rack mount
0 equipment is recommended. The following Rack Mount
0 equipment shall be provided for Modem Pooling:

0 Miscellaneous Equipment Frame (MIS - NT0X02AB)

0 Modem pooling equipment (DU's/modems) will be mounted on
0 Miscellaneous Equipment Frames (MIS). The number of MIS
0 frames required will depend on the number of modem pools
0 required. One MIS frame dedicated to Modem Pooling hard-
0 ware can house up to two (2) NT4X25BH, two (2) modem
0 shelves, and two (2) NT0X87AA/A0367433. The MIS frame
0 must be configured in accordance with established ISG
0 guidelines. (Refer to Section 3.8 Miscellaneous Equip-
0 ment for more information on the MIS frame ISG.)

0 UDS RM16M Modem Shelf (62005220)

0 NOTE: The modem shelf and the data unit shelf leads MI &
0 MIC for each modem/DU pair must be reversed for the
0 proper operation of Modem Pooling.

- 0 - Modem UDS RM16M-201B/C (62015166) Synchronous opera-
0 tion only.
0 - Modem UDS RM16M-202S/D (62025211)
0 - Modem UDS RM16M-208A/B (62085083)
0 - Modem UDS RM16M-212A (62125086)
0 - Modem UDS RM16M-212A/D (62125084)

0 The 212A/D is the 212-modem of choice for the 1200BPS
0 Modem Pooling application

0 Rack Mounted Data Units (DU):

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0 - NT4X25BH - Data Unit Shelf

0 The NT4X25BH DU shelf may house up to 16 DUs, how-
0 ever, for Modem Pooling provided the following Rack
0 mounted Low Speed DU only:

0 NT4X25CH- Low Speed Autoloop Rkmtg Data Unit (RLDU)

0 (ix) Standalone/Desk Mounted Hardware Provisioning (U.S. ap-
0 plications only):

0 The standalone modems and DUs may be provisioned for in-
0 stallation on a desk, tabletop, or in an Miscellaneous
0 Equipment Frame (MIS). To provision a modem pool using
0 desktop type of equipment, you will need the following:

0 * Provide NT4X25AF DU as required. The NT4X25AF DU re-
0 quires profile downloading. Each DU is supplied
0 equipped with its own AC power supply and NT D4B4
0 Teladapt line cord.

0 Note: The low speed data unit with elastomer keypad
0 (NT4X25AF) can only be configured as a modem pool DU
0 via a profile download. One NT6X71AB Data Line Card
0 is required per NT4X25AF DU to facilitate profile
0 downloading.

0 * analog modem that meets the modem pool requirements
0 (one per DU)

0 * RS-232C rollover cable to connect the DU and modem
0 (one per DU/Modem pair)

0 * NT6X71AB data line card (one per DU).

0 * NT6X17AA, NT6X17AB, or NT6X17AC voice line card (one
0 per modem)

0 * non-reversed TELADAPT line cord (one per modem)

0 * A minimum of two NT6X99AAs (IBERT Line Card) when the
0 modem pool is used as a maintenance modem pool

0 The NT3X25AA Common Equipment Shelf can accomodate up to
0 three (3) standalone modems or DUs. The MIS frame can
0 house up to five (5) shelves. Provide two Inverters to
0 the MIS frame; one is required, the second is optional.

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0 2.3.5 Modem Equipment Frame

0 (a) General Description

0 The Modem Equipment Frame (MOE) is provided in host offices
0 equipped with Isolated System Grounding (ISG) for the mounting of
0 modem equipment. All modem shelves mounted on the frame must be
0 isolated from the framework with the chassis tied to the logic
0 return bar. Any customer provided modem shelves must be isolated
0 from the frame and similarly connected to the logic return bar.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 (i) Modem equipment must not be equipped on a Miscellaneous
0 Equipment (MIS) frame.

0 (ii) Remote offices (RLM,RSC,RLCM and OPMs) do not require the
0 MOE frame. However, all modem equipment and their asso-
0 ciated inverters must reside in the same Remote Miscella-
0 neous Frame (RME).

0 (iii) Host office extensions that are upgraded with ISG must
0 relocate all modem equipment to either a MOE frame or an
0 Input Output Equipment (IOE) frame.

0 (iv) Modem equipment may be mounted on an IOE frame in exist-
0 ing offices, however, for all new host offices a MOE
0 frame must be provided.

0 (v) For mounting modems on IOE frames the following rules ap-
0 ply:

0 a) DC Modem Shelves must be isolated from the equipment
0 frame and modem shelf chassis must be connected to
0 the logic return busbar. One (1) NT4X2591 Data Unit
0 Grounding and Mounting Kit must be provided per DC
0 Modem Shelf provisioned to isolate the shelf from the
0 frame and to connect the chassis to the logic return
0 busbar. DC Modem Shelves ust be powered directly to
0 the Power Distribution Center (PDC).

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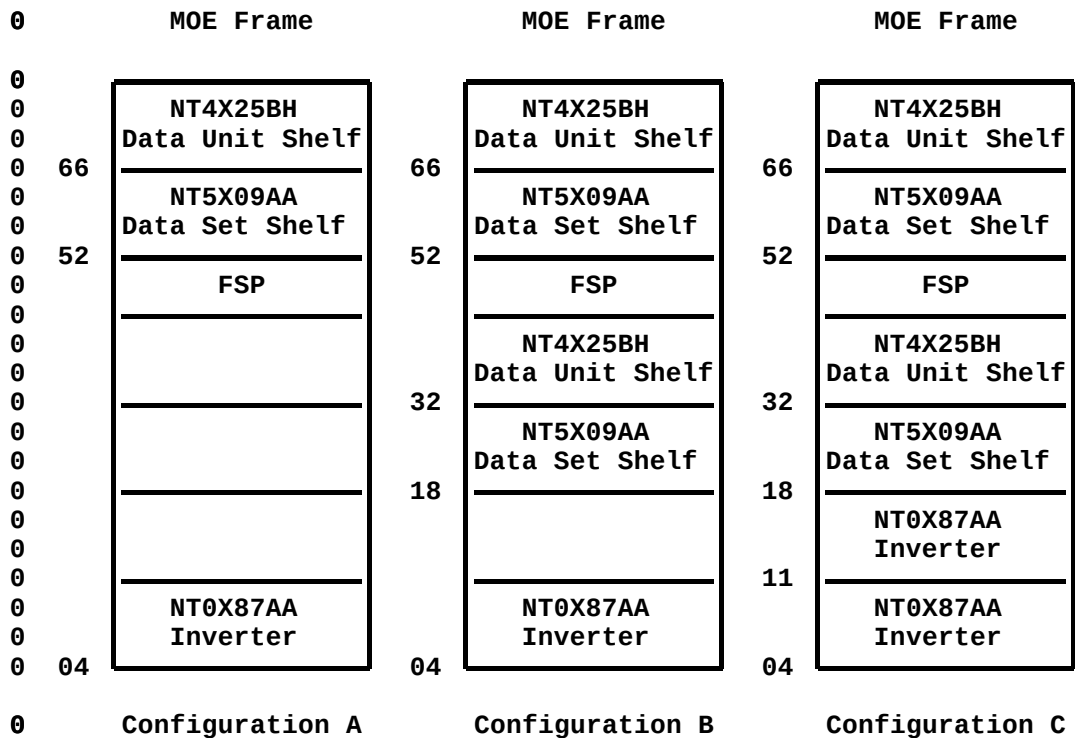
- 0 b) All AC Modem Shelves must be powered from an inverter
0 that is mounted on the same frame. The inverter must
0 be isolated from the framework and its chassis must
0 be connected to the logic return busbar.
- 0 c) Provision one (1) NT0X0009 Cable Assembly for an
0 inverter located in position 04 on the IOE frame to
0 connect the inverter to the logic return busbar.
- 0 d) Provision one (1) NT0X4309 Cable Assembly for an
0 inverter located in any other position on the IOE
0 frame.
- 0 (vi) Only current loops may be connected directly to the IOC
0 modules from devices (i.e. VDU or printers). EIA ports
0 must be connected through modems. No direct connections
0 from devices (i.e. VDU or printers) to EIA ports are al-
0 lowed. If a local EIA modem to modem connection is de-
0 sired, both the DMS modem and the device end modem cannot
0 co-exist in the DMS. The device modem must be located
0 away from any DMS frame.
- 0 (vii) Modem Pooling Configurations
- 0 Three standard configurations have been identified for
0 modem pooling. These configurations are shown in Figure
0 34.15.
- 0 Modem Equip. Fr. Modem Pooling Configuration A
0 - 1 modem shelf
- 0 Modem Equip. Fr. Modem Pooling Configuration B
0 - 2 modem shelves, no redundant power
- 0 Modem Equip. Fr. Modem Pooling Configuration C
0 - 2 modem shelves, redundant power

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0 Figure 34.15: Standard Modem Pooling Configurations

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0 3.0 Input/Output Device Requirements

0 3.1 Introduction

0 The Input/Output (I/O) system enables the CC to control the over-
0 all operation of the DMS-100 system and to direct the actions of
0 each PM. To do so, the I/O System allows the PMs and the CC to
0 communicate with each other by exchanging messages. Messages
0 contain either data or control information. The I/O System is
0 concerned only with the transmission of information between the
0 CC and the PMs; it is not concerned with the information itself.

0 3.2 Features

0 There are four major users of the I/O System.

0 3.2.1 The File System

0 The File System provides a utility to write and retrieve data
0 from the various I/O devices (for example, magnetic-tape drives,
0 disk drives and terminals).

0 3.2.2 Call Processing

0 Calling Processing looks after all aspects of a call by coordi-
0 nating PM functions (for example, initiating dial tone, collect-
0 ing digits and establishing a Switching Network connection).

0 3.2.3 I/O Maintenance

0 I/O Maintenance maintains the various components of the I/O Sys-
0 tem including the system hardware and reports any problems that
0 cannot be resolved.

0 3.2.4 Telephony Maintenance

0 Telephony Maintenance maintains the lines, trunks and service
0 circuits.

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0 3.3 Equipment Provisioning

0 3.3.1 Input/Output Controller Module (IOC)

0 (a) General Description

0 The Input/Output Controller (IOC) provides an interface between
0 the NT40 (CCC) or SuperNode and up to nine device controller Cir-
0 cuit Packs.

0 Each IOC performs serial to parallel and parallel to serial con-
0 versions to the Data to and from Device Controllers on two (2)
0 2.56Mb/s serial ports to a pair of Message Device Controllers (on
0 NT40) or Message Switches (on SuperNode).

0 The IOC consists of the following card types:

0 I/O Message Processor - Contains a microprocessor, associated
0 memory serial link I/F logic, parallel
0 bus I/F logic.

0 Device Controllers - Contains a microprocessor and associated
0 memory for the I/O device (i.e. MTD, DDU,
0 VDU, etc.)

0 IOC Terminator - Contains terminating resistors for the
0 IOC's parallel bus.

0 Power Converter - Supplies Voltages required for the IOC
0 message controller and other IOC Circuit
0 Packs.

0 (b) References

0 Chapter 3, Section 3.9 CCC and Network Subsystems

0 (c) Provisioning Considerations

0 (i) The I/O Controller Module (NT1X61AD) is made up of an I/O
0 Shelf Assembly (NT1X6112) and a Common Circuit Pack Fill
0 NT1X61AE. The provisionable I/O Message Controllers are
0 NT1X62AB for NT-40 applications and NT1X62CA for
0 SuperNode applications.

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- 0 (ii) A minimum of two I/O Controller Modules (IOC:00, IOC:01)
0 is required per system. These may be provisioned either
0 as functional modules within the Central Message I/O Con-
0 troller shelf (MDC) (NT2X76BA) for NT40 applications
0 only or as independent shelves. Note that for SuperNode
0 applications independent shelves must be provisioned.

0 If provisioned as independent shelves then provide two
0 (2) NT1X61AD.

0 Each shelf accommodates up to nine I/O device controller
0 cards.

- 0 (iii) The maximum number of IOC modules in an DMS-100 family
0 office is dependent on the number of network modules and
0 the number of Central Message Controller (CMC) Peripheral
0 Interface CP provisioned (on the CCC frame). Each pair
0 of CMC I/F cards provides 10 ports; enough for five (5)
0 network modules (one per each plane) or 10 IOCs or a com-
0 bination of both. A maximum of seven (7) pairs can be
0 provided per office. For example, an office equipped
0 with 32 network modules requires 64 CMC interface ports
0 (2 X 32). With the maximum number of CMC I/F cards al-
0 lowed (seven (7) pairs), the maximum number of ports is
0 70. Therefore, the maximum number of IOCs allowed in
0 this office is 6 (70 - 64).

0 For more information on the CMC I/F card, refer to Sec-
0 tion 3.9.

- 0 (iv) The IOC shelf and the devices (MTD, DDU, MAP etc.) it
0 interfaces should be cabled to the same power feed on the
0 Power Distribution Center (PDC).

- 0 (v) Provide one (1) PC Kit NT1X61AX when converting an ex-
0 isting IOC Module (NT1X61AA or AB) for DMS-Core applica-
0 tions.

- 0 (vi) At a Telco's request, when available, the NT2X70AZ PC Kit
0 can be provisioned to modify the NT1X61AD IOC with the
0 NT2X70AE Power Converter

- 0 (vii) Standard sparing criteria will be maintained for the IOC.

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0 3.3.2 Input/Output Controller Pack

0 (a) General Description

0 This section describes the baud rate capabilities of the various
0 versions of the NT1X67 Input/Output Controller Pack. Each pack
0 or group of packs with the same baud rate capability will be dis-
0 cussed separately.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 (i) NT1X67AB and NT1X67CB 0 (status of these cards is A&M)

0 These cards have four separate ports used for peripheral
0 terminal devices such as VDUs, printers, modems etc.
0 These ports can support one device per port at variable
0 baud rates using either the EIA or 20mA current loop mode
0 of operation. The current Northern Telecom specifica-
0 tions dictate that no single port on these cards will ex-
0 ceed 1200 baud. However, it is possible in special
0 applications for these cards to support a baud rate of up
0 to 4800 baud on a single port if the following conditions
0 are met:

0 - The terminal must be able to support the
0 higher baud rates.

0 - The sum of the baud rates for ALL ports
0 on a single card must not exceed 4800
0 baud.

0 Refer to Figure 36.1 for examples of port configurations.
0 Even though these capabilities exist, any configuration
0 that specifies a single port supporting a baud rate
0 greater than 1200 baud will be at the customer's dis-
0 cretion and/or risk. Northern Telecom will NOT guarantee
0 data integrity.

0 As a separate issue, terminals used for the operator po-
0 sition must be configured for a maximum baud rate of 1200
0 baud due to potential communication problems that may be

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0 created during emergency situations if higher baud rates
0 are used.

0 (ii) NT1X67BC and NT1X67BD

0 These cards succeed the above mentioned cards and also
0 have four separate ports for peripheral terminal devices.
0 However, these cards have had firmware modifications that
0 allow terminals to communicate at higher speeds on all
0 ports. The current Northern Telecom specification for
0 these cards dictates that no single port shall exceed
0 2400 baud. The modifications alter the processing speed
0 of the card as a whole but do not change the maximum baud
0 rate capabilities of a single port. The maximum baud
0 rate that can be supported by a single port in a special
0 application is 4800 baud. When any single port on a card
0 exceeds 2400 baud the following conditions must be met:

- 0 - The terminal must be able to support the
0 higher baud rates.
- 0 - The sum of the baud rates for ALL ports on
0 a single card must not exceed 4800 baud.

0 Refer to Figure 36.2 for examples of port configurations.
0 Even though these capabilities exist, any configuration
0 that specifies a single port supporting a baud rate
0 greater than 2400 baud will be at the customer's dis-
0 cretion and/or risk. Northern Telecom will NOT guarantee
0 data integrity.

0 As an added issue, terminals used for operator positions
0 should still be configured for 1200 baud.

0 The NT1X67BD card is a firmware updated version of the
0 NT1X67BC card and is only for use with the Auto Dialback
0 (ADB) feature NTX293 or special Line Editing Functions.
0 NT1X67BD is backwards compatible with the NT1X67BC and
0 should not be used for standard I/O terminal device
0 interface.

0 (iii) NT1X67BB and NT1X67DB

0 The NT1X67BB and NT1X67DB are special cards designed for
0 special applications. They are not functionally similar
0 to the other NT1X67 cards and cannot be used as a substi-
0 tute. Each card has a single port that will support a

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0 baud rate of up to 9600 baud and communicates using EIA
0 only. These cards are not currently used for U.S. appli-
0 cations but were applied to early offices using the
0 DNC-500. This application now uses the NT1X89AA Multi-
0 protocol Converter. Refer to Figure 36.3.

0 (iv) NT1X67EA

0 The NT1X67EA is a single port, high speed, output-only,
0 asynchronous terminal controller. This circuit pack is a
0 single channel, high capacity 9600 baud version that was
0 introduced to meet customer requirements for realtime
0 tracking of call distribution reports. Currently for
0 Richardson application only. Refer to Figure 36.4.

0 NOTE: NT1X67EA is provisionable on the MDC
0 shelf NT2X76BA only.

0 (v) NT1X67FA

0 The NT1X67FA card is for Simplified Message Desk Inter-
0 face (SMDI) applications only. It is not functionally
0 similar to the other NT1X67 cards and cannot be used as a
0 substitute. Each card has a single port that will support
0 a baud rate of up to 1200 full duplex. Refer to Figure
0 36.5.

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Example A

PORT	0	-- 1200 Baud maximum
PORT	1	-- 1200 Baud maximum
PORT	2	-- 1200 Baud maximum
PORT	3	-- 1200 Baud maximum

Example B

PORT	0	-- 600 Baud
PORT	1	-- 600 Baud
PORT	2	-- 2400 Baud
PORT	3	-- 1200 Baud

0 Example C

PORT	0	-- 300 Baud
PORT	1	-- 600 Baud
PORT	2	-- 1200 Baud
PORT	3	-- 2400 Baud

Example D

PORT	0	-- No Connection
PORT	1	-- 2400 Baud
PORT	2	-- No Connection
PORT	3	-- 2400 Baud

0 Example E

PORT	0	-- No Connection
PORT	1	-- No Connection
PORT	2	-- No Connection
PORT	3	-- 4800 Baud

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0 Figure 36.1 : NT1X67AB and NT1X67CB
0 Port Configurations0
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0 Note 1: These are examples only and not set configurations.
0 Note 2: Note that the sum of the baud rates for each card does
0 not exceed 4800 baud.
0 Note 3: Example A illustrates the normal operating condition.
0 All others are for special applications.

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Example B

0	PORT	0	-- 2400 Baud maximum	PORT	0	-- No Connection
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0	PORT	1	-- 2400 Baud maximum	PORT	1	-- 1200 Baud
0						
0	PORT	2	-- 2400 Baud maximum	PORT	2	-- 3600 Baud
0						
0	PORT	3	-- 2400 Baud maximum	PORT	3	-- No Connection
0						

0 Example c

PORT	0	--	No Connection
PORT	1	--	No Connection
PORT	2	--	No Connection
PORT	3	--	4800 Baud

PORT	0	--	600 Baud
PORT	1	--	600 Baud
PORT	2	--	3600 Baud
PORT	3	--	No Connection

Example D

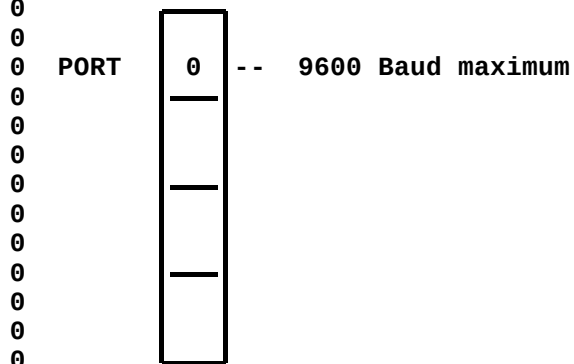
- ```

0 Note 1: These are examples only and not set configurations.
0
0 Note 2: Note that for a card that has a port exceeding 2400 baud,
0 the sum of the baud rates for all ports does not exceed
0 4800 baud.
0
0 Note 3: Example A illustrates the normal operating condition.All
0 others are for special applications.

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**Figure 36.2: NT1X67BC and NT1X67BD Port Configurations**

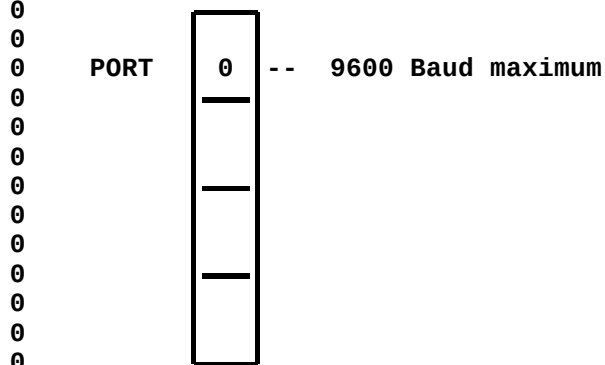
0 Example A



- 0 Note 1: Only one port available.  
0 Note 2: EIA communication only.  
0 Note 3: Used for HDLC X.25 protocol only.

0 Figure 36.3: NT1X67BB and NT1X67DB  
0 Port Configurations

0 Example A

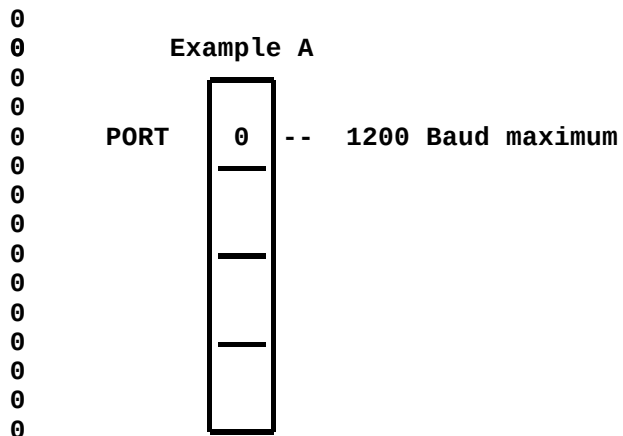


- 0 Note 1: Only one port available.  
0 Note 2: EIA communication only.  
0 Note 3: Output only.

0 Figure 36.4: NT1X67EA Port Configuration

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- 0 Note 1: Only one port available.
- 0 Note 2: 1200 Baud Full Duplex.
- 0 Note 3: SMDI Applications only.

0 Figure 36.5 : NT1X67FA Port Configuration

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### 0 3.3.3 Polling Device Requirements

#### 0 (a) General Description

0 The UDC (Universal Data Converter) is used as a buffer and data  
0 converter for OM (Operational Measurements) polling from the  
0 DMS-100 Family of switches to a centralized data collection cen-  
0 ter (typically Alston ATEMIS or TeleSciences AUTRAX).

0 The base configuration of the UDC consists of two I/O channels.  
0 Channel 2 is connected to a DMS I/O terminal controller and Chan-  
0 nel 1 is connected "downstream" for data polling.

#### 0 (b) References

0 None

#### 0 (c) Provisioning Considerations

0 ( i) The UDC may be strapped to output the following data for-  
0 mats:

- 0 1) TeleSciences Model TE-300-2000F
- 0 2) Alston Model 600BX (5 digit reading)

0 ( ii) One of four polling options (strap selectable) are avail-  
0 able:

- 0 1) UDC dumps OM data upon receiving a polling command  
0 (dedicated line).
- 0 2) UDC dumps OM data upon receiving a polling command  
0 after answering a dial up polling call (switched  
0 line).
- 0 3) UDC dumps OM data upon buffer flip at 15, 30 or 60  
0 minute intervals (dedicated line).
- 0 4) UDC dumps OM data upon answer of a dial up polling  
0 call (switched line).

0 ( iii) The Editing option allows the user to make modifications  
0 to the RMT (Register Mapping Table) which controls the  
0 processing of incoming OM data and the conversion to nu-  
0 meric data for polling. Data may be output in either a

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0 "fixed" or "variable" format. In the "fixed" format,  
0 specific OM tables may be mapped to specific memory lo-  
0 cations. In the "variable" format, OM tables are ap-  
0 pended to one another in UDC memory in the order in which  
0 they are dumped from the DMS switch (this order is fixed  
0 in DMS but specific tables may be dumped via input to the  
0 OM Management Tables). When the UDC is not equipped with  
0 the Editing option, the output assumes a variable format.

0 ( iv) The Alarm option allows for an office alarm output (via a  
0 scan point) should a power failure or hardware/software  
0 fault be detected by the UDC. With the 4K UDC, the alarm  
0 option is included with Editing.

0 ( v) Full interactive with the UDC is optionally available  
0 through either channel 0 or channel 3. Channel 0 permits  
0 the connection of a local teleprinter while channel 3 may  
0 be equipped with a 110/300 baud modem to allow remote  
0 system interaction.

0 Notes:

0 Remote system interaction is also available over channel  
0 1 only if this channel is equipped with a 110/300 baud  
0 modem.

0 It is recommended that the UDC be equipped with either  
0 channel 0 or channel 3.

0 This option is a prerequisite for Editing.

0 The following connecting cables for local teleprinter  
0 connection (port 0 option) are available:

0 1) EIA cable, male connection (75067)

0 2) EIA cable, female connection (75062)

0 3) current loop cable (75061)

0 4) external modem connecting cable (75055)

0 Channel 1 must be equipped with one of the following mod-  
0 ems:

0 1) transmit only, 1200 baud, no polling command (84420)



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0 2) transmit-receive, 1200 baud, accepts polling command  
0 (84424)

0 3) transmit-receive, 110/300 baud, accepts polling com-  
0 mand (84419)

0 If channel 3 option is required it must be equipped with  
0 a 110/300 baud modem (84419).

0 ( vi) The basic UDC is available in two memory configurations.  
0 One configuration consists of 4K dual traffic data regis-  
0 ters (84447) and is expandable to 8K with an 84425 card.  
0 The other configuration consists of 16K dual traffic reg-  
0 isters (84448) and is expandable to 32K with an 84426  
0 card.

0 ( vii)

| PEC   | DESCRIPTION       | EQUIP WITH |            |
|-------|-------------------|------------|------------|
|       |                   | 84447(4K)  | 84448(16K) |
| 84425 | 4K Mem Expansion  | *          |            |
| 84426 | 16K Mem Expansion |            | *          |
| 84509 | Editing & Alarm   | *          |            |
| 84506 | Editing           |            | *          |
| 84508 | Alarm             |            | *          |
| 84434 | Mtce. Spares Kit  | *          |            |
| 84433 | Mtce. Spares Kit  |            | *          |

0 The following hardware is always required with either UDC  
0 configuration:

0 1) Rack adapters (84414) for mounting 84447 and 84448  
0 onto Miscellaneous Equipment Frame.

0 Order quantity of one for each UDC unit required.

0 2) IOC-UDC I/O Cable-EIA (75053) (max 50 ft)  
0 -Current Loop (75054)  
0 (max 1200 ft)  
0 -lengths must be specified

0 3) Control Program Card - DMS-100 (84471)  
0 - DMS-200 (84472)  
0 - DMS-300 (84473)  
0 - DMS-100/200 (84475)

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0 (viii) The Full Maintenance Spares Kit (4K reg), 84434, includes  
0 one of every circuit card type included in 84447, spare  
0 control program card plus spare power supplies. When this  
0 kit is specified, the following orderable options are in-  
0 cluded and need not be ordered separately as spares:

- 0 (a) Spare I/O Channel 84405  
0 (b) Spare Control Program Card 8447X  
0 (c) Spare 4K Dual Traf Data Register Cd 84425

0 The Full Maintenance Spares Kit (16K reg), 84433, in-  
0 cludes one of every circuit card type included in 84448,  
0 spare control program card plus spare power supplies.  
0 When this kit is specified, the following orderable  
0 options are included and need not be ordered separately  
0 as spares:

- 0 (a) Spare I/O Channel 84405  
0 (b) Spare Control Program Card 8447X  
0 (c) Spare 4K Dual Traf Data Register Cd 84426

0 Spares may be mounted on a UDC Maintenance Spare Storage  
0 Shelf, 80013 (includes rack adapters for mounting on  
0 Maintenance Spares Storage Frame).

0 The required spares shall be ordered in NT8600 Section 9,  
0 DMS Office Maintenance.

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#### 0 3.3.4 Magnetic Tape Storage

##### 0 (a) General Description

0 Magnetic tapes are used in DMS as external storage devices and as  
0 a medium for transferring bulk data and operating software into  
0 and out of the system. The read-write device for magnetic tapes  
0 is the MTD. These are discussed in NTP 297-1001-153, DMS-100  
0 Family Input/Output Configuration, and NTP 297-1001-118, Magnetic  
0 Tape User's Guide.

0 Magnetic tapes are used for the following functions:

- 0 1) Office Image (system software backup)
- 0 2) Trouble Diagnostics and Reports
- 0 3) Automatic Message Accounting (AMA)
- 0 4) Operational Measurements (OM) if required
- 0 5) Data Modification Orders (DMO) bulk
- 0 6) Service Analysis (SA) if required
- 0 7) Call Detail Recording (DMS-300 only)
- 0 8) Peripheral Loads (to re-load peripherals)

##### 0 (b) References

0 NTP 297-1001-156 Disk Maintenance Subsystem  
0 Reference Manual

##### 0 (c) Provisioning Considerations

- 0 ( i) The number of MTD's required will depend on the features  
0 to be supported and the Telco administrative policy. A  
0 separate MTD is not required for each feature: for exam-  
0 ple OM, SA and Trouble Diagnostics and Reports may be as-  
0 signed to the same drive.
- 0 ( ii) A minimum of two (2) MTD's is required per system. An  
0 additional two (2) are required for AMA/LAMA/CAMA. This  
0 function can be provided on a Distributed Processor Pe-  
0 ripheral (DPP). An extra MTD may be provided for separate  
0 Operational Measurement (OM) support. Other drives are  
0 provided consistent with Telco requirements. Note that  
0 MTD need not be used for dumping OM and SA reports. Re-  
0 ports can be routed directly to a printer or via a data  
0 port of polling adapter to a Telco data centre. NTL will  
0 advise on the best configuration.

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0 Provide a maximum of ten (10) MTD's per system.

0 ( iii) The standard DMS MTD is the Cook Electric Co., model 2200  
0 transport, NT0X44AB.

0 ( iv) Provide one (1) MTD Mounting hardware NT0X44AC to to  
0 mount a customer-provided Hewlett Packard MTD. The HP  
0 MTD (model 7970E) may not be ordered from NTL by our cus-  
0 tomers. Provide one (1) NT0X44AC MTD Mounting Hardware  
0 to mount a customer-provided HP drive (formerly provided  
0 if 979E-151-048 MTD was drop-shipped by NT).

0 ( v) Customers may provide their own MTD and mounting hardware  
0 if the Cook Electric drive is not suitable.

0 (vi) In offices where the HP MTD is retrofitted with DDU, pro-  
0 vide one (1) R0107733 HP MTD Packing box for shipping and  
0 storing purposes.

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0 3.3.5 Disk Drive Unit (DDU)

0 (a) General Description

0 The 5.25" Disk Drive Unit (228.7 Mbytes formatted) is now the  
0 only provisionable DDU. It replaces both the 8" and 14" DDU's in  
0 all circumstances where new or replacement disk drive units are  
0 required.

0 One MTD is retained primarily to enable physical transportation  
0 of data to and from the office and secondarily as a backup to the  
0 DDU.

0 Disk application will also permit reductions in program store and  
0 data store memory by accommodating programs and data which do not  
0 require permanent residence in memory.

0 Disk drives when combined in an office with automatic remote  
0 transmission of OM and AMA data allows for a fully unattended re-  
0 motely controlled DMS application.

0 Data files recorded on disk can be manually copied on to magnetic  
0 tape for long term storage or transportation if necessary.

0 Data Recording Management

0 Data Recording Management involves functions relating to the De-  
0 vice Independent Recording Package (DIRP). DIRP controls the  
0 data flow from originating subsystems (i.e. OM,AMA,JF) to the de-  
0 vices (i.e. Tape or DDU) where the data is stored.

0 The DDU will be used to store data previously committed to tape,  
0 including:

- 0 o Office Image
- 0 o Auto Messaging Accounting (AMA)
- 0 o Parallel AMA
- 0 o Operational Measurements (OM)
- 0 o Journal File (JF)
- 0 o Peripheral Module (PM) loads
- 0 o Non-Resident Software
- 0 o Batch Data Modification Orders (DMO)
- 0 o Scan Log
- 0 o Scratch Area
- 0 o Killer Trunks (KT)

0 (b) References

0  
0 RELEASE 28.01  
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0 Reference Manual0 (c) Provisioning Considerations

0 The 5.25" DDU has been developed to replace the 8" DDU which re-  
0 placed the 14" DDU. In new offices, one or two 5.25" DDU are to  
0 be provisioned on a NT4X00AF shelf. In existing offices, when  
0 replacement is necessary, the 5.25" DDU should be provided. To  
0 replace a 14" DDU, a NT4X00AZ DDU Enhancement Kit shall be pro-  
0 vided along with a 5.25" DDU on the NT4X00AA, NT4X00AB or  
0 NT4X00AC DDU shelf to provide the proper cabling and mounting  
0 equipment. To replace an existing 8" DDU, one 5.25" DDU should  
0 be ordered for the NT4X00AA, NT4X00AB or NT4X00AC shelf and one  
0 or two DDUs should be ordered for the NT4X00AF shelf. A NTZZ99AG  
0 Univ 5.25" DDU Upgrade Kit must be provided with each 5.25" DDU  
0 provided to replace an 8" DDU.

0 (ii) The 8" DDU is no longer available for ordering. Provide  
0 the 5.25" DDU for all offices.

0 The following hardware is required for 5.25" DDU assign-  
0 ment in a new DMS-100F office. (The 8" DDU is no longer  
0 available.)

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0 NT4X00AG 5.25" DDU - (228.7 Mbytes formatted) -  
0 Maximum 2 per NT4X00AF shelf.

0 NT4X0038 Mercury Disk Hardware Kit - Provide one (1)  
0 per 5.25" or 8" DDU.

0 NT4X00AF Dual Disk Drive Shelf Assembly - supports  
0 two (2) 5.25" or two (2) 8" DDUs.

0 NT1X55DA Disk Drive Controller CP.  
0 Provide one (1) per DDU.

## 0 Notes:

0 1) For all offices, provide the 5.25" DDUs. The 8"  
0 DDU is no longer available.

0 2) The 1st DDU shall be located on the left  
0 side (slot 10) of the NT4X00AF Dual Disk Drive  
0 shelf (located in shelf Position 04). If a 2nd

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0 DDU is required on the same shelf, it shall  
0 be located on the right side (slot 18).

0 3) DDUs can only be provisioned in the IOE on shelf pos.  
0 04 with shelf pos. 18 left vacant. This is due to  
0 heating restrictions with the DDU and a fusing  
0 limitation on the IOE's FSP.

0 4) Provide one additional NT0X36AB in the IOE Frame  
0 Supervisory Panel (FSP) when the NT4X00AF Shelf is  
0 provisioned.

0 (iii) The following hardware is required to replace an existing  
0 14" DDU on an NT4X00AA, AB, or AC shelf with a 5.25"  
0 DDU. The 8" DDU is no longer available.

0 NT4X00AG 5.25" DDU - Maximum one (1) per NT4X00AA, NT4X00AB  
0 or NT4X00AC shelf.

0 NT4X00AZ B0155066 - DDU Enhancement Kit

0 Notes:

0 1) Provide the 5.25" DDU for all offices. The 8" DDU is no  
0 longer available.

0 2) The NT4X00AZ Enhancement Kit provides appropriate  
0 cabling and mounting equipment to allow the replacement  
0 of a 14" DDU shelf with a 5.25" DDU. The 8" DDU is no longer  
0 available and the NT4X00AY Enhancement Kit is no longer available.

0 ( iv) The following hardware is required to replace existing 8"  
0 DDU(s) on an NT4X00AA, AB, AC or NT4X00AF shelf with  
0 5.25" DDU(s).

0 Per Customer request, the NT4X0046 Cable Assembly supplied in the  
0 NT4X00AY 14 Inch DDU Enhancement Kit during a 14" DDU replacement by an  
0 8" DDU or the two NT4X0039 Cable Assemblies of an existing NT4X00AF can  
0 be replaced with the NT4X0048 cable assembly. For all new 14" DDU to  
0 5.25" DDU replacements provide the NT4X00AZ DDU Enhancement Kit. The

0 NT4X00AG 5.25" DDU - Maximum one (1) per NT4X00AA, AB or AC  
0 Shelf. Maximum two (2) per NT4X00AF shelf.

0 NTZZ99AG Univ. 5.25" DDU Upgrade Kit (One per 5.25" DDU is required.)

0 Notes:

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1) Existing shelf cabling used for the 8" DDU(s) will be used for the 5.25" DDU(s).

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2) On the NT4X00AF shelf, where two 8" DDUs are existing, it is possible to replace only one of the 8" DDUs with the 5.25" DDU, resulting in one (1) 5.25" DDU and one (1) 8" DDU on the shelf together.

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Per Customer request, the NT4X0046 Cable Assembly supplied in the NT4X00AY 14 Inch DDU Enhancement Kit during a 14" DDU replacement by an 8" DDU or the two NT4X0039 Cable Assemblies of an existing NT4X00AF can be replaced with the NT4X0048 cable assembly. For all new 14" DDU to 5.25" DDU replacements provide the NT4X00AZ DDU Enhancement Kit. The

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( v) When mounted on the NT4X00AF shelf, the 5.25" and 8" DDUs can only be provisioned in the IOE shelf position 4 with shelf position 18 left vacant. This is due to heating restrictions with the DDUs and a fusing limitation on the IOE's FSP. You can replace 14" DDUs with 5.25" on a one-to-one basis, with the existing shelves remaining in place. The 8" DDUs are no longer available.

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(vi) To support DDUs: package NTX074AA - Data Disk Storage is needed.

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(vii) A DDU is physically allocated in blocks. Each "DDU block" contains 1024 Bytes. Two (2) "DDU blocks" make up a "DIRP block" of 2048 Bytes. A "DIRP file segment" contains 256 DIRP blocks for a total of 524,288 Bytes.

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A volume is an area of the DDU. Volumes are used for each area of Data Recording Management. An overhead of 2,148,352 Bytes are required per volume. The overhead consists of 51,200 Bytes (50 blocks) for volume and file control and 2,097,152 Bytes (2048 blocks) for low space conditions. A DDU volume is physically defined by the multiple number "DIRP file segments" it contains plus the required overhead.

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The following are volume summary guidelines:

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o All DDU's and subsystems should be provisioned evenly across IOC's

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- 0 o The minimum size of a volume is 2,672,640 Bytes
- 0 (2610K blocks)
- 0 o The maximum size of a volume is 67,108,864 Bytes (64M
- 0 blocks)
- 0 o One volume must be located in one DDU (i.e. a single
- 0 volume cannot span 2 DDUs)
- 0 o The maximum number of volumes for each DIRP subsystem
- 0 is 24
- 0 o Each volume for a DIRP subsystem must be the same
- 0 size
- 0 o DIRP will use space evenly to all volumes allocated
- 0 to a subsystem
- 0 o Volumes must be spread evenly over the DDUs provi-
- 0 sioned
- 0 o There must be at least two (2) volumes per DDU

0 (viii) Available disk capacity is that capacity remaining after  
0 power-up and formatting:

0 66 MByte Disk - 60,513,280 bytes available  
0 154 MByte Disk - 144,615,424 bytes available  
0 8" Disk Drive Unit - 240,020,000 bytes available

0 ( ix) DDUs should be provisioned for a five year period by us-  
0 ing five-year forecasted traffic figures. The DDU provi-  
0 sioning must be re-evaluated for another five year period  
0 with each office extension.

0 ( x) Office Image System Volume Size

0 The Office Image is formed by the total combined Program  
0 Store and Data Store requirements. It is recommended  
0 that a full 67,108,864 byte volume (maximum usable volume  
0 plus overhead) be reserved for the Office Image. A volume  
0 of this size provided adequate storage for an office con-  
0 taining 8 megawords of Program Store (PS) and 16 mega-  
0 words if Data Store (DS) per side plus 50 percent spare  
0 for five-year growth.

0 Actual Office Image requirements may also be calculated  
0 using the following formula:

0 Office Image Volume Size =  
0 2,148,352 Bytes + (.75 (PS (bytes) + DS (bytes))

0 where 2,148,352 bytes is for Disk volume maintenance

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0 This formula takes into account 50 percent spare for  
0 five-year growth and the prediction that only half of the  
0 provisionable PS and DS memory is Office Image.

0 This formula is valid for NT40 offices and SuperNode of-  
0 fices without a System Load Module (SLM). The SLM con-  
0 tains SuperNode office images and thus would not require  
0 redundant images to reside on disk.

0 Each DDU can contain only one Office Image volume. The  
0 maximum number of DDUs containing an Office Image volume  
0 is three.

#### 0 Automatic Message Accounting (AMA)

0 AMA records should be stored on DDU:00 and DDU:01  
0 equipped with power interlock. AMA entries for the total  
0 retention period are recorded over DDU:00 and DDU:01  
0 (half on DDU:00 and half on DDU:01).

0 The required period of AMA record retention is specified  
0 in the number of days. Valid entries are 0 days to 499  
0 days. An example of four days retention is as follows:

0 First Day: Recorded on DDU:00  
0 Second Day: Recorded on DDU:01  
0 Third Day: Recorded on DDU:00  
0 Fourth Day: Recorded on DDU:01

0 The AMA subsystem on DDU:00 and DDU:01 should be set up  
0 for a minimum of two volumes each. AMA/Local Call Detail  
0 Recording (LCDR) and Station Message Detail Recording  
0 (SMDR) data may be contained in the same volume if NT  
0 format is utilized. This data may also be recorded in  
0 separate volumes. The factor 1.3 included in calcu-  
0 lations throughout this document consists of a dedicated  
0 area for volume and file control.

0 If a Distributive Processing Peripheral (DPP) or Billing  
0 Media Converter (BMC) is used, primary AMA is not stored  
0 on the disk.

#### 0 NT Format AMA



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0 activated to record outpulsed digits.)

0 J = Subtotal SMDR = S+T+H

0 Total SMDR = J \* 1.3 factor \* number of days  
0 retention  
0 (round up to the nearest multiple  
0 of 524,288)

0 Number of SMDR Volumes                      Total SMDR  
0 (round up to the                      =  $\frac{\quad}{\quad}$   
0 nearest even integer)                      volume size (in bytes)

0 SMDR/Volume = Total SMDR in bytes  
0  $\frac{\quad}{\text{Number SMDR Volumes}}$  + 2,148,352  
0 bytes  
0 (overhead)

0 The minimum volume size for SMDR is 2,672,640 bytes. The  
0 maximum volume size for SMDR is 67,108,864. The recom-  
0 mended minimum of SMDR volumes is four. The maximum num-  
0 bers of volumes is 24.

0 Bellcore AMA Format

0 The following calculations are used to determine storage  
0 requirements for AMA in the Bellcore record format.

0 Basic Average                      See  
0 High Day Entries \* 55 Bytes + Notes = K

0 Note 1: If the office is optionally equipped  
0 with software for Equal Access (Equal  
0 Access End Office NTX186AA or Access  
0 Tandem NTX386AA), then add 10 bytes to  
0 the multiple 55 bytes above. Ensure  
0 that High Day entries contain both  
0 originating and terminating calls if  
0 recorded.

0 Note 2: If the office is optionally equipped  
0 with the NTX703AA Deferred Bellcore  
0 AMA formatting package (without the  
0 NTX243AA AMATPS features and with or  
0 without the Equal Access software),  
0 then add 61 bytes to the multiple 55  
0 bytes above.

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0 Additive for Switch Supervisory Unit (SSU) for line and  
0 trunk if feature NTX076AA AMA Enhanced is turned on:

0 L = High Day Entries \* 8 bytes

0 Additive for MDC customer dialed account number (package  
0 NTX102AA)

0 M = High Day Entries \* 10 bytes

0 Reduction due to compression (high runner call types:  
0 message rate, flat rate, station paid calls are com-  
0 pressed by 10 bytes)

0 N = High Day Entries \* 10 bytes

0 P = Subtotal Bellcore AMA Format = (K+L+M) - N

0 P \* factor 1.2 \*  
0 number of days  
0 Total Bellcore AMA Format = retention \* 1.3  
0 (round up to the  
0 multiple of 524,288)

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0 Number of AMA Volumes      Total Bellcore AMA  
0 (round up to the      =  $\frac{\quad}{\quad}$   
0 nearest even integer)      volume size (in bytes)

0 AMA/Volume = Total Bellcore AMA Format  
0  $\frac{\quad}{\quad}$   
0 Number AMA Volumes

0 + 2,148,352 bytes (overhead)

0 (Factor 1.2 estimates variable structure code information  
0 per call code.)

0 The minimum AMA bytes per volume is 2,672,640 bytes. The  
0 maximum volume size for AMA is 67,108,864. The recom-  
0 mended minimum of AMA volumes is four. The maximum num-  
0 bers of volumes is 24.

0 Combined AMA and SMDR Volumes (NT Format Only)

0 (Do not calculate here if calculated separately.)

0 AMA/Volume = Total NT AMA + Total SMDR  
0  $\frac{\quad}{\quad}$   
0 Number of AMA Volumes

0 + 2,148,352 bytes (overhead)

0 Expanded Bellcore AMA Format (EBAF)

0 EBAF uses new base structure codes and appended modules  
0 to record AMA information. EXAMPLE: A 0+ call origi-  
0 nation on a TOPS trunk group with the calling party re-  
0 questing person-to-person. The call is then billed and  
0 completed. Record size for pre-EBAF = 69 bytes; with  
0 EBAF = 84 bytes.

0 Parallel Volumes

0 Parallel recording is optional for any subsystem on Mag  
0 Tape or disk. If parallel recording is done on disk it  
0 should be done on one that does not have regular AMA vol-  
0 umes (i.e. active/stand-by). It is recommended that par-  
0 allel volumes should be sized at a full 67,108,864 bytes.

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0 Operational Measurement Volume

0 The number of Common Language Location Identifiers (CLLI)  
0 includes pseudo maintenance CLLI, spares, interoffice  
0 CLLI, and growth CLLI. The minimum number of CLLI is  
0 120.

0 Basic OM on Trunk Groups (Single Precision)

0  $Q = \text{Number of CLLI's} * 18 \text{ bytes} * \text{number of}$   
0  $\text{dumps/day (max. 48)}$

0 Repeat for all classes used. The maximum number of  
0 classes is 30.

0 Basic OMs on Trunk Groups (Double Precision)

0  $R = \text{Number of CLLI's} * 36 \text{ bytes} * \text{number of}$   
0  $\text{dumps/day (max. 48)}$

0 Repeat for all classes used.

0 MDC OMs (Single Precision)

0  $S = \text{Number of Customer Groups} * 175 \text{ bytes} *$   
0  $\text{number of dumps/day (max. 48)}$

0 MDC OM's (Double Precision)

0  $T = \text{Number of Customer Groups} * 350 \text{ Bytes} *$   
0  $\text{number of dumps/day (max. 48)}$

0 Repeat for all classes used.

0  $V = \text{Subtotal OM} = (Q+S) \text{ or } (R+T)$

0  $\text{Total OM} = V * \text{factor } 1.3 * \text{number of days retention}$   
0  $(\text{round up to nearest multiple of } 524,288)$

0  $\text{Number of OM Volumes} = \frac{\text{Total OM}}{\text{volume size (in bytes)}}$   
0  $(\text{round up to the nearest even integer})$

0  $\text{OM/Volume} = \text{Total OM}$

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0 \_\_\_\_\_ + 2,148,352 bytes  
0 No. OM Volumes (overhead)

0 The minimum volume size for OM is 2,672,640 bytes. The  
0 maximum volume size for OM is 67,108,864. The recommended  
0 minimum of OM volumes is two. The maximum numbers of  
0 volumes is 24.

0 Journal file Volume

0 The Journal File (JF) subsystem provides a means of re-  
0 cording Data Modification Orders (DMOs) allowing their  
0 addition to the office image on respective disk drives  
0 after an office reload.

0 In a two DDU office, the expected worst case number of  
0 days retention for DDU:00 is seven days. DDU:01 has the  
0 image taken at the time the office was last booted in.  
0 If the image is older than 61 days, the following options  
0 are possible:

- 0 1) DMOs that are older than 61 days are only stored on  
0 magnetic tape, not disk. The number of days re-  
0 tention is 61 days for DDU:01.
- 0 2) The DMOs that are older than 61 days are stored on  
0 DDU. The number of days retention is optional up to  
0 as much as six months to one year.

0 In a three DDU office, the expected worst case number of  
0 days retention for DDU:00 & 01 is 14 days. For DDU:02  
0 the number of days retention is the same as for DDU:01 in  
0 a two DDU office (see above).



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0 JF Volume

0 Total JF = No. of DMOs \* 512 bytes \* factor  
0 1.3 \* no. of days retention  
0 (round up to the nearest multiple  
0 of 524,288)

0 Number of days retention equals the age of the office im-  
0 age in days.

0 JF/Volume = Total JF + 2,148,352 bytes  
0 (overhead)  
0 (minimum 2,672,640 bytes)

0 Repeat for each DDU.

0 Peripheral Module Load Volume

0 BCS 30 Peripheral Loads

| PM Load  | Description          | LRec | Records | Bytes   |
|----------|----------------------|------|---------|---------|
| NRC30B01 | RCC                  | 1024 | 2768    | 2834432 |
| RCI30B01 | RCCI                 | 1024 | 4430    | 4536320 |
| TMS30B01 | TMS                  | 1024 | 4400    | 4505600 |
| DTI30B01 | DTCI                 | 1024 | 3276    | 3354624 |
| LTi30B01 | LTCI                 | 1024 | 4468    | 4575232 |
| LCM30H   | RLCM                 | 55   | 726     | 39930   |
| XLCM30G  | RLCM (supercharging) | 55   | 877     | 48235   |
| MPC03001 | MPC0 (CCITT)         | 2048 | 149     | 305152  |
| NSS30B01 | SMS                  | 1024 | 2030    | 2078720 |
| MPCA30B0 | MPCA (asynchronous)  | 2048 | 141     | 288768  |
| MPCX30B0 | MPCX (enhanced MPC)  | 2048 | 195     | 399360  |
| LCMI30F  | LCMI                 | 55   | 1076    | 59180   |
| DC730B0  | DTC (CCS7)           | 1024 | 2432    | 2490368 |
| MC730B0  | MSB7                 | 1024 | 1492    | 1527808 |
| PAC30B0  | PRA, IAC             | 1024 | 1906    | 1951744 |
| ESA30B0  | RLCM (ESA)           | 1024 | 1478    | 1513472 |
| NDT30B0  | DTC (new mem & msg)  | 1024 | 2004    | 2052096 |
| NLG30B0  | LGC                  | 1024 | 2266    | 2320384 |
| SM30B0   | SMR                  | 1024 | 1838    | 1882112 |
| SU30B0   | SMU                  | 1024 | 2180    | 2232320 |
| BLMRA01  | LM                   | 76   | 1426    | 108376  |
| SMC30B   | MSB6                 | 1024 | 578     | 591872  |

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| PM Load  | Description         | LRec | Records | Bytes  |
|----------|---------------------|------|---------|--------|
| SDT30B   | DTC (old mem & msg) | 1024 | 770     | 788480 |
| SDC30B   | DTC (CCIS6)         | 1024 | 768     | 786432 |
| M7COA04  | ST (CCS7)           | 76   | 1002    | 76152  |
| RDCMPA02 | DCM, DES            | 76   | 523     | 39748  |
| DPPA9A   | DPP                 | 2048 | 66      | 135168 |
| ERLMQA01 | RLM (bay 0)         | 76   | 2527    | 192052 |
| BRLMQA01 | RLM (bay 1)         | 76   | 1863    | 141588 |
| SLCMI27A | LCMI                | 76   | 1148    | 87248  |
| DLM27A1  | RDLM                | 76   | 1097    | 83372  |
| FSTMDA02 | TM8 (feature load)  | 76   | 311     | 23636  |
| MCIHA02  | ST (CCIS)           | 76   | 890     | 67640  |
| TSTMKA02 | TM8 (traffic load)  | 76   | 283     | 21508  |
| BTMKA02  | TM2, TM4, TM8       | 76   | 275     | 20900  |
| MTMKA02  | MTM, TAN, OAU       | 76   | 302     | 22952  |
| RMDMA02  | RMM                 | 76   | 690     | 52440  |

0 Duplicate the PM loads on two DDUs on separate IOC's.  
0 Minimum PM volume size is 2,672,640 bytes.

0 Non-Resident Software Volume

0 All Non-Resident software is supplied to the TELCO on a  
0 tape. Thus, volume space on a DDU is not required.

0 Batch Data Modification Order Volume

0 Externally created Data Modification Orders (DMOs) may be  
0 bulk loaded into the system. DMOs can be written to DDUs  
0 either from magnetic tape or through a communication link  
0 with remote batch input terminal.

0 Batch DMO Volume = No. of DMOs \_\_\_\_ \* 128 \* 1.3

0 The suggested minimum is 250 DMOs. If this feature is  
0 used, then the recommended volume size is 2,672,640  
0 bytes.

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0 Scan Log Volume Size (Log Analyzer)

0 Scan Log is a tool that can be used to analyze log mes-  
0 sages. A recommended low value is 5,242,880 bytes. At  
0 the operating company's option this can go up to a vol-  
0 ume. (Maximum volume size is 2,672,640 bytes.)

0 Scratch Area Volume Size

0 Allocate the unused area on each DDU as a scratch area.  
0 Size the scratch area on each DDU into approximately  
0 2,097,152 or 3,145,728 byte volumes.

0 Note: A scratch area volume name must be  
0 between one to four characters in  
0 order to be usable by DIRP in an  
0 emergency situation.

0 Killer Trunk Reports To DIRP

0 Determine the required DDU storage requirements for  
0 Killer Trunk (KT) Reports using the following formula:

0 
$$\text{KT Storage} = N * (36 \text{ bytes} + (12 \text{ bytes} * M) +$$
  
0 
$$20 \text{ bytes}$$

0 Where: N = Number of reports generated per day  
0 M = Number of MDC trunk members to test

0 Multiply the total bytes required by the number of days  
0 retention.

0 
$$\text{Total KT} = \text{KT Storage} * 1.3 * \text{number of days}$$
  
0 
$$\text{retention}$$
  
0 
$$(\text{round up to the nearest multiple}$$
  
0 
$$\text{of } 524,288)$$

0 
$$\text{Number of KT Volumes} = \frac{\text{Total KT}}{\text{volume size (in bytes)}}$$
  
0 (round up to the  
0 nearest even integer)

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$$\text{KT per Volume} = \frac{\text{Total KT}}{\text{No. KT Volumes}} \div 2,672,640 \text{ bytes}$$

The minimum KT per volume is 2,672,640 records or bytes.

#### Automatic Trunk Testing Reports To DIRP

Determine the required DDU storage for Automatic Trunk Test Reports using the following formula:

$$\text{ATT Storage} = 240 \text{ bytes} + (P * 70 \text{ bytes}) * Q + 20 \text{ bytes} + (R * 10 \text{ bytes})$$

Where:

P = No. of MDC trunk group members / trunk grp

Q = No. of MDC trunk groups

R = Number of restarts

Multiply the total bytes required by the number of days retention.

$$\text{Total ATT} = \text{Storage ATT} * 1.3 * \text{number of days retention} \\ \text{(round up to the nearest multiple of 524,288)}$$

$$\text{Number of ATT Volumes} = \frac{\text{Total ATT}}{\text{volume size (in bytes)}} \\ \text{(round up to the nearest even integer)}$$

$$\text{ATT / Volume} = \frac{\text{Total ATT}}{\text{No. ATT Volumes}} \div 2,672,640 \text{ bytes}$$

The minimum volume size for ATT and KT is 2,672,640 bytes. The maximum volume size for ATT and KT is 67,108,864. The recommended minimum of ATT and KT volumes is two. The maximum numbers of volumes is 24.

#### Summary

Total all DDU requirements and divide by total usable volume space (66 or 154 Mbyte) to determine required number of DDUs.

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0 3.3.6 Distributed Processing Peripheral (DPP) AMATPS Application

0 3.3.7 Distributed Processing Peripheral (DPP) AMATPS Application

0 (a) General Description

0 The Distributed Processor Peripheral (DPP) allows remote polling  
0 of AMA data information as specified by Automatic Message Ac-  
0 counting Teleprocessing System (AMATPS) requirements. AMA data  
0 is collected and stored on the DPP's internal Disk Drive Units  
0 for forwarding, upon request, to a host collector. Disk sizes  
0 available are 140, 380, and 760 MByte 5-1/4" Winchester. (NOTE:  
0 the 760 MByte requires a minimum of BCS-30.) Currently, AMATPS  
0 is the only application of the DPP, with only one DPP unit being  
0 provisioned per office.

0 The 56K/Compression DPP introduces the implementation of Firmware  
0 Data Compression Feature (FDCF) for Automatic Message Accounting  
0 Transmitter (AMAT). FDCF will be added to the Communications  
0 Processor (CP) NT6M94BA pack and will not be a part of the BCS  
0 software release. The 56K/Compression feature is compatible with  
0 BCS-29 and higher DMS-100 offices that are equipped with the  
0 NTXF14AA feature package. This feature will implement the AT&T  
0 LZW algorithm to achieve a nominal compression ratio of 2.8:1.  
0 This is equivalent to polling non-compressed data at 27K baud  
0 over dial up phone lines. The host collector must be capable of  
0 receiving compressed data and expanding that data. The data is  
0 stored at the DPP disk and collector end in a non-compressed  
0 form. Standard disk sizes available are the 140MB, 380MB and  
0 760MB. Existing DPP's can be field upgraded to support  
0 56K/Compression.

0 The DPP is provided in a redundant configuration. The redundant  
0 DPP is a duplicated unit equipped with cross-over circuitry to  
0 ensure continuous operation in the event of a component failure.  
0 Interface to the DMS-100F is via NT1X68AC Mag Tape Controller  
0 Cards for AMA records and NT1X67BC/BD I/O Cards for connection to  
0 the MAP. The serial I/O port handles maintenance commands to the  
0 DPP, maintenance responses from the DPP, log messages from the  
0 DPP and down load capabilities. Communications between the DPP  
0 and the MAP utilizes the DMS MMI protocol. A second serial I/O  
0 port is required to provide redundant capabilities. The config-  
0 uration of the controllers is such that each controller is lo-  
0 cated on a different IOC for reliability.

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The DPP utilizes a modem interface for transmission of data to the host collector at speeds up to 56K bits per second. The 56 Kbps polling option is standard with the 760 MByte Disk, offered as an option to the 380 MByte Disk, but not available to the 140 MByte Disk. The 56K/Compression option is polled at a maximum rate of 9.6K baud via RS-232 interface from AMAT to Modem. DPP's equipped with compression hardware maybe polled at higher speeds (56K) when compression feature is turned off. The 56K feature requires a V.35 interface from AMAT to the modem. Teleprocessing is performed using the Bellcore BX.25 protocol.

The 140, 380, and 760 MByte Disk Drives are now provisionable to the DPP in a U.L. compliant chassis under a single Product Engineering Code (PEC) (NT8X48AD).

(b) References

None

(c) Provisioning Considerations

( i) Distributed Processing Peripheral

The available disk call record capacity for each different DPP type, with call records in the AMATPS format, are as follows:

| DPP SIZE         | DISK CALL RECORD CAPACITY |              |
|------------------|---------------------------|--------------|
|                  | AMA RECORDS               | AMA STORAGE  |
| 72 MByte         | 464,152 AMA               | 28.8 MBytes  |
| 140 MByte        | 939,848 AMA               | 58.3 MBytes  |
| 380 MByte        | 2,603,328 AMA             | 161.4 MBytes |
| w/o 56K polling  |                           |              |
| 380 MByte        | 3,341,520 AMA             | 207.1 MBytes |
| with 56K polling |                           |              |
| 760 MByte        | 6,336,200 AMA             | 392.7 MBytes |

Note: These figures represent 66% of actual maximum storage values. DPP warning threshold alarms will be present as these values are approached.

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0 Determine the required disk size (140, 380, or 760) by  
0 using the formula:

0 No. of AMA HD calls \* No. of Days Retention =  
0 No. of AMA Records

0 Multiplying the number of AMA records by 65 will express  
0 the AMA storage in terms of bytes.

0 ( ii) All new DPP offices will be supplied in a U.L. compliant  
0 chassis under a single PEC (NT8X48AD) in which the  
0 140,380, or 760 MByte Disk drives are now provisionable.

0 Existing DPP offices that are retrofit with any larger  
0 disk drive, or faster polling option will utilize the PEC  
0 NT8X48AB.

0 A Product Change Kit (PC Kit), NT8X48AC, will be provi-  
0 sioned with BCS20 upgrades for existing NT8X48AA and  
0 NT8X48BA DPP units. This PC Kit contains Designation La-  
0 bels converting the DPP to the NT8X48AB PEC.

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( iii) The following tables outline the Product Engineering Code versus the quantity per DPP application.

The following tables outline the Product Engineering Code versus the quantity per DPP application.

| DPP APPL.<br>PEC | INITIAL         | UPGRADE         | INITIAL                   | INITIAL                   | INITIAL                   |
|------------------|-----------------|-----------------|---------------------------|---------------------------|---------------------------|
|                  | 760MB<br>56Kbps | 760MB<br>56Kbps | 760MB<br>56Kbps<br>cmprsn | 380MB<br>56Kbps<br>cmprsn | 140MB<br>56Kbps<br>cmprsn |
| NT8X48AD         | 1               |                 | 1                         | 1                         | 1                         |
| NT6M63CJ         | 2               | 2               | 2                         | 2                         | 2                         |
| NT6M72EA         | 2               | 2               | 2                         |                           |                           |
| NT6M72DD         |                 |                 |                           | 2                         |                           |
| NT6M72DE         |                 |                 |                           |                           | 2                         |
| NT6M66BA         | 2               | 2               | 2                         | 2                         |                           |
| NT6M66BC         |                 |                 |                           |                           | 2                         |
| NT6M93AA         | 2               | 2               | 2                         | 2                         | 2                         |
| NT6M94AA         | 2               | 2               |                           |                           |                           |
| NT6M94BA         |                 |                 | 2                         | 2                         | 2                         |
| NT6M48AA         | 1               | 1               | 1                         | 1                         | 1                         |
| NT6M54AL         | 1               | 1               | 1                         | 1                         | 1                         |
| NT6M73AJ         | 1               | 1               | 1                         | 1                         | 1                         |
| NT6M73AK         | 1               | 1               | 1                         | 1                         | 1                         |
| NT6M85CA         | 1               | 1               | 1                         | 1                         | 1                         |

Table 36.1a:  
PEC Quantity per DPP Application  
Note: Reference Table C for upgrade information to Compression



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0 \* - Only apply PC Kit NT8X48AC to existing NT8X48AA and  
0 NT8X48BA DPPs. Offices containing the NT8x48AB DPP or  
0 NT8X48AD DPP do not require PC Kit NT8X48AC.

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| PEC Quantity per DPP Application |                 |       |                 |       |         |         |
|----------------------------------|-----------------|-------|-----------------|-------|---------|---------|
| DPP APPL.                        | INITIAL         |       | UPGRADES        |       | INITIAL | UPGRADE |
|                                  | 380MB<br>56Kbps | 380MB | 380MB<br>56Kbps | 380MB | 140 MB  | 140 MB  |
| PEC                              |                 |       |                 |       |         |         |
| NT8X48AC*                        |                 |       | 1               | 1     |         | 1       |
| NT8X48AD                         | 1               | 1     |                 |       | 1       |         |
| NT6M63CL                         |                 | 2     |                 |       | 2       |         |
| NT6M63CJ                         | 2               |       | 2               |       |         |         |
| NT6M63CH                         |                 |       |                 | 2     |         | 2       |
| NT6M72BA                         |                 |       |                 |       | 2       | 2       |
| NT6M72DA                         |                 | 2     |                 | 2     |         |         |
| NT6M72DD                         | 2               |       | 2               |       |         |         |
| NT6M66BA                         | 2               |       | 2               |       |         |         |
| NT6M66AH                         |                 | 2     |                 | 2     |         |         |
| NT6M66AL                         |                 |       |                 |       | 2       |         |
| NT6M93AA                         | 2               |       | 2               |       |         |         |
| NT6M72AE                         |                 | 2     |                 | 2     | 2       | 2       |
| NT6M94AA                         | 2               |       | 2               |       |         |         |
| NT6M48AA                         | 1               |       | 1               |       |         |         |
| NT6M54AL                         | 1               |       | 1               |       |         |         |
| NT6M73AJ                         | 1               |       | 1               |       |         |         |
| NT6M73AK                         | 1               |       | 1               |       |         |         |
| NT6M85CA                         | 1               |       | 1               |       |         |         |

Table 36.1b: PEC Quantity per DPP Application

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0 Note - Existing NT6M72AC and NT6M72AD CP will work with the 140  
0 MByte Disk, but will not work with the 380 MByte Disk.

0 - Existing 72 MByte Disk offices which are upgrading to a  
0 140 MByte Disk will not remove the existing NT6M66AC CP.

0 \* - Only apply PC Kit NT8X48AC to existing NT8X48AA and  
0 NT8X48BA DPPs. Offices containing the NT8X48AB DPP or  
0 the NT8X48AD DPP do not require PC Kit NT8X48AC.

0 The descriptions of the PECs mentioned above are as fol-  
0 lows:

0 NT6M48AA 56K Crossover CP  
0 NT6M54AL 56K Mounting Panel  
0 NT6M63CH EPROM (BCS-25)  
0 NT6M63CJ EPROM 380/760 56K CP (BCS-29)  
0 NT6M63CL EPROM (56K BCS21-28 or non-56K BCS29)  
0 NT6M66AC Disk Interface CP  
0 NT6M66AH Disk Interface CP  
0 NT6M66AL Disk Interface CP  
0 NT6M66BA Disk Interface 380/760 CP  
0 NT6M72AC Disk II Crossover CP  
0 NT6M72AD Disk II Crossover CP  
0 NT6M72AE Disk II Crossover CP  
0 NT6M72BA 140 MB Disk Unit  
0 NT6M72DA 380 MB Disk Unit  
0 NT6M72EA 760 MB Disk Unit  
0 NT6M73AJ 56K Crossover Interface Cable Assembly  
0 NT6M73AK 56K Crossover Interface Cable Assembly  
0 NT6M85CA 56K Crossover Interface Cable Assembly  
0 NT6M93AA Disk Crossover CP  
0 NT6M94AA 56K Interface CP  
0 NT8X48AC DPP Product Change Kit  
0 NT8X48AD DPP U.L. Chassis

0 ( iv) A DPP unit may be equipped in the same frame that has an  
0 8" DDU Unit provided, or a Remote Oscillator Shelf pro-  
0 vided, or any equipment provisioned on an IOE Frame when  
0 no more than four (4) Battery Return (BR) connections are  
0 required on FSP TB1 terminal block.

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0  
0 Terminal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

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0 | A B | A B A | | A B A |  
0 -48V Battery Return SW PWR

0 TB1 Terminal Block

0 The 380 MB DPP Disks require a minimum of BCS-25.

0 The 760MB Disk and the 56Kbps Polling option are planned  
0 to be verified in BCS 29 and Generally Available with BCS  
0 30.

0 The 56Kbps Polling option is available only on 380 & 760  
0 MB Disk DPP offices.

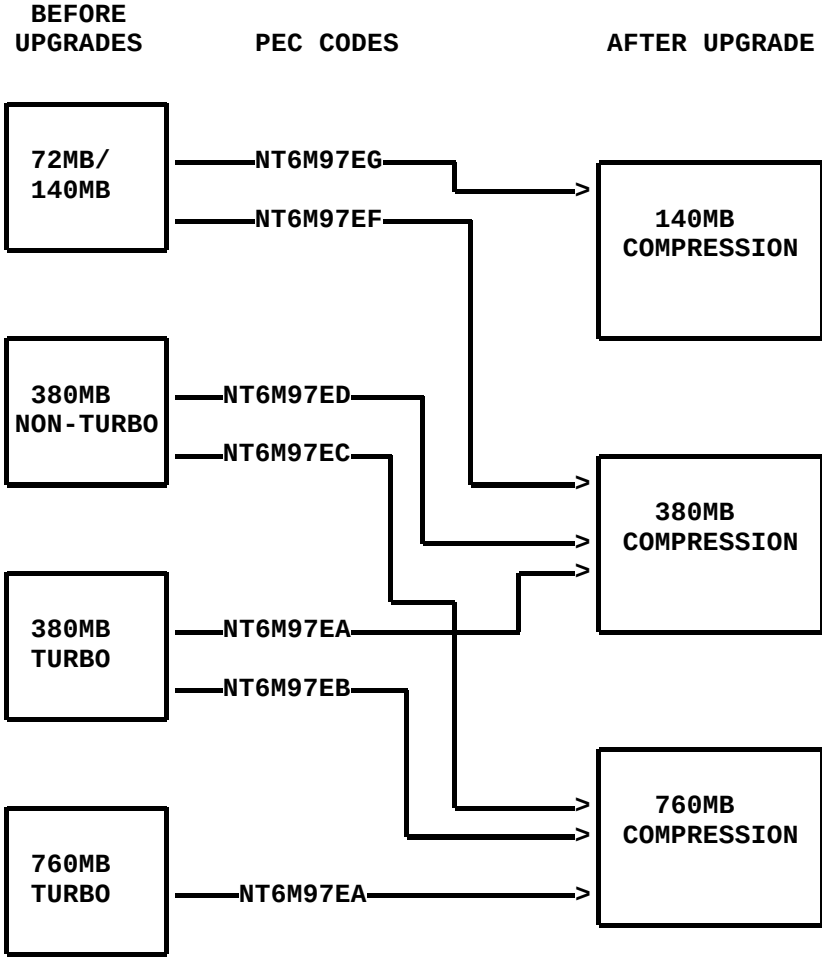
0 The 56K/Compression option is available on the 140 MByte,  
0 380 Mbyte, and 760 MByte DPP offices. This data com-  
0 pression feature is designed to be run at a polling rate  
0 of 9.6K baud. Significantly faster data cannot be main-  
0 tained and still achieve the desired compression time.

- 0 ( v) The Compression option requires a modem capable of up to  
0 9.6K and RS-232 must be used to interface the AMAT and  
0 the modem. The Automatic Message Accounting Transmitter  
0 (AMAT) must be configured properly for the selected  
0 interface.

0 Compressing AMATs will be able to work properly with non  
0 compression type collectors. Non compression type collec-  
0 tors will be able to poll data in non compressed mode  
0 only. To be able to poll in compressed mode, the collec-  
0 tor must conform to the AT&T LZW data compression spec-  
0 ifications.

- 0 ( vi) The following figure outlines the Product Engineering  
0 Code of PC Kits required to upgrade an existing DPP to  
0 56K/Compression polling. Each PEC stock list contains  
0 all the hardware required to upgrade DPP as shown.

Figure 36.6:  
DPP UPGRADE TO COMPRESSION CONFIGURATIONS  
=====



- ( vii) Cook Mag Tape Controller CP (NT1X68AC)  
Provide two (2) per each equipped NT8X48AD/AB. These two cards should be located on separate IOC modules.
- (viii) I/O Terminal Controller CP (NT1X67BC/BD)

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0 Provide two (2) ports per each equipped DPP. These two  
0 ports should be located on separate IOC modules.

0 ( ix) Power Control and Alarm CP (NT0X36AB)

0 Provide one (1) for each IOE/MTC frame with a DPP.

0 ( x) Scan Detector Circuit (NT0X10AA)

0 For offices with DPPs and BCS-23 or greater one dedicated  
0 scan circuit must be provided for each DPP. Provide as  
0 required.

0 ( xi) Provide 1200, 2400, 4800 and 9600 baud rate modems as re-  
0 quired for polling. The near and far end modems must be  
0 compatible.

0 NOTE: The Customer is responsible for modem compatibility  
0 with any automatic call back unit that they provide  
0 for DPP polling. NT does not provide an automatic  
0 call back unit for DPP polling.

0 ( xii) Provision one (1) NT8M99AB Cable Assembly per DPP for  
0 CANADIAN applications. This 50 foot (15.2 metre) null  
0 modem cable, equipped with a standard, female DB25 con-  
0 nector, is used to connect an Emergency Access Terminal  
0 (EAT) for emergency maintenance purposes. The customer  
0 is to supply a suitable terminal equipped with a keyboard  
0 and a printer for recording key input and response mes-  
0 sages; the Teletype Model 53 is recommended. Video dis-  
0 play terminals without print capability are not  
0 recommended.

0 For U.S. applications, provide one (1) NT8M99AB Cable As-  
0 sembly per customer request to connect an EAT for emer-  
0 gency maintenance purposes.

0 (xiii) The DPP and interface box mount together as one unit us-  
0 ing 26 inch mounting brackets provided with the DPP. It  
0 is designed to mount in an IOE/MTC frame, position 18 or  
0 51 using 28 inches of vertical space.

0 ( xiv) SOFTWARE PACKAGES

0 Software package NTXF14AA is required for either the  
0 56Kbps or the 760MB Disk.

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0 DPP will require package NTX243AA for all applications

0 Also required is one (1) or both of the following pack-  
0 ages:

0 NTX098AA AT&T CAMA Format  
0 NTX159AA AT&T LAMA Format

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0 For Canadian applications, order the following software  
0 packages:

| Office Type | Software Package | Description                      | Optional |
|-------------|------------------|----------------------------------|----------|
| -----       | -----            | -----                            | -----    |
| LAMA        | NTXD07AA         | AMAMOD - LAMA Master Package     | -        |
|             | NTX243AA         | AMA Teleprocessing System AMATPS | -        |
|             | NTXF14AA         | High Capacity DPP                | Y*       |
|             | NTXN81AA         | Two Digit ANI ID - End Office    | Y        |
| CAMA        | NTXD08AA         | AMAMOD - CAMA Master Package     | -        |
|             | NTX243AA         | AMA Teleprocessing System AMATPS | -        |
|             | NTXF14AA         | High Capacity DPP                | Y*       |
|             | NTXP56AA         | Two Digit ANI - CAMA             | Y        |
| TOPS        | NTXD09AA         | AMAMOD - TOPS Master Package     | -        |
|             | NTX243AA         | AMA Teleprocessing System AMATPS | -        |
|             | NTXF14AA         | High Capacity DPP                | Y*       |
|             | NTXE18AA         | TOPS AMA Enhancements            | Y**      |
|             | NTXD37AA         | TOPS MPX - Host                  | Y        |
|             | NTXN52AA         | IS-PCS/Millennium                | Y        |
| OOC         | NTXD08AA         | AMAMOD - CAMA Master Package     | -        |
|             | NTXD09AA         | AMAMOD - TOPS Master Package     | -        |
|             | NTX243AA         | AMA Teleprocessing System AMATPS | -        |
|             | NTX631AB         | OOC Call Processing              | -        |
|             | NTXF14AA         | High Capacity DPP                | Y*       |
|             | NTXE18AA         | TOPS AMA Enhancements            | Y**      |

0 Note: \* - NTXF14AA is required for either the 56kbps link  
0 or the 760 MByte Disk.

0 \*\* - NTXE18AA is mandatory for Bell Canada offices

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0 ( xv) AC Mounting Plate (NT0X07AU)

0 Provide one (1) for each equipped NT8X48AB. This plate  
0 is required to mount the duplex outlets providing commer-  
0 cial AC power to the DPP clocks. The commercial AC  
0 source provides a steady sixty cycle source to the CPP  
0 internal oscillator for accuracy.

0 The requirement for commercial AC input into the DPP is  
0 not mandatory. The crystal oscillator internal to the  
0 DPP provides Time-of-Day stamping for log messages, etc.  
0 and does not provide synchronization. The crystal  
0 oscillator has a maximum drift range of -6.06 to +11.22  
0 seconds per day without the AC supply. The Telco should  
0 specify their preference of supplying an AC source to the  
0 DPP Time-of-Day clock or settling for the on board clock  
0 without the AC source.

0 ( xvi) In addition to the battery supply, a commercial 'AC'  
0 (non-generator) supply may be optionally provisioned to  
0 drive the DPP clocks. Building Studies Engineering will  
0 provide two ED3516-30 Group 30 duplex outlets for this  
0 purpose. The outlet will be placed in the MIS frame  
0 nearest the IOE using a NT0X07AU mounting plate. Building  
0 Studies shall run TEC 90 cable from a customer supplied  
0 commercial 'AC' source to the duplex outlet. Two 'AC'  
0 circuits are required per DPP. This AC supply is op-  
0 tional based on Telco requirements.

0 (xvii) Sparing

0 Spares for the DPP are ordered in Kits and Circuit Packs  
0 based on size of Disk equipped, 56K/Compression features  
0 and BCS level of the office.

0 NT6M95AK - Spares Kit Minimum (does not include Disk  
0 Drive)

0 NT6M95AL - Spares Kit Maximum (does not include Disk  
0 Drive)

0 Individual Circuit Packs must be ordered in addition to  
0 the Spares Kits. These Individual Circuit Packs are pro-  
0 visioned per standard algorithms.

0 Stocklists for the spares kits are as follows:

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0 NT6M95AK (QTY 1 each)

0 NT6M96AA Fuse Kit  
0 NT6M65AA Error Control II CP  
0 NT6M70AC Data Stream Interface CP  
0 NT6M84BA Power/Alarm Communication CP

0 NT6M95AL (QTY 1 each)

0 NT6M95AK Minimum Spare Parts Kit  
0 NT6M60BA Quad SIO CP (4 MHZ)  
0 NT6M62BA CPU CP  
0 NT6M609AB Error Control Jumper II CP  
0 NT6M64AA Expanded Memory CP (128K DRAM)  
0 NT6M68AA Bus Terminator CP  
0 NT6M71AB Power Supply ASSY  
0 - Also includes a spare 48V fan and  
0 assorted LEDs.

0 For only information purposes, the Spares Kits for the  
0 NT8X48AA & BA are detailed as follows.

0 Note - For new DPP (NT8X48AB/AD) units, the NT6M95AA-AF  
0 Spare Kits are not orderable.

0 Spares Provisioning:

0 NT6M95AA A0325840 Spares kit min w/72MB disk assembly(NT8X48AA)  
0 NT6M95AB A0325841 Spares kit min w/o disk assembly (NT8X48AA)  
0 NT6M95AC A0325842 Spares kit max w/72MB disk assembly(NT8X48AA)  
0 NT6M95AD A0325843 Spares kit max w/o disk assembly (NT8X48AA)  
0 NT6M95AE A0328608 Spares kit min w/140MB disk assembly (NT8X48BA)  
0 NT6M95AF A0328609 Spares kit max w/140MB disk assembly (NT8X48BA)

0 Stocklists for the spares kits are as follows:

0 NT6M95AA

0 NT6M64AA A0325131 Expanded Memory CP (128K DRAM)  
0 NT6M65AA A0325132 Error Control II CP  
0 NT6M70AA A0325136 Data Stream Interface CP  
0 NT6M72AA A0325853 72MB Disk Assy  
0 NT6M84AA A0327340 Power/Alarm Communication CP

0 NT6M95AB

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0  
0 Same as NT6M95AA minus the NT6M72AA disk assembly

## 0 NT6M95AC

0 NT6M60AA A0325127 Quad SIO CP (4 MHZ)  
0 NT6M62BA A0327812 CPU CP  
0 NT6M63BA A0327401 EPROM CP ASSY  
0 NT6M64AA A0325131 Expanded Memory CP (128K DRAM)  
0 NT6M65AA A0325132 Error Control II CP  
0 NT6M66AC A0328677 High Perform. Disk I/F CP (72,140 MByte only)  
0 NT6M68AA A0325134 Bus Terminator CP  
0 NT6M70AA A0325136 Data Stream I/F CP  
0 NT6M71AA A0325823 Power Supply ASSY  
0 NT6M72AA A0325853 72MB Disk ASSY  
0 NT6M84AA A0327340 Power/Alarm Communication CP

0 - Also includes a spare 48V fan,  
0 assorted LEDs and a firmware EPROM  
0 package.

## 0 NT6M95AD

0 Same as NT6M95AC minus the NT6M72AA Disk ASSY.

## 0 NT6M95AE

0 NT6M64AA A0325131 Expanded Memory CP (128K DRAM)  
0 NT6M65AA A0325132 Error Control II CP  
0 NT6M70AA A0325136 Data Stream Interface CP  
0 NT6M72BA A0328128 140MB Disk Assy  
0 NT6M84AA A0327340 Power/Alarm Communication CP

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## 0 NT6M95AF

0 NT6M60AA A0325127 Quad SIO CP (4 MHZ)  
0 NT6M62BA A0327812 CPU CP  
0 NT6M63BA A0327401 EPROM CP ASSY  
0 NT6M64AA A0325131 Expanded Memory CP (128K DRAM)  
0 NT6M65AA A0325132 Error Control II CP  
0 NT6M66AC A0328677 High Performance Disk I/F CP  
0 NT6M68AA A0325134 Bus Terminator CP  
0 NT6M70AA A0325136 Data Stream I/F CP  
0 NT6M71AA A0325823 Power Supply ASSY  
0 NT6M72BA A0328128 140MB Disk ASSY  
0 NT6M84BA A0327340 Power/Alarm Communication CP

0 - Also includes a spare 48V fan,  
0 assorted LEDs and a firmware EPROM  
0 package.

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0 (xviii) DPP Disk Sizing

0 There are two (2) types of capacity usage available (by  
0 selection of PM load) as follows;

0 Method 1

0 \* As a threshold of 70% total capacity is reached, a  
0 minor alarm indicating the fill level is generated.

0 \* The disk subsystem will begin to write over the pres-  
0 ently stored secondary (polled) data with addi-  
0 tionally collected

0 primary (unpolled) AMA. This operation will continue  
0 until all the secondary (unpolled) data has been  
0 overwritten.

0 \* If no polling takes place, the disks continue to fill  
0 to 90% capacity, at which point a major alarm will be  
0 generated.

0 \* Finally, at 100% capacity, one disk is put off-line  
0 and the other disk is cleared of data, in preparation  
0 for storing data in a non-redundant mode.

0 Method 2

0 \* As a threshold of 70% total capacity is reached, a  
0 minor alarm indicating the fill level is generated.

0 \* The disk subsystem will continue to fill with primary  
0 and secondary data beyond 70% to a maximum of 90%.

0 \* At 90% total capacity a major alarm is generated in-  
0 dicating the fill level reached. The disk subsystem  
0 will begin to overwrite the oldest secondary (polled)  
0 data with new primary (unpolled) AMA data. This op-  
0 eration will continue until all the secondary data  
0 has been overwritten.

0 \* Finally, at 100% capacity, one disk is put off-line  
0 and the other disk is cleared of data, in preparation  
0 for storing data in a non-redundant mode.

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0 This would be an unusual situation since large traffic generating  
0 offices are assumed to be polled every hour, thus preventing data  
0 from being overwritten.

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0 Storage capacity of the DPP is shown below:

| 0 | DPP      | Total storage(bytes) | Total storage  |
|---|----------|----------------------|----------------|
| 0 | MODEL    |                      | (call records) |
| 0 | 760Mbyte | 366,000,000 at 70%   | 4,874,000      |
| 0 |          | 470,000,000 at 90%   | 6,270,000      |
| 0 |          | 523,000,000 at 100%  | 6,969,000      |
| 0 | 380MByte | 193,000,000 at 70%   | 2,570,000      |
| 0 | w/ 56k   | 248,000,000 at 90%   | 3,310,000      |
| 0 |          | 276,000,000 at 100%  | 3,600,000      |
| 0 | 380MByte | 150,000,000 at 70%   | 2,000,000      |
| 0 | w/o 56k  | 193,500,000 at 90%   | 2,579,000      |
| 0 |          | 215,000,000 at 100%  | 2,866,000      |
| 0 | 140MByte | 64,000,000 at 70%    | 850,000        |
| 0 | w/ 56k   | 82,500,000 at 90%    | 1,100,000      |
| 0 |          | 91,500,000 at 100%   | 1,220,000      |
| 0 | 140MByte | 54,200,000 at 70%    | 722,000        |
| 0 | w/o 56k  | 69,750,000 at 90%    | 933,000        |
| 0 |          | 78,000,000 at 100%   | 1,037,000      |
| 0 | 72MByte  | 26,800,000 at 70%    | 357,000        |
| 0 |          | 34,500,000 at 90%    | 462,000        |
| 0 |          | 38,600,000 at 100%   | 514,000        |

0 One call record equals 75 bytes. The storage capacity will in-  
0 crease with a corresponding reduction in the number of bytes per  
0 record.0 The average Bytes per call record is determined after removing  
0 the 12 Byte expansion field (containing the recording office type  
0 and ID) which is not stored on disk.

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0 (xix) 56 Kbps Link Transfer Rate

0 The 56 Kbps link that is associated with AMATPS has maxi-  
0 mum baud rate of 25,200,000 bytes per hour (7000 bytes  
0 per sec X3600 seconds). An associated overhead of 20% is  
0 attributed to X.25 link protocol for the communications  
0 between the HOC (Host Office Collector) and the DMS of-  
0 fice being polled. The effective polling rate of the 56  
0 Kbps link is then reduced to 20,000,000 bytes per hour or  
0 expressed in terms of call records would equate to  
0 268,800 call records per hour. (rated at 75 bytes per  
0 call)

0 For comparison of various link speeds the following chart  
0 will present the effective throughput utilizing X.25 pro-  
0 tocol:

| 0 | LINK SPEED               | RECORDS PER HOUR |
|---|--------------------------|------------------|
| 0 | 9600 bps w/o compression | 46,000           |
| 0 | 9600 bps w/ compression  | 129,000          |
| 0 | 19,200 bps               | 92,000           |
| 0 | 56,000 bps               | 268,800          |

0 Retention period

0 The following example office illustrates the retention  
0 period of the 760 Mbyte DPP:

| 0 Office Data                | Retention Period |            |
|------------------------------|------------------|------------|
|                              | One disk         | Two disk   |
| 0 Polled data (70% level)    | 5.85 days*       | N.A.       |
| 0 Unpolled data (100% level) | 8.37 days        | 16.74 days |

0 \*Includes up to one day of unpolled data

0 Given :

- 0 a. 100,000 HDBH records
- 0 b. 75 (average) bytes for all call records
- 0 c. HDBH is considered 12% of the days activity

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0  
0 (100,000 x 75)  
0 MBytes per day = ----- = 62.5 MByted/day  
0 (1,000,000 x 12%)

0 For a 760 MByte Disk DPP,

0 at 70% AMA capacity

0 Retention period = 366 MBytes / 62.5 MBytes per day

0 = 5.85 days

0 at 100% AMA capacity

0 Retention period = 523 MBytes / 62.5 MBytes per day

0 = 8.37 days

0 The two disk figure is shown only for illustration pur-  
0 poses. The recommendation would be to utilize the DPP in  
0 a redundant mode in order for duplicate records to be  
0 maintained.

0 The average Bytes per call record is determined after re-  
0 moving the 12 Byte expansion field (containing the re-  
0 cording office type and ID) which is not stored on disk.

0 ( xx) Enhanced Bellcore AMA Format (EBAF)

0 While EBAF provides for new structure codes and call type  
0 codes, the other impact is in the increased size of AMA  
0 records that will be utilized. The following examples  
0 provide for a comparison of the existing and proposed  
0 changes:

0 Example 1 is a 0-minus call originating on a TOPS trunk  
0 group. The call is marked for station paid.

0 Example 2 is an MCCS call that originated on a TOPS  
0 trunk. A LIDB query is performed.

0 Example 3 is a 1+ coin call originating on a TOPS trunk  
0 group, rated by the on-line rating service and all monies  
0 collected.

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0 Example 4 is a 0+ call originating on a TOPS trunk group  
0 with the calling party requesting person-to-person. The  
0 call is then billed and completed.

0 Example 5 is a 0+ call originating on a TOPS trunk group  
0 that is requesting bill to third party. A query to the  
0 Billing Validation Authority (BVA) is sent and received  
0 with the call successfully completed.

0 Example 6 is a 411 that employs the use of a database and  
0 is billed as a Station Paid.

0 Example 7 is a 0+ carrier call billed to Third Party. BVA  
0 is employed for verification and the operator completes  
0 the call with the aid of TOPS InterLATA Carrier Service  
0 (TICS).

0 Example 8 is a Remote Operator Number Identification  
0 (RONI) call.

0 Example 9 is a 1+ CAMA call that is completed without op-  
0 erator intervention.

0 Example 10 is a 1+ CAMA call that is completed by the op-  
0 erator. ANI failure brought the call to position.

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0 CROSS REFERENCE OF RECORD SIZES

| 0 | EXAMPLE | PRE -EBAF | w/EBAF    |
|---|---------|-----------|-----------|
| 0 | Ex. 1   | 69 bytes  | 84 bytes  |
| 0 | Ex. 2   | 82 bytes  | 113 bytes |
| 0 | Ex. 3   | 75 bytes  | 94 bytes  |
| 0 | Ex. 4   | 69 bytes  | 89 bytes  |
| 0 | Ex. 5   | 82 bytes  | 103 bytes |
| 0 | Ex. 6   | 69 bytes  | 107 bytes |
| 0 | Ex. 7   | 105 bytes | 129 bytes |
| 0 | Ex. 8   | 60 bytes  | 77 bytes  |
| 0 | Ex. 9   | 69 bytes  | 60 bytes  |
| 0 | Ex. 10  | 69 bytes  | 84 bytes  |

0 The following example is to be used as an aid in comput-  
0 ing the total number of AMA records in bytes known or  
0 anticipated for the particular office in question:

0 EXAMPLE:

|   |                                            |             |
|---|--------------------------------------------|-------------|
| 0 | 1. Number of High Day Busy Hour calls with |             |
| 0 | AMA records.                               | 100,000     |
| 0 | 2. % Busy Hour Calls versus 24 Hr Total    | 12%         |
| 0 | 3. Number of bytes per AMA record          | 75          |
| 0 | 4. Number of days of retention             | 5.0         |
| 0 | 5. Total storage required(bytes)           | 312,500,000 |

0 To calculate:  $(1/2) \times 3 \times 4 =$  TOTAL STORAGE

0 \*\* If a DMS-100 Family switch already exists, a 24 hour OM  
0 class can be created to accumulate the AMAENT field. \*\*

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0 3.3.8 Auxiliary Operator Services System Voice Response Directory  
0 Assistance System (AOSSVR-DAS) Interface

0 (a) General Description

0 The Directory Assistance System (DAS) will enable the Telco to  
0 automate selected portions of its Directory Assistance and Inter-  
0 cept services. Various suppliers provide this facility, conse-  
0 quently, several implementations for this service exist.

0 The AOSSVR-DAS Interface is the link between AOSS and the DAS.  
0 The interface handles messaging over the datalink.

0 The AOSSVR-DAS Interface will include a DAS Gateway Processor  
0 which will allow multiple AOSSVR offices to simultaneously con-  
0 nect to DAS.

0 (b) References

0 Chapter 3, Section 3.3 Operator Services

0 (c) Provisioning Considerations

0 ( i) AOSSVR will access this Gateway via a Multiple Protocol  
0 Controller (MPC) card, NT1X89AA which manages messaging  
0 over a BX.25 datalink. Message traffic will be distrib-  
0 uted evenly over all available NT1X89AA cards.

0 ( ii) Two datalinks may be connected to each NT1X89AA card  
0 (i.e. ports 2 and 3). Baud rate is 9600 baud per  
0 datalink. These datalinks will be point to point, thus  
0 will access only one DAS.

0 There can be a maximum of sixteen (16) datalinks per DMS  
0 switch.

0 At least two (2) NT1X89AA cards will be employed in case  
0 of failure, and are spread over at least two (2)  
0 IOCs/MDCs.

0 ( iii) The number of Multiple Protocol Controller Cards  
0 (NT1X89AA) required for AOSSVR-DAS Interface is equal to  
0  $TL/2$  (rounded up to the next highest integer) where:

0  $TL$  = the total number of X.25 datalinks required

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$$= NC \times NM \times NB \times 8 \times 100/25/LS \times 2$$

$$= TOT/3600$$

0 where TOT = No. of 411 DA calls (ABSBH)  
0 + No. of intercept calls (ABSBH)  
0 + No. of 131 calls (ABSBH)  
0 + No. of HNPA DA calls (ABSBH)  
0 + No. of FNPA DA calls (ABSBH)

0 NC = the number of calls per second using  
0 the NT1X89AA card (variable)

0 NM = the number of messages per call  
0 = 4 (constant)

0 NB = the number of bytes per message  
0 = 25 (constant)

0 8 = the number of bits per byte

0 100 = 100% line occupancy

0 25 = 25% line occupancy

0 LS = line speed per X.25 datalink  
0 (assumes all links at same speed)  
0 = 9600 baud

0 2 = the redundancy factor

0 Hence, TL = NC (4 x 25 x 8 x 100/25/9600 x 2)  
0 = (NC/3) x 2 (round up to the  
0 nearest integer)

0 Note that several IOCs in an office will reduce the re-  
0 dundancy or sparing factor. The redundancy factor of 2  
0 is the worst case. For example, if you needed 4  
0 datalinks and had 5 IOCs, then one link per IOC would  
0 give adequate redundancy or sparing.

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### 0 3.3.9 Automatic Dial Back Feature

#### 0 (a) General Description

0 The Automatic Dial Back feature, package NTX293AA, provides a  
0 second level of access security of dialup ports using a dual  
0 login procedure. The first login is a special DIALBACK login  
0 which requires a special DIALBACK ID and PASSWORD. The second  
0 login is the normal login currently used to gain access to the  
0 system.

0 The end user dials into a pool of answer-only intelligent modems  
0 and enters his special DIALBACK ID. The DIALBACK ID is used as a  
0 key into the software table DIALBACK where the password is held  
0 along with the directory number needed to make the return call.  
0 After receiving this password, the system disconnects the modem  
0 and places it back into the answer mode. After a short delay of  
0 at least 30 seconds to allow the originator to hang up, the sys-  
0 tem automatically dials back the originator using the DN held in  
0 the DIALBACK table. This dial back is through another intelli-  
0 gent modem located in an autodial modem pool. The originator is  
0 then required to login again. Only after this second login is  
0 the user allowed access to the DMS.

0 The modems grouped into the autodial modem pool are not dedicated  
0 to a particular remote user. When a dial-back modem is required,  
0 the system chooses an available modem from the pool.

#### 0 (b) References

0 Chapter 2 Traffic Criteria and Capacities  
0 Chapter Office Miscellaneous

#### 0 (c) Provisioning Considerations

0 ( i) All terminal controller cards used in conjunction with  
0 Automatic Dialback must be NT1X67BD. In BCS-18 offices  
0 utilizing this security feature, all terminal controllers  
0 in the office must be NT1X67BDs, therefore, a retrofit is  
0 required to replace all existing I/O terminal control-  
0 lers. In offices with BCS-19 and higher, the NTX293AA  
0 still requires the NT1X67BD, but other application may  
0 use other vintages of the NT1X67.

0 ( ii) Intelligent modems for both pools should be calculated as  
0 follows:

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## 0 1) Answer Modem Pool

$$\frac{\text{Busy Hour Attempts} \times \text{Login Hold Time}}{100} = \text{CCS}$$

0 Busy Hour Attempts - Telco provided (sum  
0 of all remote  
0 locations)

0 Login Holding Time - Equal to the maximum  
0 login time as  
0 specified by the Telco  
0 (The LOGINCONTROL  
0 command with the  
0 MAXLOGINTIME option is  
0 used to specify a  
0 maximum login time. If  
0 the user has not  
0 completed the login  
0 procedure before the  
0 maximum time expires,  
0 the port is  
0 disconnected and the  
0 modem is returned to  
0 the pool).

## 0 2) Autodial Modem Pool

$$\frac{\# \text{ Busy Hour Users} \times \text{Holding Time}}{100} = \text{CCS}$$

0 Number of busy hour users provided by Telco  
0 (Sum of all remote locations)

0 Average holding time provided by the Telco  
0 (Sum of all remote locations)

0 Using the calculated CCS for each modem pool, provision  
0 the number of modems required within each pool per the  
0 traffic tables at P.001 (Table V in Section 450/2).

0 ( iii) For U.S. Applications third party modems provisioned with  
0 the DMS shall be a Case Rixon/Datatel or Universal Data  
0 Systems (UDS) products. For Canadian Applications pro-  
0 vide Case Rixon or GDC modems as required. Refer to Of-

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0 fice Miscellaneous Section 450/38 for UDS and Case  
0 Rixon/Datatel products.

0 For Canadian offices with a BCS-18 load, the only intel-  
0 ligent modem compatible with the Automatic Dialback fea-  
0 ture is the General Datacom (GDC) Companion CTS212AH.

0 U.S. offices equipped with BCS-18 load must be upgraded  
0 to BCS 19 as GDC modems are not provisionable in the U.S.

0 When determining which modems will be compatible with  
0 this feature, four modem properties must be considered.

0 Hayes Cmd Set The modem should be fully compatible with  
0 the Hayes Cmd Set which provides the as it  
0 provides the Disconnect, Autodial,  
0 Autoanswer, and Modem Ready functionality  
0 defined below.

0 disconnect It should be possible to disconnect the  
0 modem by toggling the DTR line of the  
0 RS232C interface. The use of a control  
0 character sequence to disconnect is not re-  
0 commended.

0 Note: Modem disconnection will occur if  
0 the modem detects noise on the line or the  
0 physical connection between the user's  
0 modem and the DMS is broken. Modems dis-  
0 connected in this way may be hung. It will  
0 be necessary to BSY and RTS these modems  
0 before they will again be available. In  
0 some cases, these modems may be hung indef-  
0 initely. It is therefore recommended that  
0 telephone lines to which the modems are  
0 connected should not have the call-waiting  
0 feature since it produces an audible tone  
0 which the modem regards as noise.

0 autodial The modem should be capable of autodialling  
0 any number without the need for manual  
0 intervention.

0 autoanswer The ability to answer incoming calls is a  
0 necessary property. It should also be pos-  
0 sible to toggle the modem into and out of



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0 autoanswer mode by using control charac-  
0 ters.

0 modem ready It should be possible to force the modem's  
0 DSR line of the RS232C interface on.

0 ( iv) Software Dependencies

0 The Automatic Dialback feature is provided in software  
0 package NTX293AA Enhanced Security Package. Also required  
0 in the office is software package NTX292AB Enhanced Secu-  
0 rity w/Password Encryption (invisible password at login)  
0 or NTX292BA Enhanced Security w/o Password Encryption.

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0 3.3.10 Cook Division Billing Media Converters II

0 (a) General Description

0 The Billing Media Converters (BMC) provide for the acquisition,  
0 storage, and forwarding of data from the DMS100F. The BMC ac-  
0 cepts billing data from the DMS100F, temporarily stores the col-  
0 lected data on hard disk, and when requested retrieves,  
0 reformats, and sends the stored data to the Host Collector.  
0 (Note: If the HOC is not a Cook BMC 'POLLSTAR' device, then an  
0 I/F Analysis must be performed to ensure BMC to HOC  
0 compatibility.)

0 The BMC is available in three general configurations:

0 1) BMCA: The Billing Media Converter for Automatic Mes-  
0 sage Accounting (BMCA) is a redundant, single user, dual  
0 shelf BMC used for Automatic Message Accounting (AMA)  
0 data to a central collection point for one entire DMS100  
0 Family office. The call record format from the DMS100F to  
0 the BMCA may be either LSSGR or NT formats using the fol-  
0 lowing communication protocols:

0 \* BISYNC  
0 \* HDLC  
0 \* HDLC Lap-B  
0 \* BX.25

0 2) BMCS: The Billing Media Converter for Station Message  
0 Detail Recording (BMCS) is a redundant, single user, dual  
0 shelf BMC used for the collection, storage, retrieval, and  
0 forwarding of Station Message Detailed Recording (SMDR)  
0 data to a central collection point for one Customer Group  
0 (CG) within a DMS100F office. The call record format be-  
0 tween the DMS100F and the BMC is SMDR using the BISYNC  
0 protocol only.

0 3) BMCD: The Billing Media Converter Deuce (BMCD) is a  
0 simplex, dual user, single shelf BMC used for the col-  
0 lection, storage, retrieval, and forwarding of Station  
0 Message Detailed Recording (SMDR) data to up to two (2)  
0 different collection points; one for each of two (2) sep-  
0 arate customer groups (CG) within a DMS100F office.

0 (b) References

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0 Chapter 3, Section 3.8 Office Miscellaneous

0 (c) Provisioning Considerations

0 ( i) In all applications where a Cook Billing Processor unit  
0 is not used as the Host Collector (Cook "Pollstar"), then  
0 NT must initiate a compatibility analysis in conjunction  
0 with the Cook Electric Division to insure Host-To-BMC  
0 compatibility.

0 ( ii) 60Hz AC Clock Option

0 The BMC contains a clock for time stamping BMC log mes-  
0 sages. The clock originates from one of two sources:

- 0 1. DC powered crystal oscillator internal to the BMC, or  
0 a
- 0 2. commercial 110VAC (60Hz) signal through Cook supplied  
0 AC transformers to the BMC.

0 In offices configured for Isolated System Grounding (ISG)  
0 do not connect the clock circuit AC transformer. This  
0 connection introduces an ISG violation.

0 The 60Hz AC clock is prime when wired. If it is not  
0 used, then the internal DC clock provides the signal for  
0 the clock which generates the log message time stamps.

0 Transformers and connectors for wiring the AC clock op-  
0 tion are always provided with BMC's. The 110Vac 60Hz  
0 source must be commercial, NON-GENERATOR. The AC clock  
0 and internal DC clock circuits accuracy is approximately  
0 equal and accurate to +/- 4 seconds per day.

0 If the AC Clock option is required (in spite of the ISG  
0 violation) then provide one NT0X07AU (AC Mounting Plate).  
0 NOTE: Two AC circuits are required for a redundant BMC  
0 and one for the BMC Deuce. Cook Division supplies a kit  
0 (NT6M96AG) which includes 120-19VAC trans- formers and  
0 BMC connectors. Local cable is used between the BMC and  
0 the supplied transformers.

0 ( iii) The DMS100F must be equipped with the NTX103AA (IBN -  
0 SMDR Enhanced) software package only if SMDR data is to  
0 be collected. This package is not required for AMA.



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0 office requirements for magnetic tape drives. The BMCA  
0 and BMCS units require two NT1X68 cards. The BMCD unit  
0 requires one NT1X68 card.

0 (viii) DMS To BMC Interface

0 Provide two NT1X68AC/BC IOC Cards per BMCA or BMCS or  
0 provide one NT1X68AC/BC IOC Card per BMCD. Provide two  
0 each NT0X96AA/DB (READ), NT0X96AB/DC(WRITE), and  
0 NT0X96AC/DD (CONTROL) cables to interface the IOC cards  
0 to the BMC interface box for BMCA & BMCS. Provide only  
0 one cable each for BMCD applications.

0 Interface of each BMC unit to each NT1X68, Magnetic Tape  
0 Drive controller Card is via three cables to the Inter-  
0 face Box. The BMCA/S units require two (2) each READ  
0 (NT0X96AA/DB), WRITE (NT0X96AB/DC), and CONTROL  
0 (NT0X96AC/DD) cables which must be ordered separately  
0 (length is job engineered) and must not exceed 25 feet.  
0 This must be accounted for when defining the location of  
0 the IOC shelf and the location of the BMC. The BMCD  
0 units require 1 each Read, Write, and Control cables. The  
0 BMCA/S units and the Interface Box occupy the same amount  
0 of vertical rack space as one Cook Division MagTape Drive  
0 unit, plus 2.5 inches. The BMCD and the Interface Box  
0 occupy 14.5 inches. The Interface Box is used to convert  
0 from switch board cabling to ribbon cabling. The BMC  
0 unit is powered indirectly from the PDC via the FSP.  
0 Note: The Interface Box does not require AC or DC power.

0 ( ix) Transmission to Host Collector

0 The BMC utilizes at least one (1) modem interface for  
0 transmitting data to the processing center (Host). This  
0 requirement can be fulfilled by provisioning Rixon/UDS  
0 201, 208A/B, or T212 type modems. Cook Division supplies  
0 modem cables (NT8M99AG) with every BMC. These cables are  
0 designed for standard modems; 9600 max. baud. Refer to  
0 Section 3.8 for more information on the modems.

0 The TURBO BMC's (PEC's NT8M04EE & NT8M04FE) are capable  
0 of polling speeds up to 56K baud. Where this high speed  
0 polling is required, a dedicated link between the modem  
0 at the BMC and the modem at the Host is required. Also,  
0 the cable between the DMC and the 56K modem is dependent  
0 on the modem manufacturer:

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|   |                |           |
|---|----------------|-----------|
| 0 | 56K Modem Type | Cable PEC |
| 0 | UDS            | NTNX36BG  |
| 0 | GDC            | NTNX69AA  |
| 0 | AT&T           | NTNX69AD  |

0 (The length of these 56K modem cables is job engineered.)

0 CAUTION: Do Not Provide UDS modems for any BMC applica-  
0 tion that includes the Automatic Dial-Up (ADU) option.  
0 Until further notice the UDS modems will not work with  
0 the BMC ADU option only.

0 ( x) Hardcopy Output

0 The BMC utilizes a KSR printer for installation, testing,  
0 and maintenance purposes. This printer must be EIA  
0 RS-232-C and be located within 25 feet of the BMC. A re-  
0 mote KSR printer may also be used as a maintenance device  
0 utilizing a Rixon or UDS modem. The baud rate of this  
0 link must not exceed 1200 baud. A CRT may also be at-  
0 tached to this port, in which case baud rates to 9600 are  
0 acceptable. Cook Division supplies an RS-232 terminal ca-  
0 ble (NT8M99AB) with every BMC. This cable fits all  
0 standard RS-232-C terminal devices.

0 ( xi) Remoting DMS/BMC Alarms

0 The BMC offers the capability of monitoring several BMC  
0 alarm conditions through the DMS-100F alarm system. The  
0 BMC alarm signals may be implemented via the NT0X10AA,  
0 Miscellaneous Scan Detector Card. Cook Division supplies  
0 a connector kit (NT6M96AD) for the BMC side of the cable.  
0 Local cable is used between the BMC to the MDF and the  
0 MDF to the Scan Detector Card. The BMC requires six (6)  
0 scan points.

0 ( xii) The redundant BMC unit requires two (2) -48V inputs fused  
0 at 10 amps, one (1) for each BMC Processor. The BMC  
0 Deuce unit requires one (1) -48V input fuse at 10amps.

0 (xiii) BMCA / BMCS Disk Drive Sizing

0 Raw data for these calculations is provided by the Telco.

|   |                  |                   |                      |
|---|------------------|-------------------|----------------------|
| 0 | Average Busy     | Customer defined  | Capacity Requirement |
| 0 | Day Volume (in X | # of days of disk | = (in Call Records)  |
| 0 | Call Records)    | back-up           |                      |

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The Capacity Requirement translates to disk size via the following Table:

\* Select average number of Call Records per block...

(If number of Call Records/block for this office is not shown use the next higher number.)

18 20 26  
22 28  
24 30

\* Enter the Table at the left side. Find the appropriate number Records per block. Read to the right to find the Capacity Requirements next greater than or equal to the calculated value. Read down bottom of the Table to find the disk size.

| CALL RECORDS<br>PER BLOCK | 70 % CAPACITY REQUIREMENTS*<br>(in number of Call Records) |         |         |          |
|---------------------------|------------------------------------------------------------|---------|---------|----------|
| 18                        | 144,372                                                    | 272,106 | 549,990 |          |
| 20                        | 127,080                                                    | 302,340 | 611,100 |          |
| 22                        | 139,788                                                    | 332,574 | 672,210 |          |
| 24                        | 152,496                                                    | 362,808 | 733,320 |          |
| 26                        | 165,204                                                    | 393,042 | 794,430 |          |
| 28                        | 177,912                                                    | 423,276 | 855,540 |          |
| 30                        | 190,620                                                    | 453,510 | 916,650 |          |
| SELECT DISK-><br>SIZE     | 30MB                                                       | 72MB    | 140MB   | (future) |

Table 36.2a: Capacity Requirements per Disk Size

NOTE: Use Table 36.2a only for non BX.25 and non Deuce applications.

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| CALL<br>RECORDS<br>PER BLK | 66.6 % CAPACITY FOR BX.25 APPLICATIONS ONLY<br>(in number of Call Records) |           |           |                             |                           |                           |
|----------------------------|----------------------------------------------------------------------------|-----------|-----------|-----------------------------|---------------------------|---------------------------|
|                            | 18                                                                         | 20        | 22        | 24                          | 26                        | 28                        |
| 144,372                    | 321,336                                                                    | 650,664   | 1,802,304 | 2,313,360                   | 4,386,600                 |                           |
| 127,080                    | 357,040                                                                    | 722,960   | 2,002,560 | 2,570,400                   | 4,874,000                 |                           |
| 139,788                    | 392,744                                                                    | 795,256   | 2,202,816 | 2,827,440                   | 5,361,400                 |                           |
| 152,496                    | 428,448                                                                    | 867,552   | 2,403,072 | 3,084,480                   | 5,848,800                 |                           |
| 165,204                    | 464,152                                                                    | 939,848   | 2,603,328 | 3,341,520                   | 6,336,200                 |                           |
| 177,912                    | 499,856                                                                    | 1,012,144 | 2,803,584 | 3,598,560                   | 6,823,600                 |                           |
| 190,620                    | 535,560                                                                    | 1,084,440 | 3,003,840 | 3,855,600                   | 7,311,000                 |                           |
| SELECT<br>DISK--><br>SIZE  | 30MB                                                                       | 72MB      | 140MB     | 380MB<br>w/o 56K<br>Polling | 380MB<br>w/56K<br>Polling | 760MB<br>w/56K<br>Polling |

Table 36.2b: Capacity Requirements per Disk Size

Capacity Requirements exceeding those shown in the Table 36.2 are beyond the current capacity of the BMC.

\*Maximum Capacity Numbers are available from Cook Division.

#### SIMPLEX/NON-REDUNDANT BMC PROVISIONING

##### COOK BMC II DEUCE (BMCD)

( xiv) The The Cook Billing Media Converter II Deuce (BMCD) is a dual user, single shelf, simplex device that stores and transmits Station Recording (SMDR) records, for up to two customer groups. The BMCD is powered from the PDC via one 10 amp fuse. This unit permits the Telco's end user to poll DMS100F SMDR data is via an IBM PC/XT/AT or compatible equipped with a synchronous interface board, standard 3780 Binary Synchronous Communications (BSC/BISYNC) protocol, and a third party PC pollable Call Accounting Software package. This NTP does not define the Customer Premise Equipment (CPE).

( xv) The BMCD features and properties are defined below:

a) BMC II/Deuce Features:



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- \* 72 or 140MB disk drive (stores 1M/2M Call record respectively)
- \* Partitioning for two Customer Groups (CGs)
- \* Simplex operation and storage
- \* User selectable disk storage per CG
- \* SMDR data collection (DMS 100)
- \* 3780 BSC protocol
- \* Two access links via dial-up lines
- \* Three level alarm (User Definable)

## b) BMC II/DEUCE Power Requirements:

Input power to the unit will be one -48Vdc input from the PDC fused at 10amps. The minimum grounding requirements will be isolated logic and frame grounds.

- ( xvi) The BMCD is capable of storing SMDR data for two Customer Groups on a single DDU. Therefore, the BMC Deuce is capable of partitioning disk storage and ensure sufficient space is available of each group.

Storage Capacity Computations: Data storage is flexible to provide growth. A storage parameter setting allows the Telco to restrict the maximum amount of disk space used by each customer group (e.g. 70% for CG1 & 30% for CG2). The storage medium is based on hard disk technology using a 72 or 140 megabyte disk drive.

The chart below depicts typical disk storage capacity given: A 48 byte average record and 18 call records per line per day. Keep in mind, the storage capacity of BMC DDUs is limited by the BMC system overhead. Therefore, Maximum Call Record Storage is as indicated in the chart below:

| DISK<br>SIZE | MAXIMUM<br>CALL RECORD<br>STORAGE | AGGREGATE<br># OF LINES | APPROXIMATE<br>DAYS OF STORAGE |
|--------------|-----------------------------------|-------------------------|--------------------------------|
| =====        | =====                             | =====                   | =====                          |
| 72           | 1M                                | 1,000                   | 55                             |
| 72           | 1M                                | 3,000                   | 18                             |
| 140          | 2M                                | 4,000                   | 28                             |
| 140          | 2M                                | 6,000                   | 18                             |

The formula for calculating the aggregate number of days of SMDR data storage follows:

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0 a) Total Storage / # of Records per day = Days of Stor-  
0 age

0 1,000,000/18(1,000) = 55.55 days storage

0 1,000,000/18(3,000) = 18.51 days storage

0 2,000,000/18(4,000) = 27.77 days storage

0 2,000,000/18(6,000) = 18.51 days storage

0 b) (Total storage - % allocated to CG1)/48 = Line Capac-  
0 ity

0 For Example:

0 (1,000,000 - 70% Storage for CG#1)/48  
0 = 6250 Lines

0 NOTE: The above table is for BMCD only.

0

0

0

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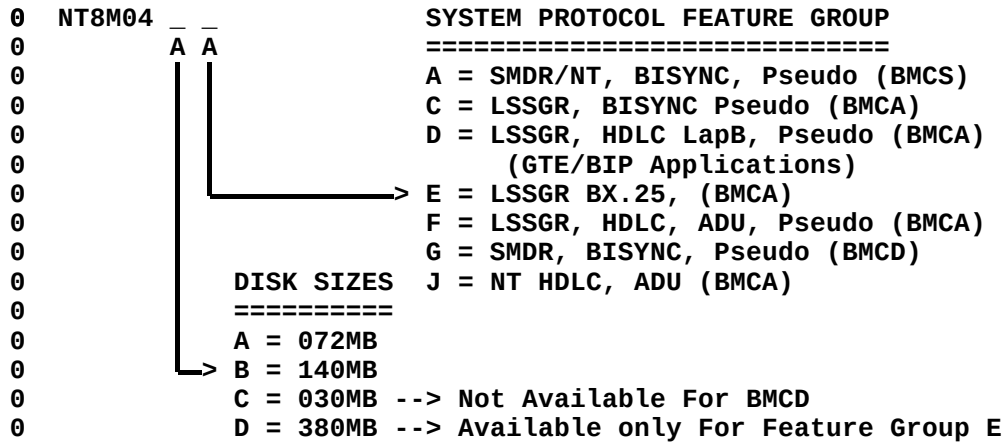
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(xvii) The BMCA, BMCD, and BMCS are provisioned by the following numbering scheme:



### Figure 36.7: BMC (BMCA, BMCS & BMCD) PROVISIONING SYNTAX

**For example: NT8M04BF = BMCA 140MB LSSGR/HDLC/ADU**

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0 The following ordering scheme is used to the determine  
0 which spares kit to order for the BMC application provi-  
0 sioned:

0 NT8M94

0 A A

0 SYSTEM PROTOCOL FEATURE GROUP  
0 =====

0 A = SMDR/NT, BISYNC, Pseudo (BMCS)  
0 C = LSSGR, BISYNC Pseudo (BMCA)  
0 D = LSSGR, HDLC LapB, Pseudo (BMCA)  
0 (GTE/BIP Applications)  
0 E = LSSGR BX.25, (BMCA)  
0 F = LSSGR, HDLC, ADU, Pseudo (BMCA)  
0 G = SMDR, BISYNC, Pseudo (BMCD)  
0 J = NT HDLC, ADU (BMCA)

0 KIT CONFIGURATION  
0 =====

0 A = Minimum spares with 72 MB disk  
0 B = Minimum spares without disk  
0 C = Maximum spares with 72 MB disk  
0 D = Maximum spares without disk  
0 E = Minimum spares with 140 MB disk  
0 F = Maximum spares with 140 MB disk  
0 G = Minimum spares with 30 MB disk -->Not Avail-  
0 able for BMCD  
0 H = Maximum spares with 30 MB disk -->Not Avail-  
0 able for BMCD  
0 J = Minimum spares with 380 MB disk->Only Avail-  
0 able for Feature E  
0 K = Maximum spares with 380 MB disk->Only Avail-  
0 able for Feature E  
0 L = Minimum spares without 380 MB -->Only Avail-  
0 able for Feature E  
0 M = Maximum spares without 380 MB -->Only Avail-  
0 able for Feature E

0 Figure 36.8: BMC SPARES KIT PROVISIONING

0 EXAMPLE: NT8M94BF = MIN spares w/o disk for LSSGR, HDLC, ADU

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## 0 4.0 Maintenance and Administration Position (MAP) Equipment

### 0 4.1 Introduction

0 The Maintenance and Administration Position (MAP) is the primary  
0 man/machine interface between the Telco personnel and the DMS  
0 system for performing I/O functions. Hardware requirements vary  
0 with functions to be performed and a single MAP can be dedicated  
0 to more than one function. This section will describe the equip-  
0 ment associated with the MAP.

0 The Maintenance and Administrative Position consists of the fol-  
0 lowing equipment:

- 0 - CRT + keys
- 0 - Visual Display Units (VDU)
- 0 - position furniture
- 0 - Jack sets
- 0 - Voice Communication module
- 0 - printer (or teletype)
- 0 - Data set to connect to IOC if the position is remote. Data sets  
0 depend on baud rate: min. 110, max. 300 for dial access. Dedi-  
0 cated facilities dictate maximum baud rate.

0 Connection between the jacks on MAP and the DMS switch is subject  
0 to normal trunking limits.

0 Reference to the MAP is made elsewhere within the Maintenance  
0 Section (3.7) of this document.

### 0 4.2 Features

0 The features of the MAP is described in NTP 297-1001-110, Mainte-  
0 nance and Administration Position.

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0 4.3 Equipment Provisioning

0 4.3.1 MAP Voice Communication Module

0 (a) General Description

0 The MAP Voice Communication Module (VCM) is the basis of the  
0 Maintenance Administration Position (MAP). The telephone set  
0 component provides the MAP operator with telephone links into and  
0 out of the DMS100F. Communication and 101-type trunks as well as  
0 CO and internal lines are handled.

0 The MAP Voice Communication Module may consist of:

- 0 - Telephone Set
- 0 - Head Sets
- 0 - Hands-free Unit
- 0 - Automatic Dialer

0 (b) References

0 None.

0 (c) Provisioning Considerations

0 ( i) The NT Logic Phones serve as the Telephone set component  
0 of the Map Voice Communication Module. These units  
0 interface the DMS System via communications trunks, 101  
0 test lines, and communications lines all of which termi-  
0 nate on the telset. They are provided only on MAP type  
0 positions used for general maintenance and trunk testing  
0 functions.

0 The communications trunks (toll office only) are used by  
0 maintenance personnel to originate calls. Two communi-  
0 cations trunks are associated with every MAP used for  
0 trunk testing functions. The communications lines (local  
0 and toll) are tie lines and normal office telephone  
0 lines.

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| <u>0 LINE ASSIGNMENT</u>  | <u>DESCRIPTION</u>                                                                                                                                                                                                                     |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 Line Zero               | Assigned to the Key System's HOLD function                                                                                                                                                                                             |
| 0 Line One                | HeadSet Monitor assignment is provided for<br>0 service analysis monitors and test monitors<br>0 at the MAP, and loading the DRAM. Use the<br>0 NT5X30AA for North American jobs or the<br>0 NT5X30BA for International jobs.          |
| 0 Lines Two & Five        | 101 Test Line - Two Key Set lines are as-<br>0 signed to this function, one for incoming<br>0 traffic and the other for outgoing traffic<br>0 -- use the NT5X30AA for North American jobs<br>0 or the NT5X30BA for International jobs. |
| 0 Lines Three & Four      | Local Talk Line - Two Key Set lines are as-<br>0 signed to this function for local communi-<br>0 cations between the FSPs and the MAP.                                                                                                 |
| 0 Lines six - Twenty-Nine | These Key Set lines are available for Telco<br>0 assignments as required                                                                                                                                                               |

0 ( ii) When provisioning Logic Phones for MAP, TTP or any other  
0 application which requires the Logic Phone to interface a  
0 Headset or Portable Tape Recorder (for loading DRAM), a  
0 Logic 20 phone must be ordered which contains a Headset  
0 Jack Assembly for connection to Northern Telecom equip-  
0 ment.

0 ( iii) The following Hardware is approved for DMS100F Logic  
0 Phone Applications:

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| 0 | <u>PEC</u>      | <u>CPC</u> | <u>DESCRIPTION</u>                            | <u>STATUS</u> |
|---|-----------------|------------|-----------------------------------------------|---------------|
| 0 | 2200-FWR-31-35S | A0317230   | Logic 10 telephone color-ash                  | *             |
| 0 | NE-D50QE-87     | A0285675   | Logic 10 Line Cord                            | *             |
| 0 | 2202-HWR-35-35S | AC278163   | Logic 20 telephone color-ash                  | **            |
| 0 | NT0C25-35       | A0287466   | Logic dialer color-ash                        |               |
| 0 | NE-D100QA-87    | AM285695   | Logic 20 Line Cord                            | A&M           |
| 0 | QUS1C-35        | A0290077   | Companion 3 handsfree unit<br>color-ash       | **            |
| 0 | NE-2012B-03     | C0056338   | Handsfree unit transformer<br>color-black     | **            |
| 0 | NE-D3BN-87      | A0263327   | 5'6" transformer cord<br>color - silver satin | **            |
| 0 | QSR2F           | A0242364   | Head Set Ivory color                          | **            |

0 \* Logic 10 Phones and its associated accessories are  
0 not to be used in the US Market as the principal  
0 Logic Phone. This is due to internal changes in the  
0 Logic 10 phone, which render it incapable of being  
0 modified to accept a Headset Jack Assembly. The  
0 headset jack assembly is required for the communi-  
0 cation line labeled 'HeadSet Monitor'. The Headset  
0 Monitor line is used to interface the telephone to a  
0 Headset or Portable Tape Recorder for loading the MTM  
0 mounted Digital Recorded Announcement Machine (DRAM).

0 \*\* Check for the availability of these units prior to  
0 provisioning them. Provisioning of the REFURBRISHED  
0 Logic 20 Telset and its' accessories shall continue  
0 until supplies have been depleted.

0 Note: The Line Cord no longer comes equipped with any of  
0 the NT manufactured Logic Phones, therefore, they  
0 must be ordered separately.

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0 4.3.2 Norstar Key System

0 (a) General Description

0 The NorStar Key System Unit (NKSU) is a digital key system which  
0 replaces the currently provisioned analog MAP Communication Mod-  
0 ule. The NKSU is not backwards compatible with the 1A2 Key System  
0 or the Logic 10/20 or ITT/Comdial 30 button phones. The purpose  
0 of this system is to provide a method of communications between  
0 the MAP positions as well as to the outside world via lines from  
0 this switch or another switch.

0 The NorStar is designed on a modular concept which offers plug-in  
0 modules to provide a number of features, however, only those ap-  
0 proved for the MAP application are listed below:

- 0 - 2 or 6-Port Expansion Cartridge which allows the addition of
- 0 two or six modules (either trunk or station modules).
- 0 - Trunk Module which allows the addition of three Trunk Car-
- 0 tridges (12 CO Lines).
- 0 - Station Module which increases the number of NorStar telephone
- 0 sets that can be connected to the NorStar by a factor of 16.
- 0 - Telephone Set (M7324)
- 0 - Telephone Set (M7310)
- 0 - Telephone Set (M7308)
- 0 - NorStar Trunk Module
- 0 - NorStar Station Module
- 0 - Technical Manual
- 0 - Headset

0 The NorStar Key Service Unit (KSU) consists of three  
0 provisionable modules, which are:

- 0 - 8 X 24 Main KSU Module (NT5B20DB)
- 0 - NorStar Trunk Module (NTM)
- 0 - NorStar Station Module (NSM)

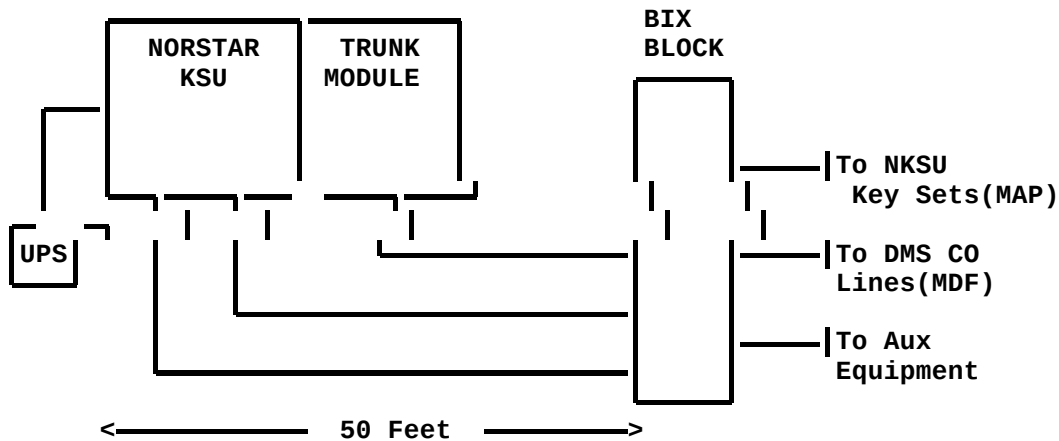
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Refer to Figure 36.10 for a block diagram of the system.



UPS = Uninterruptible Power Supply (Telco Provided)

Figure 36.10 Norstar Key System Unit Block Diagram

(b) References

None.

(c) Provisioning Considerations

- ( i) The NorStar KSU may be provisioned by equipping the NTZX18AB base unit and accessories, or by providing all components separately.
- ( ii) The NorStar KSU requires an Uninterruptible Power Supply (UPS) to be provided by the customer. The A.C. outlet must be located within 4.9 feet of the NKSU.
- ( iii) Provide one NT5B20DB-93 Main KSU Module (8 X 24) to terminate up to eight (8) CO-lines and twenty-four (24) NorStar Telsets.
- ( iv) Provide either one 2-Port expansion unit (NT5B26GA-93) to permit adding up to two (2) add on modules (NTM or NSM) in any combination, or one 6-Port expansion unit (NT5B27GA-93) to permit adding up to six (6) add on modules (NTM or NSM) in any combination.

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0 ( v) The NT5B32FA-93 Norstar Trunk Module (NTM) is provided to  
0 enable the NorStar KSU to terminate more CO-Lines, as the  
0 Base Unit terminates eight CO-Lines. A maximum of six  
0 add on modules may be provide per base KSU in any combi-  
0 nation of NTMs and NSMs.

0 The NTM may be thought of as a card cage which requires  
0 circuit packs to enable the desired functions.

0 Provide up to three (3) NT5B35GA-93 (Trunk Cartridge) per  
0 NTM. One Trunk Cartridge increases the CO-Line termi-  
0 nation capability of the base KSU by a factor of four  
0 (4). Provisioning a NTM with a full compliment of Trunk  
0 Cartridges increases the base NorStar KSU CO-Line termi-  
0 nating capability by a factor of 12, enabling the KSU to  
0 terminate a total of 20 CO-Lines.

0 ( vi) The NT5B50FA-93 Norstar Station Module (NSM) is used to  
0 permit an additional sixteen (16) telsets to be connected  
0 to the base unit (NT5B20DB-93). The base unit can  
0 accomodate twenty-four (24) Telsets without the addition  
0 of a NSM.

0 ( vii) The NorStar KSU mounting location in the DMS-100 Central  
0 Office (CO) is restricted to a dedicated CO Communi-  
0 cations Room (e.g. Broom Closet). It shall not be  
0 mounted in the same room with the DMS-100 Switching  
0 Equipment.

0 (viii) The NorStar KSU requires an Uninterruptable Power Supply  
0 (UPS) to be provided by the customer. The A.C. outlet  
0 must be located within 4.9 feet of the NKSU.

0 ( ix) The NorStar KSU cannot be mounted in the DMS-100 Switch  
0 Room due to inflamibility issues. It may be mounted on a  
0 wall outside the Switch Room but still convenient to MAP  
0 location. NKSU should be located at least 4m (13.1 ft.)  
0 from equipment such as copiers, electrical motors, and  
0 other equipment that can produce electromagnetic, radio  
0 frequency and electrostatic interference.

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0 4.3.3 Data Sets (Phones)0 (a) General Description

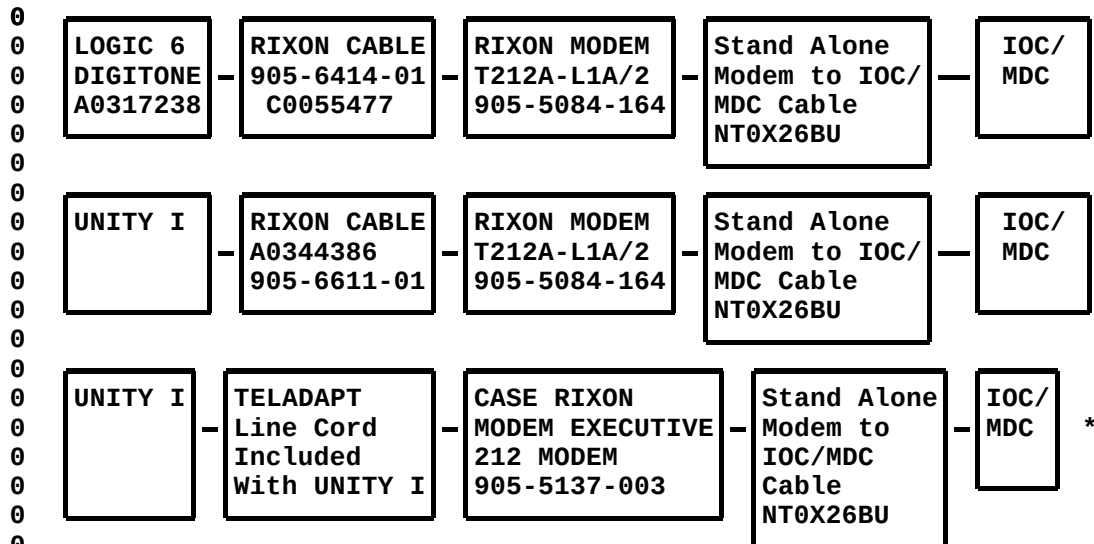
0 This section provides the provisioning information for the Data  
0 Phones.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) When data phones are required, provision either the Rixon  
0 Logic - 6 or the Unity I telephone set interfacing to  
0 the Rixon T212A or Auto Executive 212 modem as shown in  
0 Figure 36.11. The Logic 6 is a six button, five line set  
0 and the Unity I is a single line telephone set.



0 \* - This is the Recommended Configuration

0 Figure 36.11: Telephone Sets vs Rixon Modem

0 ( ii) The following telephone sets are approved for Canadian  
0 use. These phones are sourced from the Telecom Terminals  
0 Division (TTD) in London, Ontario:

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0                    PEC                    DESCRIPTION

0                    NT0C22AD-35    Unity I Telephone Set  
0                                            Chameleon Ash

0                    The following telephone sets are approved for U.S. use.  
0                    These phones are sourced from the Advanced Communications  
0                    Terminals (ACT) Division of Nashville, Tennessee:

0                    PEC                    DESCRIPTION

0                    2206-FWR-30-35-S    Logic 6 Digitone  
0                    NT4L11AA-35            Unity I Tel Set  
0                                            Chameleon Ash  
0                    NT4L11AA-03            Unity I Tel Set  
0                                            Black  
0                    NT4L11AA-93            Unity I Tel Set  
0                                            Dolphin Grey

0                    Telephone Set Features

0                    2206-FWR-30-35-S - Logic 6 Digitone multi-line six button  
0                    key telephone set equipped with 34 pin male connector  
0                    Amphenol Plug Mounting Cord and C4A Ringer. Available in  
0                    Ash colour only. The six buttons consist of five for  
0                    line pickup or other services and one hold button.

0                    NT0C22AA-35 - The A0314426 Unity I single line digitone  
0                    telephone set is equipped with a fully modular TELADAPT  
0                    cord (2 metres long). Colour is Chameleon grey. Non RFI  
0                    compliant.

0                    NT0C22AD-35 - The A0326427 Unity I single line digitone  
0                    telephone set is equipped with a fully modular TELADAPT  
0                    cord (2 metres long). Colour is Chameleon grey. CSA RFI  
0                    compliant.

0                    NT4L11AA-35 - The A0328730 Unity I single line digitone  
0                    telephone set is equipped with a fully modular TELADAPT  
0                    cord (9 feet long). Colour is Chameleon ash.

0                    NT4L11AA-03 - The A0333390 Unity I single line digitone  
0                    telephone set is equipped with a fully modular TELADAPT  
0                    cord (9 feet long). Colour is black.

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0 NT4L11AA-93 - The A0339797 Unity I single line digitone  
0 telephone set is equipped with a fully modular TELADAPT  
0 cord (9 feet long). Colour is Dolphin grey.

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0 4.3.4 Furniture

0 (a) General Description

0 Furniture is provided as an option. It is recommended for all  
0 non-portable positions. Emergency lighting is provided on the  
0 furniture as an option and is recommended for all general maintenance positions.

0 The MAP furniture configurations are based on three principal support sections (panels):

- 0 - A corner panel supporting a corner work surface on which the  
0 VDU and keyboard are located.
- 0 - A 62 in. (1.55 m) high modular panel that carries storage  
0 shelves, work surface with storage drawers, and tackboard.
- 0 - A 48 in. (1.2 m) high module panel that carries a work surface  
0 and counterpane (interaction panel).

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) The CENTER section consists of a terminal surface on  
0 which the VDU is seated. Units are available with test  
0 jacks (NT0X57AB) and without test jacks (NT0X57AA). Each  
0 position used for trunk testing must be equipped with  
0 test jacks for connecting portable test sets to test  
0 trunks.

0 ( ii) The book SHELF section (NT0X57AD), with shelf lighting  
0 mounted under the shelf. Below the shelf is a work surface with two drawers underneath. The work surface is adjustable in height.

0 ( iii) The COUNTER section (NT0X57AC) height is also adjustable. Shelf lighting is provided above the counter. The communications module or Logic 10/20 sits on the work surface of either the SHELF section or the COUNTER section.

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0 ( iv) Provide one (1) A0500 (MAP support leg) per NT0X57AD/AC  
0 for stand alone applications in which MAP Center Section  
0 NT0X57AA/AB is not provided.

0 ( v) A connectorized Test Trunk Jack Box (NT0X57AF) is avail-  
0 able for furniture not provided by NTL. One unit should  
0 be provided per position.

0 4.3.5 Other Hardware Requirements

0 (a) General Description

0 Additional hardware requirements required for the MAP is de-  
0 scribed in this section.

0 (b) References

0 NTP 297-1001-110 DMS-100 Family Maintenance and  
0 Administration Position  
0 Chapter 3, Section 3.9 DMS Supernode and Network Subsystems

0 (c) Provisioning Considerations

0 ( i) The following VDUs and Teleprinters are recommended for  
0 use with DMS.

| 0 | TYPE | MAKE/MODEL           | BAUD RATE   | EMI |
|---|------|----------------------|-------------|-----|
| 0 | VDU  | Digital Equip. Corp. | 1200        | No  |
| 0 |      | HP700/44             | up to 38.4K |     |
| 0 |      | Visual 102           | 1200        | Yes |
| 0 |      | Vision 1000          | 1200        | Yes |
| 0 |      | ColorTrend C+220R    | 300-19.2K   |     |
| 0 | T-P  | DEC                  | 1200/300    |     |
| 0 |      | LA120 R0/,S/R        |             |     |
| 0 |      | LA120 DA             |             | Yes |
| 0 |      | Datacom 1200 S/R     | 1200/300    |     |
| 0 |      | Texas Instruments    | 1200/300    |     |
| 0 |      | OMNI 810 R/O         |             |     |
| 0 |      | OMNI 820 S/R         |             | Yes |
| 0 |      | Data Product         |             |     |

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0 M200 R/O 1200

0 ( ii) Visual display units which are local or portable must be  
0 equipped with a current loop interface. VDU's which are  
0 remote are to be equipped with an EIA interface and are  
0 operated through a data set.

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0 Hewlett Packard Model HP700/44 VDU

0 The Hewlett Packard Model HP700/44 VDU is functionally  
0 compatible for EIA or 20mA Current Loop operation with  
0 the DMS-100 and DMS-Supernode.

0 The HP700/44 is functionally a direct replacement for the  
0 HP700/22, which has been MD (manufacture discontinued),  
0 as well as the DEC VT-220, VT-100, and VT-52 VDUs. The  
0 interface connectors are identical, which allows existing  
0 cable PECs to be used without modifications. This unit  
0 has been tested and approved for the following applica-  
0 tions:

- 0 - DMS-100 MAP Terminal in both EIA and Current Loop
- 0 Configurations
- 0 - DMS-Supernode RTIF Terminal in both EIA and Current
- 0 Loop Configurations.

0 The DMS100 hardware required to support this unit is de-  
0 pendent upon the application as follows:

0 MAP Terminal - NT1X67 Cards are required on the IOC or  
0 CMC

0 RTIF Terminal - NT9X26 RTIF I/F PCB

0 Power Source - NT0X87AA Inverter Unit (Canada only)

0 - Lamarche Inv A31-500-48V-A6 (U.S. only)

0 Provide the HP700/44 Series VDUs as required by the Telco  
0 for use as MAP terminal, portable MAP terminal, or Super-  
0 node RTIF Terminal.

0 The HP700/44 is the preferred terminal for use with the  
0 current loop interfaces of standard DMS I/O ports (i.e.  
0 NT1X67BC and NT9X26AB RTIF local port). The DEC VT320 is  
0 recommended only as a second choice or backup terminal  
0 for use with the NT1X67BC. It is not recommended for use  
0 with the NT9X26AB.

0 This unit may operate in an EIA RS-232C or a 20mA Cur-  
0 rent Loop configuration. If used as an EIA device the  
0 VDU must be within 50-feet of IOC. If use in a 20mA Cur-  
0 rent Loop configuration then the max distance from the  
0 IOC or RTIF Computing Module is 1200-feet. For more in-  
0 formation on the RTIF, refer to Section 3.9.

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0 ( iii) Printers which are local are to be equipped with a cur-  
0 rent loop interface. Printers which are remote are to be  
0 equipped with EIA interface and operated through a data  
0 set.

0 ( iv) Terminal Controllers are equipped with two types of  
0 transmission interfaces. Type selected for use will de-  
0 pend on the cabling distance between the I/O device and  
0 the IOC as follows:

| 0 | CABLING  |                    | MODEM    |
|---|----------|--------------------|----------|
| 0 | DISTANCE | INTERFACE TYPE     | REQUIRED |
| 0 | (feet)   |                    |          |
| 0 | < 50     | EIA - RS 232       | No       |
| 0 | <= 1200  | EIA - Current Loop | No       |
| 0 | > 1200   | EIA - RS 232       | Yes      |

0 Modems are arranged for either dial-up or private line  
0 operation.

0 ( v) A modem (dataset) is required at either end of a DMS I/O  
0 data link if the cable run between the IOC and terminal  
0 device exceeds 1200 feet.

0 Modems could be provided as dedicated (DD), dial up (DU)  
0 or local (LCL).

0 Furnishing the far end modems is usually the responsibil-  
0 ity of the Telco. The DMS end is usually provided by  
0 NTL.

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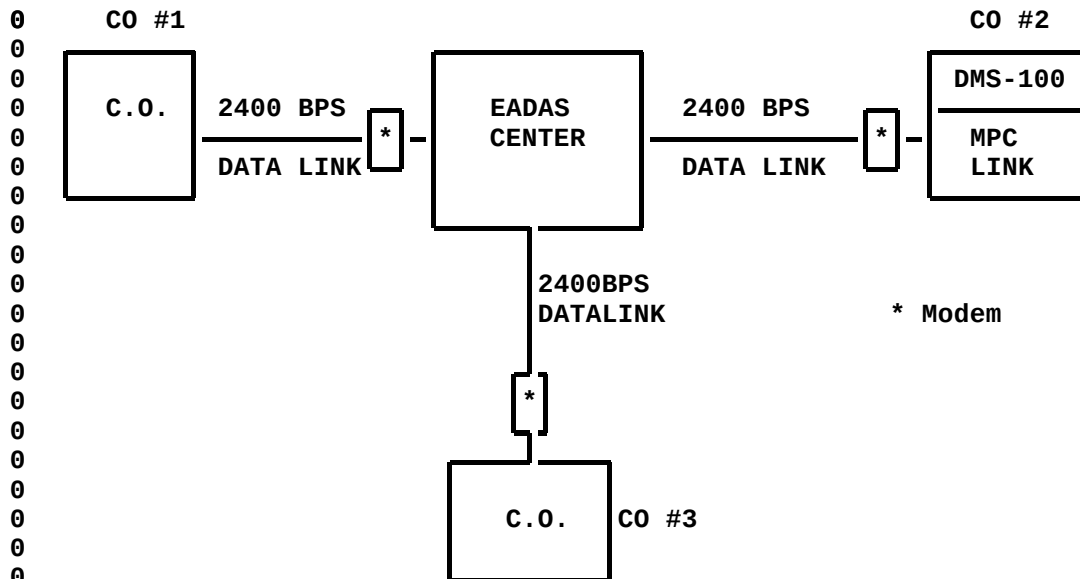
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## 0 5.0 Engineering and Administration Data Acquisition System (EADAS)

### 0 5.1 Introduction

0 The Engineering and Administrative Data Acquisition System  
0 (EADAS) is an AT&T minicomputer based Operational Support System  
0 that provides the Telco with centralized data collection and sur-  
0veillance capabilities for many switching systems. A switching  
0 system is connected to EADAS via one (1) dedicated, synchronous  
0 2400 bit/second data link. Communication over this data link uti-  
0 lizes the BX.25 Protocol. Refer to Figure 36.12.



0 Figure 36.12 EADAS

0 The Engineering and Administrative Data Acquisition System Net-  
0 work Management (EADAS/NM) is a software feature that provides  
0 network managers with centralized real-time surveillance and con-  
0 trol of the switching network. The EADAS/NM center interfaces to  
0 a switch via the EADAS center which, in this case, acts as a  
0 front-end concentrator for EADAS/NM. Based on data collected ev-  
0 ery 5 minutes, the EADAS/NM center can keep the switching network  
0 operating near maximum efficiency and help the network maintain  
0 network integrity during overloads or facility failures.

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0 5.2 Features

0 The DMS-100F software package NTX218AA provides the interface be-  
0 tween the DMS-100F and EADAS. This includes formatting the Opera-  
0 tional Measurements (OM) information into the exact format  
0 required by EADAS and receiving polls from the EADAS minicomputer  
0 and transmitting responses back to the EADAS minicomputer.

0 The NTX455AB software package provides the interface between the  
0 DMS-100F and EADAS/NM. The EADAS/NM center sends it's command  
0 and audit request messages to the DMS-100F through the EADAS/DC  
0 center and the DMS-100F responds.

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0 5.3 Equipment Provisioning

0 5.3.1 EADAS

0 (a) General Description

0 The data collected is in the form of traffic measurements from  
0 various components of a switching system providing Peg Count and  
0 usage information to the network administrators. This information  
0 is used to aid the network administrator in maintaining good  
0 telephone service to the user and to ensure that existing equip-  
0 ment is being efficiently utilized. This effort requires accurate  
0 and timely traffic measurements from the switch. EADAS provides  
0 the centralized medium for gathering switch performance informa-  
0 tion by polling the switch over the dedicated link and collecting  
0 data on 30 minute, 60 minute, and 24 hour intervals.

0 EADAS messages are sent to a switching system in the form of a  
0 poll or request for data, or in the form of a request for acti-  
0 vation when the EADAS center is instructed to do so from a EADAS  
0 Network Management center. The messages relating only to EADAS  
0 Data Collection (EADAS/DC) are:

- 0 1) 30 Minute Data Request - Sent every half-hour to re-  
0 quest the switch to send its traffic data.
- 0 2) Hourly DOR Data Request - Sent every hour to request  
0 the switch to send its Division Of Revenue (DOR) hourly  
0 totals.
- 0 3) 24 Hour Data Request - Sent every day to request the  
0 switch to send its DOR summation, service measurements  
0 and/or maintenance measurements data.
- 0 4) Time Request - Sent to request the switch to send its  
0 current time-of-day clock value to enable EADAS to de-  
0 tect gross synchronization errors.
- 0 5) EADAS Planned Down Indication - Sent to indicate to the  
0 switch that EADAS is being taken down.

0 (b) References

0 Chapter 3, Section 3.2 Software Features

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0 (c) Provisioning Considerations

- 0 ( i) The DMS-100F interfaces to the EADAS minicomputer over a  
0 dedicated, synchronous 2400 bit/second data link. This is  
0 accomplished by using one (1) RS232 synchronous commu-  
0 nication link on the NT1X89AA Multi-Protocol Controller  
0 (MPC) CP (link 2 or 3). In order for the MPC to operate  
0 with EADAS, the MPC must be loaded with the BX.25 Proto-  
0 col Support and the EADAS/DC Application Support firmware  
0 which is included with the NTX273AA package.
- 0 ( ii) It is recommended by BNR that at least two (2) MPC commu-  
0 nication links be provisioned per office. These two (2)  
0 links must be located on separate IOC modules and sepa-  
0 rate power feeds. Two (2) links are recommended to allow  
0 the transfer of the active MPC link to a wired spare MPC  
0 link when an error condition occurs. The transfer to the  
0 spare MPC is done by: 1) disabling the current MPC link  
0 using the EADAS\_ENABLED parameter, 2) changing to the  
0 spare MPC link using the EADAS\_MPC\_AND\_LINK parameter,  
0 and 3) re-enabling EADAS. This transfer does NOT require  
0 a restart and may be done at any time. It is the Telco's  
0 responsibility to provide the necessary mechanism to  
0 transfer the actual EADAS minicomputer and dedicated data  
0 link to the spare MPC.
- 0 ( iii) A 2400 bit/second synchronous modem is required for data  
0 transmission to EADAS. The modem available for ordering  
0 from Northern Telecom is the Rixon 201 modem. Provision  
0 one (1) modem for the active MPC data link and one (1)  
0 for the wired spare MPC if provisioned. If the far end  
0 modem is not 201 compatible, the Telco must be responsi-  
0 ble for provid- ing the appropriate modems.

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## 0 6.0 DMS Building Block - IOE Engineering

0 The purpose of this ECM is to document the DMS Building Block approach  
0 for capturing the provisioning of the IOE.

0 There are two (2) components to this ECM,  
0 IOE Customer Questions  
0 IOE Calculations

0 IOE Customer Questions - Worksheet of Telco inputs derived at the time  
0 of order capture.

0 IOE Calculations - Worksheet of provisioning algorithms driven from  
0 the results of DTE Customer Questions.

0 6.1 HARDWARE PROVISIONING

0

0 6.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 6.1.2 HARDWARE DEPENDENCIES

0

0 Not applicable.

## 0 P AND C SIDE PORT REQUIREMENTS

0

0 Not applicable.

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable.

## 0 CIRCUITS PER CARD

0  
0 Not applicable.

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable.

0 6.1.3 PROVISIONING CONSIDERATIONS

0

## 0 Input/Output Equipment Building Block Definition

0  
0 The Input/Output Equipment (IOE) building block method deals with  
0 a higher level of Product Engineering Code (PEC) ordering and  
0 simplifies the engineering process. The IOE provides the man to  
0 machine interface with the DMS-100F switch. The IOE essentially  
0 provides the working interface between the DMS office personnel  
0 and the DMS machine. This equipment includes the MAP, Magnetic  
0 Tape drive units, Disk Drive Units, miscellaneous I/O terminals  
0 and modems, and the I/O Controller modules which interface these

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0 with the Central Control subsystem. The I/O Controller cards are  
0 the provisionable interfaces which mount on the IOC.

0 NTZZ09AA (Input/Output Equipment Frame)

0 The NTZZ09AA contains the frame which will house all the  
0 Input/Output devices. The frame contains universal framework and  
0 is ISG compliant. The frame is equipped with the frame supervi-  
0 sory panel and cover. Optional equipment to the IOE will be de-  
0 rived from questions used to provide the required equipment.  
0 Existing rules for assignments to the IOE are still applicable.

0 NTZZ09BB (Dual Disk Drive Unit Shelf)

0 The NTZZ09BB supports up to two (2) 5.25 inch Disk Drive Units.  
0 Each NTZZ09BB contains the shelf assembly, one (1) power con-  
0 verter, one (1) designation label, cable assemblies, and other  
0 associated equipment for a fully functional dual disk drive sys-  
0 tem.

0 NTZZ09UA (228MB Disk Drive)

0 The NTZZ09UA contains a single 228.7 MByte (formatted) 5.25" hard  
0 disk drive with associated mounting hardware, for use on the Dual  
0 Disk Drive Unit Shelf.

0 NTZZ09CA/CB (Input/Output Controller Module - SuperNode)

0 The NTZZ09CA/CB contains the Input/Output Module used to house  
0 the controller cards. A maximum of 9 provisionable circuit packs  
0 can mount on the module. Each NTZZ09CA/CB includes the shelf as-  
0 sembly, Common Circuit Packs, Designation Labels, Power Convert-  
0 ers, and other associated equipment. This IOC is compatible with  
0 the SuperNode core. NTZZ09CA is replaced by NTZZ09CB.

0 NTZZ09VA/VB (Input/Output Controller Module - NT40)

0 The NTZZ09VA/VB contains the Input/Output Module used to house  
0 the controller cards. A maximum of 9 provisionable circuit packs  
0 can mount on the module. Each NTZZ09VA/VB includes the shelf as-  
0 sembly, Common Circuit Packs, Designation Labels, Power Convert-  
0 ers, and other associated equipment. This IOC is compatible with  
0 the NT40 core. NTZZ09VA is replaced by NTZZ09VB.

0 NTZZ09DA (I/O Terminal Controller Card)

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0 The NTZZ09DA contains one (1) NT1X67BC I/O Controller Circuit  
0 Pack and designation label. The controller card provides up to  
0 four ports. Each port can operate at baud rates up to 2400 baud.  
0 All four ports can be assigned as 2400 baud ports. For special  
0 applications, a single port can exceed 2400 baud up to a maximum  
0 of 4800 baud. If a single port exceeds 2400 baud, then the total  
0 assigned baud rate for all four ports cannot exceed 4800 baud. A  
0 maximum of 9 of these controller cards can mount in an IOC  
0 (NTZZ09CA/CB or NTZZ09VA/VB).

0 NTZZ09EA (I/O Terminal Controller CP w/Automatic Dial-Back)

0 The NTZZ09EA contains one (1) NT1X67BD I/O controller circuit  
0 Pack and designation label. The controller card provides up to  
0 four ports. Each port can operate at baud rates up to 2400 baud.  
0 All four ports can be assigned as 2400 baud ports. For special  
0 applications, a single port can exceed 2400 baud up to a maximum  
0 of 4800 baud. If a single port exceeds 2400 baud, then the total  
0 assigned baud rate for all four ports cannot exceed 4800 baud.  
0 This controller card must be used for applications requiring the  
0 automatic dial back feature. This controller can also be used for  
0 all standard applications in the place of NTZZ09DA. A maximum of  
0 9 of these controller cards can mount in an IOC (NTZZ09CA/CB or  
0 NTZZ09VA/VB).

0 NT1X67FA (SMDI Interface)

0 The NT1X67FA provides one Simplified Message Desk Interface port.  
0 A maximum of one device can be served from the card, with data  
0 transmission rate variable from 110 to 1200 baud. A maximum of 9  
0 of these cards can mount on the IOC Building Block.

0 NTZZ09GA (I/O Multi-Protocol Controller)

0 The NTZZ09GA contains one (1) I/O Controller Circuit Pack and  
0 designation label. This circuit pack is provided to serve the  
0 Multi-Protocol feature. A maximum of 9 of these circuit packs  
0 can be assigned to an IOC Building Block.

0 NTZZ09HA (9 Track Tape Controller CP (COOK MTD))

0 The NTZZ09HA contains one 9 track controller circuit pack and  
0 designation label. This circuit pack is provided to serve the  
0 Cook Magnetic Tape drives equipped in the office. One of these  
0 circuits is required for each Magnetic Tape drive. A maximum of  
0 nine (9) of these circuit packs can be assigned to an IOC Build-  
0 ing Block.

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0 NTZZ09JA (Disk Drive Unit Controller CP)

0 The NTZZ09JA contains one Disk Drive Unit controller Circuit Pack  
0 and designation label. This circuit pack is provided to serve  
0 one DDU and a maximum of 9 of these circuit packs can be assigned  
0 to an IOC Building Block.

0 NTZZ09KA (Enhanced I/O Multi-Protocol Controller)

0 The NTZZ09KA contains one I/O controller circuit pack and desig-  
0 nation label. This circuit pack is provided to serve the En-  
0 hanced Multi-Protocol feature. A maximum of 9 of these circuit  
0 packs can be assigned to an IOC Building Block.

0 NTZZ09LA (DPP Shelf (56Kbps))

0 The NTZZ09LA contains the common circuit packs required for the  
0 DPP unit. The high speed polling (56Kbps) hardware is always pro-  
0 vided with NTZZ09LA. The customer can choose between the 380 and  
0 760 MByte disk drives.

0 NTZZ09RA (Distributed Processing Peripheral (DPP) 380 MByte)

0 The NTZZ09RA contains the common circuit packs and two 380 MByte  
0 disk drives required for the 380 MByte DPP unit. The high speed  
0 polling (56 Kbps) hardware is always provided with NTZZ09RA. This  
0 is a Canadian only Building Block.

0 NTZZ09SA (Distributed Processing Peripheral (DPP) 760 MByte)

0 The NTZZ09SA contains the common circuit packs and two 760 MByte  
0 disk drives required for the 760 MByte DPP unit. The high speed  
0 polling (56 Kbps) hardware is always provided with NTZZ09SA. This  
0 is a Canadian only Building Block.

0 NTZZ09MA (Stratum II Shelf)

0 The NTZZ09MA provides a shelf equipped with an oscillator for use  
0 as an external clock for synchronization of the Supernode. This  
0 clock is rated at Stratum II. The shelf is equipped with redun-  
0 dant clock circuit packs. The shelf may optionally be equipped  
0 with "hot" spare circuit packs.

0 NTZZ09NA (Stratum 2.5 Shelf) (Canadian offices only)

0 The NTZZ09NA provides a shelf equipped with an oscillator for use  
0 as an external clock for synchronization of the Supernode. This

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0 clock has a capability that is not stratum rated; in terms of ac-  
0 curacy, it falls between Stratum II and Stratum III. The shelf is  
0 equipped with redundant clock circuit packs. The shelf may op-  
0 tionally be equipped with "hot" spare clock circuit packs.

0 NTZZ99AG (Univ 5.25" DDU Upgrade Kit)

0 The NTZZ99AG contains the material required to replace one 8"  
0 Priam or Mercury Disk Drive Unit with one 5.25 Disk Drive Unit.  
0 The 5.25 DDU (NT4X00AG) must be provided in addition to the  
0 NTZZ99AG.

0 NTZZ09XA (DPP Shelf)

0 The NTZZ09XA contains the common circuit packs required for the  
0 DPP unit. The customer can choose between 140 and 380 MByte disk  
0 drives. This Building Block is for U.S. application only.

0 NTZZ09YA (DPP Shelf (Compression))

0 The NTZZ09YA contains the common circuit packs required for the  
0 DPP as well as the circuit packs and hardware for the Compression  
0 option. The customer can choose between 140, 380, or 760 MByte  
0 disk drives. This Building block is for U.S. application only.

0 NTZZ09TB (Input/Output Equipment Frame (US))

0 The NTZZ09TB contains the frame which will house all the  
0 Input/Output devices. The frame is equipped with the frame su-  
0 pervisory panel and cover and is ISG compliant. The frameworks  
0 are provisionable. Optional equipment to the IOE will be derived  
0 from questions used to provide the required equipment. Existing  
0 rules for assignments to the IOE are still applicable. This  
0 Building Block is md'd and replaced by NTZZ09AA.

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0 IOE CALCULATIONS

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0 IOE CUSTOMER QUESTIONS

0 (A) DISTRIBUTED PROCESSOR PERIPHERAL (DPP) REQUIREMENTS

0 1. Is DPP remote polling of AMA required (Y/N) ? \_\_\_\_\_  
0 (If no, go to section (B) Automatic Dial-Back Provisioning)

0 2. Which of the following is a required polling option:

0 2.1 Compression \_\_\_\_\_

0 2.2 56 Kbps \_\_\_\_\_

0 2.3 neither \_\_\_\_\_

0 3. Is DPP disk drive size to be specified or calculated ?

0 3.1 Specified \_\_\_\_\_

0 3.2 Calculated \_\_\_\_\_

0 4. If DPP disk drive size is to be specified, specify the size.

0 4.1 140 Mbyte (not valid w/56 Kbps option) \_\_\_\_\_

0 4.2 380 Mbyte (valid with any option) \_\_\_\_\_

0 4.3 760 Mbyte (valid w/56 Kbps or compression) \_\_\_\_\_

0 5. If DPP disk drive size is to be calculated :

0 5.1 Number of High Day calls with AMA entries. \_\_\_\_\_

0 5.2 Number of days of retention. \_\_\_\_\_

0 6. How many modems will NT supply for DPP application ?

0 6.1 One (only near-end) \_\_\_\_\_

0 6.2 Two (near and far-end) \_\_\_\_\_

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- 0 6.3 None \_\_\_\_\_  
0 (If none, go to question 9 )
- 0 7. Select polling speed:
- 0 7.1 1200 baud (valid for 140/380 MB DDUs) \_\_\_\_\_  
0 7.2 2400 baud (valid for 140/380 MB DDUs) \_\_\_\_\_  
0 7.3 4800 baud (valid for 140/380 MB DDUs) \_\_\_\_\_  
0 7.4 9600 baud (valid for 140/380 MB DDUs) \_\_\_\_\_  
0 7.5 19,200 baud (valid for 380/760 MB DDUs) \_\_\_\_\_  
0 7.6 56,000 baud (valid for 380/760 MB DDUs) \_\_\_\_\_
- 0 8. Which of the following is required:
- 0 8.1 Dial-up (valid for 1.2 to 4.8 K) \_\_\_\_\_  
0 8.2 Private line (valid for 9.6 K to 56 K) \_\_\_\_\_
- 0 9. Select DPP spare CP's option required:
- 0 9.1 Minimum \_\_\_\_\_  
0 9.2 Maximum \_\_\_\_\_  
0 9.3 None \_\_\_\_\_
- 0 10. Is a spare DPP disk drive required ? \_\_\_\_\_
- 0 11. Select one:
- 0 11.1 Keyed status panel \_\_\_\_\_  
0 11.2 Keyless status panel \_\_\_\_\_
- 0 12. Is a cable required for an Emergency Access  
0 Terminal connection to the DPP? (Y/N) \_\_\_\_\_
- 0 13. Is a connector jack that is compatible with  
0 a 20 ma loop rover maintenance terminal needed  
0 on the DPP filler panel? (Y/N) \_\_\_\_\_
- 0 (B) AUTOMATIC DIAL-BACK PROVISIONING



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- 0  
0 1. Answer Modem Pool
- 0 1.1 Number of originating busy hour attempts. \_\_\_\_\_  
0 (Users attempts to answer only modem pool)
- 0 1.2 Login Holding Time in seconds. \_\_\_\_\_  
0 (Maximum holding time for users)
- 0 2. Autodial Modem Pool
- 0 2.1 Number of busy hour users. \_\_\_\_\_  
0 (Users logged into system)
- 0 2.2 User holding time in seconds. \_\_\_\_\_  
0 (Average holding time for users)

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0 1. Total standard I/O ports required.  
0 (Total line entries of sheets 1 & 2 above)

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## 0 (D) ISDN OAM PROCESSOR WORKSTATION

0 1. Is an ISDN OAM Processor workstation required ? \_\_\_\_\_

0  
0 (E) DISK DRIVE UNIT REQUIREMENTS

0 1. Quantity required for daily operations. \_\_\_\_\_

0 2. Total quantity of DDU required \_\_\_\_\_

0 3. Total quantity of 14" DDU to be replaced \_\_\_\_\_  
0 with 5.25" DDU.0 4. Total quantity of 8" DDU to be replaced \_\_\_\_\_  
0 with 5.25" DDU.

## 0 (F) MAGNETIC TAPE DRIVE REQUIREMENTS (Cook)

0 1. Quantity required for DDU support. \_\_\_\_\_

0 2. Quantity for other functions. \_\_\_\_\_

0 3. Total MTDs required. \_\_\_\_\_

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0 (G) Stratum II Synchronization

0 1. Is Stratum II synchronization required ? \_\_\_\_\_

0 2. Are "Hot" spare oscillators required ? \_\_\_\_\_

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## 0 (H) EADAS INTERFACE

0 1. Is EADAS Operational Support System required ? \_\_\_\_\_

0 2. Is on-line redundancy required ? \_\_\_\_\_

## 0 (J) SERVICE EVALUATION SYSTEM INTERFACE

0 1. Is a SES - DMS interface required ? \_\_\_\_\_

## 0 (K) ACD MANAGEMENT INFORMATION SYSTEM

0 Local ACD Management Information System0 1. Is a ACD - Management Information System  
0 required. \_\_\_\_\_

0 2. Quantity of ACD MIS links required. \_\_\_\_\_

0 Network ACD Management Information System0 3. Is a Network ACD - Management Information  
0 System required. \_\_\_\_\_

0 4. Quantity of NACD MIS call attempts. \_\_\_\_\_

0 5. NACD MIS link baud rate. \_\_\_\_\_

0 5.1 9600 \_\_\_\_\_

0 5.2 4800 \_\_\_\_\_

0 5.3 2400 \_\_\_\_\_

## 0 (L) SMDI INTERFACE

0 1. Quantity of SMDI links required ? \_\_\_\_\_

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0 (M) TOPS INTERFACE

0 1. TOPS MP DA

0 1.1 Quantity of busy hour calls for DMS to DASC. \_\_\_\_\_

0 2. TOPS MPX DA

0 2.1 Quantity of busy hour calls for DMS to IBM- \_\_\_\_\_  
0 DAS/C.

0 3. Automated Alternate Billing Services

0 3.1 Is AABS required ? \_\_\_\_\_

0 (N) STRATUM 2.5 SYNCHRONIZATION

0 1. Is Stratum 2.5 synchronization required ? \_\_\_\_\_  
0 (Canadian offices only)

0 2. Are "Hot" spares required ? \_\_\_\_\_

0 (P) EARTHQUAKE U.S.

0 1. Does this office require earthquake frames ? \_\_\_\_\_

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0 IOE CUSTOMER CALCULATIONS0 NTZZ09AA - IOE Frame

0 The required quantity of IOE frames is calculated from the required  
0 number of shelves. IOE frames NTZZ09AA is provided for all applica-  
0 tions.

0 If P1 = Yes, US jobs shall be provisioned with NTZZ09AA and equipped  
0 with NT0X25AH Universal framework. Refer to the IOE frame Engineering  
0 Manual sections for valid combinations.

0 The following table lists all available shelves and their required  
0 mounting positions on an IOE frame. The IOE contains five (5) avail-  
0 able 14" mounting positions. Filler panels shall occupy all unused  
0 14" mounting positions.

| Module   | Number of 14 inch<br>shelves | Number of 14 inch<br>fillers |
|----------|------------------------------|------------------------------|
| NTZZ09BB | 1                            | 1                            |
| NTZZ09CA | 1                            | 0                            |
| NTZZ09CB | 1                            | 0                            |
| NTZZ09VA | 1                            | 0                            |
| NTZZ09VB | 1                            | 0                            |
| NTZZ09LA | 2                            | 0                            |
| NTZZ09RA | 2                            | 0                            |
| NTZZ09SA | 2                            | 0                            |
| NTZZ09XA | 2                            | 0                            |
| NTZZ09YA | 2                            | 0                            |
| MTD      | 2                            | 0                            |
| NTZZ09MA | 2                            | 0                            |
| NTZZ09NA | 2                            | 0                            |

0 NTZZ09UA - 228MB Disk Drive Unit

0 Provide a quantity equal to E2.

0 NTZZ09BB - Disk Drive Unit Shelf

0 Provide a quantity equal to the number of 228MB Disk Drive Units di-  
0 vided by two and rounded up.



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0 NTZZ09CA/CB/VA/VB - Input/Output Controller Shelf

0 Provide a quantity of NTZZ09CA/CB/VA/VB equal to NTZZ09DA + NTZZ09EA +  
0 NT1X67FA + NTZZ09GA + NTZZ09HA + NTZZ09JA + NTZZ09KA divided by nine  
0 and rounded up. (Use NTZZ09CA/CB in SuperNode offices, NTZZ09VA/VB in  
0 NT40 offices). (A minimum of two NTZZ09CA/CB/VA/VB are required per  
0 office.

0 NT0X50AA - Filler Face Plate

0 Provide a quantity of NT0X50AA equal to NTZZ09DA + NTZZ09EA + NTZZ09GA  
0 + NTZZ09HA + NTZZ09JA + NTZZ09KA subtracted from the quantity of of  
0 NTZZ09CA/CB or NTZZ09VA/VB required multiplied by nine.

0 NTZZ09DA or NTZZ09EA - I/O Terminal Controller CP

0 Provide a quantity of NTZZ09DA or NTZZ09EA equal to  $(C1 + 2(\text{If ques-}$   
0  $\text{tion A1 = yes}))/4$  and rounded up. (A minimum of two NTZZ09DA or  
0 NTZZ09EA are required per office for standard applications).

0 NTZZ09EA - I/O Terminal Controller CP

0 Provide a quantity of NTZZ09EA for the automatic dial back feature per  
0 the calculations that follow:

0  $(B1.1 \times B1.2)/100 = \text{CCS}$ . Refer to attached Table Y with CCS to deter-  
0 mine the quantity of ports required. (PORTS1)

0  $(B2.1 \times B2.2)/100 = \text{CCS}$ . Refer to attached Table Y with CCS to deter-  
0 mine the quantity of ports required. (PORTS2)

0  $(\text{PORTS1} + \text{PORTS2})/4$  (rounded up) = Quantity of NTZZ09EA required.

0 NT1X67FA - SMDI Interface

0 Provide a quantity equal to L1 (unless NTZZ09GA is used to provide the  
0 interface to Simplified Message Desk).

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0 NTZZ09GA - Multi-protocol Controller

0 Provide a quantity of NTZZ09GA per the following calculation:

0 If D1 is equal to yes, aa = 1; if D1 is equal to no aa = 0.

0 If H1 is equal to yes, bb = 1; if H1 is equal to no bb = 0.

0 If H2 is equal to yes, cc = 1; if H2 is equal to no cc = 0.

0 If J1 is equal to yes, dd = 1; if J1 is equal to no dd = 0.

0 K2 = ee

0  $K4/n$ , (where n = 15600 for K5.1, 11400 for K5.2, or 7200 for K5.3) = ff0  $M1.1 \times 0.0001$  rounded up = gg0  $M2.1 \times 0.00011$  rounded up = hh0  $L1 / 2 = jj$ 0 Provide a quantity of NTZZ09GA = aa + bb + cc + dd + ee + ff + gg + hh  
0 + jj.0 NTZZ09HA - 9 Track Tape Controller CP

0 Provide a quantity of NTZZ09HA equal to F3 + 2(If A1 = yes).

0 NTZZ09JA - MSB DDU Controller CP

0 Provide a quantity of NTZZ09JA equal to E2.

0 NTZZ09KA - Enhanced Multi-protocol Controller

0 Provide a quantity of two NTZZ09KA if M3.1 is equal to yes.

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0 NTZZ09YA - Distributed Processing Peripheral (Compression)

0 For U.S. application, provide one NTZZ09YA when A2 equals Compression.

0 NTZZ09LA - DPP Shelf 56 Kbps

0 For U.S. application, provide one NTZZ09LA when A2 equals 56 Kbps.

0 NTZZ09XA- DPP Shelf

0 For U.S. application, provide one NTZZ09XA when A2 equals neither.

0 DPP Disk Drive

0 If 140 Mbyte DDU is specified (4.1);

0 Provide 2 NT6M72DE and 2 NT6M66BC if NTZZ09YA is provided, or provide  
0 2 NT6M66AL and 2 NT6M72BA if NTZZ09XA is provided.

0 If 380 Mbyte DDU is specified (4.2);

0 For Canadian application, provide one NTZZ09RA

0 For U.S. application, provide 2 NT6M72DD and 2 NT6M66BA if NTZZ09YA is  
0 provided, or provide 2 NT6M72DD if NTZZ09LA is provided, else, provide  
0 2 NT6M66AH and 2 NT6M72DA if NTZZ09XA is provided.

0 If 760 Mbyte DDU is specified (4.3);

0 For Canadian application, provide one NTZZ09SA

0 For U.S. application, provide 2 NT6M72EA and 2 NT6M66BA if NTZZ09YA is  
0 provided, or provide 2 NT6M72EA if NTZZ09LA is provided.

0 If DDU size is to be calculated, use A5.1 and A5.2 in customer  
0 questions section and refer to ECM 306 (Real Time Impact section) for  
0 calculation information to determine disk size.

0 Modems for DPP application

0 For modem provisioning, refer to ECM 633 and provide correct modem  
0 based on polling speed, number required, and whether dial-up or pri-  
0 vate line is selected.

0 DPP Spares kit

0 If minimum spare option (9.1) is selected, provide one NT6M95AK.

0 If maximum spare option (9.2) is selected, provide one NT6M95AL.

0 DPP spare disk drive

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0 If A10 equals yes, provide quantity of one of disk drive based on an-  
0 swer to A4 or A5.

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0 Status Panel

- 0 If keyed status panel (11.1) is selected, provide one (1) NT6M59AA.
- 0 if keyless status panel (11.2) is selected, provide one (1) NT6M59AB.

0 E.A.T. Cable

- 0 If A12 equals yes, provide one (1) NT8M99AB E.A.T. cable.

0 Filler Panel

- 0 If A13 equals yes, provide 1 NT6M59BB filler panel with connector jack.
- 0 If A13 equals no, provide 1 NT8M59BB filler panel.

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0 MTD - Magnetic Tape Drive (Cook)0 Provide a quantity of NT0X44AB equal to F3. NTZZ09MA - Stratum II Shelf

0 Provide one NTZZ09MA if G1 is equal to yes.

0 Provide one NTZZ09PA if G2 is equal to yes.

0 NTZZ09NA - Stratum 2.5 Shelf

0 Provide one NTZZ09NA if N1 is equal to yes.

0 Provide one NTZZ09QA if N2 is equal to yes.

0 NT4X00AZ - DDU Enhancement Kit

0 For each existing 14" DDU on an existing NT4X00AA, NT4X00AB or  
0 NT4X00AC DDU shelf to be replaced by a 5.25" DDU (Question E3), pro-  
0 vide one NT4X00AG 5.25" DDU, one NT4X00AZ DDU Enhancement Kit and one  
0 NT1X55DA Disk Drive Controller CP. This kit only applies to existing  
0 14" DDUs on existing DDU shelves. Refer to the NT4X00AA, NT4X00AB or  
0 NT4X00AC Engineering Manual Sections.

0 NTZZ99AG - Univ 5.25" DDU Upgrade Kit

0 For each existing 8" DDU on an existing NT4X00AA, NT4X00AB, NT4X00AC  
0 or NT4X00AF DDU shelf to be replaced by a 5.25" DDU (Question E4),  
0 provide one NT4X00AG 5.25" DDU and one NTZZ99AG Univ 5.25" DDU Upgrade  
0 Kit. This kit only applies to existing 8" DDUs on existing DDU  
0 shelves. Refer to the NT4X00AA, NT4X00AB, NT4X00AC or NT4X00AF Engi-  
0 neering Manual Sections.

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Table Y CCS Per Port At GOS Of P .001

|    |     |    |      |    |      |     |      |
|----|-----|----|------|----|------|-----|------|
| 21 | 346 | 51 | 1143 | 81 | 2016 | 111 | 2926 |
| 22 | 370 | 52 | 1171 | 82 | 2046 | 112 | 2956 |
| 23 | 395 | 53 | 1200 | 83 | 2076 | 113 | 2987 |
| 24 | 419 | 54 | 1228 | 84 | 2106 | 114 | 3018 |
| 25 | 444 | 55 | 1256 | 85 | 2136 | 115 | 3049 |
| 26 | 469 | 56 | 1285 | 86 | 2166 | 116 | 3080 |
| 27 | 495 | 57 | 1313 | 87 | 2196 | 117 | 3110 |
| 28 | 520 | 58 | 1342 | 88 | 2226 | 118 | 3141 |
| 29 | 545 | 59 | 1371 | 89 | 2256 | 119 | 3172 |
| 30 | 571 | 60 | 1400 | 90 | 2286 | 120 | 3203 |



0 6.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 6.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 6.2 PRODUCT/SYSTEM SPECIFICATION

0

0 6.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 6.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 6.2.3 SPARING INFORMATION

0  
0 Not applicable.

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0 6.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not applicable.

0 6.2.5 CURRENT DRAIN INFORMATION

0  
0 Not applicable.

0 6.3 SOFTWARE PROVISIONING

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0 6.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not applicable.

0 6.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 6.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

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0 6.4 REAL TIME IMPACT

0 Not applicable.

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## 0 7.0 I/O Controller Module NT1X61AD

0 The Input/Output Controller (IOC) provides an interface between the  
0 NT40 (CCC) or SuperNode and up to nine device controller Circuit  
0 Packs.

0 |

0 Each IOC performs serial to parallel and parallel to serial conver-  
0 sions to the Data to and from Device Controllers on two (2) 2.56Mb/s  
0 serial ports to a pair of Message Device Controllers (on NT40) or Mes-  
0 sage Switches (on SuperNode).

0 The IOC consists of the following card types:

0 I/O Message Processor - Contains a microprocessor, associated memory  
0 serial link I/F logic, parallel bus I/F logic.

0 Device Controllers - Contains a microproc. and associated memory  
0 for the I/O device (i.e. MTD, DDU, VDU, etc.)

0 IOC Terminator - Contain terminating resistors for the IOC's  
0 parallel bus.

0 Power Converter - Supplies Voltages req'd for the IOC message  
0 controller and other IOC Circuit Packs.

0 The I/O Controller Module (NT1X61AD) is made up of an I/O Shelf Assem-  
0 bly (NT1X6112) and a Common Circuit Pack Fill NT1X61AE. The  
0 provisionable I/O Message Controller are NT1X62AB for NT-40 applica-  
0 tions and NT1X62CA for SuperNode applications. Both NT1X61AB and  
0 NT1X62CA are manufactory discontinued and replaced by NT1X62CB for  
0 both SuperNode or NT-40 applications. The Power Converter (NT2X70AE)  
0 is now provisionable by the NT1X61AE Common CP Fill (Check availabil-  
0 ity reports for the status of the NT2X70AE CP). The NT1X61AD IOC Mod-  
0 ule is replaced by NT1X61AG IOC Module in IOE frame (NT0X43AD), and it  
0 will be replaced by NT1X61AG for all applications.

0 For offices with existing NT1X61AA and NT1X61AB IOC, a Product Change  
0 Kit (PC Kit) NT1X61AX must be provisioned to modify the IOC to inter-  
0 face with SuperNode.

0 At a Telco's request, when available, the NT2X70AZ PC Kit can be provi-  
0 sioned to modify the NT1X61AD IOC with the NT2X70AE Power Converter  
0 (Check availability reports for the status of the NT2X70AZ PC Kit).

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0 7.1 HARDWARE PROVISIONING

0

0 7.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 7.1.2 HARDWARE DEPENDENCIES

0

0 Upon General availability, the NT1X61AE IOC Common CP will re-  
0 place the NT1X61AC Common CP which will become Manufactured Dis-  
0 continued (MD).

## 0 P AND C SIDE PORT REQUIREMENTS

0

0 Not applicable.

## 0 DMS BUS PORT REQUIREMENTS

0

0 Not applicable.

0

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## 0 CIRCUITS PER CARD

0  
0 Not applicable.

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable.

0 7.1.3 PROVISIONING CONSIDERATIONS

0  
0 From BCS26 onwards, a DMS office can have maximum of thirteen  
0 (13) IOC's except for DMS-MTX offices which may allow up to  
0 twenty (20) IOC's. For each office, the maximum number of IOC's  
0 depends on how a system is configured (for example, the number of  
0 network modules and the number of CMC/MS interface circuit packs  
0 provisioned) and the limitation for software to support maintenance  
0 functions for IOCs and connected devices without impacting  
0 System's performance.

0 A minimum of two I/O Controller Modules (IOC:00, IOC:01) is required  
0 per system. These may be provisioned either as functional  
0 modules within the Central Message I/O Controller shelf (MDC)  
0 (NT2X76BA) for NT40 applications only or as independent shelves.  
0 Note that for SuperNode applications independent shelves must be  
0 provisioned.

0 If provisioned as independent shelves then provide two (2)  
0 NT1X61AD.

0 Each shelf accommodates up to nine I/O device controller cards.

0 The IOC shelf and the devices (MTD, DDU, MAP etc.) it interfaces  
0 should be cabled to the same power feed on the Power Distribution  
0 Center (PDC).

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0 Provide one (1) PC Kit NT1X61AX when converting an existing IOC  
0 Module (NT1X61AA or AB) for DMS-Core applications.

0 At a Telco's request, when available, the NT2X70AZ PC Kit can be  
0 provisioned to modify the NT1X61AD IOC with the NT2X70AE Power  
0 Converter (Check availability reports for the status of the  
0 NT2X70AZ PC Kit).

0 7.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 7.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 7.2 PRODUCT/SYSTEM SPECIFICATION

0

0 7.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 7.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

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0 7.2.3 SPARING INFORMATION

0  
0 Standard sparing criteria will be maintained for the IOC.

0 7.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Each IOC will have dissipation based on its contents. The fol-  
0 lowing is an outline of the major IOC component dissipations.

0 NT1X61 - 24.0 Watts  
0 NT1X67 - 12.6 Watts  
0 NT1X89AA - 12.6 Watts  
0 NT1X55 - 12.6 Watts

0 The IOC Shelf requires one (1) 20 Amp fuse.

0 7.2.5 CURRENT DRAIN INFORMATION

0  
0 An empty IOC shelf without any provisionable I/O Device control  
0 card will have a current drain of 0.5 Amps.

0 7.3 SOFTWARE PROVISIONING

0

0 7.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not applicable.

0



0 7.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 7.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 7.4 REAL TIME IMPACT

0 Not applicable.

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0 8.0 Modem Equipment Frame (MOE) Canadian Offices Only

0 Modem Equipment Frame (MOE) NT0X43BA

0 The Modem Equipment Frame (MOE) is provided in host offices equipped  
0 with Isolated System Grounding (ISG) for the mounting of modem equip-  
0 ment. All modem shelves mounted on the frame must be isolated from  
0 the framework with the chassis tied to the logic return bar. Any cus-  
0 tomer provided modem shelves must be isolated from the frame and simi-  
0 larly connected to the logic return bar.

0 8.1 HARDWARE PROVISIONING

0

0 8.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 8.1.2 HARDWARE DEPENDENCIES

0

0 Not applicable.

0 | P AND C SIDE PORT REQUIREMENTS

0

0 | Not applicable.

0

0

0| DMS BUS PORT REQUIREMENTS

0  
0| Not applicable.

0| CIRCUITS PER CARD

0  
0| Not applicable.

0| DISCRIMINATION NUMBERING

0  
0| Not applicable.

0 8.1.3 PROVISIONING CONSIDERATIONS

0  
0 Modem equipment must not be equipped on a Miscellaneous Equipment  
0 (MIS) frame.

0 Remote offices (RLM,RSC,RLCM and OPMs) do not require the MOE  
0 frame. However, all modem equipment and their associated  
0 inverters must reside in the same Remote Miscellaneous Frame  
0 (RME).

0 Host office extensions that are upgraded with ISG must relocate  
0 all modem equipment to either a MOE frame or an Input Output  
0 Equipment (IOE) frame.

0 Modem equipment may be mounted on an IOE frame in existing of-  
0 fices, however, for all new host offices a MOE frame must be pro-  
0 vided.

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0 For mounting modems on IOE frames the following rules apply:

- 0 1) DC Modem Shelves must be isolated from the equipment frame  
0 and modem shelf chassis must be connected to the logic return  
0 busbar. One (1) NT4X2591 Data Unit Grounding and Mounting  
0 Kit must be provided per DC Modem shelf provisioned to iso-  
0 late the shelf from the frame and to connect the chassis to  
0 the logic return busbar. DC Modem shelves must be powered  
0 directly to the Power Distribution Center (PDC).
- 0 2) All AC Modem Shelves must be powered from an inverter that is  
0 mounted on the same frame. The inverter must be isolated  
0 from the framework and its chassis must be connected to the  
0 logic return busbar.
- 0 3) Provision one (1) NT0X0009 Cable Assembly for an inverter lo-  
0 cated in position 4 on the IOE frame to connect the inverter  
0 to the logic return busbar.
- 0 4) Provision one (1) NT0X4309 Cable Assembly for an inverter lo-  
0 cated in any other position on the IOE frame.

0 Only current loops may be connected directly to the IOC modules from  
0 devices (i.e. VDU or printers). EIA ports must be connected through  
0 modems. No direct connections from from devices (i.e. VDU or print-  
0 ers) to EIA ports are allowed. If a local EIA modem to modem con-  
0 nection is desired, both the DMS modem and the device end modem cannot  
0 co-exist in the DMS. The device modem must be located away from any  
0 DMS frame.

0 Reference CA0X04 01 24 and CA0X15 01 14 for switchboard cabling per-  
0 taining to the MOE frame.

#### 0 Modem Pooling Configurations

0 Three standard configurations have been identified for modem pooling.  
0 These configurations are shown in Figure 1.

0 Modem Equipment Frame Modem Pooling Configuration A  
0 - 1 modem shelf

0 Modem Equipment Frame Modem Pooling Configuration B  
0 - 2 modem shelves, no redundant power

0 Modem Equipment Frame Modem Pooling Configuration C  
0 - 2 modem shelves, redundant power

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0 For non modem pooling applications, provision the necessary equipment  
0 as required.

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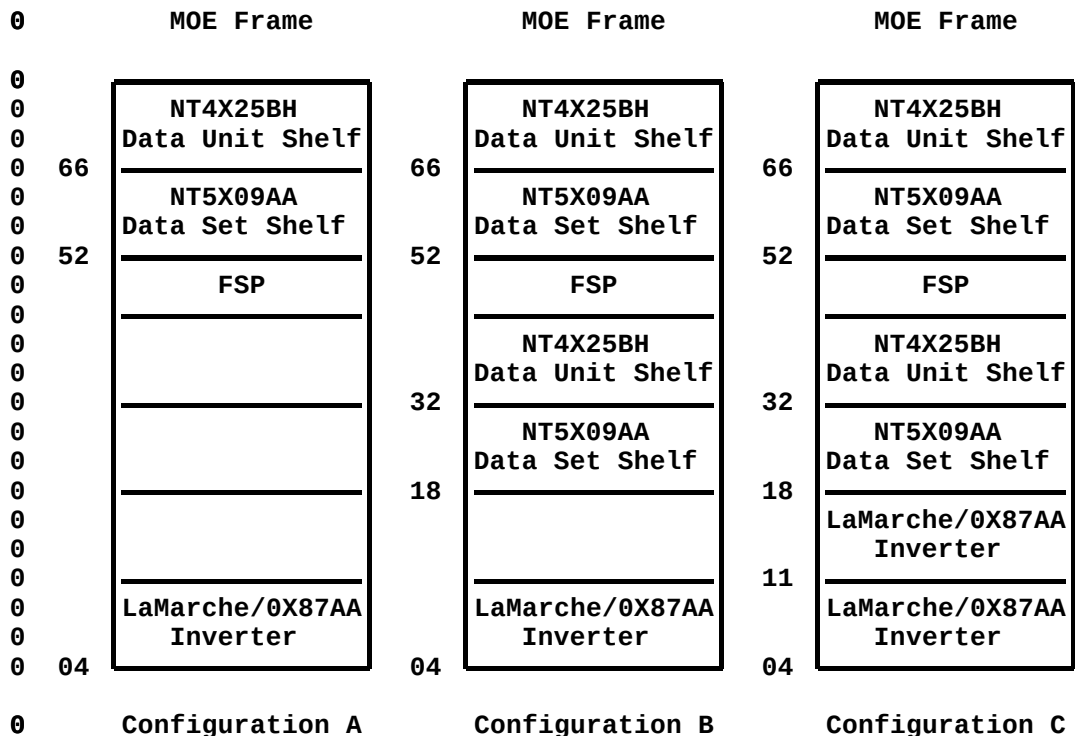
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0 Figure 1: Standard Modem Pooling Configurations

0 8.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 8.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 8.2 PRODUCT/SYSTEM SPECIFICATION

0

0 8.2.1 PHYSICAL CHARACTERISTICS

0

0 Not applicable.

0 8.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

0 8.2.3 SPARING INFORMATION

0

0 Standard sparing algorithm shall apply.

0| 8.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0| Not applicable.

0

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0| 8.2.5 CURRENT DRAIN INFORMATION

0  
0| Not applicable.

0 8.3 SOFTWARE PROVISIONING

0

0 8.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not applicable.

0 8.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 8.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

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0 8.4 REAL TIME IMPACT

0 Not applicable.

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0 9.0 DMS-100 Provisionable Modems For RTP

0 This NTP defines the terms used in Data Communications and defines the  
0 provisionable modem products from all RTP approved sources (i.e.  
0 Case/Datatel (CASE), Universal Data Systems (UDS), and General  
0 DataComm (GDC)) and relates those products to specific applications.

0 Data Communications is required whenever one has a need to transmit  
0 data or information from one location to another. In order to com-  
0 plete this task, three elements are required:

0 Terminals / Computers (DTE Equipment)  
0 Modems / Data Sets (DCE Equipment)  
0 Transmission Facilities / Lines (Media)

0 In Voice communications when a telephone call is made, there are again  
0 three elements required to make the phone connections to the point  
0 where two people can talk to each other. These elements are:

0 People (DTE Equipment)  
0 Telephones (DCE Equipment)  
0 Transmission Facilities / Lines (Media)

0 Therefore, Telecommunications and Data Communications are very simi-  
0 lar. The Telephones perform the same function as do modems and data-  
0 sets, namely they convert information from a form created by humans  
0 into a signal suitable for transmission over the telephone facility  
0 and then converts it back to a form intelligible to humans.

0 A modem is used whenever transmission of data is required utilizing a  
0 telephone line provisioned to carry analog signals. The word modem is  
0 actually a contraction for the terms modulator-demodulator. It is used  
0 in telephone circuits designed to transmit analog signals which fall  
0 within the audio spectrum used in human speech. The  
0 terminals/computers produce digital pulses and the modem interfaces  
0 these digital pulses with the analog tones carried on the Telephone  
0 facilities. Very simply, a modem converts machine output digital  
0 signals into an analog wave form and then converts this analog wave  
0 form back into digital signals for input into another machine.

0 Whenever transmission of data is required utilizing a telephone line  
0 provisioned to carry digital pulses only, then a dataset is needed

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0 instead of a modem. A dataset is made up two units called a DSU and a  
0 CSU. A DSU, or digital service unit, provides a standard interface to  
0 a user's terminal and handles the signal translation, regeneration,  
0 reformatting, and timing. A CSU, or channel service unit, provides  
0 the connection to the digital telephone line and is capable of provid-  
0 ing local loop equalization, transient protection, isolation and cen-  
0 tral office loopback testing capability.

0 We now know that modems are used on analog facilities and datasets  
0 (DSU/CSU's) are used on digital facilities.

0 In the case of analog facilities there are two types of facilities  
0 that can be provisioned; either a dial-up circuit or analog switched  
0 facility, and a leased line or private line.

0 Dial-up circuits permit contact with any terminal/CPU which has access  
0 to the telephone network. Whenever an operator wants to transfer data  
0 from one location to another, they dial the telephone number of the  
0 remotely located terminal/CPU. The telephone central office estab-  
0 lishes a connection between the dialing party and the dialed party.  
0 Once communication is set up, the terminal/CPU at each end conduct the  
0 data transfer. When the data transfer is completed, the connection  
0 is broken and the modem/telephone is placed on hook allowing for a  
0 call to be made to another location or at another time. With today's  
0 technology it is possible to transmit at speeds from 75bps up to  
0 28,800bps utilizing dial-up services.

0 A leased line is used when two locations have a high volume data  
0 transfer requirement and the time required to transfer this data via  
0 dial-up facilities is cost prohibitive. A leased line is a circuit  
0 which is nailed up or fixed between two locations, and is normally re-  
0 ferred to as 3002 type service. A leased line can be conditioned to  
0 reduce errors in transmission as well as permit ease in determining  
0 the location of error conditions since its routing is known. The  
0 transmission speeds available on analog leased lines are from 110bps  
0 to 19,200bps. Even though technology permits up to 28,800bps, the  
0 modem providers have not developed a leased line modem capable of  
0 transmitting at these speeds. This is because fewer and fewer analog  
0 leased lines are being provisioned today and the trend is to move into  
0 digital services for leased/private line requirements.

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0 Unlike analog facilities, digital facilities accept and transmit dig-  
0 ital pulses, therefore no conversion of the transmitted signal is re-  
0 quired. Also, digital facilities are available only in leased/private  
0 line services. All of the properties of an analog leased line apply  
0 to digital leased lines, except for the transmission speeds available.  
0 Common transmission speeds used today are from 2400bps up to 45Mbps.  
0 Common Digital Service types available today are DDS (2400bps up to  
0 64Kbps), T1 (1.544Mbps) and T3 (45Mbps).

## 0 | 9.1 HARDWARE PROVISIONING

0

### 0 9.1.1 HARDWARE USAGE RESTRICTIONS

0

0 See TABLE Z

### 0 9.1.2 HARDWARE DEPENDENCIES

0

0 See TABLE Z

## 0 P AND C SIDE PORT REQUIREMENTS

0

0 N/A

0

0

0

0 DMS BUS PORT REQUIREMENTS

0  
0 N/A

0 CIRCUITS PER CARD

0  
0 N/A

0 DISCRIMINATION NUMBERING

0  
0 N/A

0 | 9.1.3 PROVISIONING CONSIDERATIONS

0  
0 See Engineering Manual Section Table Z for selecting NT Approved  
0 modems for specific applications.

0 Modems must be matched to the application being provisioned and  
0 the existing Far End Modem (if applicable). Modems located at  
0 the DMS Site are generally referred to as the Near End Modem.

0 In cases where the modems are configured in a back to back ar-  
0 rangement - the modem directly connected to the Device/Device  
0 controller (1X67/89, DPP, BMC, etc.) is considered the Near End  
0 Modem.

0 When selecting modems for an existing network it is often neces-  
0 sary to mix modems from different suppliers. In these cases it

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0 is necessary for the modems to be compatible (be able to talk to  
0 each other).

0 COMPATIBILITY

0 Compatibility between modems depends greatly on the exactness  
0 with which their Modulation Techniques conform to the specifica-  
0 tion (e.g. AT&T or CCITT) in question. TABLE 1 outlines stand-  
0 ard AT&T/CCITT specifications for modems at the various operating  
0 speeds.

0 The term "HANDSHAKING" is all important in determining modem  
0 compability as it describes the exchange of control signals that  
0 establish a connection between two modems. Standards (e.g. BELL  
0 108, 103, 208A/B, etc. or CCITT V.22, 22 bis, 29, etc) govern the  
0 signals required to set up, transmit, and terminate calls. For a  
0 handshake to occur the two modems must be compatible.

0 AT&T Compatibility

0 There are two governing bodies, AT&T and CCITT. Modems built to  
0 AT&T (commonly refered to as BELL or WECO) standard are likely to  
0 be compatible. However, manufactures of modems to the BELL spec-  
0 ifications have added convience features to the basic specifica-  
0 tion, such as - Automatic Answer, Automatic Dial, The ability to  
0 be controlled from a computer console or AT command set.

0 However, some manufactures have refined their products to such a  
0 degree that they are no longer compatible with the original AT&T  
0 product. For the most part, manufactures claiming AT&T  
0 compability are in fact compatible.

0 CCITT Compatibility

0 CCITT V.XX standards are directed primarily at the European Tele-  
0 phone facility. However, North American modem manufactures and  
0 Communications Network operators are moving toward the CCITT  
0 standards for data communications. This is due in part to AT&T  
0 getting out of the business and the need to be compatible with  
0 the European Market.

0 CCITT standards call for newer and faster modems to be backward  
0 compatible with their earlier counterparts.

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0 For Example: A 2400bps V.22 bis modem will be compatible with  
0 its 1200 bps V.22 counterpart at the V.22 bis fallback operating  
0 speed of 1200bps. It will also be compatible with the AT&T 212A  
0 modem specification operating at 1200bps since the standards are  
0 closely related.

0 Many Dial-up (DU) or Public Switched Telephone Network (PSTN) and  
0 Private Lease Line (PLL) modems conform to CCITT specifications,  
0 the most popular being:

- 0 \* V.22 and V.22 bis for medium speed dial-up modems
- 0 \* V.32 for 4800 bps and 9600 bps for dial-up modems
- 0 \* Others in use are V.26, V.27, V.29, V.33, and their alterna-  
0 tives.

#### 0 Hayes Compatibility

0 Another type of compability involves the Hayes AT Command Struc-  
0 ture. The Hayes AT Structure relates to the modem commands,  
0 modem responses, and the ability to provide settings that are  
0 compatible with various communications programs.

0 For Example:

0 Modems compatible with the Hayes SMARTMODEM 1200 obey the 22  
0 modem commands and 16 register settings stipulated for that de-  
0 vice. Hayes compatibility also involves compatibility with the  
0 AT&T 103 operating standard at 0 to 300 bps and the AT&T 212  
0 standard at 1200 bps.

0 Hayes compatible products have speakers for audibly following  
0 call progress, front panel status lights on external units, and  
0 auto dial, auto answer, manual dial, and manual answer features  
0 for asynchronous operation.

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0 TABLE 1: MODEM STANDARDS

| SPEED<br>(BPS) | FULL-DUPLEX/<br>HALF-DUPLEX/<br>MULTIDROP (2W/4W)      | SYNC/<br>ASYNC | PSTN/<br>PLL/<br>DDS | TYPE/SERIES<br>MODEM<br>(STANDARD)          |
|----------------|--------------------------------------------------------|----------------|----------------------|---------------------------------------------|
| 0 TO 300       | Full-Duplex (2W)<br>Multidrop (2W/4W)                  | ASYNC<br>ASYNC | PSTN<br>PLL          | 103J (BELL)<br>108 (BELL)                   |
| 0 TO 1200      | Full-Duplex (2W)                                       | ASYNC/SYNC     | PSTN                 | 212 (BELL)                                  |
|                | Half-Duplex (2W)                                       | ASYNC          | PSTN                 | 202S (BELL)                                 |
|                |                                                        | SYNC           | PSTN                 | 202S/S (BELL)                               |
| 0 TO 1800      | Half-Duplex (2W)<br>Full-Duplex (4W)<br>Multidrop (4W) | ASYNC          | PLL                  | 202T (BELL)                                 |
| 0 TO 2400      | Full-Duplex (2W)                                       | ASYNC/SYNC     | PSTN                 | 224 (BELL/CCITT)                            |
| 2400           | Half-Duplex (2W)                                       | SYNC           | PSTN                 | 201C (BELL)                                 |
|                | Full-Duplex (4W)<br>Multidrop (4W)                     | SYNC           | PLL<br>DDS           | 201B (BELL)<br>DDS 2.4K (BELL)              |
| 4800           | Half-Duplex (2W)                                       | SYNC           | PSTN                 | 208B (BELL)                                 |
|                | Full-Duplex (4W)<br>Multidrop (4W)                     | SYNC           | PLL<br>DDS           | 208A (BELL)<br>DDS 4.8K (BELL)              |
| 9600           | Half-Duplex (2W)<br>Full-Duplex (2W)                   | SYNC<br>SYNC   | PSTN<br>PSTN         | V.29 (SPECIAL)<br>V.32 (CCITT)              |
|                | Full-Duplex (4W)                                       | SYNC           | PLL<br>DDS           | V.29 (CCITT)<br>Fast Poll V.29<br>(SPECIAL) |
|                | Multidrop (4W)                                         | SYNC           | PLL<br>DDS           | Fast Poll V.29<br>DDS 9.6K (BELL)           |
| 14.4K          | Full-Duplex (4W)                                       | SYNC           | PLL                  | V.33 (CCITT)                                |



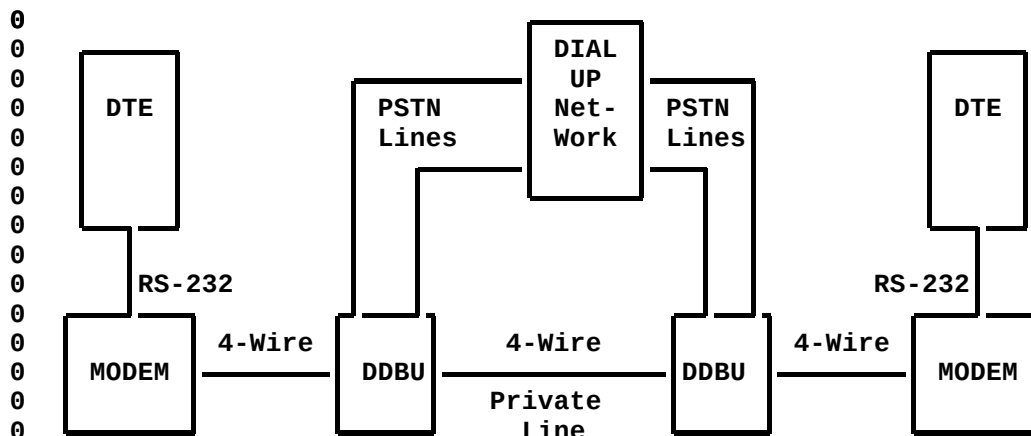
|   |     |                  |      |                |
|---|-----|------------------|------|----------------|
| 0 |     |                  |      |                |
| 0 | 56K | Full-Duplex (4W) | SYNC | DDS            |
| 0 |     |                  |      | DDS 56K (BELL) |

#### 0 | 9.1.4 OFFICE LAYOUT INFORMATION

0

#### 0 Office Layout Dual Dial Backup Units

0  
0 Detailed below in Figures 2 & 3 respectively is a typical conceptual layout of a Dual Dial Backup Unit (DDBU) in a Dedicated and Dial-Up mode. However, this section is for historical purposes only as no DDBU is currently approved for DMS-100F applications.  
0

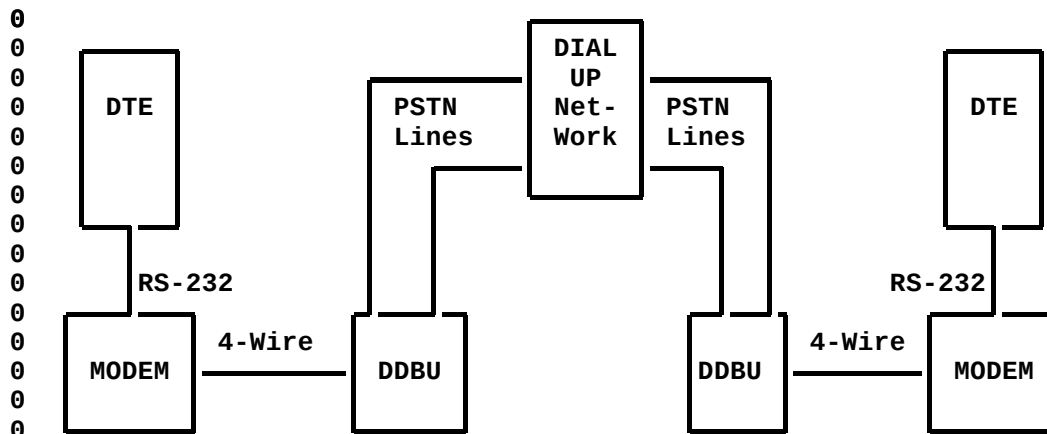


0 Figure 2: DDBU Dial Backup Configuration

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0 Figure 3: DDBU Dial-Up Configuration

0 9.1.5 TRAFFIC TABLES

0  
0 Not Applicable

0 9.2 PRODUCT/SYSTEM SPECIFICATION

0 See Engineering Manual Section

0 9.2.1 PHYSICAL CHARACTERISTICS

0

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0 9.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not Applicable

0 9.2.3 SPARING INFORMATION

0  
0 The standard sparing algorithms shall apply

0 9.2.4 POWER FEED AND FUSING REQUIREMENTS

0

## 0 CASE/DATATEL DCM42000 Modem Shelf (-48VDC)

0

0 Input Voltage.....-48VDC  
0 Power Consumption.....134.4 watts Fully loaded  
0 Current Drain.....2.8 Amps  
0 Fusing Requirements.....Two (2) 5 Amp Fuses

0 Capacity.....1 to 16 DCM4200 Series Modems.

0 Connections.....DTE interface: Sixteen 25-pin EIA  
0 female connectors

0 Telephone Line Interface.Four DDD 50-pin male connectors and  
0 two PL 50-pin female connectors

0 Telephone Interface.....Four 50-pin female connectors, used  
0 for the 4229 DAS unit interface  
0 connection.

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0 Host - Input/Output Equipment  
0 Chapter 8

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## 0 MECHANICAL DIMENSIONS

0 Height 7"(178mm) Width 19"(483mm) Depth 15.4"(392mm)  
0 Weight 33.8lb(15.4Kg) fully Loaded

## 0 CASE/DATATEL DCM42001 Modem Shelf (-48VDC)

0  
0 Input Voltage.....115V,RMS at 60Hz  
0 Power Consumption.....207VA Fully loaded  
0 Current Drain.....1.8 AMPS  
0 Fusing Requirements.....Two (2) 5 Amp Fuses

0 Capacity.....1 to 16 DCM4200 Series Modems.

0 Connections.....DTE interface: Sixteen 25-pin EIA  
0 female connectors

0 Telephone Line Interface.Four DDD 50-pin male connectors and  
0 two PL 50-pin female connectors

0 Telephone Interface.....Four 50-pin female connectors, used  
0 for the 4229 DAS unit interface  
0 connection.

## 0 MECHANICAL DIMENSIONS

0 Height 7"(178mm) Width 19"(483mm) Depth 15.4"(392mm)  
0 Weight 33.8lb(15.4Kg) fully Loaded

## 0 UDS RM16M Modem Shelf -48VDC

0  
0 Input Voltage.....-48Vdc +/- 4V  
0 Power Consumption..... N/A  
0 Current Drain.....3 Amps Max  
0 Fusing Requirements.....Two (2) 3 Amp Fuses

0 Capacity.....1 to 16 Modems

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0 Connections..... N/A

0 Telephone Line Interface... N/A

0 Telephone Interface..... N/A

0 MECHANICAL DIMENSIONS

0 Height 7.0" Width 23.0" Depth 10.75"  
0 Weight 50lbs

0 GDC DS-5 / DS-6 -48V Modem Shelf

0  
0 Input Voltage.....-48Vdc +/- 4V  
0 Power Consumption..... 160 watts  
0 Current Drain.....3.3 Amps Max  
0 Fusing Requirements.....Two (2) 5 Amp Fuses

0 Capacity.....1 to 16 Modems

0 Connections..... N/A

0 Telephone Line Interface... N/A

0 Telephone Interface..... N/A

0 MECHANICAL DIMENSIONS

0 Height 10.50" Width 23.0" Depth 13.50"  
0 Weight 17lbs

0 9.2.5 CURRENT DRAIN INFORMATION

0  
0 See section 3.4.1 - 3.4.4

0

0 9.3 SOFTWARE PROVISIONING

0

0 9.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 See Table Z.

0 9.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 See Table Z.

0 9.3.3 MEMORY PROVISIONING

0  
0 Not Applicable

0 9.4 REAL TIME IMPACT

0 Not Applicable

0

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0 10.0 Building Block Engineering - CompuCALL

0 The block diagram on Figure 1 on page 8-223 illustrates in outline a  
0 typical hardware configuration required for operating the CompuCALL  
0 feature.

0 CompuCALL is a Central Office (CO) service using an Open System Inter-  
0 connection (OSI) based application level interface between the CO  
0 DMS-100 switch and external equipment such as a computer located at a  
0 service providers premises. CompuCALL is considered to be a software  
0 feature because no new hardware is introduced for CompuCALL.

0 CompuCALL software comprises applications residing in the DMS and in  
0 the service providers host computer, both of which exchange messages  
0 relating to call processed in the DMS. The Switch Computer Applica-  
0 tions Interface (SCAI) messaging protocol is used.

0 A CompuCALL application requires one or more data links from the IOC  
0 (Input Output Controller) to the Service Providers Premises. The num-  
0 ber of links installed in a particular DMS switch providing CompuCALL  
0 service depends upon the following factors:

- 0 \* Number of service providers premises served.
- 0 \* Expected data traffic per Session per Service Provider

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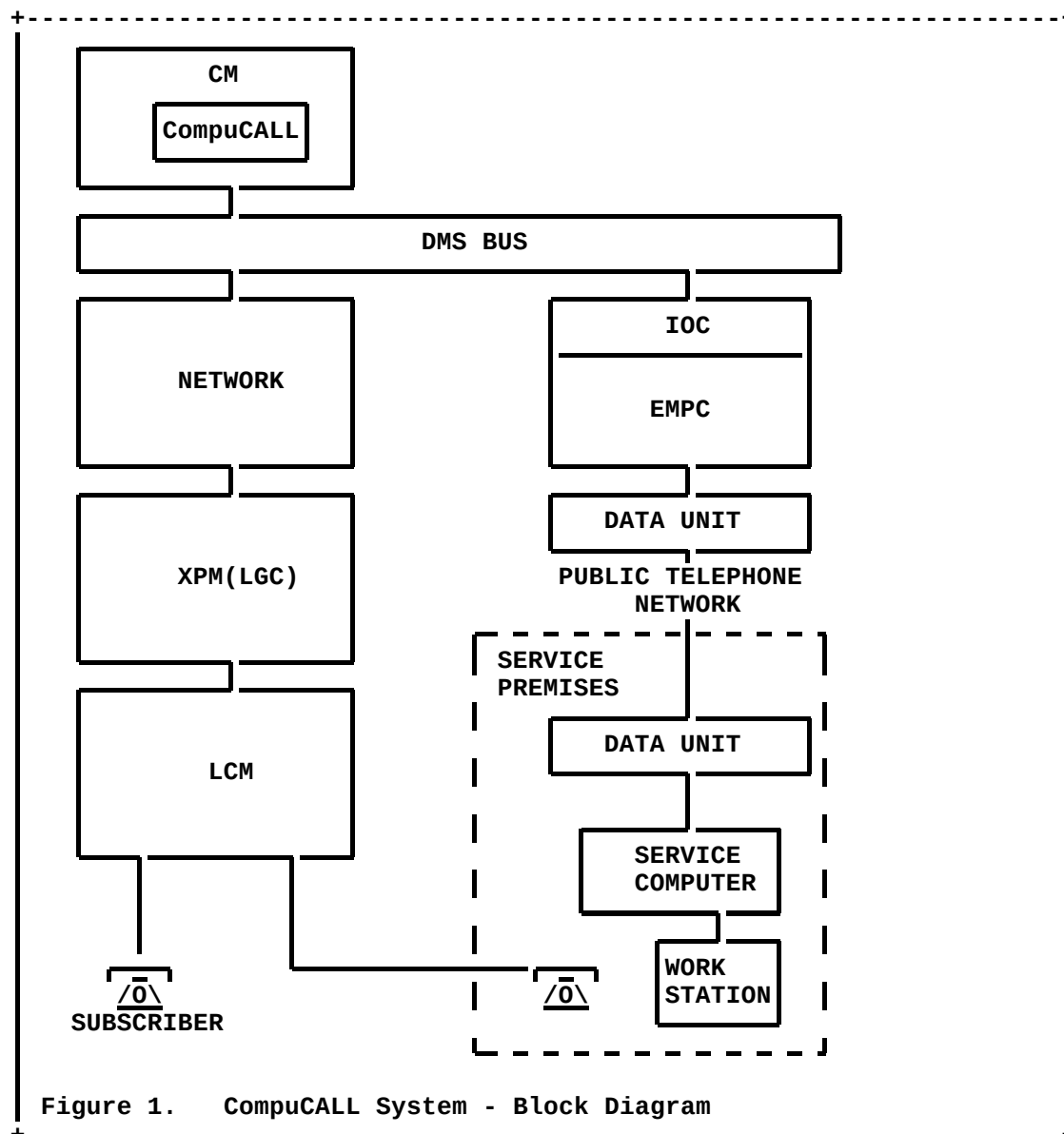
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Figure 1. CompuCALL System - Block Diagram

The traffic expected per application is to some extent dependent upon the DMS feature interfacing the service provider through CompuCALL. Currently the following features are capable of using the CompuCALL interface.



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0 \* Meridian Automatic Call Distribution with Extended Call Manage-  
0 ment. The combination of MACD with CompuCALL gives the feature en-  
0 titled MACD CompuCALL.

0 10.1 Hardware Provisioning

0

0 10.1.1 Hardware Usage Restrictions

0

0 EMPC Port Usage Recommendation

0  
0 Although the EMPC can serve two data link ports, only one port  
0 should be used in CompuCALL applications.

0 10.1.2 Hardware Dependencies

0  
0 None identified.

0 P and C Side Port Requirements

0

0

0

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## 0 DMS Bus Port Requirements

0

## 0 Circuits per Card

0

## 0 Discrimination Numbering

0

0 10.1.3 Provisioning Considerations

0

## 0 CompuCALL Sessions

0

0 CompuCALL Link provisioning is based upon CompuCALL sessions. The  
0 provisioning characteristics of a session are as follows:

0 \* One (1) CompuCALL application per session. (MADC is an exam-  
0 ple of a CompuCALL application)

0 \* One (1) session per ACD Group

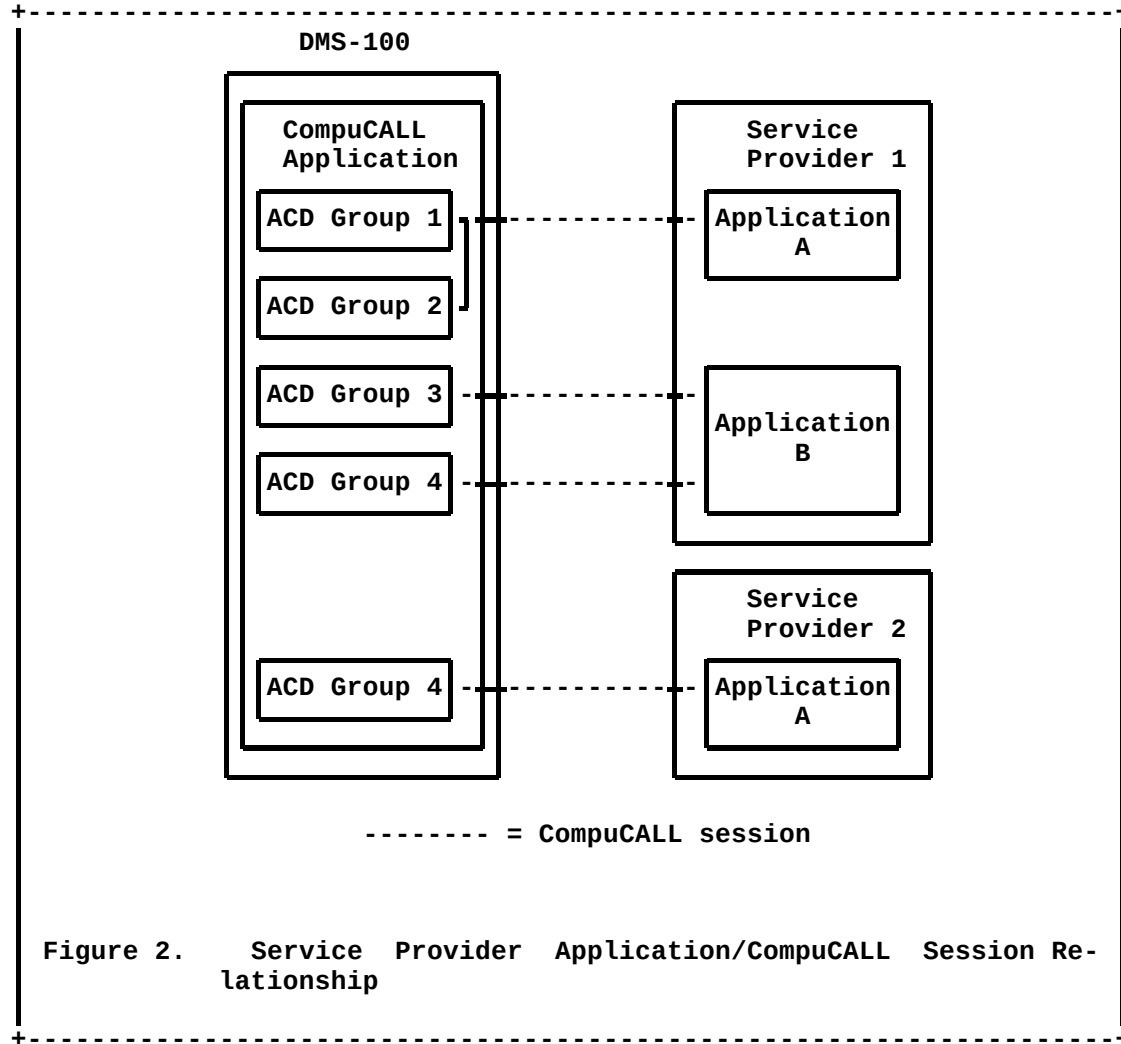
0 \* Multiple sessions per host (service provider) application.

0 \* Multiple ACD groups per session

0 The relationships between CompuCALL Applications, service provider ap-  
0 plications and sessions are illustrated in Figure 2 on page 8-226.

0

0



## CompuCALL Links

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0 A compucall link is a logical Switched Virtual Circuit (SVC)  
0 which carries messages between a DMS 100 application, e.g., MADC,  
0 and a service provider's host computer.

0 Up to and including BCS 34, a session is carried by a maximum of  
0 one SVC and a maximum of one session is carried by one SVC. Refer  
0 to Section 2.4.1 for the definition of a session.

0 From and including BCS 35, a session may be carried by more than  
0 one SVC. This capability may be used to improve CompuCALL reli-  
0 ability.

0 SVCs are set up on X.25 physical links. Currently, CompuCALL  
0 links are restricted to one (1) SVC per X.25 physical link.

0 MACD CompuCALL/SMDI (Simplified Message Desk Interface)

0  
0 The AUXCP scheduler class was originally introduced for the in-  
0 coming message processing function of SMDI. This scheduler class  
0 is therefore shared with SMDI if this feature is present in the  
0 switch. The sum of guaranteed CP real time allocated to both MACD  
0 CompuCALL messaging and SMDI shall result in a setting of no  
0 greater than 25% for the office parameter AUXP\_CP\_SHARE.

0 Information Needed for Provisioning

0  
0 a) Number of Service Providers

0 (1) Number of Service Providers <SVCE PROVIDERS>? =\_\_\_\_\_

0 b) Redirection Option

0 (1) Is MADC CompuCALL redirection option  
0 required (Yes or No) <SCAIREDIR> =\_\_\_\_\_

0 c) Service Provider Information

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0 For each Service Provider, answer the following questions:

0 (1) Max. number of simultaneous CompuCALL Sessions  
0 required <MAX SESSIONS> =\_\_\_\_\_

0 For each Session, answer the following questions, based on HDBH  
0 traffic:

0 (2) Inbound MACD COMPUCALL CA (Call Attempts)/Hour  
0 (HDBH) w/o redirection option

0 < MACD CCALL IN W/O REDIRECT CA/HOUR> =\_\_\_\_\_

0 (3) Inbound MACD COMPUCALL CA/Hour (HDBH)  
0 W/ redirection option  
0 zero (0) redirects/call

0 < MACD CCALL IN W/ REDIRECT (0) CA/HOUR> =\_\_\_\_\_

0 (4) Inbound MACD COMPUCALL CA/Hour (HDBH) W/ redirection  
0 option one (1) redirect/call

0 < MACD CCALL IN W/ REDIRECT (1) CA/HOUR> =\_\_\_\_\_

0 (5) Outbound MACD COMPUCALL CA/Hour  
0 < MACD CCALL OUT CA/HOUR> =\_\_\_\_\_

0 (6) X.25 Link Bandwidth

0 Check one

0 a) Bandwidth <9600 bits/s> \_\_\_\_\_  
0 b) Bandwidth <19200 bits/s> \_\_\_\_\_  
0 c) Bandwidth <56000 bits/s> \_\_\_\_\_

0 <DATA SPEED> =  
0 If a) = yes, then 9600 bits/s  
0 else if b) = yes then 19200 bits/s  
0 else if c) = yes then 56000 bits/s =\_\_\_\_\_

0 (6) Service Provider Premises Data Modem Requirements

0 Answer yes or no:

0 Are Service Provider premises data modems to be  
0 supplied, <SUPPLY CP MODEMS> ? \_\_\_\_\_

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0 d) CO Modem Provisioning Requirements

0 Answer yes or no:

0 Are CO located data modems to be  
0 supplied, <SUPPLY CO MODEMS> ? \_\_\_\_\_

## 0 Provisioning Calculations

0 Perform the calculations in a) to f) below for each Service Pro-  
0 vider:

0 a) Required Number of X.25 Links

0 Refer to answers to questions in section 2.4.4 c) Service Pro-  
0 vider Information. To determine the number of X.25 links, for  
0 each Service Provider, calculate expected message traffic for  
0 each Session required by the Service Provider, as follows:

0 <TOTAL MESSAGES/SEC> =  
0 (MACD CCALL IN W/O REDIRECT CA/HOUR/3600) x 4  
0 + (MACD CCALL IN W/ REDIRECT (0) CA/HOUR/3600) x 5  
0 + (MACD CCALL IN W/ REDIRECT (1) CA/HOUR/3600) x 10  
0 + (MACD CCALL OUT CA/HOUR/3600) x 3 = \_\_\_\_\_

0 <AVERAGE MESSAGE LENGTH> (bytes) =  
0 {[ (MACD CCALL IN W/O REDIRECT CA/HOUR/3600) x 4] x 82  
0 + [ (MACD CCALL IN W/ REDIRECT (0) CA/HOUR/3600) x 5] x 66  
0 + [ (MACD CCALL IN W/ REDIRECT (1) CA/HOUR/3600) x 10] x 53  
0 + [ (MACD CCALL OUT CA/HOUR/3600) x 3] x 46}  
0 divided by TOTAL MESSAGES/SEC (round up) = \_\_\_\_\_

0 <X.25 LINK CAPACITY> =  
0 lookup Figure 3 , for AVERAGE MESSAGE  
0 SIZE, and DATA SPEED (messages per second) = \_\_\_\_\_

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|   |       | AVERAGE MESSAGE SIZE IN BYTES |    |    |    |    |    |    |
|---|-------|-------------------------------|----|----|----|----|----|----|
|   |       | 95                            | 80 | 65 | 60 | 55 | 50 | 45 |
|   | SPEED | MESSAGES PER SECOND           |    |    |    |    |    |    |
| 1 | 9600  | 11                            | 13 | 16 | 17 | 18 | 19 | 20 |
| 2 | 19200 | 20                            | 20 | 22 | 22 | 23 | 25 | 25 |
| 3 | 56000 | 20                            | 19 | 20 | 21 | 22 | 23 | 23 |

Figure 3. X.25 Link Capacity (MACD CompuCALL)

<NO OF X.25 LINKS> (needed for session) =  
If BCS 35 or Greater, then  
(TOTAL MESSAGES/SEC)/(X.25 LINK CAPACITY)  
(round up)  
else 1 =\_\_\_\_\_

<SUB-TOT X.25 LINKS>  
(needed for Service Provider) =  
Sum NO OF X.25 LINKS =\_\_\_\_\_

Note..If BCS is not BCS 35 or greater, check that the selected  
X.25 link bandwidth is adequate for the expected  
traffic, as follows

<BANDWIDTH> =  
If (TOTAL MESSAGES/SEC)/(X.25 LINK CAPACITY) > 1  
Then TOO NARROW  
Else OK

If BANDWIDTH is TOO NARROW then DATA SPEED must be increased to  
accommodate the estimated traffic for the Session. If DATA SPEED  
cannot be increased Session traffic must be reduced.

#### b) Enhanced Multi Protocol Controller Card Provisioning

For each Service Provider calculate the number of EMPC cards re-  
quired as follows:

<NUMBER OF EMPC> = SUB-TOT X.25 LINKS =\_\_\_\_\_

0  
0 RELEASE 28.01  
0 93 12 030 c) Link Protection0 From BCS 35 onwards, CompuCALL will have the capability of per-  
0 mitting one Session to be carried on more than one SVC. This ena-  
0 bles the provisioning of additional SVCs, to provide protection  
0 against link failure. Protection should be engineered to provide  
0 protection per CompuCALL Session.0 d) Number of 9.6 kbs Modems Required0 Calculate the number of 9.6 kbs modems required for  
0 each service provider as follows:0 <MODEMS 9.6 KBS> = if DATA SPEED = 9600  
0 then if SUPPLY CP MODEMS = yes  
0 then SUB-TOT X.25 LINKS  
0 else 0  
0 + if DATA SPEED = 9600  
0 and if SUPPLY CO MODEMS = yes,  
0 then SUB-TOT X.25 LINKS  
0 else 0

=\_\_\_\_\_

0 e) Number of 19.2 kbs Modems Required0 <MODEMS 19.2 KBS> = if DATA SPEED = 19200  
0 then if SUPPLY CP MODEMS = yes  
0 then SUB-TOT X.25 LINKS  
0 else 0  
0 + if DATA SPEED = 19200  
0 and if SUPPLY CO MODEMS = yes,  
0 then SUB-TOT X.25 LINKS  
0 else 0

=\_\_\_\_\_

0 f) Number of 56 kbs Modems Required0 <MODEMS 56 KBS> = if DATA SPEED = 56000  
0 then if SUPPLY CP MODEMS = yes  
0 then SUB-TOT X.25 LINKS  
0 else 0  
0 + if DATA SPEED = 56000  
0 and if SUPPLY CO MODEMS = yes,  
0 then SUB-TOT X.25 LINKS  
0 else 0

=\_\_\_\_\_

0 g) Total EMPC Required0 <TOT EMPC'S> = Sum of the NUMBER OF EMPC'S  
0 calculated for each Service Provider



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0 (refer to 2.6.1) =\_\_\_\_\_

0 h) Total Number of 9.6 kbs Modems Required

0 <TOT MODEMS 9.6 KBS> = Total the number of  
0 MODEMS 9.6 KBS calculated for  
0 each Service Provider =\_\_\_\_\_

0 j) Total Number of 19.2 kbs Modems Required

0 <TOT MODEMS 19.2 KBS> = Total the number of  
0 MODEMS 19.2 KBS calculated for  
0 each Service Provider =\_\_\_\_\_

0 h) Total Number of 56 kbs Modems Required

0 <TOT MODEMS 56 KBS> = Total the number of  
0 MODEMS 56 KBS calculated for  
0 each Service Provider =\_\_\_\_\_

0 10.1.4 Office Layout Information

0  
0 Refer to the Engineering Manual

0 10.1.5 Traffic Tables

0  
0 Not applicable.

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0 10.2 Product/System Specification

0 The data protocol (layer 1, physical) used on the interface be-  
0 tween the CompuCALL data link EMPC and the Data Unit or Synchro-  
0 nous Modem, refer to Figure 1 on page 8-223 may be any of the  
0 following:

0 \* RS232-C

0 \* V.35

0 10.2.1 Physical Characteristics

0  
0 Refer to the Engineering Manual.

0 10.2.2 EMI/Earthquake Information

0  
0 Refer to the Engineering Manual.

0 10.2.3 Sparing Information

0  
0 Standard sparing algorithms apply.

0

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0 10.2.4 Power Feed and Fusing Requirements

0

0 10.2.5 Current Drain Information

0

0 10.3 Software Provisioning

0 Software provisioning requirements for the MACD CompuCALL appli-  
0 cation are given below.

0 10.3.1 Required Software Packages and Interdependencies

0

0 The following software master package is required:

0 \* NTXR39 The Meridian ACD CompuCALL Options Master Package

0 The above master package has limited deployment in BCS33 and is  
0 available for Canada Market only.

0 For the US market area, the following packages are required:

0 \* NTXJ59AB CompuCALL Base (NTXJ59AC LTD in BCS35)

0 | \* NTXJ60AB CompuCALL Coordinated Voice and Data

0 | \* NTXR89AA Centrex Coordinated Voice and Data

0 Package NTXJ65AA X.25 Transport is required in applications prior  
0 to BCS34.

0 The following packages are optional:

0 \* NTXJ62AA Third Party Call Control

0  
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0 \* NTXJ63AA Voice Processing Integration

0 10.3.2 Software Usage Restrictions

0  
0 None identified.

0 10.3.3 Memory Provisioning

0  
0 The memory requirements for CompuCALL includes separate require-  
0 ments for the SCAI base and for each of the applications. For CC  
0 memory requirements of MADC with CompuCALL use MEMCALC.

0 10.4 Real Time Impact

0 MADC CompuCALL real time impact may be considerable. Estimate  
0 MADC CompuCALL impact on real time using the REAL::TIME, version  
0 6.4 or later.

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0 11.0 Data Unit Rackmount Shelf

0 The NT4X25DH Data Unit Rackmount Shelf is designed to house up to six-  
0 teen (16) rackmount Data Units or Loop Extension Line Interface Cards  
0 in any configuration. The NT4X25DH may be used in a customer premise  
0 or central office application where a high concentration of datapath  
0 equipment is required. Customer Engineering should only order this  
0 shelf for central office applications.

0 11.1 HARDWARE PROVISIONING

0

0 11.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The NT4X25DH may be used in a customer premise or central office  
0 application where a high concentration of datapath equipment is  
0 required. Customer Engineering should only order this shelf for  
0 central office applications.

0 11.1.2 HARDWARE DEPENDENCIES

0

0 The NT4X25DH when equipped with the NT4X25DK AC-DC Power Supply  
0 should be powered via an inverter. One (1) NT0X87AA can accommo-  
0 date the power requirements for two (2) NT4X25DH shelves. One  
0 LaMarche Inverter can accommodate the power requirements for five  
0 (5) NT4X25DH shelves.

0 | P AND C SIDE PORT REQUIREMENTS

0

0 | Not applicable

0

0| DMS BUS PORT REQUIREMENTS

0  
0| Not Applicable

0| CIRCUITS PER CARD

0  
0| Not Applicable

0| DISCRIMINATION NUMBERING

0  
0| Not Applicable

0 11.1.3 PROVISIONING CONSIDERATIONS

0  
0 The NT4X25DH will house up to sixteen cards. The following card  
0 types are available for mounting in the shelf (mixing allowed):

|                                                |          |
|------------------------------------------------|----------|
| 0 Data Unit Rackmount Low Speed                | NT4X25AD |
| 0 Data Unit Rackmount High Speed               | NT4X25AV |
| 0 Data Unit Loop Interface Low Speed           | NT4X25AR |
| 0 Data Unit Loop Interface High Speed          | NT4X25AS |
| 0 Low Speed Rackmount Auto Loop Back Data Unit | NT4X25CH |
| 0 Filler Face Plate                            | NT0X50AL |
| 0 AC-DC Power Supply                           | NT4X25DK |
| 0 DC-DC Power Supply                           | NT4X25DL |

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0 NT4X25DK Designation Label P0733972  
0 Data Unit Ground and Mounting Hardware NT4X2591

0 The NT4X25AD Rackmount Low Speed Data Unit is a functional re-  
0 placement to the stand-alone Low Speed Data Unit and is designed  
0 to fit into the NT4X25DH shelf. The NT4X25AD can be ordered by  
0 the customer for customer premise datapath applications or it may  
0 be ordered by the Telco for Datapath Modem Pooling applications.  
0 This unit is replaced by NT4X25CH.

0 The NT4X25AV Rackmount High Speed Data Unit is a functional re-  
0 placement to the stand-alone High Speed Data Unit and is designed  
0 to fit into the NT4X25DH shelf. The NT4X25AV may be ordered by  
0 the customer for customer premise datapath applications.

0 The NT4X25AR Loop Extension Low Speed Line Interface Unit is part  
0 of a Datapath Data Unit loop extension system that increases the  
0 loop length beyond the 4.6 km limitation. The Line Interface  
0 Unit is located at the central office providing the data services  
0 and operates in conjunction with a Data Terminating Unit at the  
0 customer premise. The NT4X25AR is designed for use with a Low  
0 Speed DTU and mounts in the NT4X25DH shelf. Provision one (1)  
0 NT4X25AR for each Low Speed Datapath loop requiring loop exten-  
0 sion beyond 4.6 km. It is the responsibility of the customer to  
0 provide the Data Terminating Unit. Refer to Figure 1.

0 The NT4X25AS Loop Extension High Speed Line Interface Unit is the  
0 high speed equivalent to the NT4X25AR.

0 The NT4X25CH Rackmount Low Speed EIA Controlled Loop Back Data  
0 Unit is a functional replacement for the NT4X25AD and is designed  
0 to fit into the NT4X25DH shelf. The additional capabilities of  
0 the NT4X25CH over the NT4X25AD are the EIA controlled loop back  
0 (V.54) and the synchronous automatic call (V.25) features. This  
0 is primarily a non switched maintenance capability.

0 The NT4X25CH can be ordered by the customer for customer premise  
0 datapath applications or it may be ordered by the Telco for  
0 Datapath Modem Pooling applications.

0 The NT4X25DK is an AC-DC power supply. This power supply is used  
0 in applications where there is access to an inverter. The  
0 NT4X25DK power supply would be used in "computer room" applica-  
0 tions.

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0 The NT4X25DL is a DC-DC power supply. This power is used in ap-  
0 plications where there is not access to an inverter. The NT4X25DL  
0 power supply would be used in Central Office applications.

## 0 CABLING

0  
0 One screw terminal block per slot location (TB1 - TB16) is pro-  
0 vided to connect the T&R pairs and MI/MIC leads from the Data  
0 Unit. The screw size on the terminal block is 6-32. These ter-  
0 minal blocks are for modem pooling applications only.

0 One RS232 25 pin female connector per slot location (odd no.  
0 P3-P33) is provided for Data Terminal Equipment (DTE) input. This  
0 connection is for low speed interface only.

0 T&R pairs for each slot are also available on two 50 pin tele-  
0 phone connectors(C0,C1). These connectors are used to cable the  
0 voice and data pairs to the Main Distributing Frame. Refer to  
0 CA0X15.

0 Always provided with the NT4X25DH is a V.35 2X18 connector  
0 adapter that plugs into the RS232 connector. This V.35 adapter  
0 is required to convert the 25 pin connector to the 36 pin 2X18  
0 V.35 interface for connection to a high speed unit.

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## 0 LEAD ASSIGNMENTS

0

0 Terminal Block Lead Assignment

0 Pin 1 MIC  
0 2 MI  
0 3 R'  
0 4 T'  
0 5 R  
0 6 T

0 Connector C0 Lead Assignments (Data)

|   |     |    |     |     |    |     |     |    |    |     |    |     |     |    |     |
|---|-----|----|-----|-----|----|-----|-----|----|----|-----|----|-----|-----|----|-----|
| 0 | Pin | 1  | T1  | Pin | 11 | T11 | Pin | 21 | NC | Pin | 31 | R6  | Pin | 41 | R16 |
| 0 |     | 2  | T2  |     | 12 | T12 |     | 22 | NC |     | 32 | R7  |     | 42 | NC  |
| 0 |     | 3  | T3  |     | 13 | T13 |     | 23 | NC |     | 33 | R8  |     | 43 | NC  |
| 0 |     | 4  | T4  |     | 14 | T14 |     | 24 | NC |     | 34 | R9  |     | 44 | NC  |
| 0 |     | 5  | T5  |     | 15 | T15 |     | 25 | NC |     | 35 | R10 |     | 45 | NC  |
| 0 |     | 6  | T6  |     | 16 | T16 |     | 26 | R1 |     | 36 | R11 |     | 46 | NC  |
| 0 |     | 7  | T7  |     | 17 | NC  |     | 27 | R2 |     | 37 | R12 |     | 47 | NC  |
| 0 |     | 8  | T8  |     | 18 | NC  |     | 28 | R3 |     | 38 | R13 |     | 48 | NC  |
| 0 |     | 9  | T9  |     | 19 | NC  |     | 29 | R4 |     | 39 | R14 |     | 49 | NC  |
| 0 |     | 10 | T10 |     | 20 | NC  |     | 30 | R5 |     | 40 | R15 |     | 50 | NC  |

0 Connector C1 Lead Assignments (Voice)

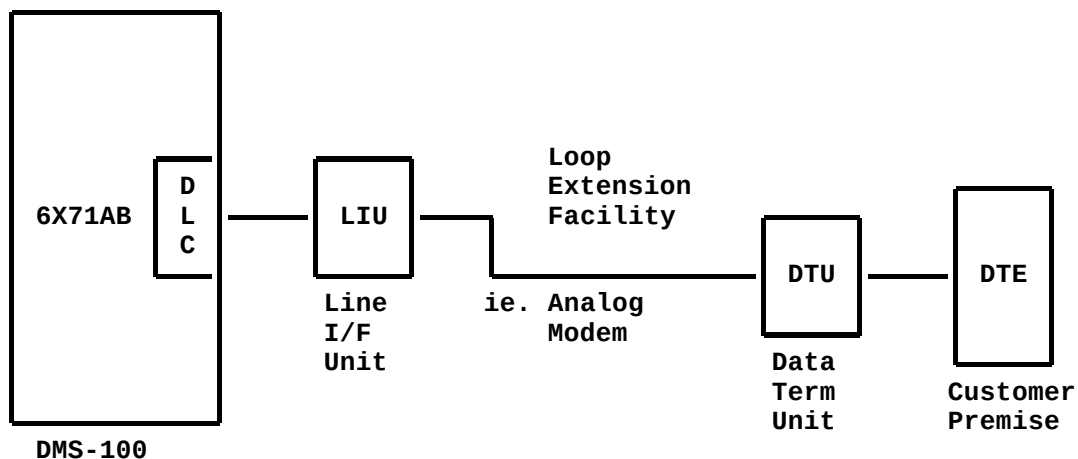
|   |     |    |      |     |    |      |     |    |     |     |    |      |     |    |      |
|---|-----|----|------|-----|----|------|-----|----|-----|-----|----|------|-----|----|------|
| 0 | Pin | 1  | T1'  | Pin | 11 | T11' | Pin | 21 | NC  | Pin | 31 | R6'  | Pin | 41 | R16' |
| 0 |     | 2  | T2'  |     | 12 | T12' |     | 22 | NC  |     | 32 | R7'  |     | 42 | NC   |
| 0 |     | 3  | T3'  |     | 13 | T13' |     | 23 | NC  |     | 33 | R8'  |     | 43 | NC   |
| 0 |     | 4  | T4'  |     | 14 | T14' |     | 24 | NC  |     | 34 | R9'  |     | 44 | NC   |
| 0 |     | 5  | T5'  |     | 15 | T15' |     | 25 | NC  |     | 35 | R10' |     | 45 | NC   |
| 0 |     | 6  | T6'  |     | 16 | T16' |     | 26 | R1' |     | 36 | R11' |     | 46 | NC   |
| 0 |     | 7  | T7'  |     | 17 | NC   |     | 27 | R2' |     | 37 | R12' |     | 47 | NC   |
| 0 |     | 8  | T8'  |     | 18 | NC   |     | 28 | R3' |     | 38 | R13' |     | 48 | NC   |
| 0 |     | 9  | T9'  |     | 19 | NC   |     | 29 | R4' |     | 39 | R14' |     | 49 | NC   |
| 0 |     | 10 | T10' |     | 20 | NC   |     | 30 | R5' |     | 40 | R15' |     | 50 | NC   |

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Datapath Loop Extension

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Figure 1

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0 11.1.4 OFFICE LAYOUT INFORMATION

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0 Not applicable

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0 11.1.5 TRAFFIC TABLES

0  
0 Not applicable

0 11.2 PRODUCT/SYSTEM SPECIFICATION

0

0 11.2.1 PHYSICAL CHARACTERISTICS

0

## 0 NT4X25BH/DH Rackmount Data Shelf

0

## 0 Mechanical

0 Dimensions (WxHxD).....19.00" x 8.00" x 13.25"  
0 .....(48.3 cm x 20.3 cm x 33.7 cm)  
0 Weight.....42.9 lb (max)  
0 .....(20.3 kg (max))

0 Mounting: MOE Frame, NT0X43BA (Canada)

0 ISG MIS Frame (U.S.)

0 For further information on the Modem Equipment (MOE) Frame, see Engi-  
0 neering Manual section MS0X43BA and ECM329 for information on the ISG  
0 MIS frame.

0 NOTE: The unit(s) described in this section must be powered in ac-  
0 cordance with ISG Specifications. (Refer to the Engineering Manual  
0 Active Equipment, chapter EMA17, Grounding Requirements.)

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0 11.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable

0 11.2.3 SPARING INFORMATION

0  
0 Standard sparing algorithms shall apply.

0 11.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 Input Voltage.....-42 to -56Vdc -48Vdc Nominal

0 Input Voltage..... 95 to 135Vac 117Vac Nominal

0 Power Consumption.....95 Watts

0 Thermal Dissipation.....253 BTU/hr (dc powered)

0 Thermal Dissipation.....334 BTU/hr (ac powered)

0 Fusing Requirements.....20 Amps

0 11.2.5 CURRENT DRAIN INFORMATION

0

0

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0

0 Current Drain.....8 Amps

0 11.3 SOFTWARE PROVISIONING

0

0 11.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Not applicable

0 11.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not applicable

0 11.3.3 MEMORY PROVISIONING

0

0 Not applicable

0 11.4 REAL TIME IMPACT

0 Not applicable

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## 0 12.0 Feature Enhanced Elastomer Keyboard Data Units

0 The Feature Enhanced Elastomer Keyboard Data Units (i.e. Low Speed  
0 NT4X25AF, NT4X25AH; and High Speed NT4X25AG, NT4X25AK) replace the  
0 Feature Enhanced Data Units (i.e. Low Speed NT4X25AN, High Speed  
0 NT4X25AP) respectively.

0 These data units are equipped with an enhanced keypad and rotary baud  
0 rate switch. The two DIP switch packages have been removed and re-  
0 placed by two new keypad keys (SETTINGS and ALTERNATE) and an array of  
0 LED indicators. The Data Units' operating parameters are set via the  
0 keypad. The new LED indicators show the currently selected Data Unit  
0 operating parameters and are used when setting the parameters.

### 0 12.1 HARDWARE PROVISIONING

0

#### 0 12.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 The Feature Enhanced Elastomer Keyboard Data Unit must be con-  
0 nected to the enhanced data line card, line card type D, NT6X71AB  
0 or Single Slot Data Line Card NT6X71BA, in order to provide the  
0 Profile and Speed Restriction features. The Single Slot Data  
0 Line Card NT6X71BA replaces NT6X71AA/AB for offices with BCS-32  
0 or higher. NT6X71AB will continue to be provided for offices with  
0 BCS-31 or lower.

#### 0 12.1.2 HARDWARE DEPENDENCIES

0  
0 Each data unit (i.e. NT4X25AF/AH/AG/AK) requires one line card  
0 type D (i.e. NT6X71AA/AB/BA).

0 Data units NT4X25AF/AH/AG/AK may coexist on a switch with other  
0 types of data units.

0

0 | P AND C SIDE PORT REQUIREMENTS

0  
0 | Not applicable.

0 | DMS BUS PORT REQUIREMENTS

0  
0 | Not applicable.

0 | CIRCUITS PER CARD

0  
0 | Not applicable.

0 | DISCRIMINATION NUMBERING

0  
0 | Not applicable.

0 12.1.3 PROVISIONING CONSIDERATIONS

0  
0 There are two (2) versions of the Feature Enhanced Elastomer Key-  
0 board Data Unit:

- 0 1. Low Speed Feature Enhanced Elastomer Keyboard Data Unit  
0 NT4X25AF and NT4X25AH

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0 The NT4X25AF has an Electronic Business Set (EBS) Grey  
0 plastic case whereas the NT4X25AH has a Chameleon Grey  
0 plastic case. Otherwise, both units are the same.

0 2. High Speed Feature Enhanced Elastomer Keyboard Data Unit  
0 NT4X25AG and NT4X25AK

0 The NT4X25AG has an EBS Grey plastic case whereas the  
0 NT4X25AK has a Chameleon Grey plastic case. Otherwise,  
0 both units are the same.

0 These data units support all features of the Feature Enhanced  
0 Data Units (i.e. NT4X25AN and NT4X25AP) they are replacing.

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0 12.2 PRODUCT/SYSTEM SPECIFICATION

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0 12.2.1 PHYSICAL CHARACTERISTICS

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0 The Data Unit is a stand-alone module, equipped to transmit and  
0 receive data. It provides keypad dialing to establish asynchro-  
0 nous or synchronous calls. A standard 500/2500 telephone set may  
0 operate normally via the Data Unit to a standard 500 set line  
0 card in the DMS-100 Family switch for making voice calls.

0 The Data Unit connects to the DMS-100 Family switch via a  
0 4-conductor line cord which eventually terminates on a data line  
0 card.

0 The Data Unit interfaces with the Data Terminal Equipment (DTE)  
0 in one of two ways:

0 a) EIA RS232 Interface - The RS232C interface is for connection  
0 to data terminal equipment (DTE) for serial binary data trans-  
0 mission. It utilizes a DB25 type mechanical connector, which is  
0 a 25 pin interface. It is recommended for operation at data  
0 transmission speeds up to 19.2 kbps.

0 The low speed data units NT4X25AA/AN/AT/AD/AF/AX have the RS232C  
0 interface.

0 b) CCITT V.35 Interface - The V.35 Interface is for connection to  
0 DTE for serial binary synchronous data transmission. The inter-  
0 face is implemented on a DB25 mechanical connector or NT data  
0 units. An adapter cable is also provided to connect to terminals  
0 that have the 37 pin V.35 plug interface. The V.35 interface  
0 must be used for high speed synchronous data transmission up to  
0 64 kbps.

0 The high speed data units NT4X25AG/AK/AP/AU/AV have the V.35  
0 interface.

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0 12.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable

0 12.2.3 SPARING INFORMATION

0  
0 Standard sparing algorithms apply.

0| 12.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0| Not applicable

0| 12.2.5 CURRENT DRAIN INFORMATION

0  
0| Not applicable

0 12.3 SOFTWARE PROVISIONING

0

0 12.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not applicable

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0  
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0 12.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable

0 12.3.3 MEMORY PROVISIONING

0  
0 Not applicable

0 12.4 REAL TIME IMPACT

0 Not applicable

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## 0 13.0 Business Network Management

0 Business Network Management (BNM) is a Networks product that sup-  
0 plements DMS-100F Meridian Digital Centrex (MDC) by providing MDC  
0 network analysis and control features. Specifically, a BNM sys-  
0 tem collects information from DMS-100 Business switches, proc-  
0 esses the information collected and provides reports associated  
0 with the Centrex network. This document provides engineering in-  
0 formation for Business Network Management (BNM) release NSR28-32.  
0 The NSR-32 software release of BNM provides the following system  
0 enhancements:

- 0 \* Increases the number of DMS nodes supported to 20.
- 0 \* The eight (8) customer limitation for Operational Measurement  
0 (OM), Automatic Trunk Test (ATT) and Killer Trunk (KT) report  
0 data collection is removed and limited by the provisioning  
0 capacity of the system involved. There is however a datafill  
0 limitation of 64.
- 0 \* Increases available disk storage area for OM/KT/ATT data by a  
0 dedicated SCSI File Processor and up to 4 SCSI 160 MByte disk  
0 drives.
- 0 \* Increases system performance in large systems by offloading  
0 OM/KT/ATT collection file server activity to the dedicated  
0 File Processor.

## 0 13.1 HARDWARE PROVISIONING

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### 0 13.1.1 HARDWARE USAGE RESTRICTIONS

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0 N/A

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0 13.1.2 HARDWARE DEPENDENCIES

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0 If a DMS MIS Frame is provisioned for a BNM office, then a miscellaneous hardware kit must also be provided. Refer to ECM-406  
0 for available hardware kits.

0 13.1.3 PROVISIONING CONSIDERATIONS

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0 BNM Base Enhancements

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0 2.4.1.1 Audible/Visual Alarm Enhancement

0 The NSR28-32 release allows two (2) Alarm LANLink Interface  
0 Units (ALIU's) to be provisioned to visually and audibly indicate alarm conditions in the BNM system. Previously only one  
0 ALIU could be provisioned.

0 2.4.1.2 Operational Measurements Collection/Reporting

0 The NSR-27 Disk Utilization and Monitoring feature utilizes  
0 two Program Replaceable Units (PRUs) OMC and OMR. The NSR28-32  
0 release provides minor enhancements to these PRUs which change  
0 the amount of processor memory required. Refer to System Engineering Bulletin (SEB) 90-12-002 for PRU provisioning.

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#### 0 2.4.1.3 Processor CPU and Disk Performance Monitoring

0 A system performance monitoring tool is provided in NSR28-32  
0 allowing a user to monitor the percent utilization of  
0 processor Central Processing Units (CPUs) and the percent  
0 utilization of multiple disk drives during feature operation.  
0 Processors that may be monitored include the Primary  
0 Processor, multiple Application Processors and multiple File  
0 Processors.

0 Implementing the CPU monitoring capability requires an addi-  
0 tional 2 kbytes of code to be added to each Application  
0 Processor, File Processor and Primary Processor operating in  
0 the system. The processor RAM buffer should be adequate to  
0 absorb this requirement.

0 Additionally a 68010-3 Application Processor should be provi-  
0 sioned for execution of a monitoring program called MXP. MXP  
0 is responsible for processor CPU utilization measurements and  
0 imposes a CPU utilization load of approximately 5 to 10 per-  
0 cent and requires approximately 200 kbytes of RAM. This  
0 processor must be reserved for performance monitoring pur-  
0 poses.

0 The above Application Processor may also execute the Disk Mon-  
0 itoring module called MXD. MXD is responsible for generating  
0 disk utilization measurements and requires 175 kbytes of  
0 processor RAM. The CPU impact of MXD is negligible.

0 In addition to the above software requirements, a PRU called  
0 XSRU Boss is required for interaction with MXP and MXD. XSRU  
0 Boss requires 251 kbytes of RAM and should be placed on the  
0 processor with MXD and MXP.

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0 2.4.1.4 OM Collection File Processor Requirements

0 With NSR-32, new functionalities are available allowing OM,  
0 ATT, and KT data to be collected via a dedicated SCSI File  
0 Processor (FP) with up to four SCSI disk drives daisy chained  
0 together. This option is available to those systems whose Pri-  
0 mary :LOCAL disk can no longer contain both the NSR system  
0 load and the OM, ATT, KT storage requirements. This option  
0 also offloads the Primary Processor of data collection File  
0 Server activity.

0 The SCSI 160 MByte disk drives after formatting have an ap-  
0 proximate storage capacity of 158 MBytes. Thus the four units  
0 daisy chained have a storage capacity of 632 MBytes storage  
0 capacity for OM, ATT and KT data. The SCSI 350 MByte disk  
0 drives after formatting have an approximate storage capacity  
0 of 250 MBytes. Thus the four units daisy chained have a stor-  
0 age capacity of 1000 MBytes storage capacity for OM, ATT and  
0 KT data.

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### CABINET 4

**CABINET 8**

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0 NOTE: DO NOT RELOCATE PRU'S WHEN UPGRADEING SYSTEM. PROVIDE NEW  
0 HARDWARE AS REQUIRED TO ACCOMMODATE STORAGE REQUIREMENTS.

0 \* EQUIP AS REQUIRED PER RULES

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0 Enhancements To Station Administration

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0 2.4.2.1 Station Administration Service Order History

0 The Station Administration Service Order Processor (SO) PRU  
0 has been enhanced to add the capability to create service or-  
0 der history records. This capability allows user entered ser-  
0 vice orders to be retained for later access/reference. Only  
0 those service orders that are successfully processed are re-  
0 corded in the history file.

0 2.4.2.2 Station Administration Recent Change Audit

0 The Station Administration Database Upload (DU) PRU is en-  
0 hanced in NSR28-32 to provide a Station Administration Recent  
0 Change (SARC) database audit capability. This audit task is  
0 invoked by any BNM DVIX feature requiring access to a custom-  
0 er's SARC files. Basically this audit task retrieves the spe-  
0 cific customer's SARC records and formats those records into a  
0 format compatible with DVIX features. An example of a DVIX  
0 feature requiring access to SARC files would be the BNM/COSMOS  
0 Interface feature and the BNM User Connect Time Data Col-  
0 lection feature.

0 2.4.2.3 Name Display Control

0 The DMS/BNM Station Administration database upload and data-  
0 base synchronization capabilities were enhanced in the  
0 NSR-28/BCS-28 software release to include the Name and Sup-  
0 press features on Electronic Business sets.

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## 0 2.4.2.4 ISDN Station Administration

0 The (BNM) Integrated Services Digital Network (ISDN) Station  
0 Administration (SA) feature is an enhancement to Meridian  
0 Digital Centrex Business Network Management Station Adminis-  
0 tration allowing users to centrally administer their ISDN  
0 stations/terminals, along with Meridian Digital Centrex  
0 stations, that are spread across multiple ISDN nodes. Major  
0 ISDN SA enhancements include:

0 \* Support of ISDN voice terminals with line class code  
0 ISDNKSET (B and Bd). Functions supported are:

- 0 - Assign and delete secondary DNS
- 0 - Add and delete station, DN and code access features
- 0 - Change feature parameters
- 0 - Swap B type stations
- 0 - Change customer group, NCOS
- 0 - Add MADN member

0 \* The capability to administer Data Packet Terminals is also  
0 provided via an interface to the Data Packet Network (DPN)  
0 Network Administration System (NAS) Interface.

- 0 - The BNM system must also communicate with the DPN NAS  
0 system to implement changes required in the packet  
0 network. An X.25 protocol interface has been  
0 developed for this purpose. For the initial release  
0 of this feature only NAS on an IBM 370 mainframe is  
0 supported.

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0 2.4.2.5 BNM Hardware Requirements For Station Administration

0 The ISDN Station Administration feature is executed on a  
0 standard BNM hardware system, and the following hardware is  
0 required in the BNM system to support the ISDN Station Admin-  
0 istration features:

0 1) 68010-6/68020-7 SCSI File Processor

0 Provision one (1) per BNM system to support the Station Admin-  
0 istration feature database. This processor controls the  
0 read/write activity for storage of DMS-100 Line Equipment Num-  
0 ber (LEN) information and batch service orders. This processor  
0 is only required when the disk drive connected to the Primary  
0 Processor is not sufficient to store the LEN and service order  
0 data.

0 If the ISDN Station Administration feature is being added to  
0 an in-service system and a File Processor already exists for  
0 standard Station Administration, then the existing File  
0 Processor will be utilized for ISDN Station Administration  
0 also. In this case do not provisioned an additional  
0 processor.

0 2) SCSI Disk Drive

0 Provide one (1) SCSI Disk Drive for retention of Station Ad-  
0 ministration DMS-100 LEN information. This disk drive con-  
0 nects to the above Station Administration File Processor. As  
0 mentioned above, this disk is only required when additional  
0 storage area is required for Station Administration. In small  
0 BNM systems the disk drive connected to the Primary may be  
0 sufficient.

0 If ISDN Station Administration is being added to an in-service  
0 system and a disk drive exists for standard Station Adminis-  
0 tration, then this disk unit will also be used to retain data  
0 on ISDN terminals. In this case do not provision an addi-  
0 tional disk drive.

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0 3) 68010/68020 Application Processors

0 Appropriate Application Processors are required to support the  
0 associated PRUs. Refer to the Software Provisioning section  
0 and the Performance/Memory Engineering section for Application  
0 Processor provisioning guidelines.

0 If ISDN Station Administration is being added to an in-service  
0 system equipped with standard Station Administration then Ap-  
0 plications Processors already exist to support all required  
0 PRUs except for the PC PRU. However the memory requirements  
0 for some of the PRUs have changed because of ISDN support mod-  
0 ifications, therefore, be sure to ensure that sufficient  
0 processor memory is available to support the ISDN Station Ad-  
0 ministration addition.

0 4) Data Links

0 One dedicated 9600 bit/second synchronous data link is re-  
0 quired between the BNM system and each DPN NAS system in the  
0 network when ISDN Station Administration feature package  
0 NTG240 is implemented. Each data link requires a LIU loaded  
0 with the X.25 protocol personality and a 9600 bps synchronous  
0 modem to be provisioned on the BNM end.

0 One dedicated 9600 or 19,200 bit/second X.25 data link is re-  
0 quired between the BNM system and each DMS-100F ISDN switch in  
0 the network when the NTG240 package is ordered. Each data  
0 link requires a LIU port loaded with the X.25 protocol person-  
0 ality and a 9600/19,200 bps synchronous modem.

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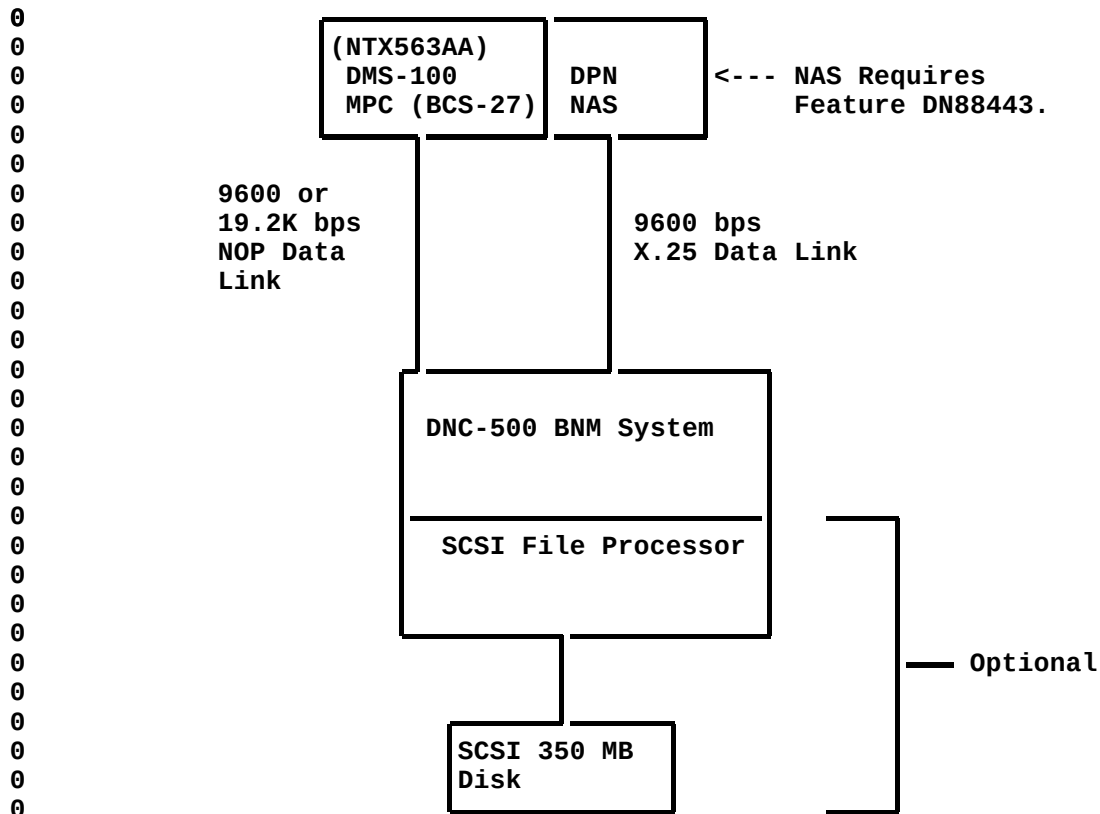
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0        Each DMS-100 ISDN switch with customers utilizing the BNM ISDN  
0        Station Administration feature will require an X.25 data link  
0        to the BNM system via the Multi-Protocol Controller (MPC) cir-  
0        cuit pack. Additionally, a dedicated 9600 or 19,200  
0        bit/second modem (synchronous) is required per link.

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0 Business Network Management
0 ISDN Station Administration
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## 0 To SMDR Data Spooling

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0 The NSR28-32 software release of the Business Network Management  
0 (BNM) system provides enhancements to the SMDR Data Spooling fea-  
0 ture allowing multiple instances of the Data Spooler (DS) Program  
0 Replaceable Unit (PRU) to be provisioned in a BNM system. Prior  
0 to the NSR-28 release the maximum number of DS PRUs allowed was  
0 one.

0 A single DS PRU can transfer collected SMDR records to a customer  
0 premise device for up to eight (8) SMDR customers simultaneously.  
0 The NSR-28 BNM release allows up to a maximum of four (4) DS  
0 PRUs. Thus the maximum number of spooling ports that can spool  
0 records simultaneously is increased to thirty-two (32).

0 The actual number of DS PRUs required in a given BNM system is  
0 based on the number of simultaneously active Spooling ports re-  
0 quired at any given time. This value is then equal to the number  
0 of Spooling customers that must receive their SMDR records in the  
0 same time interval.

0 # DS PRUs = # Simultaneous Ports  
0 ----- (round up to whole no.)  
0 8 ports/PRU

0 Each DS PRU must be assigned to an Application Processor accord-  
0 ing to processor CPU real time requirements. The real time load  
0 imposed on an Application Processor by the DS is calculated as  
0 follows:

0 ( Average 11.25% \* # active ports) \* 100

0 Assuming that active spooling ports will be distributed evenly  
0 across DS PRUs, the number of active ports to be inserted in the  
0 above formula will be the total number of required ports divided  
0 by the required number of DS PRUs as calculated above.

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0 Utilizing the above formula it is determined that eight simul-  
0 taneously active ports will utilize 90% of the processor CPU ca-  
0 pacity. This is above the recommended engineering limit of 80%,  
0 however, the processor will operate sufficiently at this load  
0 level. The 80% maximum engineering load incorporates a 5% proc-  
0 essing overhead requirement and a 15% buffer. This 15% buffer  
0 was imposed to ensure that multiple PRUs on the same Application  
0 Processor would not overload the CPU. In the case of the DS PRU  
0 operating at maximum capacity, only the DS PRU may be loaded on a  
0 given Application Processor. When eight ports are spooling data  
0 simultaneously the CPU will run at 90% occupancy. When a given  
0 DS PRU requires less than 80% real time capacity other PRUs may  
0 be assigned with it on the same Application Processor as long as  
0 the engineering limit of 80% real time capacity is not exceeded.

0 It is assumed that the Spooling Supervisor (SS) PRU will not uti-  
0 lize significant processor real time capacity.

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0 Of Station Administration Billing

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0 The Business Network Management (BNM) Station Administration  
0 Billing feature provides the capability to bill the end-user for  
0 the daily usage of Station Administration. Billing records are  
0 generated based on user connect time, station feature counts,  
0 Marketing Service Center (MSC) work, activation of "Hot Spare"  
0 Directory Numbers (DN), Integrated Services Digital Network  
0 (ISDN) Packet Data changes. All billing data is transferred to  
0 magnetic tape for distribution to the Customer Record Information  
0 System (CRIS).

0 2.4.4.1 Connect Time Billing

0 The user connect time billing portion of this feature main-  
0 tains a database recording connect and disconnect logon activ-  
0 ity on a per customer basis. Utilizing this database a  
0 monthly connect time summary is then generated for each cus-  
0 tomer.

0 A new Program Replaceable Unit (PRU) called the BNM Customer  
0 Billing (CB) PRU is introduced in NSR28 to provide the user  
0 connect time billing functionality.

0 The CB PRU utilizes the Dynamic Network Control (DNC) Security  
0 Agent capability, which validates and maintains information  
0 about user logons, to obtain information regarding identifica-  
0 tion of those users logging on to and logging off of the BNM  
0 system. This information is obtained by regularly polling the  
0 Security Agent and thus generating records of session connect  
0 times. These records are maintained on a daily basis identi-  
0 fying every customer connect and disconnect to BNM Station Ad-  
0 ministration.

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#### 0 2.4.4.2 Feature Count/MSB Billing

0 The feature count capability keeps track of the total number  
0 of features assigned to a Directory Number on a daily basis.  
0 At the end of the day the maximum number of features assigned  
0 to each DN is retained and sorted into ten categories represent-  
0 ing lines with zero, one, two, three, four, five, six,  
0 seven, eight, and nine or more features. On the billing date  
0 for each customer all daily totals for each of the ten categories  
0 are totaled and divided by thirty. These totals are then  
0 sent to the Customer Record Information System (CRIS).

0 In addition to the above billing capabilities, billing records  
0 are generated for primary Integrated Services Digital Network  
0 (ISDN) directory number MSC work. These billing records are  
0 generated each time a customer requests MSC to make changes.  
0 Information pertaining to the date of a primary DN change, the  
0 actual DN and the number of changes processed by the MSC is  
0 provided.

0 "Hot Spare" directory numbers are billed based on the length  
0 of time they are activated. Changes regarding a hot spare DN  
0 are recorded on a per customer basis. Daily billing occurs  
0 based on this retained data.

0 Upon initializing the feature and activating a customer, an  
0 Audit process activates the Station Administration Recent  
0 Change Audit capability to reformat the customer's Station Ad-  
0 ministration Recent Change (SARC) station database into a format  
0 compatible with DVIX billing processes. Directory Number  
0 feature counts and MSC work counts are tracked via this database.  
0

0 A daily billing process executes once per day to read all customer  
0 databases and process daily feature counts and daily MSC  
0 counts. The output of this process is written to daily feature  
0 files.

0 All of the processes required to implement billing of  
0 feature/MSB counts are DVIX features executing on a 68020 SCSI  
0 File Processor equipped with the DVIX Operating System.

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#### 0 2.4.4.3 ISDN Packet Data Billing

0 The ISDN Packet Data Billing functionality provides the Telco  
0 with the ability to bill customers based on the number of  
0 Packet B and Packet D Closed User Groups (CUGs) and on the  
0 number of Logical D channels. This functionality is imple-  
0 mented by modifying the Service Order (SO) PRU to add the  
0 basic procedures required to compile Packet Data Service Order  
0 recent change files.

0 An audit file generation procedure has been incorporated to  
0 enable the BNM system to obtain a snapshot of the customer's  
0 Network Administration System (NAS) database. This retrieval  
0 is initiated by the user when initializing a given customer.  
0 The recent change information is compiled after a change has  
0 been made to ISDN Data Network Addresses (DNAs) via service  
0 orders affecting CUGs and logical channels. Change records  
0 are retained in a file called Packet Data Recent Change  
0 (PDRC).

0 Actual billing occurs via a DVIX process responsible for proc-  
0 essing the PDRC files on a daily basis and generating a single  
0 accounting record for each customer. On a monthly basis, the  
0 daily billing records are processed to generate a monthly  
0 billing summary which is submitted to the Customer Record In-  
0 formation System (CRIS).

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0 2.4.4.4 BNM Hardware Requirements For Station Administration Billing

0 The Station Administration Billing feature operates on a  
0 DNC-500 BNM system, and the following hardware is required in  
0 the BNM system to support this feature:

0 1) 68020-7 SCSI File Processor

0 Provision one per DNC-500 BNM system when the NTG243 feature  
0 is required. This processor must be equipped with the DVIX  
0 operating system. This processor is designated the Billing  
0 File Processor.

0 2) SCSI Disk Unit

0 Provision one per DNC-500 BNM system when the NTG241/NTG243  
0 features are provisioned. This disk unit is connected to the  
0 above SCSI File Processor to retain all customer billing data.  
0 This disk unit is designated the Billing Disk.

0 3) SCSI 9-Track Magnetic Tape Drive 6250 BPI

0 A minimum of one per DNC-500 BNM system is required to be used  
0 to record billing records on MAG Tape for subsequent transfer  
0 to the CRIS. If one already has been provisioned for other  
0 purposes then an additional tape drive is not required.

0 4) 68010/68020 Application Processor

0 An Application Processor is required to support the CB PRU.  
0 CB may be placed on the same processor as the PC PRU. It may  
0 also be placed onto a processor with other PRUs based on RAM  
0 and real time requirements.

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## 0 Of BNM/COSMOS Interface

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0 The BNM/COSMOS interface is the first interface application uti-  
0 lizing the Host Mediation Services (HMS) capability. HMS is a  
0 customizable interface feature allowing BNM applications to  
0 interact with various remote Host devices and Man-Machine Inter-  
0 face (MMI) terminals via a uniform Network Operations Protocol  
0 (NOP) interface. The BNM/COSMOS Interface feature customizes the  
0 HMS interface application allowing BNM to transfer Station Admin-  
0 istration Service Order information to the Telco's COSMOS system  
0 via a NOP interface.

### 0 2.4.5.1 BNM Hardware Requirements For BNM/COSMOS Interface

0 The BNM/COSMOS Interface feature operates on a standard BNM  
0 system, and the following hardware is required in the BNM sys-  
0 tem to support this feature:

#### 0 1) 68020-7 File Processor

0 Provision one (1) 68020-7 File Processor to support the  
0 BNM/COSMOS Interface feature software. This processor must be  
0 equipped with the DVIX operating system software and addi-  
0 tionally executes all of the DVIX application software modules  
0 associated with this feature. Be sure to order the appropri-  
0 ate DVIX software/license as indicated in the software provi-  
0 sioning section.

#### 0 2) SCSI Disk Unit

0 Provision one (1) 160 Mbyte Disk Only Unit to be used in con-  
0 junction with the above 68020 File Processor to store neces-  
0 sary Change Files. The 160 Mbyte Disk provides approximately  
0 158 Mbytes of formatted storage area. If storage requirements  
0 exceed 95% of the formatted 160 Mbyte capacity provision a 350  
0 Mbyte Disk Unit.

0

One LIU port equipped with the Asynchronous Programmable Input/Output (APIO) personality and a compatible modem is required per link.

```
graph LR; DVIX[DVIX FILE PROCESSOR] --- DISK[160/350 MB DISK]; STA[STATION ADMIN FILE PROCESSOR] --- SARCS[160/350 MB SARCS FILES]; DVIX --- DVS_BUS[DVS BUS]; STA --- DVS_BUS; DVS_BUS --- LAN_LINK[LAN LINK]; LAN_LINK --- LIU[LIU]; LIU --- MODEM[MODEM]; MODEM --> COSMOS[To COSMOS System];
```

The diagram illustrates the architecture of the COSMOS System. It features two main processing units at the top: the DVIX FILE PROCESSOR and the STATION ADMIN FILE PROCESSOR. Each is connected to a local storage device (160/350 MB DISK and 160/350 MB SARCS FILES, respectively). Both processors are connected to a central DVS BUS. The DVS BUS is further connected to a LAN LINK, which then connects to a LIU (Local Interface Unit). The LIU is connected to a MODEM, which finally connects to the COSMOS System.

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0 Of Call Detail Records Collection

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0 The Business Network Management (BNM) system prior to the NSR-28  
0 software release was only able to collect Station Message Detail  
0 Recording (SMDR) records from Northern Telecom DMS-100 Family  
0 switching systems. With the release of NSR-28 a new feature is  
0 available allowing Call Detail Records (CDR) to be collected from  
0 other vendor switching systems and most major PBX's.

0 This feature is implemented utilizing a record converter manufac-  
0 tured by TSB International called the CC3. This hardware unit  
0 collects CDR utilizing a polling process, converts the records  
0 into CC3 format and forwards the data to the BNM system. The BNM  
0 system is then scheduled to retrieve the received data, format  
0 the CC3 CDR into DMS SMDR format and store the converted SMDR re-  
0 cords on disk. The BNM CDR collection feature is then compatible  
0 with the CC3 CDR format. NTI is not responsible for compatibil-  
0 ity issues between the CC3 and other vendor switching systems.  
0 Any vendor switch or PBX that is compatible with the CC3 may be a  
0 candidate for BNM CDR.

0 The software incorporated into the BNM system to poll the TSB CC3  
0 collection devices and receive the CDR records is called Switch  
0 PBX Poller (SPP). BNM Man-Machine Interfaces have been modified  
0 to allow BNM users to schedule the CC3 polling intervals.

0 BNM DVIX processes have been developed to periodically retrieve  
0 the received CDR records from disk and convert the CDR records  
0 into DMS-100 format SMDR records. Blocks of converted SPP CDR  
0 are filed onto disk on a per node and per customer basis where  
0 access by other SMDR features, such as SMDR Spooling and Call  
0 Tracking, can be achieved.

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0 2.4.6.1 BNM Hardware Requirements For CDR Collection

0 The Call Detail Records (CDR) Collection feature operates on a  
0 standard BNM system, and the following hardware is required in  
0 the BNM system to support this feature:

0 1) 68020-7 File Processor

0 Provision one per system to execute the required DVIX proc-  
0 esses as described in latter sections of this document. This  
0 processor may be designated the SPP File Processor.

0 2) SCSI Disk Unit

0 Provision one per system when the above File Processor is pro-  
0 visioned for this feature. This disk unit stores the incoming  
0 CDR records prior to conversion to SMDR records. This disk  
0 unit operates via the above File Processor and may be desig-  
0 nated the SPP Disk Unit.

0 If the 160 Mbyte storage area is not sufficient as determined  
0 using the disk storage calculations, provision one 350 Mbyte  
0 disk unit.

0 The converted CDR records are stored in the form of SMDR re-  
0 cords on the same disk unit as the standard DMS-100 SMDR re-  
0 cords. This disk unit is either the one interfacing the File  
0 Server :LOCAL or the disk unit(s) interfacing the :LOCSMDR  
0 File Server. In any case, ensure that adequate :LOCAL or  
0 :LOCSMDR disk storage area is available for both the standard  
0 DMS-100 SMDR records and the SMDR Records converted via this  
0 feature.

0 If an initial BNM system is being configured ensure that at  
0 least a second 160 Mbyte/350 Mbyte disk unit and associated  
0 processor (Primary or File Processor) is provisioned to retain  
0 the converted SMDR records. Refer to the NSR-27 Engineering  
0 guidelines for details on the :LOCSMDR File Server and the  
0 various processor/disk combinations.

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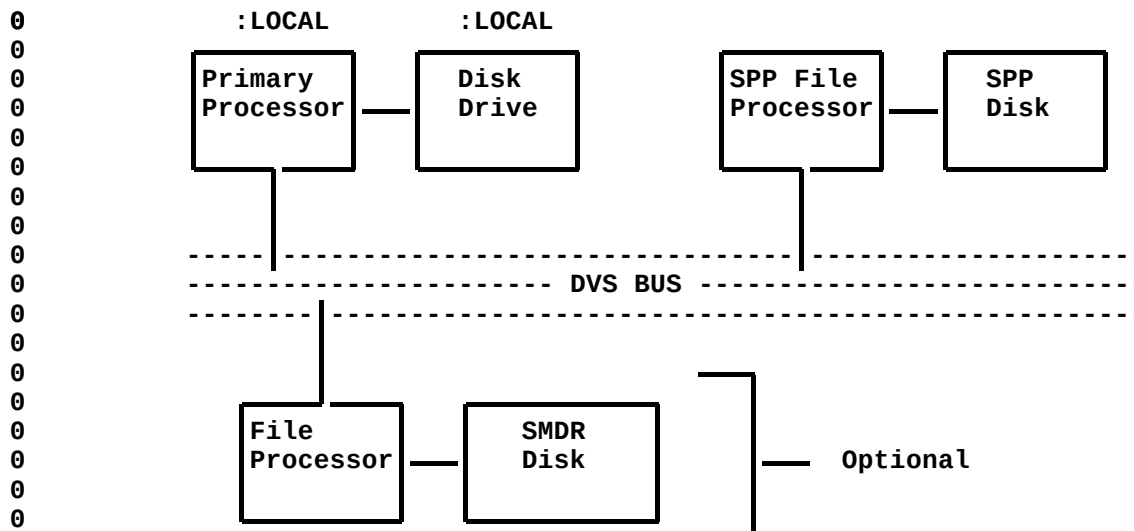
0 3) Application Processor

0 The new HS PRU, as described in the following sections, operates on a 68010 or 68020 Application Processor. HS may be assigned on any Application Processor with other PRUs as required utilizing the processor memory/real time data provided in latter sections. Therefore it is not necessary to provision an Application Processor specifically for this feature unless it is deemed necessary.

0 4) Data Links

0 One asynchronous data link, either dial-up or dedicated, is required for each non-DMS node interfacing BNM. In association with this link, one Asynchronous Programmable Input Output (APIO) Lan Interface Unit (LIU) port and one asynchronous modem is required per data link. A 9600 bps data link is recommended, however, speeds of 300, 1200, 2400 and 4800 bits per second are supported.

0 Hardware Block Diagram  
0 For Call Detail Records (CDR) Collection



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0 : LOCSMDR : LOCSMDR   
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0 13.1.4 OFFICE LAYOUT INFORMATION

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0 N/A

0 13.1.5 TRAFFIC TABLES

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0 N/A

0 13.2 PRODUCT/SYSTEM SPECIFICATION

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0 13.2.1 PHYSICAL CHARACTERISTICS

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0 POWER/HEAT DISSIPATION

0  
0 240 Watts/Cabinet (NT4G13DA)  
0 320 Watts/Cabinet (NT4G13FA)

0 CURRENT DRAIN

0  
0 BNM System powered from -48VDC Source:  
0 A 2-Cabinet System 17 amps

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|   |                    |         |
|---|--------------------|---------|
| 0 | A 3-Cabinet System | 25 amps |
| 0 | A 4-Cabinet System | 34 amps |
| 0 | A 5-Cabinet System | 42 amps |
| 0 | A 6-Cabinet System | 50 amps |
| 0 | A 7-Cabinet System | 59 amps |
| 0 | A 8-Cabinet System | 67 amps |

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## 0 FUSING REQUIREMENTS

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0 All systems that are co-located with a DMS-100F must be powered  
0 via -48VDC direct from the Power Board to ensure that Central Of-  
0 fice Isolated System Ground (ISG) requirements are met.

0 -48VDC Source: Nominal Input: -48VDC  
0 Minimum Input: -42VDC  
0 Maximum Input: -56VDC

0 2 Cabinets - Fused at 25A  
0 3 Cabinets - Fused at 38A  
0 4 Cabinets - Fused at 57A  
0 5 Cabinets - Fused at 63A  
0 6 Cabinets - Fused at 75A  
0 7 Cabinets - Fused at 89A  
0 8 Cabinets - Fused at 100A

0 AC Powered: 115VAC, 15 Amp (2-4 Cabinets)  
0 220VAC, 20 Amp (2-8 Cabinets)  
0 240 Watts/Cabinet (NT4G13DA)  
0 320 Watts/Cabinet (NT4G13FA)  
0 Constant Power required  
0 Single Outlet  
0 9 Ft. Power Cord

0 If a MIS Frame is provisioned for BNM LIUs and inverters, then  
0 the MIS Frame must be co-located with the BNM System and the cus-  
0 tomer is responsible for providing the power. This MIS Frame  
0 cannot be powered from a PDC in the DMS office.

0 If a DMS MIS Frame is provisioned for a BNM office, then a mis-  
0 cellaneous hardware kit must also be provided. Refer to ECM-406  
0 for available hardware kits.

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0 13.2.2 EMI/EARTHQUAKE INFORMATION

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0 N/A

0 13.2.3 SPARING INFORMATION

0  
0 Apply standard sparing algorithms.

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0 13.3 SOFTWARE PROVISIONING

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0 13.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

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## 0 Station Administration

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## 0 4.1.1.1 BNM Software Requirements

0 The following BNM feature packages are required to provision  
0 the ISDN Station Administration feature:

0 NTG240 ISDN Station Administration

0 All of the remaining Station Administration enhancements are  
0 included in the NSR28-32 release of the NTG102 software pack-  
0 age.

0 The ISDN Station Administration feature requires the following  
0 software packages interdependencies:

|   |        |                              |
|---|--------|------------------------------|
| 0 | NTG102 | Station Administration       |
| 0 | NTG000 | Data Voice System Base       |
| 0 | NTG001 | Dynamic Network Control Base |
| 0 | NTG002 | DNC-500 Base                 |

## 0 4.1.1.2 DMS-100F Software Requirements

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0 The following DMS-100 software packages are required to allow  
0 the BNM system to administer ISDN Station service orders:

0 NTX273 Multi-Protocol Controller  
0 NTX560 Network Operations Protocol  
0 NTX563 Station Administration

0 The NTX563 software package has been modified in the BCS-27  
0 software release to allow ISDN stations/terminal service or-  
0 ders to be implemented remotely via the BNM system. Therefore  
0 all DMS-100 ISDN switches with customers utilizing the BNM  
0 ISDN Station Administration feature will require the above  
0 software and BCS-27.

0 In order to implement the Name and Suppress capabilities each  
0 applicable DMS-100F must be equipped with BCS-28.

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## 0 Station Administration Billing

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## 0 4.1.2.1 BNM Software Requirements

0 The following software packages and the associated  
0 interdependencies are required to implement the Station Adminis-  
0 tration Billing feature:

|   |          |                                         |        |
|---|----------|-----------------------------------------|--------|
| 0 | NTG241   | BNM Connect Time Data Collection        | NOTE 1 |
| 0 | NTG243   | ISDN Billing & CRIS Interface (DVIX)    | NOTE 1 |
| 0 | NTG163   | Foreign Operating System Manager (FOSM) | NOTE 2 |
| 0 | NT4G91FF | DVIX Operating System (03.20) & License | NOTE 3 |
| 0 | NT4G94FF | DVIX License Only                       | NOTE 4 |

0 NOTE 1: These packages are always required to implement  
0 the subject features.

0 NOTE 2: Provision the NTG163 package when any DVIX  
0 software feature is ordered. NTG163 is only  
0 required one time, therefore, if it already exists  
0 it is not necessary to order it again.

0 NOTE 3: Order one (1) NT4G91FF DVIX 3.01 license and  
0 software for the first 68020 File Processor  
0 running DVIX application software. If NT4G91FF  
0 was or is already ordered for a previous DVIX  
0 feature, it is not necessary to order this PEC  
0 again.

0 NOTE 4: Order one (1) NT4G94FF DVIX License for  
0 each 68020 processor running DVIX application  
0 software that is provisioned above and beyond  
0 the first processor as described in NOTE 2.

0 The developer of the DVIX operating software has stipulated  
0 that each processor running DVIX applications must be li-

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0 censed. Northern Telecom has developed an ordering/pricing  
0 structure allowing us to pay the licensing fee on a per  
0 processor basis on behalf of the customer. The NT4G91 PEC  
0 numbers provide the actual DVIX software tape and a license  
0 fee for one processor. When additional processors are running  
0 DVIX applications in the same BNM system, the NT4G94 PEC must  
0 be ordered for each additional processor dedicated to DVIX.  
0 The Station Administration Billing feature requires the fol-  
0 lowing software package interdependencies:

|   |        |                              |
|---|--------|------------------------------|
| 0 | NTG000 | Data Voice System Base       |
| 0 | NTG001 | Dynamic Network Control Base |
| 0 | NTG002 | DNC-500 BNM Base             |
| 0 | NTG102 | Station Administration II    |
| 0 | NTG240 | ISDN Station Administration  |

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## 0 BNM/COSMOS Interface

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## 0 4.1.3.1 BNM Software Requirements

0 The following software packages and the associated  
0 interdependencies are required to implement the BNM/COSMOS Inter-  
0 face feature:

|   |          |                                         |        |
|---|----------|-----------------------------------------|--------|
| 0 | NTG186   | Host Mediation Services (HMS)           | NOTE 1 |
| 0 | NTG248   | OSI Mediation Interface for BNM/COSMOS  | NOTE 1 |
| 0 | NTG249   | OSS Automatic Station Admin. Update     | NOTE 1 |
| 0 | NTG163   | Foreign Operating System Manager (FOSM) | NOTE 2 |
| 0 | NT4G91FF | DVIX Operating System (03.20) & License | NOTE 3 |
| 0 | NT4G94FF | DVIX License Only                       | NOTE 4 |

0 NOTE 1: This software package is always required to  
0 implement the BNM/COSMOS Interface feature.

0 NOTE 2: This software package must be provisioned when  
0 any DVIX application feature is provisioned.  
0 If NTG163 has already been provisioned for  
0 a DVIX feature, it is not necessary to order it  
0 again for BNM/COSMOS Interface.

0 NOTE 3: Order one (1) NT4G91FF DVIX 3.20 license and  
0 software for the first 68020 File Processor  
0 and/or Application Processor running DVIX  
0 application software. If NT4G91FF  
0 was or is already ordered for a previous DVIX  
0 feature, it is not necessary to order this PEC  
0 again.

0 NOTE 4: Order one (1) NT4G94FF DVIX License for  
0 each 68020 processor running DVIX  
0 application software that is provisioned above  
0 and beyond the first processor as described in  
0 NOTE 3.

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0 The developer of the DVIX operating software has stipulated  
0 that each processor running DVIX applications must be li-  
0 censed. Northern Telecom has developed an ordering/pricing  
0 structure allowing them to pay the licensing fee on a per  
0 processor basis on behalf of the customer. The NT4G91 PEC  
0 numbers provide the actual DVIX software tape and a license  
0 fee for one processor. When additional processors are running  
0 DVIX applications in the same BNM system, the NT4G94 PEC must  
0 be ordered for each additional processor dedicated to DVIX.

0 The BNM/COSMOS Interface feature requires the following soft-  
0 ware package interdependencies:

0 NTG000 Data Voice System Base  
0 NTG001 Dynamic Network Control Base  
0 NTG102 Station Administration  
0 NTG002 DNC-500 Base

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## 0 Call Detail Records (CDR) Collection

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## 0 4.1.4.1 BNM Software Requirements

0 The CDR collection features operate on a standard BNM system  
0 equipped with the Data Voice System (DVS) base, Dynamic Net-  
0 work Control (DNC) base and BNM base software.

0 The following software packages and the associated  
0 interdependencies are required to implement the Call Detail Re-  
0 cords (CDR) Collection feature:

|   |          |                                      |        |
|---|----------|--------------------------------------|--------|
| 0 | NTG212   | Network Node SMDR Collection         | NOTE 1 |
| 0 | NTG213   | Interface To PBX for SMDR Collection | NOTE 2 |
| 0 | NTG163   | Foreign Operating System Manager     | NOTE 3 |
| 0 | NT4G91FF | DVIX 3.20 Operating System (68020)   | NOTE 4 |
| 0 | NT4G94FF | DVIX License                         | NOTE 5 |
| 0 | NT4G91EE | Turbo Informix                       | NOTE 6 |
| 0 | NT4G91DE | Informix 4GL Runtime                 | NOTE 6 |
| 0 | NT4G91BX | Informix 4GL                         | NOTE 6 |
| 0 | NT4G91FU | Informix ESQL/C License              | NOTE 7 |
| 0 | NT4G91FN | C-ISAM License                       | NOTE 7 |

0 NOTE 1: Provide this package when Call Detail Recording  
0 record collection is required from a non-DMS-100F  
0 switching system. For NSR28-32 the only supported  
0 switch types are any that are compatible with the  
0 CC3 device from TSB.

0 NOTE 2: Provide this package when Call Detail Recording  
0 record collection is required from a PBX. For a  
0 list of compatible PBX's refer to NTP-450-1021-131.

0 NOTE 3: Provision the NTG163 package when any DVIX  
0 software feature is ordered. NTG163 is only

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0 required one time, therefore, if it already exists  
0 it is not necessary to order it again.

0 NOTE 4: Order one (1) NT4G91FF DVIX 3.20 license and  
0 software package for the first 68020 File  
0 Processor or Application Processor running a DVIX  
0 Feature. If NT4G91FF was or is already ordered  
0 for a previous DVIX feature, it is not necessary  
0 to order this PEC again. In this application the  
0 NTG212 and NTG213 packages are both DVIX features.

0 NOTE 5: Order one (1) NT4G94FF DVIX License for  
0 each 68020 processor running DVIX  
0 application software that is provisioned above  
0 and beyond the first processor as described in  
0 NOTE 3.

0 NOTE 6: Order one (1) NT4G91EE Turbo Informix software  
0 package when NTG212 and/or NTG213 is ordered.  
0 Also, order one (1) NT4G91DE Informix 4GL Runtime  
0 and one (1) NT4G91BX Informix 4GL software package  
0 when NTG212 and/or NTG213 is ordered. These codes  
0 include the software and lincense fee for the SPP  
0 File Processor.

0 NOTE 7: Order one (1) each of these referenced license  
0 codes when the NTG212 and/or NTG213 software  
0 packages are provisioned. These licenses are  
0 required because the NTG212 and NTG213 features  
0 utilize portions of this Informix software.  
0 It is only necessary to ensure that the  
0 proper license fees are paid.

0 The developer of the DVIX operating software has stipulated  
0 that each processor running DVIX applications must be li-  
0 censed. Northern Telecom has developed an ordering/pricing  
0 structure allowing us to pay the licensing fee on a per  
0 processor basis on behalf of the customer. The NT4G91 PEC  
0 numbers provide the actual DVIX software tape and a license  
0 fee for one processor. When additional processors are running  
0 DVIX applications in the same BNM system, the NT4G94 PEC must  
0 be ordered for each additional processor dedicated to DVIX.

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0 13.3.2 SOFTWARE USAGE RESTRICTIONS

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0 13.3.3 MEMORY PROVISIONING

0  
0 BNM requires memory to be provisioned for various PRUs and  
0 Storage Disks. These requirements are dependent on the type of  
0 software features ordered. Refer to the appropriate System Engi-  
0 neering Bulletin (SEB) for detailed information:

0 89-03-007 NSR-28 BNM Base Enhancements  
0 89-03-003 Station Administration Enhancements  
0 89-03-004 SMDR Data Spooling Enhancements  
0 89-03-005 Station Administration Billing  
0 89-03-002 BNM/COSMOS Interface  
0 89-03-001 Call Detail Records (CDR) Collection  
0 90-12-002 Business Network Management (BNM) NSR-32  
0 Engineering Guidelines.

0 13.4 REAL TIME IMPACT

0 Real time impact is dependent on the type and quantity of PRUs  
0 provisioned. Refer to the appropriate System Engineering Bulle-  
0 tin (SEB) for detailed information:

0 89-03-007 NSR-28 BNM Base Enhancements  
0 89-03-003 Station Administration Enhancements  
0 89-03-004 SMDR Data Spooling Enhancements  
0 89-03-005 Station Administration Billing  
0 89-03-002 BNM/COSMOS Interface  
0 89-03-001 Call Detail Records (CDR) Collection  
0 90-12-002 Business Network Management (BNM) NSR-32  
0 Engineering Guidelines.

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#### 0 14.0 Disk Drive Unit Provisioning

0 Available disk capacity is that capacity remaining after  
0 power-up and formatting:

0 66 MByte Disk - 60,513,280 bytes available  
0 154 MByte Disk - 144,615,424 bytes available  
0 8" Disk Drive Unit - 240,020,000 bytes available

0 DDU's should be provisioned for a five year period by using five-  
0 year forecasted traffic figures. The DDU provisioning must be  
0 re-evaluated for another five year period with each office exten-  
0 sion.

#### 0 Data Recording Management

0 Data Recording Management involves functions relating to the De-  
0 vice Independent Recording Package (DIRP). DIRP controls the  
0 data flow from originating subsystems (i.e. OM,AMA,JF) to the de-  
0 vices (i.e. Tape or DDU) where the data is stored.

0 Disk Drive Unit sizing is divided into the following major areas

- 0 o General Provisioning Information
- 0 o Subsystem volume sizes (which are as follows)
  - 0 o Office Image
  - 0 o Auto Messaging Accounting (AMA)
  - 0 o Parallel AMA
  - 0 o Operational Measurements (OM)
  - 0 o Journal File (JF)
  - 0 o Peripheral Module (PM) loads
  - 0 o Non-Resident Software
  - 0 o Batch Data Modification Orders (DMO)
  - 0 o Scan Log
  - 0 o Scratch Area
  - 0 o Killer Trunks (KT)

#### 0 GENERAL PROVISIONING INFORMATION

0 A DDU is physically allocated in blocks. Each "DDU block" con-  
0 tains 1024 Bytes. Two (2) "DDU blocks" make up a "DIRP block" of  
0 2048 Bytes. A "DIRP file segment" contains 256 DIRP blocks for a  
0 total of 524,288 Bytes.

0 A volume is an area of the DDU. Volumes are used for each area  
0 of Data Recording Management. An overhead of 2,148,352 Bytes are  
0 required per volume. The overhead consists of 51,200 Bytes (50

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0 blocks) for volume and file control and 2,097,152 Bytes (2048  
0 blocks) for low space conditions. a DDU volume is physically de-  
0 fined by the multiple number "DIRP file segments" it contains  
0 plus the required overhead.

0 The following are volume summary guidelines;

- 0 o All DDU's and subsystems should be provisioned evenly across
- 0 IOC's
- 0 o The minimum size of a volume is 2,672,640 Bytes (2610K blocks)
- 0 o The maximum size of a volume is 67,108,864 Bytes (64M blocks)
- 0 o One volume must be located in one DDU (i.e. a single volume
- 0 cannot span 2 DDUs)
- 0 o The maximum number of volumes for each DIRP subsystem is 24
- 0 o Each volume for a DIRP subsystem must be the same size
- 0 o DIRP will use space evenly to all volumes allocated to a
- 0 subsystem
- 0 o Volumes must be spread evenly over the DDUs provisioned
- 0 o There must be at least two (2) volumes per DDU

0 14.1 HARDWARE PROVISIONING

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0 14.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 N/A

0 14.1.2 HARDWARE DEPENDENCIES

0  
0 N/A

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0 14.1.3 PROVISIONING CONSIDERATIONS

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0 Office Image System Volume Size

0 The Office Image is formed by the total combined Program Store  
0 and Data Store requirements. It is recommended that a full  
0 67,108,864 byte volume (maximum usable volume plus overhead) be  
0 reserved for the Office Image. A volume of this size provides  
0 adequate storage for an office containing 8 megawords of Program  
0 Store (PS) and 16 megawords of Data Store (DS) per side plus 50  
0 percent spare for five-year growth.

0 Actual Office Image requirements may also be calculated using the  
0 following formula:

0 Office Image Volume Size =

0 2,148,352 Bytes +  
0  $(.75 * (\text{Program Store (bytes)} + \text{Data Store (bytes)}))$

0 Where 2,148,352 bytes is for Disk volume maintenance

0 This formula takes into account 50 percent spare for five-year  
0 growth and the prediction that only half of the provisionable PS  
0 and DS memory is Office Image.

0 This formula is valid for NT40 offices and SuperNode offices  
0 without a System Load Module (SLM). The SLM contains SuperNode  
0 office images and thus would not require redundant images to re-  
0 side on disk.

0 Each DDU can contain only one Office Image volume. The maximum  
0 number of DDU's containing an Office Image volume is three.

0 Automatic Message Accounting (AMA)

0 AMA records should be stored on DDU:00 and DDU:01 equipped with  
0 power interlock. AMA entries for the total retention period are  
0 recorded over DDU:00 and DDU:01 (half on DDU:00 and half on  
0 DDU:01).

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0 The required period of AMA record retention is specified in the  
0 number of days. Valid entries are 0 days to 499 days. An example  
0 of four days retention is as follows:

0 First Day: Recorded on DDU:00  
0 Second Day: Recorded on DDU:01  
0 Third Day: Recorded on DDU:00  
0 Fourth Day: Recorded on DDU:01

0 The AMA subsystem on DDU:00 and DDU:01 should be set up for a  
0 minimum of two volumes each. AMA/Local Call Detail Recording  
0 (LCDR) and Station Message Detail Recording (SMDR) data may be  
0 contained in the same volume if NT format is utilized. This data  
0 may also be recorded in separate volumes. The factor 1.3 included  
0 in calculations throughout this document consists of a dedicated  
0 area for volume and file control.

0 If a Distributive Processing Peripheral (DPP) or Billing Media  
0 Converter (BMC) is used, primary AMA is not stored on the disk.

0 NT Format AMA

0 The following calculations are used to determine storage require-  
0 ments for AMA in the NT format. Entries should be answered calls  
0 unless the Telco is recording unanswered attempts, in which case  
0 entries should be call attempts.

0 A = AMA DDD High Day Entries \* 22 bytes  
0 B = Lcdr High Day Entries \* 22 bytes  
0 C = AMA IDDD High Day Entries \* 25 bytes  
0 D = Tops High Day Entries \* 45 bytes

0 E = Optional Trunk ID extension High Day Entry \* 9 bytes

0 F = Subtotal NT AMA = A+B+C+D+E

0 Total NT AMA = F \* 1.3 factor \* number of days retention

0 (rounded up to the nearest multiple of 524,288)

0 Number of AMA Volumes = Total NT AMA

0 -----  
0 volume size (in bytes)

0 (rounded up to the nearest even integer)

0

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0 AMA/volume = Total NT AMA (bytes)  
0 ----- + 2,148,352 bytes (overhead)  
0 number of AMA volumes

0 The minimum volume size for AMA is 2,672,640 Bytes. The maximum  
0 volume size for AMA is 67,108,864 Bytes. The recommended minimum  
0 of AMA volumes is four. The maximum number of volumes is 24.

0 SMDR (IBN Lines)

0 The following calculations are used to determine storage require-  
0 ments for SMDR records.

0 S =  
0 SMDR (dialed digits less than 12) \* High Day entries \* 33 bytes

0 T =  
0 SMDR (dialed digits 12 or greater) \* High Day entries \* 39 bytes

0 H = Additive for High Day entries \* 13 bytes

0 (for calls if the dialed digits are different than the outputted  
0 digits and the option is activated to record outputted digits.)

0 J = Subtotal SMDR = S+T+H

0 Total SMDR = J \* 1.3 factor \* number of days retention.

0 (round up to the nearest multiple of 524,288)

0 Number of SMDR Volumes = Total SMDR  
0 -----  
0 volume size (in Bytes)

0 (round up to the nearest even integer)

0 SMDR/volume = Total SMDR in bytes  
0 ----- + 2,148,352 bytes (overhead)  
0 number of SMDR volumes

0 The minimum volume size for SMDR is 2,672,640 Bytes. The maximum  
0 volume size for SMDR is 67,108,864 Bytes. The recommended minimum  
0 of SMDR volumes is four. The maximum number of volumes is 24.

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0 Combined AMA and SMDR Volumes (NT Format Only)

0 (Do not calculate here if calculated separately.)

0 AMA/Volume =

0 Total NT AMA + Total SMDR  
0 ----- + 2,148,352 bytes (overhead)  
0 number of AMA volumes

0 Bellcore AMA Format

0 The following calculations are used to determine storage require-  
0 ments for AMA in the Bellcore record format.

0 Basic Average High Day entries \* 55 bytes + See notes = K

0 Note 1:

0 If the office is optionally equipped with software for Equal  
0 Access (Equal Access End Office NTX186AA or Access Tandem  
0 NTX386AA), then add 10 bytes to the multiple 55 bytes above.  
0 Ensure that High Day entries contain both originating and  
0 terminating calls if recorded.

0 Additive for Switch Supervisory Unit (SSU) for line and trunk if  
0 feature NTX076AA AMA Enhanced is turned on:

0 L = High Day Entries \* 8 bytes

0 Additive for IBN customer dialed account number(package NTX102AA)

0 M = High Day entries \* 10 bytes

0 Reduction due to compression (high runner call types: message  
0 rate, flat rate, station paid calls are compressed by 10 bytes.)

0 N = High Day entries \* 10 bytes

0 P = Subtotal Bell Core AMA Format = (K+L+M) - N

0 Total Bell Core AMA Format = P \* factor 1.2 \* number of days  
0 retention \* 1.3

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0  
0 (round up to the nearest multiple of 524,288)

0 Number of AMA volumes = total Bell Core AMA  
0 -----  
0 volume size (in Bytes)

0 (round up to the nearest even integer)

0 AMA/Volume =

0 Total Bell Core AMA Format  
0 ----- + 2,148,352 bytes (overhead)  
0 number of AMA volumes

0 (Factor 1.2 estimates variable structure code information per  
0 call code.)

0 The minimum volume size for AMA is 2,672,640 Bytes. The maximum  
0 volume size for AMA is 67,108,864 Bytes. The recommended minimum  
0 of AMA volumes is four. The maximum number of volumes is 24.

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0 Expanded Bellcore AMA Format (EBAF)

0 EBAF uses new base structure codes and appended modules to record  
0 AMA information. Refer to SEB: 89-12-002 for a cross reference  
0 of record sizes.

0 Example: A 0+ call originating on a TOPS trunk group with the  
0 calling party requesting person-to-person. The call is then  
0 billed and completed. Record size for pre-EBAF = 69 bytes, with  
0 EBAF = 84 bytes.

0 Parallel Volumes

0 Parallel recording is optional for any subsystem on Mag Tape or  
0 disk. If parallel recording is done on disk it should be done on  
0 one that does not have regular AMA volumes (i.e.  
0 active/stand-by). It is recommended that parallel volumes should  
0 be sized at a full 67,108,864 Bytes.

0 Operational Measurement Volume

0 The number of Common Language Location Identifiers (CLLI) in-  
0 cludes pseudo maintenance CLLI, spares, interoffice CLLI, and  
0 growth CLLI. The minimum number of CLLI is 120.

0 Basic OM on Trunk Groups (Single Precision)

0  $Q = \text{Number of CLLI's} * 18 \text{ bytes} * \text{number of dumps/day (max.48)}$   
0 Repeat for all classes used. The maximum number of classes is 30.

0 Basic OM's on Trunk Groups (Double Precision)

0  $R = \text{Number of CLLI's} * 36 \text{ bytes} * \text{number of dumps/day (max. 48)}$   
0 Repeat for all classes used.

0 IBN OM's (Single Precision)

0  $S =$   
0 Number of Customer Groups \* 175 bytes \* no. of dumps/day (max.48)  
0 Repeat for all classes used. The maximum number of classes is 30.

0 IBN OM's (Double Precision)

0  $T =$   
0 Number of Customer Groups \* 350 bytes \* no. of dumps/day (max.48)  
0 Repeat for all classes used.

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0  
0 V = Subtotal OM = (Q+S) or (R+T)  
0  
0 Total OM = V \* factor 1.3 \* number of days retention  
0  
0 (round up to the nearest multiple of 524,288)  
0  
0 Number of OM Volumes = Total OM  
0 -----  
0 volume size (in Bytes)  
0  
0 (round up to the nearest even integer)

0 OM/volume = Total OM  
0 ----- + 2,148,352 bytes (overhead)  
0 No.of OM Volumes

0 The minimum volume size for OM is 2,672,640 Bytes. The maximum  
0 volume size for OM is 67,108,864 Bytes. The recommended minimum  
0 of OM volumes is two. The maximum number of volumes is 24.

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0 Journal File Volume

0 The Journal File (JF) subsystem provides a means of recording  
0 Data modification Orders (DMO's) allowing their addition to the  
0 office image on respective disk drives after an office reload.

0 In a two DDU office, the expected worst case number of days re-  
0 tention for DDU:00 is seven days. DDU:01 has the image taken at  
0 the time the office was last booted in. If the image is older  
0 then 61 days, the following options are possible.

0 (1) DMO's that are older than 61 days are only stored on  
0 magnetic tape, not disk. The number of days retention  
0 is 61 days for DDU:01.

0 (2) The DMO's that are older than 61 days are stored on DDU.  
0 The number of days retention is optional up to as much as  
0 6 months to one year.

0 In a three DDU Office, the expected worst case number of days re-  
0 tention for DDU:00 & 01 is 14 days. For DDU:02 the number of  
0 days retention is the same as for DDU:01 in a two DDU office (see  
0 above.)

0 JF Volume

0 Total JF =

0 No. of DMO's \* 512 bytes \* factor 1.3 \* No. of days retention  
0 (round up to the nearest multiple of 524,288)

0 Number of days retention equals the age of the office image in  
0 days.

0 JF/Volume = Total JF + 2,148,352 bytes (Overhead)  
0 (minimum 2,672,640 bytes)

0 Repeat for each DDU.

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0 Peripheral Module Load Volume

## 0 BCS 30 Peripheral Loads

| 0 | PM Load  | Description          | LRec | Records | Bytes   |
|---|----------|----------------------|------|---------|---------|
| 0 | RDCMPA02 | DCM, DES             | 76   | 523     | 39748   |
| 0 | DPPA9A   | DPP                  | 2048 | 66      | 135168  |
| 0 | SDC30B   | DTC (CCIS6)          | 1024 | 768     | 786432  |
| 0 | DC730B0  | DTC (CCS7)           | 1024 | 2432    | 2490368 |
| 0 | NDT30B0  | DTC (new mem & msg)  | 1024 | 2004    | 2052096 |
| 0 | SDT30B   | DTC (old mem & msg)  | 1024 | 770     | 788480  |
| 0 | DTI30B01 | DTCI                 | 1024 | 3276    | 3354624 |
| 0 | LCMI30F  | LCMI                 | 55   | 1076    | 59180   |
| 0 | SLCMI27A | LCMI                 | 76   | 1148    | 87248   |
| 0 | NLG30B0  | LGC                  | 1024 | 2266    | 2320384 |
| 0 | BLMRA01  | LM                   | 76   | 1426    | 108376  |
| 0 | LTi30B01 | LTCl                 | 1024 | 4468    | 4575232 |
| 0 | MPC03001 | MPC0 (CCITT)         | 2048 | 149     | 305152  |
| 0 | MPCA30B0 | MPCA (asynchronous)  | 2048 | 141     | 288768  |
| 0 | MPCX30B0 | MPCX (enhanced MPC)  | 2048 | 195     | 399360  |
| 0 | SMC30B   | MSB6                 | 1024 | 578     | 591872  |
| 0 | MC730B0  | MSB7                 | 1024 | 1492    | 1527808 |
| 0 | MTMKA02  | MTM, TAN, OAU        | 76   | 302     | 22952   |
| 0 | PAC30B0  | PRA, IAC             | 1024 | 1906    | 1951744 |
| 0 | NRC30B01 | RCC                  | 1024 | 2768    | 2834432 |
| 0 | RCl30B01 | RCCI                 | 1024 | 4430    | 4536320 |
| 0 | DLM27A1  | RDLM                 | 76   | 1097    | 83372   |
| 0 | LCM30H   | RLCM                 | 55   | 726     | 39930   |
| 0 | ESA30B0  | RLCM (ESA)           | 1024 | 1478    | 1513472 |
| 0 | XLCM30G  | RLCM (supercharging) | 55   | 877     | 48235   |
| 0 | ERLMA01  | RLM (bay 0)          | 76   | 2527    | 192052  |
| 0 | BRLMA01  | RLM (bay 1)          | 76   | 1863    | 141588  |
| 0 | RMDA02   | RMM                  | 76   | 690     | 52440   |
| 0 | SM30B0   | SMR                  | 1024 | 1838    | 1882112 |
| 0 | NSS30B01 | SMS                  | 1024 | 2030    | 2078720 |
| 0 | SU30B0   | SMU                  | 1024 | 2180    | 2232320 |
| 0 | MCIHA02  | ST (CCIS)            | 76   | 890     | 67640   |
| 0 | M7COA04  | ST (CCS7)            | 76   | 1002    | 76152   |
| 0 | BTMKA02  | TM2, TM4, TM8        | 76   | 275     | 20900   |
| 0 | FSTMDA02 | TM8 (feature load)   | 76   | 311     | 23636   |
| 0 | TSTMKA02 | TM8 (traffic load)   | 76   | 283     | 21508   |
| 0 | TMS30B01 | TMS                  | 1024 | 4400    | 4505600 |

0 Duplicate the PM loads on two DDU's on separate IOC's.  
0 Minimum PM volume size is 2,672,640 bytes.

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0 93 12 03

0 Peripheral Module Load Volume

## 0 BCS 32 Peripheral Loads

| 0 | PM Load  | Description         | LRec | Records | Bytes   |
|---|----------|---------------------|------|---------|---------|
| 0 | CMRAH04  | CMR                 | 1024 | 170     | 174080  |
| 0 | DCH32CD2 | DCH                 | 1024 | 672     | 688128  |
| 0 | RDCMDA02 | DCM, DES            | 76   | 523     | 39748   |
| 0 | ADCPA01  | DES                 | 76   | 441     | 33516   |
| 0 | DPP004   | DPP                 | 2048 | 67      | 137216  |
| 0 | DPT021   | DPP (turbo)         | 2048 | 113     | 231424  |
| 0 | SDC32B   | DTC (CCIS6)         | 1024 | 768     | 786432  |
| 0 | DC732CD1 | DTC (CCS7)          | 1024 | 2848    | 2916352 |
| 0 | NDT32CD  | DTC (new mem & msg) | 1024 | 2234    | 2287616 |
| 0 | SDT32B   | DTC (old mem & msg) | 1024 | 772     | 790528  |
| 0 | DTI32CD2 | DTCI                | 1024 | 4058    | 4155392 |
| 0 | DTUBAA01 | DTU                 | 60   | 755     | 45300   |
| 0 | MRC32CD  | EIU                 | 1020 | 2343    | 2389860 |
| 0 | ENC32CD  | ENET                | 1020 | 2538    | 2588760 |
| 0 | FRC32CD  | FRIU                | 1020 | 2538    | 2588760 |
| 0 | IPE32BZ  | IPE                 | 1024 | 139     | 142336  |
| 0 | LCME32N  | LCM (2B1Q)          | 55   | 1197    | 65835   |
| 0 | LCMI32F  | LCMI                | 55   | 1017    | 55935   |
| 0 | NLG32CD  | LGC                 | 1024 | 2730    | 2795520 |
| 0 | LRC32CD  | LIU7 (2 slot)       | 1020 | 2603    | 2655060 |
| 0 | LCC32CD  | LIU7 (3 slot)       | 1020 | 2668    | 2721360 |
| 0 | BLMTA03  | LM                  | 76   | 1426    | 108376  |
| 0 | LPC32CD  | LPP (LIM)           | 1020 | 4488    | 4577760 |
| 0 | NLT32CD  | LTC (4 meg mem)     | 1024 | 2902    | 2971648 |
| 0 | LTi32CD2 | LTCI                | 1024 | 4058    | 4155392 |
| 0 | MPCA32CD | MPC (async)         | 2048 | 144     | 294912  |
| 0 | MPCX32CD | MPC (BX.25)         | 2048 | 196     | 401408  |
| 0 | MPC432CD | MPC (V.32)          | 2048 | 157     | 321536  |
| 0 | MPC032CD | MPC0 (CCITT 1980)   | 2048 | 157     | 321536  |
| 0 | SMC32B   | MSB6                | 1024 | 580     | 593920  |
| 0 | MC732CD  | MSB7                | 1024 | 1564    | 1601536 |
| 0 | RMTMKA01 | MTM (receivers)     | 76   | 302     | 22952   |
| 0 | MTMKA02  | MTM, TAN, OAU       | 76   | 302     | 22952   |
| 0 | MTULF01  | MTU                 | 80   | 1871    | 149680  |
| 0 | OAM32CA  | OAM                 | 128  | 7814    | 1000192 |
| 0 | NRC32CD  | RCC                 | 1024 | 3182    | 3258368 |
| 0 | RCI32CD2 | RCCI                | 1024 | 4664    | 4775936 |
| 0 | DLM32A   | RDLM                | 76   | 1089    | 82764   |

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0 BCS 32 Peripheral Loads (Continued)

| 0 | PM Load  | Description          | LRec | Records | Bytes   |
|---|----------|----------------------|------|---------|---------|
| 0 | LCM32H   | RLCM                 | 55   | 727     | 39985   |
| 0 | ESA32CD  | RLCM (ESA)           | 1024 | 1604    | 1642496 |
| 0 | XLCM32K  | RLCM (supercharging) | 55   | 1021    | 56155   |
| 0 | ERLMTA02 | RLM (bay 0)          | 76   | 2527    | 192052  |
| 0 | BRLMTA02 | RLM (bay 1)          | 76   | 1863    | 141588  |
| 0 | RMM31C   | RMM                  | 1024 | 27      | 27648   |
| 0 | SM32CD   | SMR                  | 1024 | 1996    | 2043904 |
| 0 | NSM32CD  | SMR (enhanced)       | 1024 | 2186    | 2238464 |
| 0 | NSS32CD  | SMS                  | 1024 | 2284    | 2338816 |
| 0 | SU32CD   | SMU                  | 1024 | 2452    | 2510848 |
| 0 | MCIHA02  | ST (CCIS)            | 76   | 890     | 67640   |
| 0 | M7CQA01  | ST (CCS7)            | 76   | 962     | 73112   |
| 0 | FSTMDA02 | TM8 (feature load)   | 76   | 311     | 23636   |
| 0 | TSTMKA02 | TM8 (traffic load)   | 76   | 283     | 21508   |
| 0 | TMS32CD2 | TMS                  | 1024 | 4568    | 4677632 |
| 0 | XCH32CD2 | TMS                  | 1024 | 630     | 645120  |

0 Duplicate the PM loads on two DDU's on separate IOC's.  
0 Minimum PM volume size is 2,672,640 bytes.

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0 Non-Resident Software Volume

0 All Non-Resident Software is supplied to the Telco on a tape.  
0 Thus volume space on a DDU is not required.

0 Batch Data Modification Order Volume

0 Externally created Data Modification Orders (DMOs) may be bulk  
0 loaded into the system. DMOs can be written to DDUs either from  
0 magnetic tape or through a communication link with remote batch  
0 input terminal.

0 Batch DMO Volume = Number of DMOs\_\_\_\_\_ x 128 x 1.3

0 The suggested minimum is 250 DMOs. The Maximum number of DMO's is  
0 4096. If this feature is used, then the recommended volume size  
0 is 2,672,640 bytes.

0 Scan Log Volume Size (Log Analyzer)

0 Scan Log is a tool that can be used to analyze log messages. A  
0 recommended low value is 5,242,880 bytes. At the operating com-  
0 pany's option this can be increased.(Maximum volume size is  
0 67,108,864 Bytes)

0 Scratch Area Volume Size

0 Allocate the unused area on each DDU as a scratch area. Size the  
0 scratch area on each DDU into approximatley 2,097,152 or  
0 3,145,728 byte volumes.

0 Note: A scratch area volume name must be between one to four  
0 characters in order to be usable by DIRP in an emergency  
0 situation.

0 Killer Trunk Reports To DIRP

0 Determine the required DDU storage requirements for Killer Trunk  
0 (KT) Reports using the following formula:

0  $KT \text{ Storage} = N * (36 \text{ bytes} + (12 \text{ bytes} * M) + 20 \text{ bytes}$

0 Where: N = Number of reports generated per day.

0 M = Number of IBN trunk members to test

0 Multiply the total bytes required by the number of days retention.

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0

0 Total KT = KT Storage \* 1.3\* number of days retention

0 (round up to the nearest multiple of 524,288)

0 Number of KT volumes = Total KT

0

0 -----  
0 Volume Size (in Bytes)

0 (round up to the nearest even integer)

0 KT per volume = Total KT

0

0 ----- + 2,672,640 bytes

0 Number of KT Volumes

0 The minimum KT per volume is 2,672,640 records or bytes.

0 | \* For a definition of Killer Trunks, refer to NTP-297-1001-451  
0 | Customer Data Schema: table TRKGRP.

0 Automatic Trunk Testing Reports to DIRP

0 Determine the required DDU storage for Automatic Trunk Test re-  
0 ports using the following formula.

0 ATT Storage =

0 240 bytes + (P \* 70 bytes) \* Q + 20 bytes + (R \* 10 bytes)

0 Where:

0 P = Number of IBN trunk group members per trunk group.

0 Q = Number of IBN trunk groups.

0 R = Number of restarts

0 Multiply total bytes required by the number of days retention.

0 Total ATT = Storage ATT \* 1.3 \* number of days retention

0 (round up to the nearest multiple of 524,288)

0

0

0

0



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0 JNumber of ATT volumes = Total ATT  
0 -----  
0 volume size (in Bytes)

0 (round up to the nearest even integer)

0 ATT per volume =  $\frac{\text{Total ATT}}{\text{Number of ATT Volumes}} + 2,672,640 \text{ bytes}$   
0  
0

0 The minimum ATT per volume is 2,672,640 bytes

0 ATT and KT reports should be separate volumes.

0 The minimum volume size for ATT and KT is 2,672,640 Bytes. The  
0 maximum volume size for OM is 67,108,864 Bytes. The recommended  
0 minimum of ATT and KT volumes is two. The maximum number of vol-  
0 umes is 24.

0 Summary

0 Total all DDU requirements and divide by total usable volume  
0 space to determine required number of DDU's.

0 14.1.4 OFFICE LAYOUT INFORMATION

0  
0 N/A

0 14.1.5 TRAFFIC TABLES

0  
0 N/A

0

0

0 14.2 PRODUCT/SYSTEM SPECIFICATION

0

0 14.2.1 PHYSICAL CHARACTERISTICS

0  
0 N/A

0 14.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 N/A

0 14.2.3 SPARING INFORMATION

0  
0 N/A

0 14.3 SOFTWARE PROVISIONING

0

0 14.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 N/A

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0 NORTHERN TELECOM  
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0 14.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 N/A

0 14.3.3 MEMORY PROVISIONING

0  
0 N/A

0 14.4 REAL TIME IMPACT

0 N/A

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## 0 15.0 Magnetic Tape Drive (MTD) and

### 0 Magnetic Tape Drives

0 Magnetic tapes are used in DMS as external storage devices and as a  
0 media for transferring bulk data and operation software into and out  
0 of the system. The read-write device for magnetic tapes is the MTD.  
0 Magnetic tapes are used for the following functions:

- 0 1) Office Image (system software backup)
- 0 2) Trouble Diagnostics and Reports
- 0 3) Automatic Message Accounting (AMA)
- 0 4) Operational Measurements (OM) if required
- 0 5) Data Modification Orders (DMO) bulk
- 0 6) Service Analysis (SA) if required
- 0 7) Call Detail Recording (DMS-300 only)
- 0 8) Peripheral Loads (to re-load peripherals)

### 0 Disk Drive Units

0 NT's Disk Drive Unit (DDU) is included in the Input/Output Device  
0 (IOD) subsystem of the DMS-100 Family of switches. Its applica-  
0 tion is similar to MTDs when used for storage or retrieval of in-  
0 formation. The following are some of the types of information  
0 that can be stored on a disk:

- 0 - The office image
- 0 - Non-resident software commands
- 0 - Automatic Message Accounting (AMA), Operational Measurements  
0 (OMs), and Journal File (JF) data.

0 Refer to ECM 300 for calculation of DDU volume size.

## 0 15.1 HARDWARE PROVISIONING

0

### 0 15.1.1 HARDWARE USAGE RESTRICTIONS

0

0 When mounted in the NT4X00AF shelf, the 5.25" and 8" DDUs can  
0 only be provisioned in the IOE shelf position 04 with shelf posi-  
0 tion 18 left vacant. This is due to heating restrictions with

0  
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0 the DDUs and a fusing limitation on the IOE's FSP. 8" DDUs are  
0 no longer available.

0 A NT4X00AZ DDU Enhancement Kit must be provided with a 5.25" DDU  
0 when the 5.25" DDU is provided to replace a 14" DDU on a  
0 NT4X00AA, NT4X00AB or NT4X00AC DDU shelf.

0 A NTZZ99AG Univ 5.25" DDU Upgrade Kit must be provided with a  
0 5.25" DDU when the 5.25" DDU is provided to replace an 8" Priam  
0 or Mercury DDU on a NT4X00AA, NT4X00AB, NT4X00AC or NT4X00AF DDU  
0 shelf.

#### 0 15.1.2 HARDWARE DEPENDENCIES

0  
0 Provide one additional NT0X36AB in the IOE Frame Supervisory  
0 Panel (FSP) when the NT4X00AF Shelf is provisioned.

#### 0 15.1.3 PROVISIONING CONSIDERATIONS

##### 0 0 Magnetic Tape Drives

0 For an office which will have MTDs only, Magnetic Tape Drive  
0 Units are provisioned as follows:

- 0 - A minimum of two (2) is required per system, one for mainte-  
0 nance and one for back-up or image/spare.
- 0 - An additional two (2) may be required for LAMA/CAMA. This  
0 function can be provided on a Distributed Processor Periph-  
0 eral (DPP).
- 0 - An extra MTD may be provided for separate Operational Meas-  
0 urement (OM) support.
- 0 - Provide a maximum of ten (10) MTD per system.

0

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0 In a disk office one MTD is retained primarily to enable physical  
0 transportation of data to and from the office and secondarily as  
0 a back up to the DDU.

0 The standard DMS MTD is the Cook Electric drive, 209800-153 or  
0 NT0X44AB. If the MTD is to be drop-shipped, separately order the  
0 the drive (209800-153) and its mounting hardware (NT0X44AD) on  
0 the appropriate specs. If MTD is not to be drop-shipped, the  
0 combined drive and hardware is ordered using NT0X44AB. The  
0 Hewlett Packard 7970E-151-048 MTD has been rated MD and can no  
0 longer be ordered by Northern Telecom. Provide one (1) NT0X44AC  
0 MTD Mounting Hardware to mount a customer-provided HP drive (for-  
0 merly provided if 7970E-151-048 MTD was drop-shipped by NT).  
0 Customers may provide their own MTD and mounting hardware if the  
0 Cook Electric drive is not suitable. In offices where the HP MTD  
0 is retrofitted with DDU, provide one (1) R0107733 HP MTD Packing  
0 Box for shipping and storing purposes.

0 Disk Drive Units

0 The 5.25" DDU has been developed to replace the 8" DDU which re-  
0 placed the 14" DDU. In new offices, one or two 5.25" DDU are to  
0 be provisioned on a NT4X00AF shelf. In existing offices, when  
0 replacement is necessary, the 5.25" DDU should be provided. To  
0 replace a 14" DDU, a NT4X00AZ DDU Enhancement Kit shall be pro-  
0 vided along with a 5.25" DDU on the NT4X00AA, NT4X00AB or  
0 NT4X00AC DDU shelf to provide the proper cabling and mounting  
0 equipment. To replace an existing 8" DDU, one 5.25" DDU should  
0 be ordered for the NT4X00AA, NT4X00AB or NT4X00AC shelf and one  
0 or two DDUs should be ordered for the NT4X00AF shelf. A NTZZ99AG  
0 Univ 5.25" DDU Upgrade Kit must be provided with each 5.25" DDU  
0 provided to replace an 8" DDU.

0 The 8" DDU is no longer available for ordering. Provide the  
0 5.25" DDU for all offices.

0 The following hardware is required for 5.25" DDU assignment in a  
0 new DMS-100F office. (The 8" DDU is no longer available)

0 PEC CPC

0 NT4X00AG B0232823 - 5.25" DDU - (228.7 Mbytes formatted) -  
0 Maximum 2 per NT4X00AF shelf.

0

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0 NT4X0038 B0227231 - Mercury Disk Hardware Kit - Provide one  
0 (1) per 5.25" or 8" DDU.

0 NT4X00AF B0225620 - Dual Disk Drive Shelf Assembly -  
0 supports two (2) 5.25" or two (2)  
0 8" DDUs.

0 NT1X55DA B0226492 - Disk Drive Controller CP.  
0 Provide one (1) per DDU.

0 Notes: 1) For all offices, provide the 5.25" DDUs. The 8"  
0 DDU is no longer available.

0 2) The 1st DDU shall be located on the left  
0 side (slot 10) of the NT4X00AF Dual Disk Drive  
0 shelf (located in shelf Position 04). If a 2nd  
0 DDU is required on the same shelf, it shall  
0 be located on the right side (slot 18).

0 3) DDUs can only be provisioned in the IOE on shelf  
0 pos. 04 with shelf pos. 18 left vacant. This is  
0 due to heating restrictions with the DDU and a  
0 fusing limitation on the IOE's FSP.

0 4) Provide one additional NT0X36AB in the IOE Frame  
0 Supervisory Panel (FSP) when the NT4X00AF Shelf is  
0 provisioned.

0 The following hardware is required to replace an existing 14" DDU  
0 on a NT4X00AA, NT4X00AB or NT4X00AC shelf with a 5.25" DDU. The  
0 8" DDU is no longer available.

0 PEC CPC

0 NT4X00AG B0232823 - 5.25" DDU - Maximum one (1) per  
0 NT4X00AA, NT4X00AB or NT4X00AC shelf.

0 NT4X00AZ B0234738 - DDU Enhancement Kit

0 Notes: 1) For all offices, provide the 5.25" DDU. The 8"  
0 DDU is no longer available.

0

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0 2) The NT4X00AZ Enhancement Kit provides appropriate  
0 cabling and mounting equipment to allow the  
0 replacement of a 14" DDU on a NT4X00AA, NT4X00AB  
0 or NT4X00AC DDU shelf with a 5.25" DDU. The 8"  
0 DDU is no longer available and the NT4X00AY  
0 Enhancement Kit is no longer available.

0 The following hardware is required to replace existing 8" DDU(s)  
0 on an NT4X00AA, NT4X00AB, NT4X00AC or NT4X00AF shelf with 5.25"  
0 DDU(s).

0 PEC CPC

0 NT4X00AG B0232823 - 5.25" DDU - Maximum one (1) per  
0 NT4X00AA, NT4X00AB or NT4X00AC shelf.  
0 Maximum two (2) per NT4X00AF shelf.

0 NTZZ99AG B0235777 - Univ 5.25" DDU Upgrade Kit (One per  
0 5.25" DDU is required)

0 Notes: 1) Existing shelf cabling used for the 8" DDU(s)  
0 will be used for the 5.25" DDU(s).

0 2) On the NT4X00AF shelf, where two 8" DDUs are  
0 existing, it is possible to replace only one  
0 of the 8" DDUs with the 5.25" DDU, resulting  
0 in one (1) 5.25" DDU and one (1) 8" DDU on the  
0 shelf together.

0 Per Customer request, the NT4X0046 Cable Assembly supplied in the  
0 NT4X00AY 14 Inch DDU Enhancement Kit during a 14" DDU replacement  
0 by an 8" DDU or the two NT4X0039 Cable Assemblies of an existing  
0 NT4X00AF can be replaced with the NT4X0048 cable assembly. For  
0 all new 14" DDU to 5.25" DDU replacements provide the NT4X00AZ  
0 DDU Enhancement Kit. The NT4X00AY DDU Enhancement Kit is no  
0 longer available.

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0 15.1.4 OFFICE LAYOUT INFORMATION

0  
0 5.25" DDUs can only be provisioned in the IOE on shelf position  
0 04 and shelf position 18 must be left vacant. This is due to  
0 heating restrictions with the DDUs and a fusing limitation on the  
0 IOE's FSP. When replacing 14" DDU's with 5.25" DDUs, they can be  
0 replaced on a one to one basis with the existing shelves remain-  
0 ing in place. The 8" DDUs are no longer available.

0 15.1.5 TRAFFIC TABLES

0  
0 None

0 15.2 PRODUCT/SYSTEM SPECIFICATION

0

0  
0 15.2.1 PHYSICAL CHARACTERISTICS

0

0 8 Inch DDU

0 Power Consumption - 100 watts  
0 Current Drain - 7 Amps  
0 Fusing Requirements - One (1) 20A Fuse per DDU

0

0  
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0 5.25 Inch DDU

0  
0 Input Voltage - 5V and 24V  
0 Power Consumption - 93 watts  
0 Current Drain - 8 Amps  
0 Fusing Requirements - One (1) 20A Fuse per DDU

0 15.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 None

0 15.2.3 SPARING INFORMATION

0  
0 Standard sparing rules will apply.

0 15.3 SOFTWARE PROVISIONING

0

0 15.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 To support DDUs: package NTX074AA - Data Disk Storage is needed.

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0 15.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 None

0

0 15.3.3 MEMORY PROVISIONING

0  
0 None

0 15.4 REAL TIME IMPACT

0 None

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## 0 16.0 NTX251 - Datapath Modem Pooling

0 In order to fully comprehend the capabilities of Modem Pooling it is  
0 essential that the user have a thorough working knowledge of DATAPATH.  
0 A synopsis of DATAPATH is as follows:

0 DATAPATH allows users to connect their computers and terminals  
0 through the DMS100F in circuit switched digital networks.  
0 DATAPATH provides full-duplex asynchronous and synchronous data  
0 transmission at various user-selectable speeds (300-19,200 bps  
0 asynchronous and 1200-64,000 bps synchronous).

0 It also uses a standard, non-loaded 2Wire subscriber loop for  
0 distances as defined below:

| CABLE GAUGE | MAX CABLE LENGTH<br>FOR 42db LOSS | MAX CABLE LENGTH<br>FOR 31.25 MS Delay |
|-------------|-----------------------------------|----------------------------------------|
| =====       | =====                             | =====                                  |
| 22          |                                   | 5.7Km(18.5Kft)                         |
| 24          |                                   | 5.4Km(17.5Kft)                         |
| 26          | 4.0Km(13.1Kft)                    |                                        |

0 As indicated in the above chart the limiting factor for 22 &  
0 24AWG cable is Transmission Delay and for 26 AWG cable the lim-  
0 iting factor is Transmission Loss.

0 DATAPATH uses standard A & B bit signaling on the trunk side,  
0 and industry standard RS-232C and V.35 interfaces to the end us-  
0 er's Data Terminal Equipment (DTE). DATAPATH provides users  
0 with a number of DMS system and station features.

0 DATAPATH provides the main advantages of dial-up and point-to-  
0 point systems because it provides access through a switched net-  
0 work. It operates continuously in digital mode, from call setup  
0 time to call completion. Additionally, DATAPATH offers such ca-  
0 pabilities as:

- 0 \* voice and data 2wire pair in a single jack
- 0 \* use of existing subscriber loop
- 0 \* efficient use of trunks and lines (no dedicated facilities)
- 0 \* multiple device access from data terminal equipment
- 0 \* sharing of modems among users and trunks

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0 \* efficient use of computer ports through the queuing and  
0 hunting features of the DMS system

0 \* use of the DMS system and station features

0 DATAPATH uses the End-to-End digital data communications be-  
0 tween user-site Data Units (DU) via the DMS100F. Modem Pooling  
0 expands the connectivity of DATAPATH by allowing low speed dig-  
0 ital DATAPATH users to communicate with analog trunks or modems.  
0 This is accomplished by converting the data from digital to ana-  
0 log, and visa versa, at the DMS100F.

## 0 16.1 HARDWARE PROVISIONING

0

### 0 16.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Currently known hardware usage restrictions are as follows:

#### 0 \* Maintenance Modem Pools

0 Modem pool elements using half-duplex modems can not be  
0 tested by maintenance modem pools, or used in maintenance  
0 modem pools.

#### 0 \* Variable Speed Modems

0 A single Modem/Data Unit pair cannot be used to handle multi-  
0 ple transmission speeds (e.g. 1200, 2400, 4800, and 9600 bps)  
0 even though the modem is capable of providing this service.  
0 This is not the way Modem Pooling was designed. Each Datapath  
0 modem pool element (Modem/Data unit) must be datafilled for a  
0 single speed in the DMS-100, and have a constant speed set in  
0 their configuration.

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0 16.1.2 HARDWARE DEPENDENCIES

0  
0 The low speed data unit with elastomer keypad (NT4X25AF) can only  
0 be configured as a modem pool DU via a profile download.

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not Applicable

## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable.

## 0 CIRCUITS PER CARD

0  
0 Not Applicable.

## 0 DISCRIMINATION NUMBERING

0  
0 Not Applicable.

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0 16.1.3 PROVISIONING CONSIDERATIONS

0  
0 The number of elements (DU/modem pairs) in a modem pool is deter-  
0 mined by traffic requirements for that particular pool. Each  
0 modem pool group can have up to 256 elements (Data Unit/Modem  
0 pairs). The total number of modem pools is constrained by the  
0 number of available common language location identifiers (CLLIs).  
0 Several pools with different operating characteristics may be  
0 configured for use in different applications. Each modem pool is  
0 configured to handle inbound calls, outbound calls, or both, i.e  
0 bidirectional (inbound and outbound) calls.

0 Provide inbound modem pools when the analog (analog modem) side  
0 of the connection path originates the call, or when an analog fa-  
0 cility is used at some point in the transmission path. The ter-  
0 minating digital switch activates the modem pool when it  
0 determines that the terminator is a DU and that a modem or analog  
0 facility is used at some point in the transmission path.

0 Provide outbound modem pools when the digital (subscriber DU)  
0 side of the connection path originates the call. An analog modem  
0 is provided when the user's DU calls an analog modem or when the  
0 call must go out over an analog trunk.

0 A modem pool that is designated as both inbound and outbound  
0 (bidirectional) can handle inbound or outbound calls.

0 A Maintenance Modem Pool is a modem pool reserved for testing  
0 purposes. It is not used in normal call processing. Each main-  
0 tenance modem pool is designated to test the elements of one or  
0 more specific modem pools that require distinct transmission  
0 characteristics (speed and data format). The elements within a  
0 particular maintenance modem pool are configured to meet the re-  
0 quirements of the corresponding modem pool.

0 Maintenance modem pools allow the craftperson to test the modem  
0 pool equipment from the Maintenance and Administration Position  
0 (MAP) of the DMS-100 Family switch via integrated test equipment.

0

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## 0 RACK MOUNTED MODEM POOL

0  
0 The use of rack mounted equipment is recommended. This allows a  
0 more efficient use of frame space, ease of installation, and a  
0 more visually appealing configuration.

0 The following Rack Mounted equipment shall be provided for Modem  
0 Pooling:

0 \* Miscellaneous Equipment Frame (MIS) dedicated to modems

0 Note 1: The dedicated MIS frame must be configured in accord-  
0 ance with established ISG guidelines (See API-130 for exten-  
0 sions or ECM-289 for initial offices).

0 Note 2: One MIS frame dedicated to Modem Pooling hardware,  
0 can house up to 2-Data Unit Shelves, 2-Modem Shelves, and  
0 2-LaMarche Inverters.

0 \* UDS RM16M Modem Shelf

0 Note: The modem shelf and the data unit shelf leads MI &  
0 MIC for each modem/DU pair must be reversed for the proper  
0 operation of Modem Pooling.

0 \* Modems tested for use with Modem Pooling

0 \* Data Unit Shelf

0 - NT4X25DH (60Hz AC) or NT4X25DH (DC-Powered) Data Unit  
0 Shelf

0 The NT4X25DH DU shelf may house up to 16 DUs, however,  
0 for Modem Pooling provide the following Rack mounted Low  
0 Speed DU only.

0 - NT4X25CH - Low Speed Autoloop Rkmtg Data Unit (RLDU)

0 Note: Refer to ECM-277 for Data Unit Provisioning

0 \* Inverter

0 The newly introduced DC-Power Data Unit shelf makes provi-  
0 sioning of the inverter optional and the least desired alter-



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0 native. Therefore, detailed discussion of Rack mounted Modem  
0 Pools will center on a complete DC-Powered package.

## 0 MODEM SPECIFICATIONS

0  
0 A modem to be used with a DU in a modem pool must conform to cer-  
0 tain specifications. These requirements are different for in-  
0 bound, outbound, and bidirectional modem pools.

### 0 \* Modem Specifications For Inbound Modem Pools:

- 0 - two-wire switched network operation
- 0 - speed to match the service application designated for the  
0 modem pool
- 0 - call termination via DTR (data terminal ready) off, loss  
0 of carrier detect, or both
- 0 - 1 start bit, 5, 6, 7, or 8 data bits, 1, 1.5 or 2 stop  
0 bits for asynchronous operation
- 0 - external clock option for synchronous operation
- 0 - auto-answer when physical ringing is applied

### 0 \* Modem Specifications For Outbound Modem Pools:

- 0 - two-wire switched network operation
- 0 - speed to match the service application designated for the  
0 modem pool
- 0 - call termination via DTR off, loss of carrier detect, or  
0 both
- 0 - 1 start bit, 5, 6, 7, or 8 data bits, 1, 1.5 or 2 stop  
0 bits for asynchronous operation
- 0 - external clock option for synchronous operation

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- 0 - MI and MIC (Mode Indicator and Mode Indicator Common)  
0 leads
- 0 \* Modem Specifications For Bidirectional Modem Pools:
  - 0 - two-wire switched network operation
  - 0 - speed to match the service application designated for the  
0 modem pool
  - 0 - call termination via DTR off, loss of carrier detect, or  
0 both
  - 0 - 1 start bit, 5, 6, 7, or 8 data bits, 1, 1.5 or 2 stop  
0 bits for asynchronous operation
  - 0 - external clock option for synchronous operation
  - 0 - MI and MIC (Mode Indicator and Mode Indicator Common)  
0 leads
  - 0 - auto-answer when physical ringing is applied
  - 0 - automatic switching between originate and answer mode

#### 0 CASE RIXON DATATEL RACK MOUNTED MODEMS

0  
0 This Information Shall Be Provided On A Subsequent Issue Of The  
0 ECM.

#### 0 POWER SUPPLY

0  
0 The inverter is optional with the introduction of the DC-Powered  
0 Data Unit shelf. However, when the inverter is used locate it at  
0 the bottom of the frame (See Figure 5 & 6). It is required to  
0 supply protected AC to the AC Powered NT4X25DH and/or AC Powered

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0 Modem shelves. A second Inverter may be provisioned as a backup.  
0 In this case each DU shelf is connected to each inverter.

0 In offices with two or more frames, configured for ISG you can  
0 provision the elements of a modem pool in several frames and thus  
0 provide one pool with access to several inverters for back-up.

## 0 DMS INTERFACE CIRCUITS

0  
0 The following line cards may be provided:

- 0 \* NT6X17AA - Std Type-A Voice Line Card (VLC)
- 0 \* NT6X17AB - Std Type-A Voice Line Card (VLC)
- 0 \* NT6X17AC - Std Type-A Voice Line Card (VLC)
- 0 \* NT6X71AA - Data Line Card (DLC) (rated MD)
- 0 \* NT6X71AB - Data Line Card (DLC) (rated A&M)
- 0 \* NT6X71BA - Single Slot Data Line Card
- 0 \* NT6X99AA - IBERT Line Card (ILC)

0 Line cards are provisioned per the following rules:

- 0 \* Provide one DLC (NT6X71) per Data Unit.
- 0 \* Provide one VLC (NT6X17) per modem.
- 0 \* Provide ILC (NT6X99) as required for Maintenance Modem Pools  
0 only, however a minimum of two is required. Refer to ECM274  
0 for detailed engineering requirement for the ILC (See Figure  
0 4).

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## 0 Figure 5: Modem Pooling Rack Mounted

0  
0 Refer to Figure 5 below for a pictorial layout of the MIS frame  
0 in a rack mounted configuration.

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0 MIS FRAME (AC POWERED DUs)

|   |                           |
|---|---------------------------|
| 0 | Rackmount Data Unit Shelf |
| 0 | NT4X25DH                  |
| 0 | E/W 1 NT4X25DK Pwr Supply |
| 0 | 1 to 16 NT4X25CHs         |
| 0 |                           |
| 0 |                           |
| 0 | UDS Modem Shelf           |
| 0 | 62005220                  |
| 0 | E/W up 16 modems          |
| 0 |                           |
| 0 |                           |
| 0 | Frame Supervisory Panel   |
| 0 | (FSP)                     |
| 0 | NT0X88AF                  |
| 0 |                           |
| 0 |                           |
| 0 | Rackmount Data Unit Shelf |
| 0 | NT4X25DH                  |
| 0 | E/W 1 NT4X25DK Pwr Supply |
| 0 | 1 to 16 NT4X25CHs         |
| 0 |                           |
| 0 |                           |
| 0 | UDS Modem Shelf           |
| 0 | 62005220                  |
| 0 | E/W up 16 modems          |
| 0 |                           |
| 0 | Inverter Unit             |
| 0 |                           |
| 0 |                           |
| 0 | Inverter Unit             |
| 0 | (optional)                |

MIS FRAME (DC POWERED DUs)

|                           |
|---------------------------|
| Rackmount Data Unit Shelf |
| NT4X25DH                  |
| E/W 1 NT4X25DL Pwr Supply |
| 1 to 16 NT4X25CHs         |
|                           |
|                           |
| UDS Modem Shelf           |
| 62005220                  |
| E/W up 16 modems          |
|                           |
|                           |
| Frame Supervisory Panel   |
| (FSP)                     |
| NT0X88AF                  |
|                           |
|                           |
| Rackmount Data Unit Shelf |
| NT4X25DH                  |
| E/W 1 NT4X25DL Pwr Supply |
| 1 to 16 NT4X25CHs         |
|                           |
|                           |
| UDS Modem Shelf           |
| 62005220                  |
| E/W up 16 modems          |
|                           |
| SPACE AVAILABLE           |

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## 0 STANDALONE/DESK MOUNTED MODEM POOLS

0  
0 The standalone modems and DUs may be provisioned for installation  
0 on a desk, tabletop, or in an Miscellaneous Equipment Frame  
0 (MIS). To provision a modem pool using desktop type of equip-  
0 ment, you will need the following:

## 0 \* The Miscellaneous Equipment Frame (MIS)

0 Provision the MIS Frame to house the desktop DUs and modems  
0 (if desired). The MIS bay can house the following:

- 0 - Five NT3X25AA shelves for DUs or modems
- 0 - one NT0X88AF frame supervisory panel
- 0 - two Inverters (one is required; the second is optional)

0 See Figure 6 for a typical layout of the MIS frame  
0 mounted desktop units.

## 0 \* NT3X25AA - Common Equipment Shelf

0 In the Dedicated MIS frame, shelf mounting positions 50 thru  
0 52 are invalid for this shelf. The shelf can accomodate up  
0 to 3 standalone modem or DUs and 15 telco provided Teladapt  
0 jacks (three on each shelf) which provide the connections  
0 from the DUs and modems to the distribution frame.

## 0 \* Standalone Data Unit

0 Provide NT4X25AF DU as required. The NT4X25AF DU requires  
0 profile downloading, which requires the Data Line Card. Each  
0 DU is supplied equipped with its own AC power supply and NT  
0 D4B4 Teladapt line cord.

0 \* Analog Modem - Provision one per DU that meets the modem  
0 pool requirements. NTI Tested and approved modems are listed  
0 in paragraph 2.4.9.

0 \* RS-232C rollover cable to connect the DU and modem (one per  
0 DU/modem pair)

0 \* NT6X71AB/BA data line card (one per DU).

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- 0 \* NT6X17AA, NT6X17AB, or NT6X17AC voice line card (one per  
0 modem)
- 0 \* non-reversed TELADAPT line cord (one per modem)
- 0 \* A minimum of two NT6X99AAs (IBERT Line Card) when the modem  
0 pool is used as a maintenance modem pool (See ECM274 for de-  
0 tailed engineering information).

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## 0 Figure 6: STANDALONE MODEM POOLING EQUIPMENT

0  
0 Refer to Figure 6 below for a typical layout of the MIS frame us-  
0 ing Standalone/Desktop Units.

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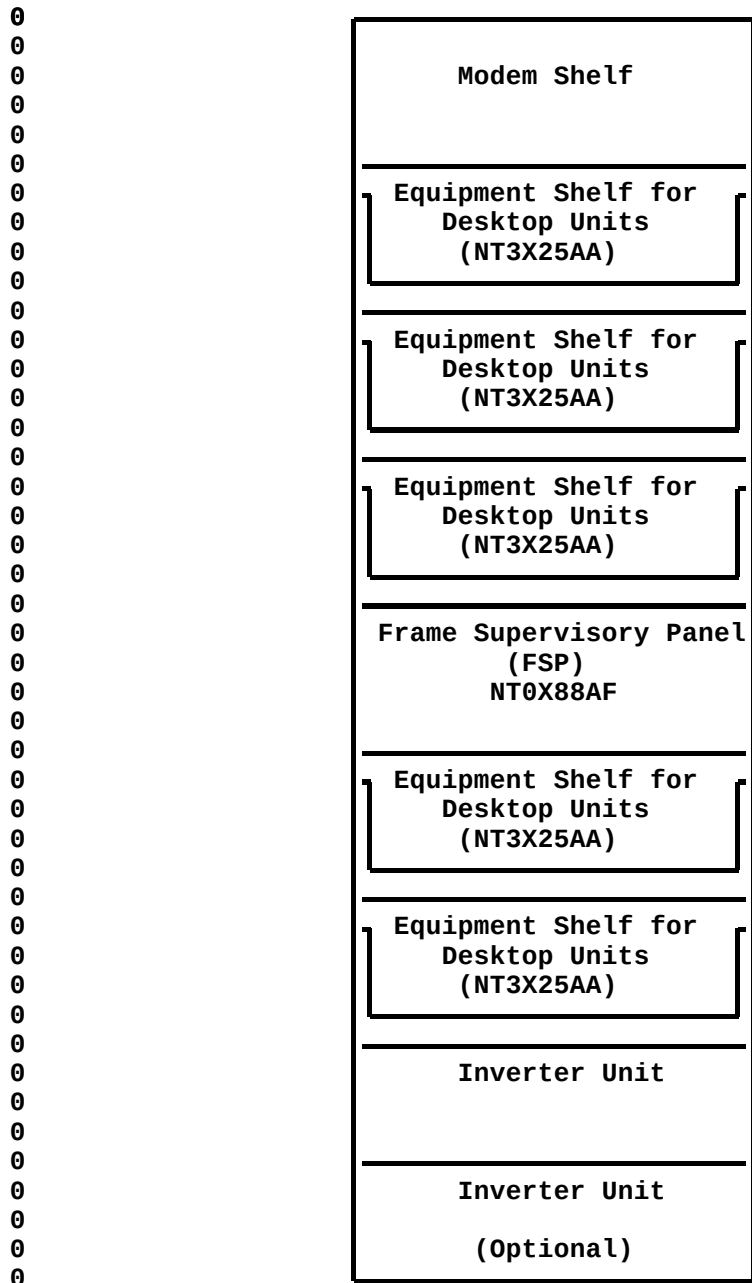
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| UDS MODEL No.               | SPEED<br>(bps)               | MODEM<br>POOL<br>ELEMENT |                  |                  | TIMING                                                   | OPERATING<br>MODES         | QTY |
|-----------------------------|------------------------------|--------------------------|------------------|------------------|----------------------------------------------------------|----------------------------|-----|
|                             |                              | IMP                      | OMP              | BMP              |                                                          |                            |     |
| RM16M-212A                  | 300<br>1200                  | X<br>X                   | X<br>X           | X<br>X           | Async<br>Async, Sync                                     | Full Duplex                |     |
| RM16M-212A/D<br>(preferred) | 300<br>1200                  | X<br>X                   | X<br>X           | X<br>X           | Async<br>Async, Sync                                     | Full Duplex<br>Auto Dial   |     |
| RM16M-2440                  | 300<br>1200<br>2400          | X<br>X<br>X              | X<br>X<br>X      | X<br>X<br>X      | Async, Sync<br>Async, Sync<br>Async, Sync                | Full Duplex                |     |
| RM16M-201BC/AS              | 2400                         | X                        | X                | X                | Async                                                    | Half Duplex                |     |
| RM16M-202S/D                | 1200                         | X                        | X                | X                | Async, Sync                                              | Half Duplex                |     |
| RM16M-208A/B                | 4800                         | X                        | X                | X                | Sync                                                     | Half Duplex                |     |
| RM16M-9648T<br>RM16M-9648T  | 4800<br>9600                 | X<br>X                   | X<br>X           | X<br>X           | Async<br>Async                                           | Half Duplex<br>Half Duplex |     |
| RM16M-V.3225                | 1200<br>2400<br>4800<br>9600 | X<br>X<br>X<br>X         | X<br>X<br>X<br>X | X<br>X<br>X<br>X | Async, Sync<br>Async, Sync<br>Async, Sync<br>Async, Sync | Half Duplex                |     |

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0 16.1.5 TRAFFIC TABLES

0  
0 Refer To ECM-497 for Traffic Provisioning Rules

0 16.1.6 CUSTOMER QUESTIONNAIRE

0  
0 The following questions numbered 1 thru 7 required to direct pro-  
0 visioning of Modem Pooling. Note: The questions below are  
0 referred to in the Calculations Section as Q1 thru Q7 (e.g. Q3  
0 meaning Question #3):

- 0 1. Rack Mount Configuration Required - Y/N
- 0 2. Maintenance Modem Pools (MMP) Required - Y/N
- 0 3. Quantity Of Maintenance Modem Pools Required per Modem Pool  
0 Type  
0 Range = 0 - 3, Default = 1  
0 Enter Quantity: \_\_\_\_\_
- 0 4. Select Modem Vendor
- 0 a. UDS \_\_\_\_\_
- 0 5. Goto Table 1 and Select the Required SPEED, MODEL, and Quan-  
0 tity as Required for Inbound Modem Pools (IMP):

|      | <u>SPEED</u>                 | <u>MODEL</u> | <u>QUANTITY</u> |
|------|------------------------------|--------------|-----------------|
| 0 a. | 300 bps _____                | _____        | _____           |
| 0 b. | 1200 bps _____               | _____        | _____           |
| 0 c. | 2400 bps _____               | _____        | _____           |
| 0 d. | 4800 bps _____               | _____        | _____           |
| 0 e. | 9600 bps _____               | _____        | _____           |
| 0 f. | TOTAL Modems Required: _____ |              |                 |

- 0 6. Goto Table 1 and Select the Required SPEED, MODEL, and Quan-  
0 tity as Required for Outbound Modem Pools (OMP):

|  | <u>SPEED</u> | <u>MODEL</u> | <u>QUANTITY</u> |
|--|--------------|--------------|-----------------|
|--|--------------|--------------|-----------------|

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- 0 a. 300 bps \_\_\_\_\_  
 0 b. 1200 bps \_\_\_\_\_  
 0 c. 2400 bps \_\_\_\_\_  
 0 d. 4800 bps \_\_\_\_\_  
 0 e. 9600 bps \_\_\_\_\_  
 0 f. TOTAL Modems Required: \_\_\_\_\_

- 0 7. Goto Table 1 and Select the Required SPEED, MODEL, and Quan-  
 0 tity as Required for Bidirectional Modem Pools (BMP):

- 0 SPEED MODEL QUANTITY  
 0 a. 300 bps \_\_\_\_\_  
 0 b. 1200 bps \_\_\_\_\_  
 0 c. 2400 bps \_\_\_\_\_  
 0 d. 4800 bps \_\_\_\_\_  
 0 e. 9600 bps \_\_\_\_\_  
 0 f. TOTAL Modems Required: \_\_\_\_\_

0 TABLE 1: Modem to Modem Pool Element Requirements

| COL# | A                        | B           | C                              | D   | E   | F                               | G   | H   | I                  |
|------|--------------------------|-------------|--------------------------------|-----|-----|---------------------------------|-----|-----|--------------------|
| ROW# | UDS MODEL No.            | SPEED (bps) | MODEMS APPROVED FOR MODEM POOL |     |     | QUANTITY REQUIRED FOR EACH TYPE |     |     | MODEM MODEL TOTALS |
|      |                          |             | IMP                            | OMP | BMP | IMP                             | OMP | BMP |                    |
| 1    | RM16M-212A               | 300         | X                              | X   | X   |                                 |     |     |                    |
| 2    |                          | 1200        | X                              | X   | X   |                                 |     |     |                    |
| 3    | RM16M-212A/D (preferred) | 300         | X                              | X   | X   |                                 |     |     |                    |
| 4    |                          | 1200        | X                              | X   | X   |                                 |     |     |                    |
| 5    | RM16M-2440               | 300         | X                              | X   | X   |                                 |     |     |                    |
| 6    |                          | 1200        | X                              | X   | X   |                                 |     |     |                    |
| 7    |                          | 2400        | X                              | X   | X   |                                 |     |     |                    |
| 8    | RM16M-201BC/AS           | 2400        | X                              | X   | X   |                                 |     |     |                    |
| 9    | RM16M-202S/D             | 1200        | X                              | X   | X   |                                 |     |     |                    |
| 10   | RM16M-208A/B             | 4800        | X                              | X   | X   |                                 |     |     |                    |

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|   |    |              |      |                      |   |   |  |  |  |  |
|---|----|--------------|------|----------------------|---|---|--|--|--|--|
| 0 | 11 | RM16M-9648T  | 4800 | X                    | X | X |  |  |  |  |
| 0 | 12 |              | 9600 | X                    | X | X |  |  |  |  |
| 0 | 13 | RM16M-V.3225 | 1200 | X                    | X | X |  |  |  |  |
| 0 | 14 |              | 2400 | X                    | X | X |  |  |  |  |
| 0 | 15 |              | 4800 | X                    | X | X |  |  |  |  |
| 0 | 16 |              | 9600 | X                    | X | X |  |  |  |  |
| 0 | 17 |              |      | TOTAL PER<br>MP TYPE |   |   |  |  |  |  |

# 0 16.1.7 CALCULATIONS TO CUSTOMER QUESTIONS

0 The following calculations will provide the modems, data units,  
0 data unit shelf, MIS frame and common equipment shelves if re-  
0 quired. These calculations support the provisioning of DC pow-  
0 ered units only.

| 0 | RULE | PARAMETER | CALCULATION                                                                                         | RESULT  |
|---|------|-----------|-----------------------------------------------------------------------------------------------------|---------|
| 0 | ---- | -----     | -----                                                                                               | -----   |
| 0 | R001 | 212A      | TABLE LOOKUP From TABLE 1 CELLS<br>(F1 + F2 + G1 + G2 + H1 + H2)<br>= 212A<br>ELSE 0                | = _____ |
| 0 | R002 | 212A/D    | TABLE LOOKUP From TABLE 1 CELLS<br>(F3 + F4 + G3 + G4 + H3 + H4)<br>= 212A/D<br>ELSE 0              | = _____ |
| 0 | R003 | 2440      | TABLE LOOKUP From TABLE 1 CELLS<br>(F5 + F6 + F7 + G5 + G6 + G7 +<br>H5 + H6 + H7) = 2440<br>ELSE 0 | = _____ |

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| 0 | RULE | PARAMETER | CALCULATION                                                                                                                                                              | RESULT  |
|---|------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 0 | ---- | -----     | -----                                                                                                                                                                    | -----   |
| 0 | R004 | 201BCAS   | TABLE LOOKUP From TABLE 1 CELLS<br>(F8 + G8 + H8) = 201BCAS<br>ELSE 0                                                                                                    | = _____ |
| 0 | R005 | 202SD     | TABLE LOOKUP From TABLE 1 CELLS<br>(F9 + G9 + H9) = 202SD<br>ELSE 0                                                                                                      | = _____ |
| 0 | R006 | 208AB     | TABLE LOOKUP From TABLE 1 CELLS<br>(F10 + G10 + H10) = 208AB<br>ELSE 0                                                                                                   | = _____ |
| 0 | R007 | 9648T     | TABLE LOOKUP From TABLE 1 CELLS<br>(F11 + F12 + G11 + G12 + H11 + H12)<br>= 9648T<br>ELSE 0                                                                              | = _____ |
| 0 | R008 | V3225     | TABLE LOOKUP From TABLE 1 CELLS<br>(F13 + F14 + F15 + F16 + G13 + G14 +<br>G15 + G16 + H13 + H14 + H15 + H16)<br>= V3225<br>ELSE 0                                       | = _____ |
| 0 | R009 | TIMP      | SUM(F1-F16)                                                                                                                                                              | = _____ |
| 0 | R010 | TOMP      | SUM(G1-G16)                                                                                                                                                              | = _____ |
| 0 | R011 | TBMP      | SUM(H1-H16)                                                                                                                                                              | = _____ |
| 0 | R012 | TMODEM    | SUM(I1-I16)                                                                                                                                                              | = _____ |
| 0 | R013 | CHECK     | IF TMODEM = SUM(TIMP + TOMP + TBMP) THEN<br>GOTO R014<br>ELSE ERROR - RECOMPUTE                                                                                          | = _____ |
| 0 | R014 | MMP       | IF Q2 = Y THEN<br>R001 = (R001 + Q3)<br>R002 = (R002 + Q3)<br>R003 = (R003 + Q3)<br>R004 = (R004 + Q3)<br>R005 = (R005 + Q3)<br>R006 = (R006 + Q3)<br>R007 = (R007 + Q3) |         |

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| 0 | RULE  | PARAMETER | CALCULATION                        | RESULT  |
|---|-------|-----------|------------------------------------|---------|
| 0 | ----  | -----     | -----                              | -----   |
| 0 |       |           | R008 = (R008 + Q3)                 |         |
| 0 |       |           | SUM (R001 - R008)                  | = _____ |
| 0 | R015  | T212A     | IF Q1 = Y THEN GOTO ECM-633        |         |
| 0 |       |           | TABLE Z2 Line 12 Column D and      |         |
| 0 |       |           | Provide Quantity Of PEC = R001     |         |
| 0 |       |           | ELSE GOTO ECM-633 TABLE Z2 Line 12 |         |
| 0 |       |           | Column B and Provide Quantity Of   |         |
| 0 |       |           | PEC = R001                         | = _____ |
| 0 | R0016 | T212A/D   | IF Q1 = Y THEN GOTO ECM-633        |         |
| 0 |       |           | TABLE Z2 Line 14 Column D and      |         |
| 0 |       |           | Provide Quantity Of PEC = R002     |         |
| 0 |       |           | ELSE GOTO ECM-633 TABLE Z2 Line 14 |         |
| 0 |       |           | Column B and Provide Quantity Of   |         |
| 0 |       |           | PEC = R002                         | = _____ |
| 0 | R017  | T2440     | IF Q1 = Y THEN GOTO ECM-633        |         |
| 0 |       |           | TABLE Z2 Line 20 Column D and      |         |
| 0 |       |           | Provide Quantity Of PEC = R003     |         |
| 0 |       |           | ELSE GOTO ECM-633 TABLE Z2 Line 20 |         |
| 0 |       |           | Column B and Provide Quantity Of   |         |
| 0 |       |           | PEC = R003                         | = _____ |
| 0 | R018  | T201BCAS  | IF Q1 = Y THEN GOTO ECM-633        |         |
| 0 |       |           | TABLE Z2 Line 2 Column D and       |         |
| 0 |       |           | Provide Quantity Of PEC = R004     |         |
| 0 |       |           | ELSE GOTO ECM-633 TABLE Z2 Line 2  |         |
| 0 |       |           | Column B and Provide Quantity Of   |         |
| 0 |       |           | PEC = R004                         | = _____ |
| 0 | R019  | T202SD    | IF Q1 = Y THEN GOTO ECM-633        |         |
| 0 |       |           | TABLE Z2 Line 6 Column D and       |         |
| 0 |       |           | Provide Quantity Of PEC = R005     |         |
| 0 |       |           | ELSE GOTO ECM-633 TABLE Z2 Line 6  |         |
| 0 |       |           | Column B and Provide Quantity Of   |         |
| 0 |       |           | PEC = R005                         | = _____ |
| 0 | R020  | T208AB    | IF Q1 = Y THEN GOTO ECM-633        |         |
| 0 |       |           | TABLE Z2 Line 9 Column D and       |         |
| 0 |       |           | Provide Quantity Of PEC = R006     |         |
| 0 |       |           | ELSE GOTO ECM-633 TABLE Z2 Line 9  |         |
| 0 |       |           | Column B and Provide Quantity Of   |         |
| 0 |       |           | PEC = R006                         | = _____ |

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| 0 | RULE | PARAMETER | CALCULATION                                    | RESULT  |
|---|------|-----------|------------------------------------------------|---------|
| 0 | ---- | -----     | -----                                          | -----   |
| 0 | R021 | T9648T    | IF Q1 = Y THEN GOTO ECM-633                    |         |
| 0 |      |           | TABLE Z2 Line 20 Column D and                  |         |
| 0 |      |           | Provide Quantity Of PEC = R007                 |         |
| 0 |      |           | ELSE ERROR - STANDALONE 9648T Unavailable      | = _____ |
| 0 | R022 | TV3225    | IF Q1 = Y THEN GOTO ECM-633                    |         |
| 0 |      |           | TABLE Z2 Line 21 Column D and                  |         |
| 0 |      |           | Provide Quantity Of PEC = R008                 |         |
| 0 |      |           | ELSE ERROR - STANDALONE V3225 Unavailable      | = _____ |
| 0 | R023 | RMHWARE   | SELECT                                         |         |
| 0 |      |           | WHEN Q1 = Y THEN                               |         |
| 0 |      |           | R014/16 (Round Up) =                           |         |
| 0 |      |           | QTY NT4X25DH Required AND                      |         |
| 0 |      |           | QTY NT4X25DK Required,                         |         |
| 0 |      |           | QTY 62005220 Required,                         |         |
| 0 |      |           | QTY A0317172 = QTY 62005220,                   |         |
| 0 |      |           | QTY NT6X71AB/BA = R014,                        |         |
| 0 |      |           | QTY NT6X17AC = R014,                           |         |
| 0 |      |           | QTY NT4X25CH = R014,                           |         |
| 0 |      |           | AND QTY NT0X02AB = (R014 * 18)/72 (ROUND UP)   |         |
| 0 |      |           | OTHERWISE                                      |         |
| 0 |      |           | QTY NT4X25AF = R014,                           |         |
| 0 |      |           | QTY A0317172 = R014,                           |         |
| 0 |      |           | QTY NT6X71AB/BA = R014,                        |         |
| 0 |      |           | QTY NT6X17AC = R014,                           |         |
| 0 |      |           | QTY NT3X25AA = R014/3 (Round UP),              |         |
| 0 |      |           | QTY LaMarche = QTY NT3X25AA/4 (Round UP),      |         |
| 0 |      |           | AND QTY NT0X02AB = (R014/3) * 7)/72 (ROUND UP) |         |
| 0 |      |           | END                                            | = _____ |
| 0 | R024 | DU_Filler | (R014/16) = x (Round down)                     |         |
| 0 |      |           | R014 - (16 * x) =                              |         |
| 0 |      |           | QTY NT0X50AL Required                          |         |
| 0 |      |           | For NT4X25DH Shelves                           |         |
| 0 |      |           | ELSE 0                                         | = _____ |

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0 16.2 PRODUCT/SYSTEM SPECIFICATION

0

0 16.2.1 PHYSICAL CHARACTERISTICS

0

0 Not applicable.

0 16.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Provision this equipment per MIS Frame specifications. Refer to  
0 ECM-125 for provisioning details.

0 16.2.3 SPARING INFORMATION

0

0 Provision Maintenance Spares per Telco specifications.

0 16.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 Not Applicable

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0 16.2.5 CURRENT DRAIN INFORMATION

0  
0 Not Applicable

0 16.3 SOFTWARE PROVISIONING

0

0 16.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Modem Pooling capabilities are as of BCS-24 and later, and is  
0 provided by the NTX251AA Software package. However, the follow-  
0 ing software packages must be provided in conjunction with the  
0 NTX251AA package for the proper operation of Modem Pooling:

- 0 \* NTX000AA - BILGE
- 0 \* NTX001AA - Common Basic
- 0 \* NTX100AA - Integrated Business Network - Basic (IBN)
- 0 \* NTX106AA - IBN - Proprietary Business Set
- 0 \* NTX250AA - DATAPATH Basic
- 0 \* NTX270AA - New Peripheral Maintenance Package
- 0 \* NTX901AA - Local Features I

0 16.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

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0 16.3.3 MEMORY PROVISIONING

0  
0 Refer to MEMCALC for Memory Provisioning.

0 16.4 REAL TIME IMPACT

0 Refer to Real-Quick for the Real Time Impact.

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## 0 17.0 NSD Billing Media Converter II

0 The Billing Media Converter (BMC) is available from Northern Telecom's  
0 NSD. The BMC provides for the acquisition, storage, and forwarding of  
0 data from the DMS100F. The BMC accepts billing data from the DMS100F,  
0 temporarily stores the collected data on hard disk, and when requested  
0 retrieves, reformats, and sends the stored data to the Host Office  
0 Collector (HOC). (NOTE: If the HOC is not a BMC 'POLLSTAR' device -  
0 then an I/F Analysis must be performed to ensure BMC to HOC compat-  
0 ibility).

0 The BMC is currently available in several configurations and option  
0 packages where the variables include:

- 0 \* the disk drive size,
- 0 \* the number of users per system,
- 0 \* the communications protocol used,
- 0 \* the maximum rate of data between the BMC & HOC, and
- 0 \* the Automatic Dial-Up (ADU) option.

0 The various BMC configurations are grouped into two divisions:  
0 Redundant or Simplex.

0 The Simplex unit is a single processor, single shelf configura-  
0 tion. It accepts Station Message Detail Records (SMDR) from the  
0 DMS100F. The Redundant unit is equipped with redundant compo-  
0 nents (dual processors, dual shelf configuration) and is avail-  
0 able in several different configurations that accept SMDR, Lata  
0 Switching System Generic requirements (LSSGR), or Northern  
0 Telecom (NT) Call Record Format.

## 0 \* Redundant Billing Media Converter Configurations

0 BMCA The Billing Media Converter for Automatic Message  
0 Accounting (BMCA) is a redundant, single user, dual  
0 shelf BMC used for the collection, storage,  
0 retrieval, and forwarding of Automatic Message Ac-  
0 counting (AMA) data to a central collection point  
0 for one entire DMS100F office. The call record  
0 format from the DMS100F to the BMCA may be either  
0 LSSGR, or NT format.

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0 BMCS The Billing Media Converter for Station Message De-  
0 tail Recording (BMCS) is a redundant, single user,  
0 dual shelf BMC used for the collection, storage,  
0 retrieval, and forwarding of Station Message Detail  
0 Record (SMDR) data to a central collection point  
0 for one Customer Group (CG) within a DMS100F of-  
0 fice. The call record format between the DMS100F  
0 and the BMC is SMDR.

0 \* Simplex (Non-Redundant) Billing Media Converter Deuce

0 BMCD The Billing Media Converter Deuce (BMCD) is a  
0 simplex, dual user, single shelf BMC used for the  
0 collection, storage, retrieval, and forwarding of  
0 Station Message Detailed Recording (SMDR) data to  
0 up to two (2) different collection points; one for  
0 each of two (2) separate customer groups (CG)  
0 within a DMS100F office.

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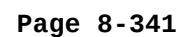
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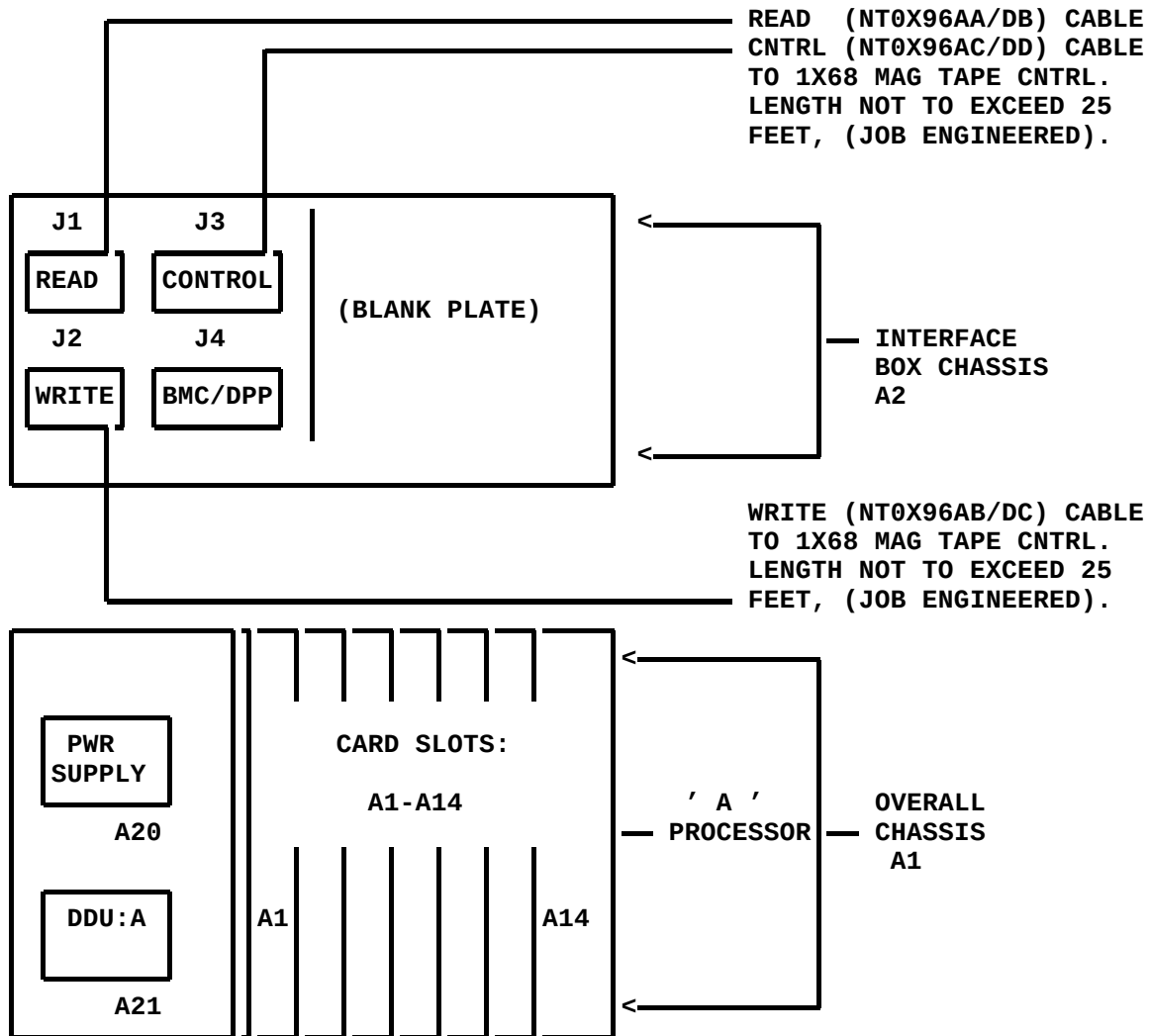


Figure 2: BMCD Physical Configuration



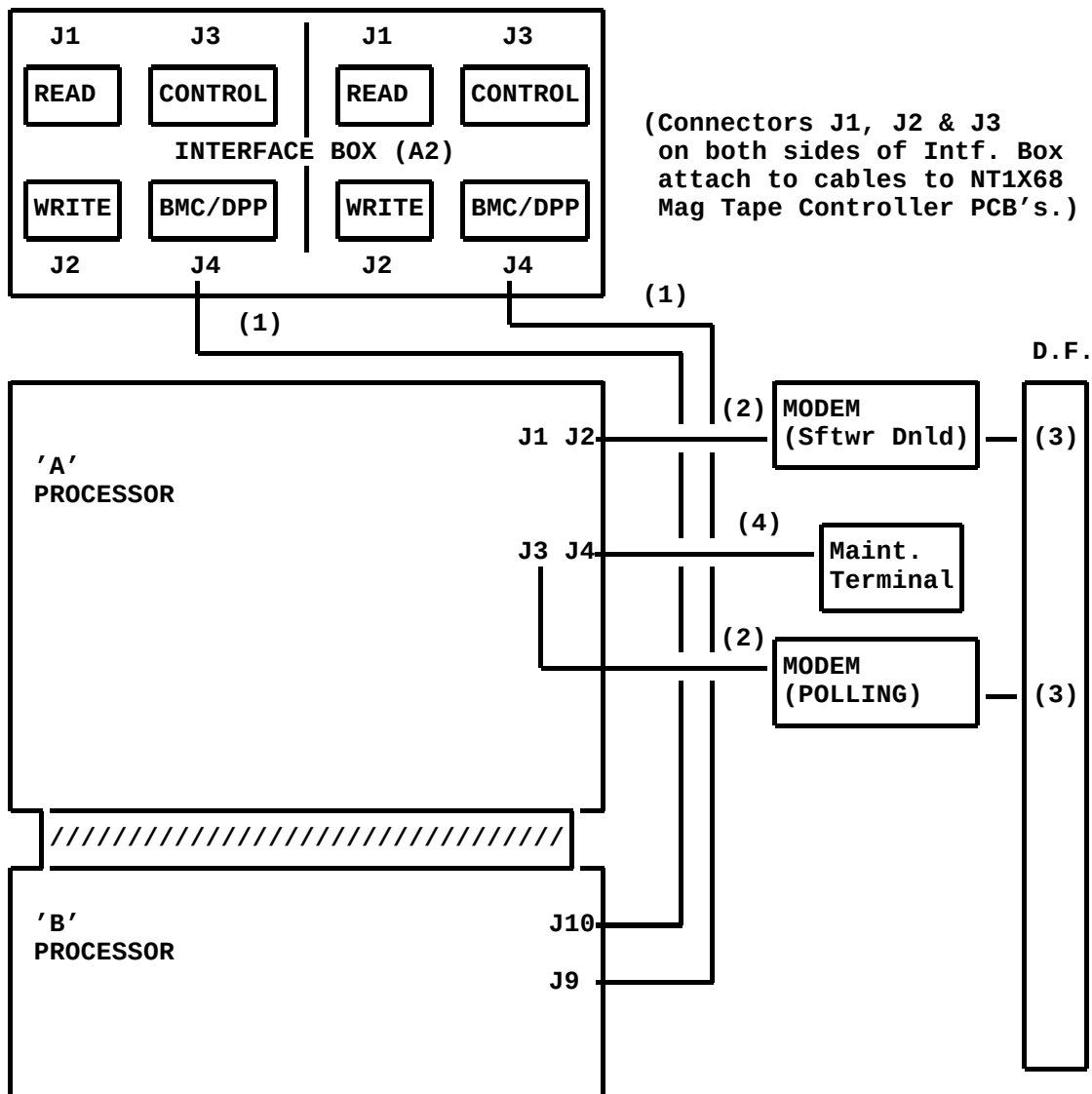


Figure 3: BMCA/S Connectivity Diagram For 'A', 'C', & 'M' Feature Groups

1. These are 4' ribbon cables (Connector J10 = NT6M99AG & J9 = NT6M99AF) furnished by NSD.
2. These are 50' RS-232-C Cables (NT8M99AG) furnished by NSD.

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- 0 3. The Modem-DF cables are engineered/furnished/installed by DMS100.  
0 4. These are 25' RS-232-C cables (NT8M99AB) furnished by NSD.

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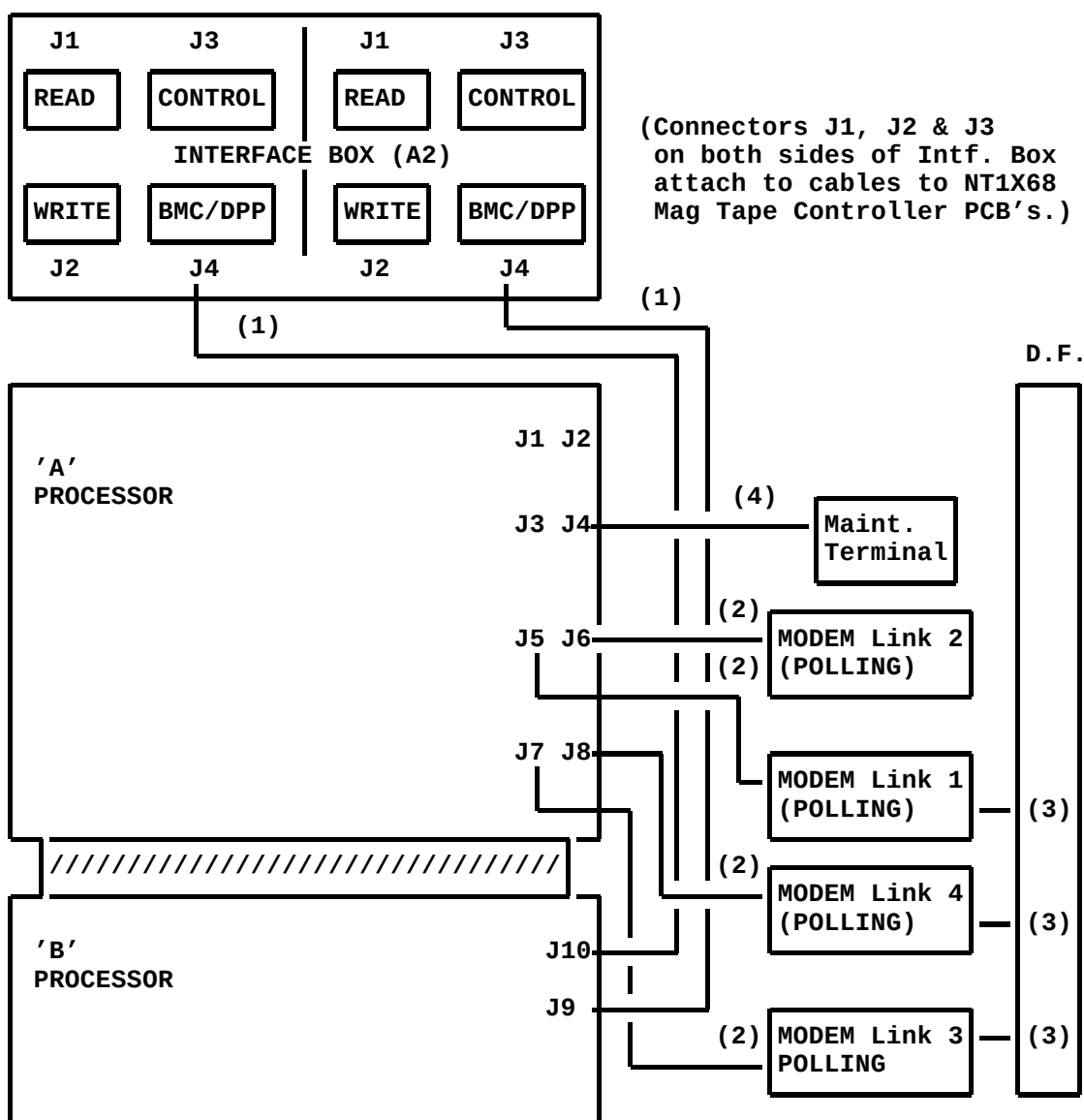


Figure 4: BMCA Connectivity Diagram For 'D' Feature Groups

- These are 4' ribbon cables (Connector J10 = NT6M99AG & J9 = NT6M99AF furnished by NSD).

- 0 2. These are 50' RS-232-C Cables (NT8M99AG) furnished by NSD.  
0 3. The Modem-DF cables are engineered/furnished/installed by DMS100.  
0 4. These are 25' RS-232-C cables (NT8M99AB) furnished by NSD.

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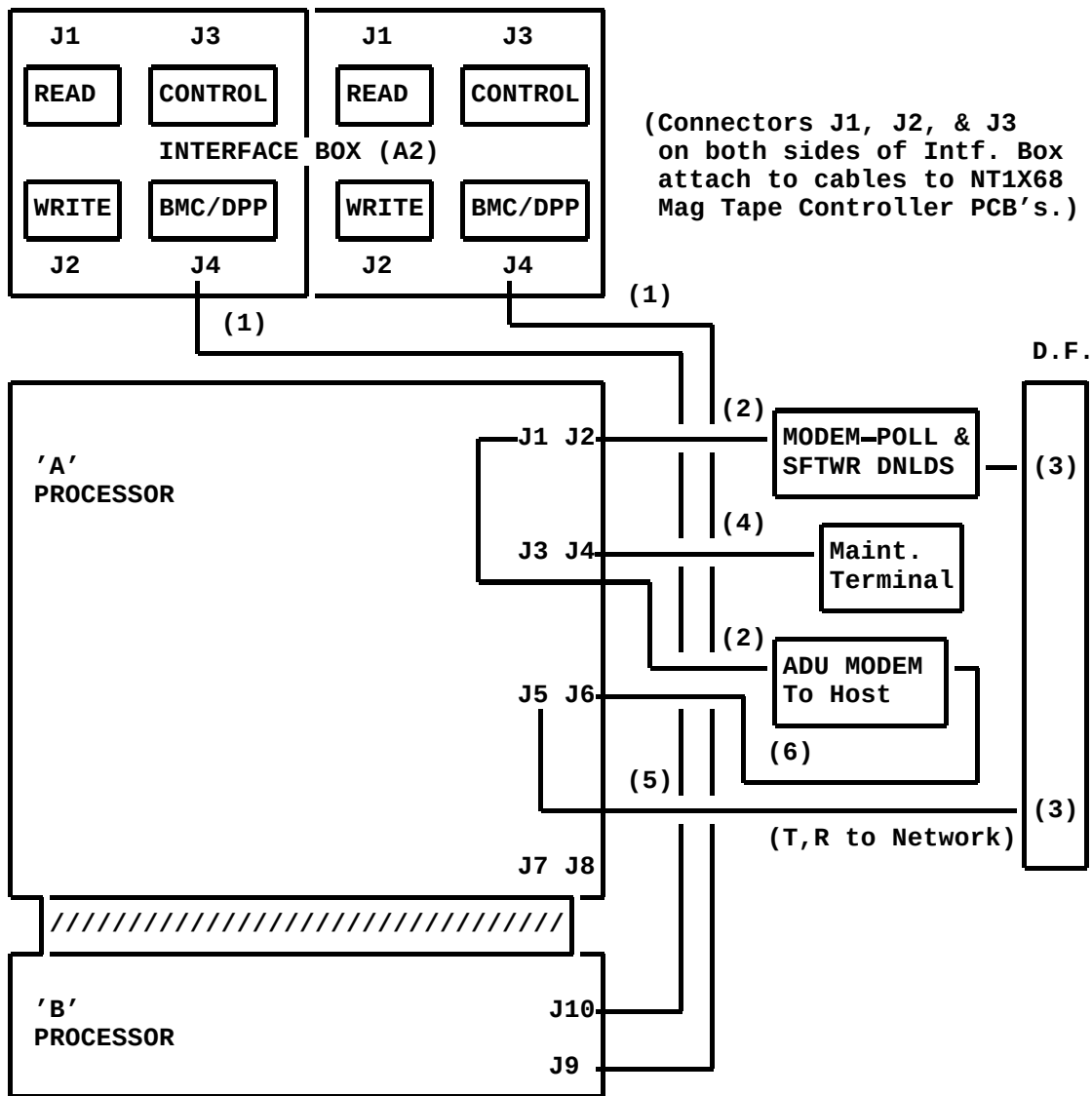
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**Figure 5: BMCA Connectivity Diagram For 'F' & 'J' Feature Groups**

1. These are 4' ribbon cables (Connector J10 = NT6M99AG & J9 = NT6M99AF) furnished by NSD.
2. These are 50' RS-232-C Cables (NT8M99AG) furnished by NSD.
3. The Modem-DF cables are engineered/furnished/installed by DMS100.

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- 0 4. These are 25' RS-232-C cables (NT8M99AB) furnished by NSD.  
0 5. Cables for connector J5 are engineered/furnished/installed by DMS100  
0 Switching, however NSD provides the appropriate connectors.  
0 6. These are RS-232-C Cables (NT8M70AA) furnished by NSD.

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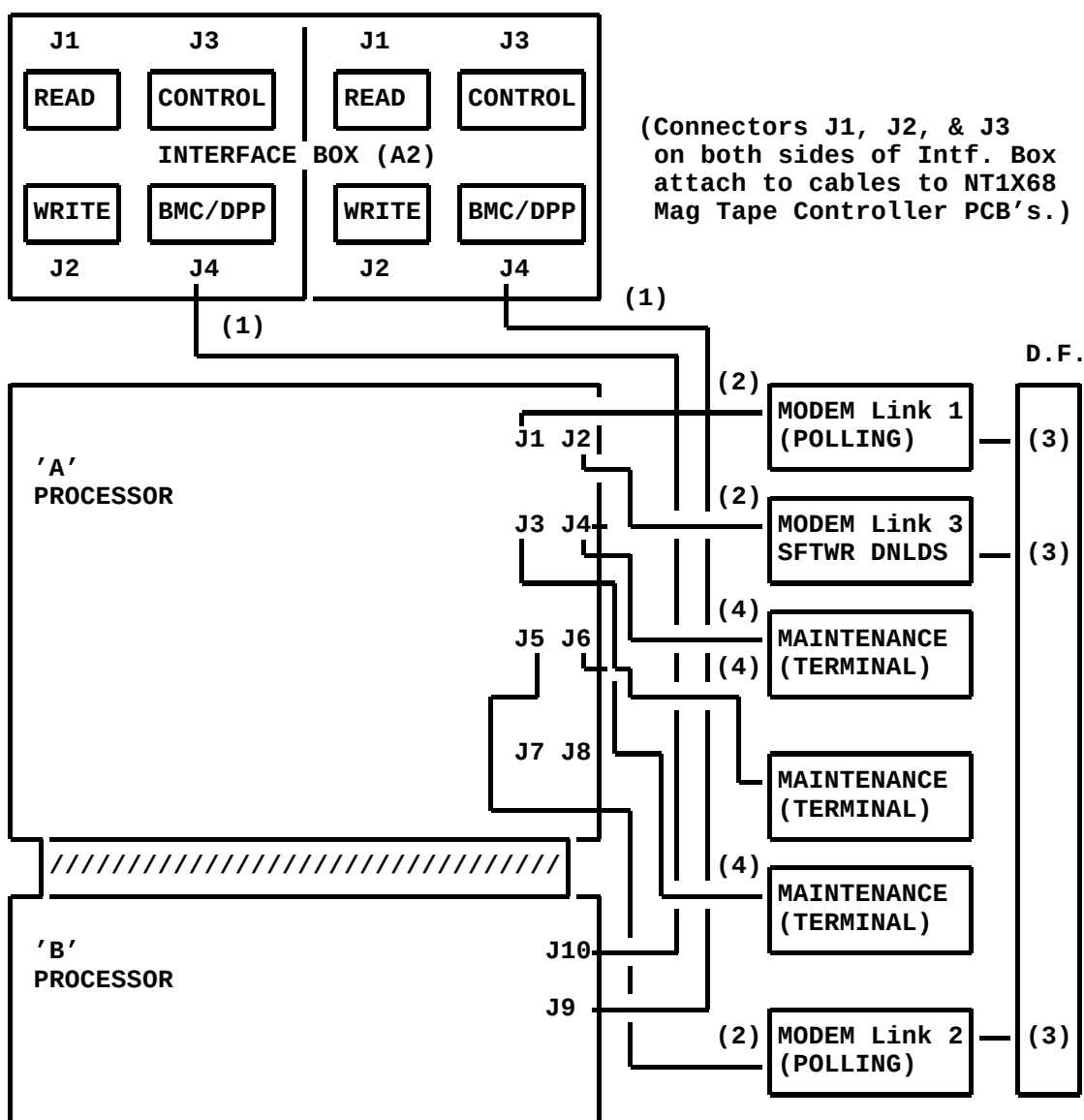


Figure 6: BMCA Connectivity Diagram For 'E' Feature Group  
W/O 56K Polling

1. These are 4' ribbon cables (Connector J10 = NT6M99AG & J9 = NT6M99AF) furnished by NSD.
2. These are 50' RS-232-C Cables (NT8M99AG) furnished by NSD.
3. The Modem-DF cables are engineered/furnished/installed by DMS100.

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4. These are 25' RS-232-C cables (NT8M99AB) furnished by NSD.

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5. Cables for connector J5 are engineered/furnished/installed by DMS100  
Switching, however NSD provides the appropriate connectors.

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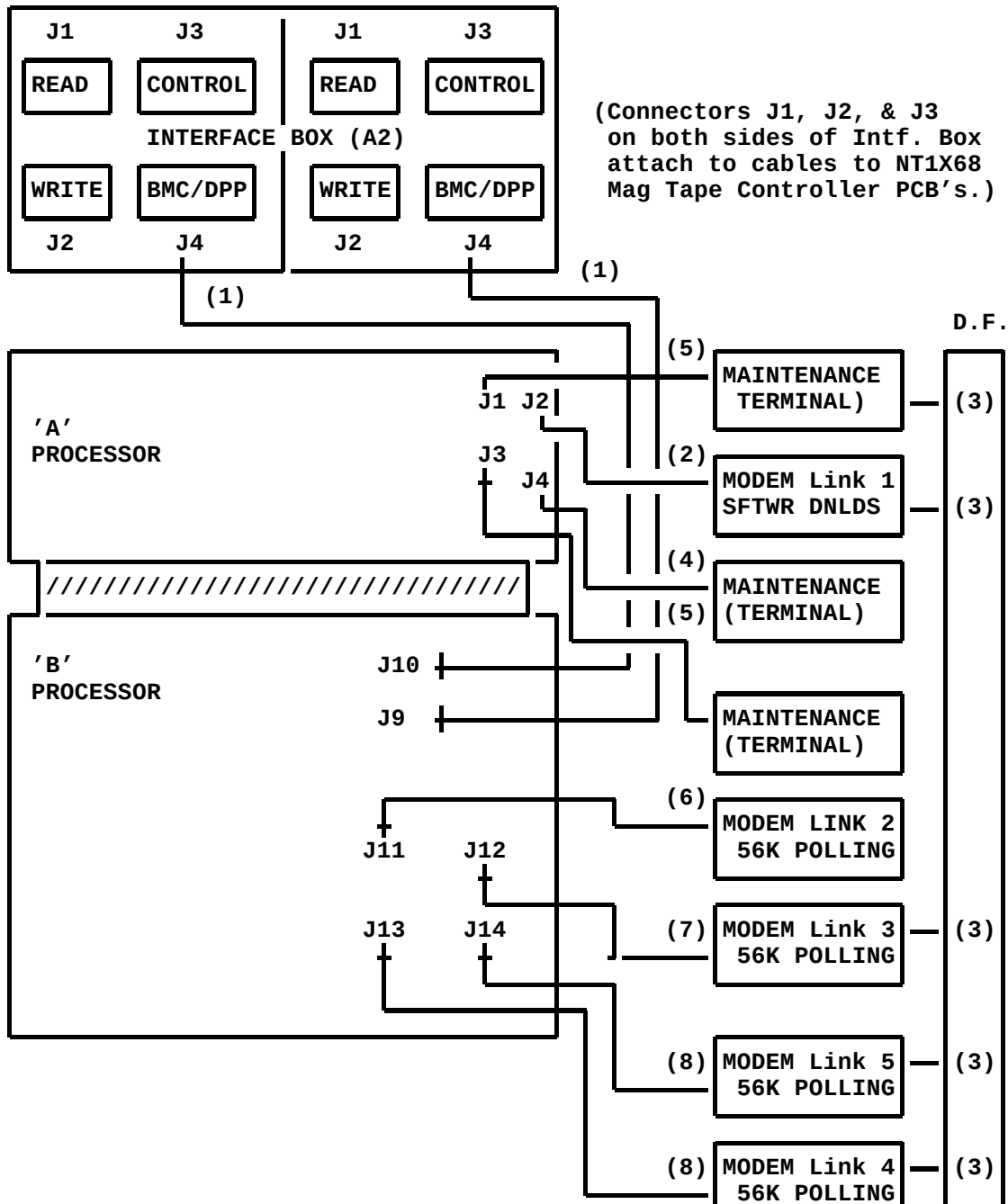
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0   
0 Figure 7: BMCA Connectivity Diagram For 'E' Feature Group W/56K Polling

0 Refer to the Next Page for a description of numbered items enclosed  
0 in parentheses.

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- 0 1. These are 4' ribbon cables (Connector J10 = NT6M99AG & J9 =  
0 NT6M99AF) furnished by NSD.  
0 2. These are 50' RS-232-C Cables (NT8M99AG) furnished by NSD.  
0 3. The Modem-DF cables are engineered/furnished/installed by  
0 DMS100.  
0 4. These are 25' RS-232-C cables (NT8M99AB) furnished by NSD.  
0 5. These are 25' RS-232-C cables which must be provisioned.  
0 Provide via the PEC NT8M99AB.  
0 6. This Cable NTNX36BG must be provisioned; length job engi-  
0 neered to a maximum of 50 feet.  
0 7. This cable must be provisioned based on the modem used as  
0 follows. Also, the length is job engineered to a maximum of  
0 50 feet.  
0 \* UDS 56K DSU: Use NTNX36BG or BZ cable  
0 \* GDC or SYNT II DSU: Use NTNX69AA cable  
0 \* AT&T 2600 Series or MR1 DSUs: Use NTNX69AD Cable  
0 8. This is a 50' RS-232C Cable (NT8M99AG) which must be provi-  
0 sioned.

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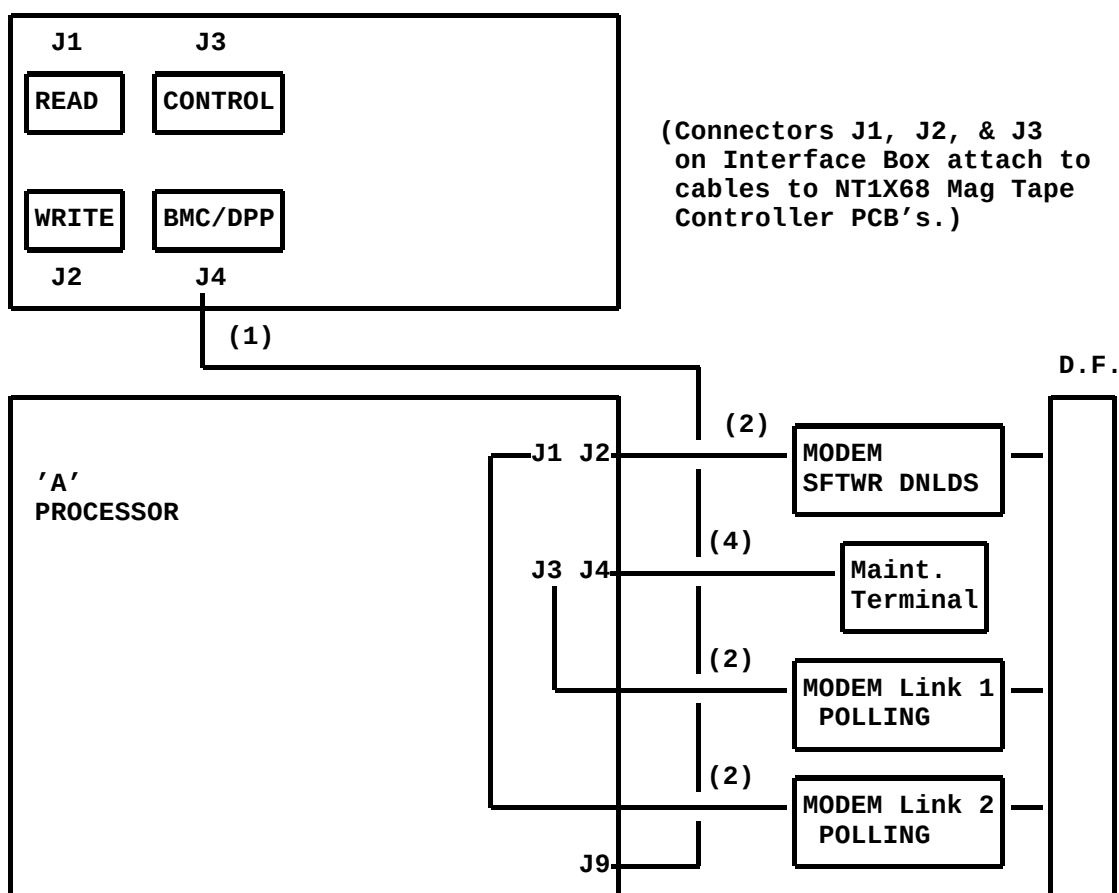


Figure 8: BMCD Connectivity Diagram For 'G' and 'L' Feature Groups

1. These are 4' ribbon cable (NT6M99AG) furnished by NSD.
2. These are 50' RS-232-C Cables (NT8M99AG) furnished by NSD.
3. The Modem-DF cables are engineered/furnished/installed by DMS100.
4. These are 25' RS-232-C cables (NT8M99AB) furnished by NSD.

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0 17.1 HARDWARE PROVISIONING

0

0 17.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The following hardware usage restrictions apply to all version of  
0 NSD Billing Media Converter (BMC):

0 \* 60Hz AC Clock Option

0 The BMC contains a clock for time stamping BMC log messages.  
0 The clock originates from one of two sources:

- 0 1. A DC powered crystal oscillator internal to the BMC, or a  
0 2. A commercial 110VAC (60Hz) signal through NSD supplied AC  
0 transformers to the BMC.

0 In offices configured for Isolated System Grounding (ISG) do  
0 not connect the clock circuit AC transformer. This connection  
0 introduces an ISG violation.

0 The 60Hz AC clock is prime when wired. If it is not used,  
0 then the internal DC clock provides the signal for the clock  
0 which generates the log message time stamps.

0 Transformers and connectors for wiring the AC clock option  
0 are always provided with BMC's. The 110Vac 60Hz source must  
0 be commercial, NON-GENERATOR. The AC clock and internal DC  
0 clock circuits accuracy is approximately equal and accurate  
0 to +/- 4 seconds per day.

0 \* Physical Location Limits

0 The distance between the MTD controller card (NT1X68) and the  
0 main BMC unit must not exceed 25 feet.

0 \* Modem Selection with Specific Options

0 Do Not Provide UDS modems for any BMC application that in-  
0 cludes the Automatic Dial-Up (ADU) option. Until further no-

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0 tice the UDS modems do not work with the BMC ADU option. UDS  
0 modems do work with non-ADU applications.

0 \* Host Collector Compatibility

0 In all applications where a BMC unit is not used as the Host  
0 Collector (NSD 'Pollstar'), then the SAE must initiate a Com-  
0 patibility Analysis to be performed by:

- 0 - Department 3321 in conjunction with NT Peripheral TAS to  
0 insure Host-To-BMC compatibility for U.S. jobs, or
- 0 - Department S684 in conjunction with NT Peripheral TAS to  
0 insure Host-To-BMC compatibility for Canadian jobs.

0 17.1.2 HARDWARE DEPENDENCIES

0 The following DMS-100F supporting hardware is required for the  
0 BMCA/S/D as applicable:

0 \* DMS To BMC Interface

0 Provide two NT1X68AC/BC IOC Cards per BMCA or BMCS or provide one  
0 NT1X68AC/BC IOC Card per BMCD. Provide two each NT0X96AA/DB  
0 (READ), NT0X96AB/DC (WRITE), and NT0X96AC/DD (CONTROL) cables to  
0 interface the IOC cards to the BMC interface box for BMCA & BMCS.  
0 Provide only one each cable for BMCD applications.

0 See Table B, 'I/O Controller Module Provisionable Cards' for de-  
0 vice controller card assignment rules.

0 \* Transmission to Host Collector

0 The BMC utilizes at least one (1) modem interface for transmitting  
0 data to the processing center (Host). This requirement can be  
0 fulfilled by provisioning Rixon/UDS 201, 208A/B or T212 type mod-  
0 ems Refer CM-633 for detailed engineering information on Rixon and  
0 UDS modems respectively). NSD supplies modem cables (NT8M99AG)  
0 with every BMC. These cables are designed for standard modems;  
0 9600 max. baud.

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0 The TURBO BMC's (PEC's NT8M04EE & NT8M04FE) are capable of polling  
0 speeds up to 56K baud. Where this high speed polling is required,  
0 a dedicated link between the modem at the BMC and the modem at the  
0 Host is required. Also, the cable between the BMC and the 56K  
0 modem is dependent on the modem manufacturer:

|   |                |           |
|---|----------------|-----------|
| 0 | 56K Modem Type | Cable PEC |
| 0 | UDS            | NTNX36BG  |
| 0 | GDC            | NTNX69AA  |
| 0 | AT&T           | NTNX69AD  |

0 (The length of these 56K modem cables is job engineered.)

0 \* Hardcopy Output

0 The BMC utilizes a KSR printer for installation, testing, and  
0 maintenance purposes. This printer must be EIA RS-232-C and be  
0 located within 25 cable feet of the BMC. A remote KSR printer may  
0 also be used as a maintenance device utilizing a Rixon or UDS  
0 modem. The baud rate of this link must not exceed 1200 baud. A  
0 CRT may also be attached to this port, in which case baud rates to  
0 9600 are acceptable. NSD supplies a 25' RS-232 terminal cable  
0 (NT8M99AB) with every BMC. This cable fits all standard RS-232-C  
0 terminal devices.

0 \* Remoting DMS/BMC Alarms

0 The BMC offers the capability of monitoring several BMC alarm con-  
0 ditions through the DMS-100F alarm system. The BMC alarm signals  
0 may be implemented via the NT0X10AA, Miscellaneous Scan Detector  
0 Card. NSD supplies a connector kit (NT6M96AD) for the BMC side of  
0 the cable. Local cable is used between the BMC to the MDF and the  
0 MDF to the Scan Detector Card. The BMC requires six (6) scan  
0 points.

0 \* 60Hz AC Clock Option Support

0 If the AC Clock option is required (in spite of the ISG violation)  
0 then provide one NT0X07AU (AC Mounting Plate). NOTE: Two AC cir-  
0 cuits are required for a redundant BMC and one for the BMC Deuce.  
0 NSD Division supplies a kit (NT6M96AG) which includes 120-19VAC  
0 trans- formers and BMC connectors. Local cable is used between  
0 the BMC and the supplied transformers.

0

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0  
0

0 | P and C SIDE PORT REQUIREMENTS

0  
0 | There are 3 C side ports (read,write, and control). There are  
0 | zero or no P side ports.

0 | DMS BUS PORT REQUIREMENTS

0  
0 | N/A

0 | CIRCUITS PER CARD

0  
0 | N/A

0 | DISCRIMINATION NUMBERING

0  
0 | Discrimination Numbering is 0-n.

0 17.1.3 PROVISIONING CONSIDERATIONS

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0 \* HDLC  
0 \* HDLC Lap-B  
0 \* BX.25  
0 \* ASCII

0 2. Station Message Detailed Recording (SMDR) Configuration  
0 referred to as the Billing Media Converter for SMDR  
0 (BMCS). The BMCS configuration supports SMDR data col-  
0 lection and polling with the BISYNC or ASCII protocol.

## 0 Simplex/Non-Redundant BMC Provisioning

0  
0 The NSD Billing Media Converter II Deuce (BMCD) is a dual  
0 user, single shelf, simplex device that stores and transmits  
0 Station Message Detail Recording (SMDR) records, for up to two  
0 Customer Groups (CGs).

0 The NT8M04\_G permits two of the Telco's CGs to poll DMS100F  
0 SMDR data via an IBM PC/XT/AT (or compatible) equipped with a  
0 synchronous interface board, standard 3780 Binary Synchronous  
0 Communications (BSC/BISYNC) protocol, and a third party PC  
0 pollable Call Accounting Software package.

0 The NT8M04\_L permits two of the Telco's CGs to poll DMS100F  
0 SMDR data via any Polling Device capable of handling ASCII  
0 data.

0 NOTE: This ECM does not define this Customer Premise Equip-  
0 ment (CPE). The ECM does define the DMS100F installed  
0 hardware and software requirements for the BMCD.

0 The BMCD offers the following features:

- 0 \* 72 or 140MB Disk Drive (Stores 1M/2M Call Record Respec-  
0 tively)
- 0 \* Partitioning For Two Customer Groups (CGs)
- 0 \* Simplex Operation And Storage
- 0 \* User Selectable Disk Storage Per CG

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- 0 \* SMDR Data Collection (DMS 100)
- 0 \* 3780 Bisync or ASCII protocol
- 0 \* Two Access Links Via Dial-Up Lines For Polling
- 0 \* One Access Links Via Dial-Up Lines For Software Downloads
- 0 \* Three Levels Of User Definable Alarms

## 0 Selecting The Correct BMC

0  
0 The SAE must determine which of the many BMC CONFIGURATIONS  
0 BEST MATCHES THE TELCO'S REQUIREMENTS. These requirements are  
0 determined as follows:

- 0 1. Determine the format of the call records to be  
0 stored/forwarded, e.g. LSSGR, SMDR, or NT Call Record  
0 Format.
- 0 2. If "SMDR (NT)" call record format is chosen, determine the  
0 number of customer groups to be support by a single BMC.
- 0 3. Determine if the Automatic Dial-Up (ADU) option is re-  
0 quired.
- 0 4. Determine the polling protocol required.
- 0 5. Determine the polling speed required for modem provision-  
0 ing.
- 0 6. Determine the disk drive size required.
- 0 7. Refer to paragraphs 2.2 and 2.3 to provision BMC  
0 supporting/interface hardware as required.

0 The BMC provides the capability of polling DMS billing data  
0 from a remote location. The BMC receives the billing data  
0 through the NT1X68AC or NT1X68BC, NSD Magnetic Tape Drive Con-  
0 troller Cards. The BMC provides total magnetic tape drive em-  
0 ulation, and accordingly, can reduce office requirements for  
0 magnetic tape drives. The BMCA and BMCS units require two

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0 NT1X68 cards and the BMCD (defined later) requires one NT1X68  
0 card.

0 Interface of each BMC unit to each NT1X68, Magnetic Tape Drive  
0 Controller Card is via three cables to the Interface Box. The  
0 BMCA/S units require 2 each Read (NT0X96AA/DB), Write  
0 (NT0X96AB/DC), and Control (NT0X96AC/DD) cables which must be  
0 ordered separately, length is job engineered and must not ex-  
0 ceed 25 feet. This must be accounted for when defining the lo-  
0 cation of the IOC shelf and the location of the BMC. The BMCD  
0 units require 1 each Read, Write, and Control cables. The  
0 BMCA/S units and the Interface Box occupy the same amount of  
0 vertical rack space as one NSD Divison MagTape Drive unit,  
0 plus 2.5 inches. The BMCD and the Interface Box occupy 14.5  
0 inches. The Interface Box is used to convert from switch  
0 board cabling to ribbon cabling. The BMC unit is powered in-  
0 directly from the PDC via the FSP. Note: The Interface Box  
0 does not require AC or DC power.

#### 0 BMCA / BMCS Disk Drive Sizing

0  
0 Raw data for these calculations is provided by the Telco.

0 Average Busy X Customer defined # Capacity Requirement  
0 Day Volume of days of disk = (in Call Records)  
0 (in Call Records) back-up

0 The Capacity Requirement translates to disk size via the fol-  
0 lowing Table:

0 \* Select average number of Call Records per block...

0 (If number of Call Records/block for this office is not  
0 shown use the next higher number.)

0 18 20 26  
0 22 28  
0 24 30

0 \* Enter the Table at the left side. Find the appropriate  
0 number Records per block. Read to the right to find the  
0 Capacity Requirements next greater than or equal to the

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calculated value. Read down bottom of the Table to find the disk size.

| CALL RECORDS<br>PER BLOCK | 70 % CAPACITY REQUIREMENTS<br>(in number of Call Records) |         |         |          |
|---------------------------|-----------------------------------------------------------|---------|---------|----------|
| 18                        | 144,372                                                   | 272,106 | 549,990 |          |
| 20                        | 127,080                                                   | 302,340 | 611,100 |          |
| 22                        | 139,788                                                   | 332,574 | 672,210 |          |
| 24                        | 152,496                                                   | 362,808 | 733,320 |          |
| 26                        | 165,204                                                   | 393,042 | 794,430 |          |
| 28                        | 177,912                                                   | 423,276 | 855,540 |          |
| 30                        | 190,620                                                   | 453,510 | 916,650 |          |
| SELECT DISK-><br>SI%E     | 30MB                                                      | 72MB    | 140MB   | (future) |

NOTE: Use this table only for non BX.25 and non Deuce applications.

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| CALL RECORDS<br>PER BLOCK | 66.6 % CAPACITY FOR BX.25 APPLICATIONS ONLY<br>(in number of Call Records) |         |           |                             |                           |                           |
|---------------------------|----------------------------------------------------------------------------|---------|-----------|-----------------------------|---------------------------|---------------------------|
|                           | 18                                                                         | 20      | 22        | 24                          | 26                        | 28                        |
| 18                        | 144,372                                                                    | 321,336 | 650,664   | 1,802,304                   | 2,313,360                 | 4,386,600                 |
| 20                        | 127,080                                                                    | 357,040 | 722,960   | 2,002,560                   | 2,570,400                 | 4,874,000                 |
| 22                        | 139,788                                                                    | 392,744 | 795,256   | 2,202,816                   | 2,827,440                 | 5,361,400                 |
| 24                        | 152,496                                                                    | 428,448 | 867,552   | 2,403,072                   | 3,084,480                 | 5,848,800                 |
| 26                        | 165,204                                                                    | 464,152 | 939,848   | 2,603,328                   | 3,341,520                 | 6,336,200                 |
| 28                        | 177,912                                                                    | 499,856 | 1,012,144 | 2,803,584                   | 3,598,560                 | 6,823,600                 |
| 30                        | 190,620                                                                    | 535,560 | 1,084,440 | 3,003,840                   | 3,855,600                 | 7,311,000                 |
| SELECT DISK-><br>SI%E     | 30MB                                                                       | 72MB    | 140MB     | 380MB<br>w/o 56K<br>Polling | 380MB<br>w/56K<br>Polling | 760MB<br>w/56K<br>Polling |

Capacity Requirements exceeding those shown in the Table are beyond the current capacity of the BMC.

(\*\* Maximum Capacity Numbers are available from NSD, Morton Grove, Illinois.)

#### BMCD Disk Drive Sizing

The BMCD is capable of storing SMDR data for two Customer Groups on a single DDU. Therefore, the BMC Deuce is capable of partitioning disk storage and ensure sufficient space is available of each group.

Storage Capacity Computations: Data storage is flexible to provide growth. A storage parameter setting allows the Telco to restrict the maximum amount of disk space used by each customer group (e.g. 70% for CG1 & 30% for CG2). The storage medium is based on hard disk technology using a 72 or 140 megabyte disk drive.

The chart below depicts typical disk storage capacity given: A 48 byte average record and 18 call records per line per day. Maximum Call Record Storage is indicated in the chart below:

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| 0 | DISK SIZE | MAXIMUM<br>CALL RECORD<br>STORAGE | AGGREGATE<br># OF LINES | APPROXIMATE<br>DAYS OF STORAGE |
|---|-----------|-----------------------------------|-------------------------|--------------------------------|
| 0 | =====     | =====                             | =====                   | =====                          |
| 0 | 72        | 1M                                | 1,000                   | 55                             |
| 0 | 72        | 1M                                | 3,000                   | 18                             |
| 0 | 140       | 2M                                | 4,000                   | 28                             |
| 0 | 140       | 2M                                | 6,000                   | 18                             |

0 The formula for calculating the aggregate number of days of SMDR  
0 data storage follows:

0 a) Total Storage / No. of Records per day = Days of Storage

0 1,000,000/18(1,000) = 55.55 days of storage

0 1,000,000/18(3,000) = 18.51 days of storage

0 2,000,000/18(4,000) = 27.77 days of storage

0 2,000,000/18(6,000) = 18.51 days of storage

0 b) (Total storage - % allocated to CG#1)/48 = Line Capacity

0 Example:

0 (1,000,000 - 70% Storage for CG#1)/48 = 6250 Lines

0 NOTE: The above table si for BMC Duece only.

0 17.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not Applicable

0 17.1.5 TRAFFIC TABLES

0  
0 Not Applicable

0

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0 17.2 PRODUCT/SYSTEM SPECIFICATION

0

0 17.2.1 PHYSICAL CHARACTERISTICS

0

0 BMC II/DEUCE Power Requirements:

0 The BMCD is powered from the PDC via one 10 amp fuse.

0 The BMCA and BMCS configurations require two (2) 10 amp fuses.

0 The minimum grounding requirements for all BMC units is isolated  
0 logic and frame grounds (See ECM-289).

## 0 BMC Deuce (BMCD)

0

0 Input Voltage -48VDC  
0 Power Consumption 150 watts  
0 Current Drain 5 Amps  
0 Thermal Dissipation 612 BTU/hr  
0 Fusing Requirements One 10 Amp Fuse at PDC

## 0 MECHANICAL DIMENSIONS

0 Height 14.5"(368.5mm)  
0 Width 19"(483mm)  
0 Length 15"(381mm)

0

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## 0 BMC AMA &amp; SMDR (BMCA &amp; BMCS)

0  
0 Input Voltage -48VDC  
0 Power Consumption 300 watts  
0 Current Drain 10 Amps  
0 Thermal Dissipation 1,024 BTU/hr  
0 Fusing Requirements Two 10 Amp Fuses at PDC

## 0 MECHANICAL DIMENSIONS

0 Height 14.5"(368.5mm)  
0 Width 19"(483mm)  
0 Length 15"(381mm)

0 17.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not Applicable

0 17.2.3 SPARING INFORMATION

0  
0 Provision one BMC Spares Kit as required for the BMC configura-  
0 tion (BMCA, BMCS, or BMCD) per Telco specifications. See para-  
0 graphs 2.1.3 thru 2.1.4 for BMC Spares Kit PECs.

0 17.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Simplex BMCD requirements are as follows:  
0 One (1) 10 AMP fuse required at PDC  
0 Reduntant BMCA/S requirements are as follows:

0  
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0 | Two (2) 10 AMP fuses are required at PDC. One for  
0 | each unit.

0 | 17.2.5 CURRENT DRAIN INFORMATION

0  
0 | Simplex BMCD requirements are as follows:  
0 | 2 Amps nominal  
0 | 7 Amps maxium at intitial start up

0 | Redundant BMCA/S requirements are as follows:  
0 | 4 Amps nominal  
0 | 14 Amps maxium at intitial start up

0 17.3 SOFTWARE PROVISIONING

0

0 17.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The DMS100F must be equipped with the NTX103AA (IBN - SMDR En-  
0 hanced) software package only if SMDR data is to be collected.  
0 This package is not required for AMA. NTX103AA requires the fol-  
0 lowing S/W packages.

0 NTX000AA - BILGE  
0 NTX001AA - Common Basic  
0 NTX102AA - IBN Station Message Detailed Recording (SMDR)  
0 NTX901AA - Local Features 1

0

0

0

0  
0 Host - Input/Output Equipment  
0 Chapter 8

0 17.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not Applicable

0 17.3.3 MEMORY PROVISIONING

0  
0 Not Applicable

0 17.4 REAL TIME IMPACT

0 Not Applicable

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## 0 18.0 Attendant Consoles

0 The BSAC (Business Services Attendant Console) is defined as an op-  
0 tional feature of the Meridian Digital Centrex (MDC). It is used to  
0 answer calls placed to a specific directory number (DN), dial "0"  
0 calls from within a customer group, intercept calls, and "don't an-  
0 swer" recalls. The console operates in a switch loop mode, and is  
0 connected to the DMS-100F switch via standard three-pair cable through  
0 three standard line cards.

0 Note, the console is not connected directly to the line and  
0 trunk circuits; a virtual loop concept is used. Refer to Figure  
0 1 and 2 for a conceptual block diagram of the Attendant  
0 Console/DMS system configuration.

0 The BSAC terminal is used in DMS100 Switching offices as an  
0 interface between the operator and the switch. The operator to  
0 DMS interface is via a keyboard, for sending information to the  
0 DMS and a combination, 16 segment display for receiving informa-  
0 tion from the DMS. At the same time the operator is in voice  
0 communication with the customer.

0 Additionally, this ECM consolidates and supercedes all existing  
0 Attendant Console ECM's and API's which include the following:

0 API-038 API For BSAC

0 ECM-090 Power Supply For BSAC & BSAC Provisioning

0 ECM-098 Power Supply For BSAC W/O Battery Backup

0 ECM-147 New BSAC And Battery Backup

0 ECM-21804 NT4X09AH & NT4X09AG BSAC

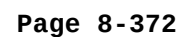
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0 \* NT1X31AA MD status for U.S. Ref. ECM320 for NT3X68 Provisioning.

0 Figure 1: Attendant Console Current Configuration Using LGC/LCM

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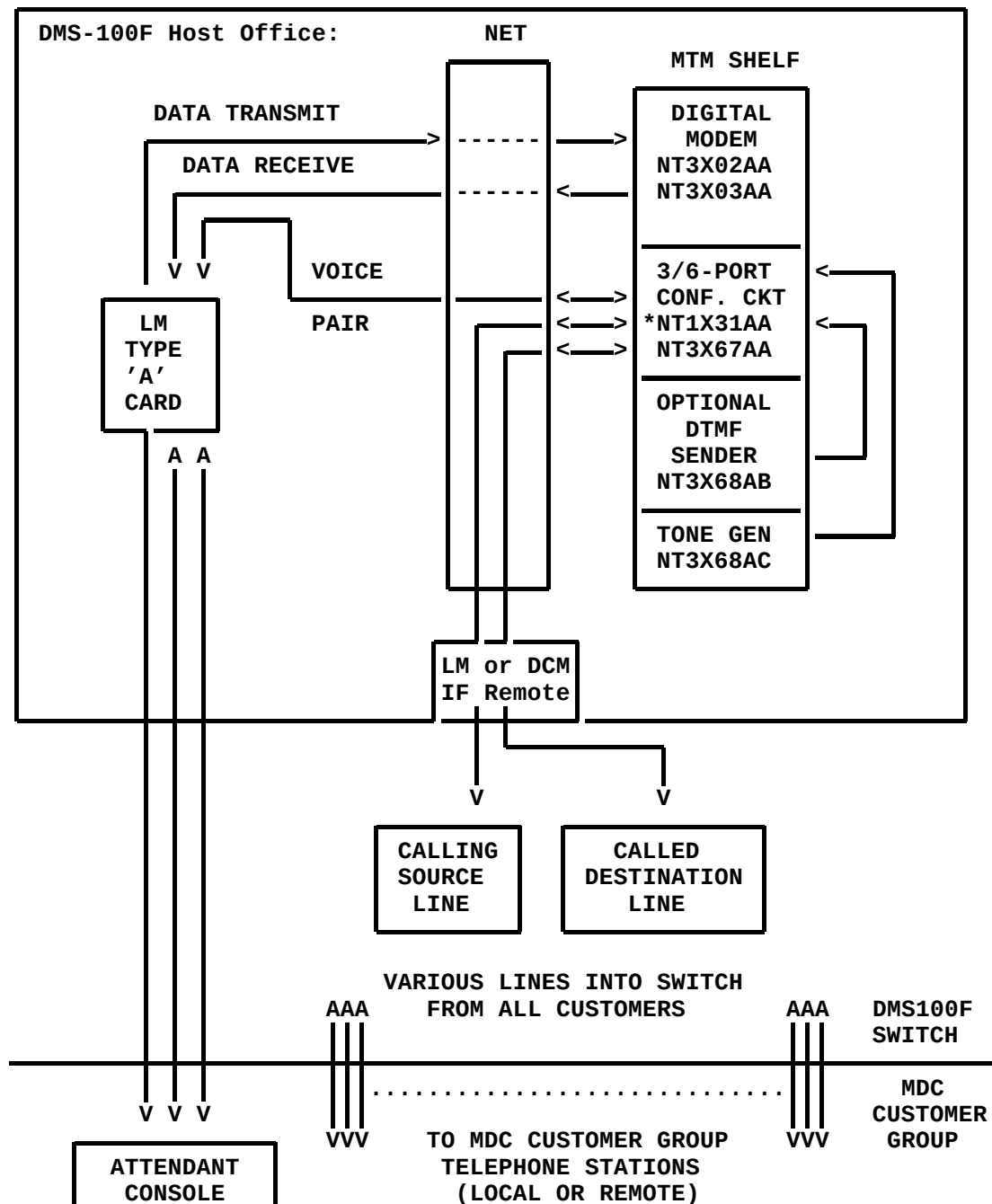
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0 NT4X09BB/BC  
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0 Figure 2: Attendant Console Existing Configuration Using LM's  
0 \* NT1X31AA MD status for U.S. Ref. ECM320 for NT3X68 Provisioning.

0 18.1 HARDWARE PROVISIONING

0

0 18.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The physical location of the Attendant Console from the DMS is  
0 the only known usage restriction. In that; if the unit is placed  
0 greater than 600 feet from the nearest MIS Frame FSP then the  
0 Pylon power supply must be provided as defined herein.

0 18.1.2 HARDWARE DEPENDENCIES

0

0 Additional BSAC support hardware required at the host office fol-  
0 lows:

- 0 \* Conference Circuits
- 0 \* Digital Modems
- 0 \* Tone Generator Circuit Packs

0 18.1.3 PROVISIONING CONSIDERATIONS

0

0 The Attendant Console may be provisioned for any DMS-IBN System.  
0 However, different versions exist to support the different market  
0 requirements. The BSAC is shipped with a 8 foot connectorized  
0 cable assembly.

0



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0 The provisioning method used for determining the number of at-  
0 attendant consoles is based on the CCS method derived from the  
0 Erlang C formula.

0 The number of attendant consoles to be provisioned should be  
0 based on the following criteria:

- 0 \* the attendant console activated CCS
- 0 \* the speed of answer objectives
- 0 \* and the average attendant work time (AWT).

0 The NT4X09BB and NT4X09BC BSAC's will be provisioned in the same  
0 way as the NT4X09AG and NT4X09AH attendant consoles. Section  
0 450/310 of NTP 297-1001-450 outlines all of the provisioning con-  
0 siderations for Canadian Engineering. The NT8620 Reference Man-  
0 ual outlines all of the provisioning for U.S. Engineering.

0 Provide BSAC Unit NT4X09BB for all U.S. requirements and Canadian  
0 English speaking customer requirements or NT4X09BC for French  
0 keyboard characters

0 The following BSAC support hardware required at Host Office:

- 0 1. Conference Circuits
- 0 2. Digital Modems
- 0 3. Tone Generator Circuit Packs

0 The above support hardware is provisioned as follows:

- 0 \* Conference Circuits

0 Provide one (1) NT3X67AA (Six Port Conference Circuit)  
0 per one (1) or two (2) BSACS provided as per customer re-  
0 quirements. If customer requires the NT3X67AA be used in  
0 a three (3) port configuration, then provide one (1)  
0 NT3X67AA per two (2) BSACs, otherwise provide one (1)  
0 NT3X67AA per BSAC.

- 0 \* Digital Modems

0 Provide one (1) NT3X02 & NT3X03 modem pair per BSAC. This  
0 modem pair provides four (4) digital modem circuits.

- 0 \* Tone Generator CP

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0 Provide one Call Waiting Tone Generator Card per Central  
0 Office (CO). A second card may be provided per customer  
0 request for increased reliability. The card is equipped  
0 with four (4) circuits.

0 \* Head Sets

0 Due to logistics U.S. and Canadian jobs are not supplied  
0 with head sets from the same manufacturer. Provide  
0 headset as follows:

0 For Canadian jobs order:

- 0 - QSR2F2 - Hset w/T Mark Std w/o Acc
- 0 - QSR2G1 - Hset Std w/15ft cord
- 0 - QKP1A - Headset Acc Kit

0 For U.S. jobs order:

- 0 - HSB552-1 - Supra Monaural Headset

0 The following headsets have been Manufacture Discon-  
0 tinued (MD'ed):

- 0 - HS0552-1 - Supra Monaural Headset - Status MD'ed
- 0 - HS0554-1 - Supra Binaural Headset - Status MD'ed

0 \* DTMF Sender CP

0 One NT3X68AB - DTMF SENDER CP is optionally required when  
0 the Attendant Console must output DTMF to some other  
0 switching system. This circuit is provisionable on a one  
0 per office basis two max for redundancy.

0 \* Power Supply

0 The attendant console requires -48V for the Central Of-  
0 fice when the console is located less than 875 feet from  
0 the power source. If the console is located greater than  
0 875 feet from the power source then provide the Pylon  
0 Power Supply with or without battery back-up. One Pylon  
0 power supply can accommodate up to two (2) attendant con-  
0 soles.

0 Note:

0 The strap between terminals 7 and 8 must be con-  
0 nected on the KTS-3 power supply. The strap will be  
0 in place on the Pylon Nevafail (NF-3) as it comes  
0 from the factory.

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0 \* Line Cards

0 Each attendant console requires three (3) Type-A Line  
0 Cards to connect to the integrated business network, one  
0 for Voice, Data Transmit, and Data Receive.

0 Facilities connecting the console to the assigned line  
0 cards shall be 2-wire 1300 ohms and not greater than 8db  
0 loss with a maximum loop-length of 4,877m (16,000 ft.).

0 18.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 18.1.5 TRAFFIC TABLES

0  
0 Refer to PRTCALC/RTCALC for Traffic Tables.

0 18.2 PRODUCT/SYSTEM SPECIFICATION

0  
0 18.2.1 PHYSICAL CHARACTERISTICS

0  
0 \* CURRENT DRAIN

0 The Attendant Console current drain is 1-1/3 amps.

0 \* FUSING REQUIREMENTS

0

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0 If the Attendant console is fused from the MIS frame FSP, a  
0 1-1/3 amp fuse is required. Otherwise power is supplied via  
0 the Pylon Power Supply.

0 18.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 18.2.3 SPARING INFORMATION

0  
0 Sparing is per Telco Specifications Only.

0 18.3 SOFTWARE PROVISIONING

0

0 18.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The Attendant Console requires the following S/W Packages in or-  
0 der to function properly:

0 NTX100AA - Integrated Business Networks - Basic (IBN)

0 NTX100AA Needs:

0 NTX000AA - BILGE

0 NTX001AA - Common Basic

0 NTX901AA - Local Features Basic

0

0

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0 Host - Input/Output Equipment  
0 Chapter 8

0 18.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 18.3.3 MEMORY PROVISIONING

0  
0 Refer to MEMCALC for CC/SN memory requirements.

0 18.4 REAL TIME IMPACT

0 Refer to RTCALC for Real Time requirements.

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0 19.0 Meridian Business Sets (MBS)

0 The DMS100F Meridian Business Set (MBS), is designed to operate with  
0 Northern Telecom's Meridian Digital Centrex (MDC) Software, which pro-  
0 vides subscribers with pushbutton access to a host of business fea-  
0 tures. Feature assignment is completely flexible because features are  
0 programmable in the DMS-100F system software.

0 For further information, refer to the following:

0 NTP 297-2011-100 Business Set Feature Description and Operation  
0 NTP 297-2011-180 Business Set Line Engineering  
0 NTP 297-2011-200 Business Set General Description, Installation,  
0 Maintenance and Ordering Information

0 The MBS operates over a 2-wire (single pair) loop to a line card  
0 (NT6X21) controlled by the DMS-100F switching system. The extensive  
0 loop length allows the EBS to be located up to 15,000 feet (4.8 km)  
0 from the host or remote office using standard 26-guage wire.

0 The M5009 Meridian Business Set (MBS) is equipped with a standard  
0 12-button telephone keypad, nine assignable keys which have LCD indi-  
0 cators and four dedicated feature keys for Volume Up, Volume Down,  
0 Hold, and Release.

0 The M5112 Meridian Business Set (MBS) is equipped with a standard  
0 12-button telephone keypad, 12 feature keys with LCD indicators and  
0 four dedicated feature keys for Volume Up, Volume Down, Hold, and Re-  
0 lease. The M5112 also provides handsfree speakerphone capability  
0 which can be controlled with 2 of the feature keys for handsfree and  
0 mute.

0 The M5209 Meridian Business Set (MBS) is equipped with a standard  
0 12-button telephone keypad, nine assignable keys which have LCD indi-  
0 cators and four dedicated feature keys for Volume Up, Volume Down,  
0 Hold, and Release. There is a 48 character LCD tiltable display,  
0 which is made up of two lines of 24-characters. The display is con-  
0 trolled by an internal microprocessor, and shows information such as  
0 calling name, calling number, reason display, time and programming in-  
0 formation.

0 The M5312 Meridian Business Set (MBS) is equipped with a standard  
0 12-button telephone keypad, 12 assignable keys which have LCD indica-

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0 tors and four dedicated feature keys for Volume Up, Volume Down, Hold,  
0 and Release. There is a 48 character LCD tiltable display, which is  
0 made up of two lines of 24-characters. The display is controlled by  
0 an internal microprocessor, and shows information such as calling  
0 name, calling number, reason display, time and programming informa-  
0 tion. The M5312 also provides handsfree speakerphone capability which  
0 can be controlled with two of the feature keys for handsfree and mute.

0 The M5212 ACD Meridian Business Set (MBS) is equipped with a standard  
0 12-button telephone keypad, 12 assignable keys which have LCD indica-  
0 tors and four dedicated feature keys for Volume Up, Volume Down, Hold,  
0 and Release. There is a 48 character LCD tiltable display, which is  
0 made up of two lines of 24-characters. The display is controlled by  
0 an internal microprocessor, and shows information such as calling  
0 name, calling number, reason display, time and programming informa-  
0 tion. The M5212 also supports both Carbon and Electret headsets and  
0 provides hookswitch bypass for ACD agents.

0 ADD ON MODULES: To further enhance a user's MBS, add on modules which  
0 provide additional features and functions, are available for the the  
0 entire MBS family. These modules include the (M518 18 Button Add-on)  
0 and the M536 (36 Button Add-on).

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0 19.1 HARDWARE PROVISIONING

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0 19.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not Applicable

0 19.1.2 HARDWARE DEPENDENCIES

0

0 Not Applicable

0 P AND C SIDE PORT REQUIREMENTS

0

0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0

0 Not Applicable

0

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0 CIRCUITS PER CARD

0  
0 Not Applicable

0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0 19.1.3 HARDWARE DEPENDENCIES

0  
0 N/A

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0 19.1.4 PROVISIONING CONSIDERATIONS

0  
0 ETS Line Card:

0 A special Electronic Telephone Set (ETS) Line Card (NT6X21) is  
0 required to receive and interpret ETS signalling information. The  
0 ETS line card is supported by the DMS100F advanced peripherals  
0 LCM, RLCM, and RSC.

0 Loop Range and Signal Attenuation:

0 The operational range for the ETS, with or without add-ons is de-  
0 termined by one of two factors - either the DC Loop Range or the  
0 Signal attenuation at 8Khz.

0 1) For successful ETS operation, the following limits cannot be  
0 exceeded:

0 Loop Resistance: 1230 Ohms Maximum

0 Signal Attenuation at 8 Khz: 24 db Maximum

0 2) The factor which reaches the maximum limit first will deter-  
0 mine the loop range for the Electronic Telephone Set (ETS).

0 3) The above DC loop resistance limit assumes that the central  
0 office battery voltage is between 42.75 volts and 56 volts.  
0 The associated cable and cabling distances used within the  
0 resistance limits above are:

| <u>GAUGE</u> | <u>LENGTH(Feet/Meters)</u> | <u>RESISTANCE (OHMS)</u> |
|--------------|----------------------------|--------------------------|
| 22           | 7500/2300                  | 250                      |
| 24           | 4800/1500                  | 250                      |
| 26           | 3000/1000                  | 250                      |
| 28           | 2000/600                   | 250                      |

0 Power Supply Requirements:

0 The Meridian Business Set and associated add-ons can be loop  
0 powered or locally powered. When locally powered the set  
0 provides all display, handsfree and add on capabilities.

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0 When CO loop powered or during power failure mode (also loop  
0 powered) only the basic feature capabilities of button ac-  
0 cess and receiving and making calls are available.

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0 19.1.5 OFFICE LAYOUT INFORMATION

0  
0 Not Applicable

0 19.1.6 TRAFFIC TABLES

0  
0 See ECM-497 - Simplified Traffic Provisioning

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0 19.2 PRODUCT/SYSTEM SPECIFICATION

0

0 19.2.1 PHYSICAL CHARACTERISTICS

0

0 N/A

0

0 19.2.2 EMI/EARTHQUAKE INFORMATION

0

0 N/A

0

0 19.2.3 SPARING INFORMATION

0

0 Apply standard sparing rules.

0 19.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 Not Applicable

0

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0 19.2.5 CURRENT DRAIN INFORMATION

0  
0 Not Applicable

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0 19.3 SOFTWARE PROVISIONING

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0 19.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

## 0 MBS SOFTWARE FEATURES

0 Please refer to the appropriate Centrex feature packages. These  
0 include NTX100 and NTX106 Business Set Features.

0 19.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 N/A

0 19.3.3 MEMORY PROVISIONING

0

0 Refer to MEMCALC for memory provisioning.

0 19.4 REAL TIME IMPACT

0 Refer to PRTCALC or REALQUICK for this information.

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0 20.0 RT-1000 Engineering (MIS for NACD)

0 The non-DMS Central Office portion of this product is NOT to be  
0 ordered through NTACCESS/CADES, but will be ordered through a  
0 Purchase Planner.

0 20.1 HARDWARE PROVISIONING

0

0 20.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 The ACD nodes (MACDs and/or MACD Servers) interface to the RTDB  
0 Server (through the X.25 gateway) via EMPC (Enhanced Multi-  
0 Protocol Controller) cards. Only one of the two links on the  
0 EMPC can be active; therefore, one EMPC is required for each  
0 link from a DMS-100 to the X.25 gateway of the RT-1000 system.  
0 Refer to the Engineering Manual Section to determine the number  
0 of links.

0 The unused port of the EMPC can NOT be used for other  
0 applications. Port 2 or 3 of the EMPC must be used for the  
0 connection to RT-1000.

0 20.1.2 HARDWARE DEPENDENCIES

0  
0 MPCs can NOT be used; EMPCs must be used.

0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable



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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable

## 0 CIRCUITS PER CARD

0  
0 Not applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable

0 20.1.3 PROVISIONING CONSIDERATIONS

0  
0 The capacities of the RT-1000 system are:

- 0 - 60 Controllers
- 0 - 180 Supervisor Terminals
- 0 - 4 Login Terminals (1 local, 3 remote)
- 0 - 7500 Agents
- 0 - 192,000 Calls Per Hour
- 0 - 12 Links (to MACDs and/or MACD Servers)

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0 20.1.4 OFFICE LAYOUT INFORMATION

0  
0 The RT-1000 MIS will not be co-located with the switch, although  
0 it may be in the same building.

0 20.1.5 TRAFFIC TABLES

0  
0 Each 9600 baud DMS EMPC link can support up to 24 NACD event  
0 messages per second. Since an average call requires 4 event  
0 messages, a link can handle 6 calls per second. If the traffic  
0 from any single ACD node (DMS-100) will exceed 6 calls per  
0 second, an additional link (or links) must be provisioned for  
0 that node.

0 Total messages from the ACD nodes to the RT-1000 MIS must not  
0 exceed 216 per second. Therefore, the total calls for the system  
0 must not exceed 54 per second. Refer to the Systems Engineering  
0 Bulletin 93-02-001, MACD, for additional information on messaging  
0 and link capacity.

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0 93 12 030 20.2 PRODUCT/SYSTEM SPECIFICATION

0

0 20.2.1 PHYSICAL CHARACTERISTICS

| 0 | 0        | 0              | 0      | 0     | 0      | 0        | 0       |
|---|----------|----------------|--------|-------|--------|----------|---------|
| 0 | CPC      | DESCRIPTION    | HEIGHT | WIDTH | DEPTH  | POWER    | CURRENT |
| 0 | -----    | -----          | -----  | ----- | -----  | CONS.    | DRAIN   |
| 0 | A0383956 | RTDB SERVER    | 24.0"  | 8.7"  | 23.4"  | 310W     | 5.4A    |
| 0 |          | w/ 1350SX DISK | 14.6"  | 7.5"  | 15.3"  | 70W      | 1.2A    |
| 0 | A0383954 | TERMINAL SRVR1 | 24.0"  | 8.7"  | 23.4"  | 310W     | 5.4A    |
| 0 | A0384175 | TERMINAL SRVR2 | 24.0"  | 8.7"  | 23.4"  | 310W     | 5.4A    |
| 0 | A0383799 | RDBMS SERVER   | 24.0"  | 8.7"  | 23.4"  | 310W     | 5.4A    |
| 0 |          | w/ 1350SA DISK | 14.6"  | 7.5"  | 15.25" | 70W      | 1.2A    |
| 0 | A0384173 | FDDI CONC.     | 5.0"   | 19.0" | 18.0"  | 100W     |         |
| 0 | B0239141 | XYPLEX CHASSIS | 10.5"  | 19.0" | 9.5"   | 600W     | 7.0A    |
| 0 | C3550140 | TELEBIT MODEM  | 2.4"   | 8.5"  | 13.0"  |          |         |
| 0 | A0351641 | DOWTY MODEM    | 2.2"   | 6.8"  | 11.5"  | 9W       |         |
| 0 | C3550132 | CABINET        | 78.25" | 19.0" | 24.0"  |          |         |
| 0 | B0239144 | CONTROLLR      | 6.4"   | 21.3" | 18.7"  |          |         |
| 0 |          | w/ MONITOR     | 14.0"  | 14.0" | 14.6"  | 80W      |         |
| 0 | A0386016 | PRINTER, EPSON | 5.9"   | 17.9" | 14.2"  | 120W MIN |         |
| 0 | B0239143 | INTEL TERMINAL | 3.9"   | 15.0" | 15.0"  |          | 5.0A    |
| 0 | A0322496 | LINE DRIVER    | .75"   | 2.0"  | 2.75"  |          | 0.0A    |

0

0 20.2.2 EMI/EARTHQUAKE INFORMATION

0

0 RT-1000 equipment is NOT earthquake compliant. RT-1000 equipment is  
0 FCC compliant.

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0 20.2.3 SPARING INFORMATION

0  
0 Provide spares per customer preference.

0 20.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not applicable

0 20.2.5 CURRENT DRAIN INFORMATION

0  
0 Not applicable

0 20.3 SOFTWARE PROVISIONING

0

0 20.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 DMS-100 and MACD Server Nodes

0  
0 In addition to ACD software, the following additional packages  
0 must be added. Refer ACD ECM for ACD software provisioning.

0 ACD - Supergroup (NTXE22)

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0  
0 One of the following two packages is also required.

0 Networked ACD on CCS7 (NTXN46)  
0 Networked ACD on PRA (NTXN47)

0 Refer to the SMS database for more information on software pack-  
0 aging.

#### 0 RT-1000 Hosts (HP)

0  
0 The HP UX (UNIX) operating system is included with the RT-1000 HP  
0 host hardware. It does not need to be ordered separately.

0 RT-1000H (application software for the HP hosts) includes soft-  
0 ware for all four HP hosts. One (1) RT-1000H software package is  
0 required per RT-1000 system, NOT one for each of the four HP  
0 hosts.

0 RT-1000H software is delivered on DAT (Digital Audio Tape). It  
0 is a universal load (the same software is installed at each  
0 site).

#### 0 RT-1000 Controllers (PCs)

0  
0 The SCO XENIX operating system is included with the Controller.

0 RT-1000C (application software for the controller) is included  
0 with the Controller. RT-1000C software is delivered on high den-  
0 sity floppy diskette (both 3.5" and 5.25").

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0 RT-1000 Terminals (PCs)

0  
0 DOS version 3.3 or higher is required. The DOS operating system  
0 is included with the Terminal.

0 RT-1000T (application software for the RT-1000 Terminals) is in-  
0 cluded with the Terminals. RT-1000T software is delivered on  
0 high density floppy diskettes (both 3.5" and 5.25").

0 20.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 All ACD nodes connected to the RT-1000 MIS must use the same data  
0 stream. RT-1000 supports BCS-30, BCS-31, and BCS-32 data  
0 streams. Since a BCS release allows the use of an earlier data  
0 stream (up to two releases back), the DMS-100 ACD nodes connected  
0 to the RT-1000 could be at different BCS releases. For example,  
0 one node could be running BCS-32 with BCS-30 data stream, and an-  
0 other node could be running BCS-31 with BCS-30 data stream.

0 20.3.3 MEMORY PROVISIONING

0  
0 All RT-1000 MIS components (HP hosts, controllers, terminals,  
0 X.25 gateway, and communications server) come with a standard  
0 memory configuration. Memory in these components is not  
0 provisionable.

0 Refer to MEMCALC for information on memory provisioning in the  
0 DMS- 100 (for NACD).

0

0

0 20.4 REAL TIME IMPACT

0 Refer to the Systems Engineering Bulletin 93-02-001, MACD, for  
0 information on the switch side real time impact.

0 Real-time capacity of the RT-1000 HP host computers will not be  
0 exceeded if the RT-1000 configuration does not exceed the capaci-  
0 ties given in section 2.4

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0 CHAPTER 9

0 HOST - MAINTENANCE AND MISC. EQUIPMENT

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Host - Maintenance and Misc. Equipment  
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0 1.0 Trunk Modules

0 1.1 Introduction

0 The Trunk Module (TM) encodes and multiplexes incoming speech  
0 from a maximum of 30 analog trunks into an eight-bit PCM format.  
0 The TM then combines them with internal control signals as well  
0 as the trunk supervisory and control for transmission at 2.56  
0 Mb/s to the network.

0 In the other direction, the 30 digital speech signals and the two  
0 control channel signals received from the network are demulti-  
0 plexed and decoded by the TM into 30 individual channels of com-  
0 bined analog speech and signalling.

0 DMS maintenance and test circuits and interface trunk circuits  
0 for stand alone test equipment mount on DMS Maintenance Trunk  
0 Modules and Trunk Modules. Normally these circuits are not  
0 PIPable and specified quantities should reflect requirements for  
0 the busy season prior to exhaust. The Remote Service Module  
0 (RSM) houses office maintenance, alarm and service circuits re-  
0 quired for remote offices employing RLMS.

0 In an office served by more than one DF, the Telco is advised for  
0 administrative reasons to terminate all MTM on the same DF. For  
0 similar reasons the Telco may wish to associate all TM-mounted  
0 circuits provisioned in this section with the same DF, including  
0 MTM.

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0 1.2 Features

0 1.2.1 Service Circuits

0 DMS service circuits are packaged in printed circuit cards which  
0 generally mount on Maintenance Trunk Module (MTM). The exceptions  
0 are:

- 0 1. digital echo suppression cards which mount on Digital  
0 Echo Suppressor Shelves (DES),
- 0 2. three-port conference circuit cards and MF and Digitone  
0 receiver cards which mount both on TMs and MTMs. (Note:  
0 six-port conference circuit cards mount only on MTMs.)

0 With the exception of digital echo suppression cards, service  
0 circuits are not PIPable and specified quantities should reflect  
0 requirements for the busy season prior to exhaust.

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0 1.2.2 Testing and Diagnostic Requirements

0 A number of DMS test circuits are multi-functional units which,  
0 under software control, can cater to a variety of testing and di-  
0 agnostic requirements, including test source functions for 100  
0 series standard tests, 100 series test line functions and DMS  
0 manual and automated test routines. In such instances it is not  
0 necessary to provision these circuits on a one-to-one basis re-  
0 lating to individual tests but rather on a pooled basis relating  
0 to demand. For example DMS automated tests (purchased feature)  
0 are scheduled to run at night leaving common test resources  
0 available for other applications during the day.

0 Refer to NTP 297-1001-516 Trunks Maintenance Reference Manual,  
0 NTP 297-1001-121 Automatic Trunk Testing Description and NTP  
0 297-2101-516 Line Maintenance Reference Manual for information on  
0 the Test Line Test Types. Table 35.1 lists the DMS hardware re-  
0 quired for standard test lines and test source applications.

| TEST LINE TEST TYPE                                            | DMS HARDWARE<br>REQUIRED<br>(NAME * OR PEC) |   |   |       |        |          |
|----------------------------------------------------------------|---------------------------------------------|---|---|-------|--------|----------|
|                                                                | OFFICE<br>CLASS                             |   |   | TEST  |        | NOTE     |
|                                                                | -----                                       |   |   | TEST  | TEST   |          |
|                                                                | 3                                           | 4 | 5 | ORIG  | TERM   |          |
| 0 1. Balance (100 Type)                                        | X                                           | X | X | TTT   | T102   |          |
| 0 2. Communications (101 Type)                                 | X                                           | X | X | 101TT | 101TT  |          |
| 0 3. Milliwatt (102 Type)                                      | X                                           | X | X | TTT   | T102   |          |
| 0 4. Signal-Supervisory (103 Type)                             | X                                           | X | X | TTT   | -      |          |
| 0 5. Transmission Measuring and<br>0 Noise Checking (104 Type) | X                                           | X | X | TTT   | TTT    |          |
| 0 6. Automatic Transmission<br>0 Measuring System (105 Type)   | X                                           | X | X | ROTL  | NE 105 | 1,3<br>4 |
| 0 7. Echo Suppression Loop-Around<br>0 Test Line (108 Type)    | X                                           | X |   | -     | SD2Y67 | 2        |

0 Test Lines for Toll-Connecting  
0 Trunks:

|                                 |   |   |   |     |      |  |
|---------------------------------|---|---|---|-----|------|--|
| 0 1. "Synchronous" Test Line    | X | X | X | TTT | -    |  |
| 0 2. "Nonsynchronous" Test Line |   |   | X | TTT | -    |  |
| 0 3. Loop-Around Transmission   |   |   | X | TTT | TLPA |  |

0 Test Line  
0 4. Open-Circuit Test Termination X TTTT TTTT  
0 5. Short-Circuit Test X TTTT TTTT  
0 Termination

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0 TEST LINE HARDWARE

0 Table 35.1

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## 0 Table 35.1 Notes:

0 TTT: Transmission Test Trunk consists of the pair of MTM  
0 mounted cards, Test Signal Generator and PCM Level Meter.  
0 See Transmission Test Trunk, Section 1.3.3 for more in-  
0 formation.

0 ROTL: Remote Office Test Line. DMS supports Au-  
0 tomation Produces Co. model 1066-ROTL/52A interfaced via:

0 NT3X91AA Remote Office Test Line I/F Trunk,  
0 (Section 1.3.1)

0 NT0X10AA Miscellaneous Scanner

0 NT2X57AA SD Card I

0 101TT: 101 Communication Test Trunk (Section 1.3.10)

0 T102: 102 Test Trunk (Milliwatt) (Section 1.3.5)

0 TLPA: Loop Around Test Line (Section 1.3.2)

0 TTTT: Transmission Termination Test Trunk (Section 1.3.8)

0 1. DMS terminates on external equipment:

0 NE 105 Test Line (1) A311-12-900,  
0 NT 105 Responder (1) TTS1050C,  
0 via:  
0 NT2X88AA, 4W E&M trunk interface.

0 2. DMS terminates on external equipment:

0 SD2Y67, 108 termination,  
0 SD-95277-02-01, milliwatt supply,  
0 via:  
0 NT2X88AA, 4W E&M trunk interface.

0 3. DMS originates from external ROTL equipment via:

0 NT3X91AA, Remote Office Test Line I/F trunk.

0 4. External equipment interfaced to the DMS by means of  
0 4-wire E&M trunks are used for 105 and 108 tests. See  
0 Section 3.7, Office Maintenance for more information.



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0 Other hardware are MTM-mounted cards and are covered in  
0 this section.

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0 1.2.3 Time Switch Broadcasting

0 Time Switch Broadcasing (TSB) is a process employed in DMS to  
0 distribute certain tones and recorded messages via the network  
0 simultaneously to many users from a single source. The speech  
0 channel incoming to the network from each source can be connected  
0 in a broadcast mode to all outgoing speech channels within the  
0 same network incoming time switch. A number of service circuits  
0 utilize this process.

0 Old Network

0 It is necessary to limit the number of simultaneous connections  
0 in order to reduce the possibility of Network Subgroup (NSG)  
0 blocking. This maximum is normally specified in translations and  
0 should not exceed 16 per NSG in the network without deloading.  
0 These additional 16 channels are the signalling channels which  
0 are available for speech connections within the network module.

0 With NSG deloading, the maximum number of simultaneous con-  
0 nections can be up to a maximum of 256.

0 New Network

0 Same criteria as above except that the maximum number of simul-  
0 taneous connections should not exceed 32 per NSG in the network  
0 without deloading.

0 With NSG deloading, the maximum number of simultaneous con-  
0 nections can be up to a maximum of 512.

0 From a traffic standpoint each TSB source can be viewed as being  
0 a trunk group in which the number of servers equals the above  
0 specified maximum number of connections.

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0 1.2.4 Multi-Party Bridged Services

0 A Plain Ordinary Telephone Service (POTS) software feature pack-  
0 age called "Multi-Party Bridged (MPB) Services (NTX297AA)" allows  
0 a group of subscriber lines to simulate being a single line or a  
0 multi-party line. This feature associates together a group of  
0 lines (MPB Group) so they appear to the subscribers to be differ-  
0 ent parties of a multi-party line. This feature makes it possi-  
0 ble to bridge (by software) up to four (4) lines which cannot be  
0 bridged physically because they have no analog appearance in the  
0 CO.

0 MPB is available on lines connected to any module (LM, LCM,  
0 DMS-10, SLC-96, DMS-1R). Members of an MPB Group each have a  
0 unique Directory Number (DN) and a unique Line Equipment Number  
0 (LEN).

0 Bridging is supported through software and conference circuit  
0 cards (NT3X67). Six Port Conference Circuits are used when two,  
0 three or four members of a MPB Group are bridged. A useful ap-  
0 plication for Bridged Services is to set up conference calls.

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0 1.2.5 Analog Trunks

0 (a) General Description

0 Trunk cards provide features that are required to achieve the  
0 necessary functional compatibility for each analog trunk group.  
0 Applique circuits are used as adapters to provide an interface  
0 between a DMS-100 Family trunk circuit and a specific item of  
0 Northern Telecom (NT) or other manufacturer's equipment, or for  
0 special purpose (e.g. Board-to-Board Testing).

0 (b) References

0 NTP 297-1001-152 Trunk Selection and Compatibility  
0 NTP 297-2101-516 Line Maintenance Reference Manual

0 Chapter 3, Section 3.7 Office Maintenance

0 (c) Provisioning Considerations:

0 ( i) Refer to NTP 297-1001-152, DMS-100 Family Trunk Selection  
0 and Compatibility for a list of available applique cir-  
0 cuits, trunk cards and the features provided by the trunk  
0 hardware of each card.

0 ( ii) One Balance Network plug-in (daughter board) must be pro-  
0 visioned for each 2-wire trunk circuit on each card as  
0 follows:

0 a) For H88 loaded cable select Precision Balance Network  
0 - H88, NT2X80AA,

0 b) For International applications select the following  
0 Balanced Networks:

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## 0 TOLL CONNECTING

## MISCELLANEOUS

0 CA = CAMA  
0 DD = DDD Access  
0 OO = Operator Office  
0 RC = Recording  
0 Completing  
0 SP = Traffic Serv Pos  
0 TC = Toll Completing  
0 TS = Toll Switching  
0 TM = TS and TC  
0 AN = Announcement  
0 (machine)  
0 IN = Information  
0 IR = Intercept  
0 VR = Verification  
0 TK = Test Desk  
0 MAP = Maintenance  
0 & Admin. Pos  
0 DID = Direct  
0 Inward  
0 Dialing

## 0 INTERNATIONAL

0 SL = Signalling Link

## 0 3) Trunk Direction:

0 Identifies the traffic on the trunk group in relation  
0 to the DMS:

0 IC - Incoming  
0 OG - Outgoing  
0 2WY - Two Way

## 0 4) Two-Wire (2W) or Four-Wire (4W) Trunk.

## 0 5) Impedance:

0 The terminating impedance at the trunk group in ohms:

0 600 ohms  
0 900 ohms

## 0 6) Signalling Type:

0 MF - Multifrequency  
0 DP - Dial pulse  
0 NO - None  
0 CC - Common channel signalling  
0 DT - Digitone  
0 KP - MF from Key Pulse Switchboard  
0 MFA - Multifrequency ANI  
0 DPA - Digipulse ANI

0 Host - Maintenance and Misc. Equipment  
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0 KPA - MF ANI from Key Pulse Switchboard  
0 RB - Reverse Battery  
0 HL - High Low  
0 There are two types of loop  
0 signalling with a maximum loop of  
0 3800 ohms. 'RB', Reverse Battery  
0 which is normal for machine  
0 switching or 'HL', High Low which is  
0 normal for recording completing to a  
0 3CL.  
0 EM - For a DMS trunk with E&M leads type  
0 I modified (2 wire)  
0  
0 II - For a DMS trunk with E&M leads type  
0 II modified (4 wire)  
0 SF - For single frequency built into the  
0 DMS trunk  
0 N6 - For CCITT No. 6 signalling system  
0 (DMS-300 only)

0 7) Start Pulse Signal:

0 The type of pulse start signal required by the far  
0 end:

0 ID - Immediate Dial  
0 DD - Delay Dial  
0 WK - Wink

0 8) Coin Control:

0 The type of coin control signalling used by the far  
0 end circuits:

0 T&R - Tip and Ring  
0 IB - Inband  
0 3W - 3rd Wire  
0 WK - Multiwink

0 9) Ringing:

0 The far end circuits ringing type:

0 SX - Simplex  
0 IB - Inband  
0 T&R - Tip and Ring  
0 RF - Ring Forward

0 Host - Maintenance and Misc. Equipment  
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0 10) Echo Suppressor Control:

0 Echo Suppressor Control (ESC) can be provided for  
0 4-wire E&M and CCITT No. 5 and No. 6 trunks.

0 DMS-100 Family Digital Echo Suppressors (DES) can be  
0 provided where the transmission round trip delay ex-  
0 ceeds 45 msecs.

0 ( iv) The input/output (I/O) test trunk is a NT2X90 card  
0 mounted in an 8-wire Trunk Module (TM) at the host of-  
0 fice, in a RMM at a RLCM or in a RSM at a RLM. It pro-  
0 vides a DMS interface with non-DMS local testing  
0 equipment such as:

- 0 - #14 Local Test Desk
- 0 - #3 Local Test Cabinet
- 0 - Centralized Automatic Loop Reporting System

0 It enables the maintenance personnel who operate the  
0 non-DMS test equipment to access subscriber lines via the  
0 MTA. Provide one I/O Test Trunk for each test trunk  
0 which DMS interfaces mentioned above.

0 The LTP Talk/Monitor MTA interface provides an alternate  
0 interface connection to a subscriber line without going  
0 through the line circuit for purposes of monitoring and  
0 testing. Access is via the Metallic Test Access Unit  
0 (MTA) and the line card access relay. Normally multiples  
0 to the line side of the Line Test Unit (LTU). One I/O  
0 Test Trunk is required for each LTU ordered.

0 For more information, refer to NTP 297-2101-516.

0 Operator Verification Access provides a high impedance  
0 monitor-only connection between an incoming operator ver-  
0 ification trunk and a subscriber line via the MTA and the  
0 line card access relay. It is recommended that one ac-  
0 cess interface circuit (I/O Test Trunk) be provided for  
0 each operator verification trunk required. Correspond-  
0 ingly one MTA test multiple must be provided for each  
0 interface required. See MTA, Section 1.3.9 and Section  
0 3.7, Office Maintenance for more information on the MTA  
0 provisioning.



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0 ( v) DMS supports the Automation Products Co., model  
0 1066-ROTL/52A ROTL and 105 Test Line. Each ROTL can  
0 serve up to 640 trunks per day based on an eight hour  
0 test shift. The interface circuit is the ROTL I/F Trunk  
0 NT3X91AA which has two (2) circuits per card.

0 Three trunk circuits are required for each ROTL; one for  
0 each of two test ports plus one for a standard 105 Test  
0 Line port.

0 One additional trunk circuit is required for each addi-  
0 tional 105 Test Line provided; up to a total of six.

0 For more information on the ROTL unit, refer to Section  
0 3.7, Office Maintenance.

0 ( vi) One Trunk Card NT2X83AA (two circuits per card) is to be  
0 provided for each interface trunk circuit required to  
0 interface the Automatic Number Announcement (ANA) system.  
0 For more information on ANA circuit, refer to Section  
0 3.7, Office Maintenance.

0 ( vii) Jack ended 4-wire trunk appearances are extended to each  
0 Maintenance and Administration Position (MAP) used for  
0 line testing (LTP) and (or) trunk testing (TTP) to facil-  
0 itate the connection of portable test sets into the sys-  
0 tem.

0 For DMS-100 and DMS-100/200 offices Jack Ended Trunk,  
0 NT1X54AA, (2 circuits per card) must be provided.

0 For DMS-200 offices NT1X54AA cards may be used on TM8's  
0 or MTM's, or the 4-wire E&M trunk, NT2X72AA (2 circuits  
0 per card) may be provided only if mounted on TM8.

0 Refer to the Input/Output Section (3.6) for more informa-  
0 tion on Jack Ended Trunks.

0 (viii) One CAMA Position signalling Trunk, NT2X65AA (one circuit  
0 per card, mounts on TM8) and one CAMA CW SUSP LT TRK,  
0 NT2X66AA (one circuit per card, mounts on TM2, TM4, TM8)  
0 is required per CAMA position.

0 ( ix) Analog trunks can be used to provide and interface be-  
0 tween the TOPS positions and the DMS switching network  
0 and the TOPS TTY's and the DMS switching network. Two  
0 analog trunks, one for voice and one for data, are re-

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0 quired for each TOPS position. An exception is the Force  
0 Management Position which requires only one trunk for  
0 data, no voice. One analog trunk is required for each  
0 TOPS TTY (with the exception of the SNAC TTY which re-  
0 quires one I/O port appearance instead). Refer to the  
0 Operator Services section (3.5) to determine whether the  
0 TOPS position or the TOPS TTY will interface with the DMS  
0 switching network via analog trunks or not. Use the  
0 4-wire E&M trunk NT2X72 (two circuits per card) which  
0 mounts on the TM8.

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0 1.2.6 Loop Around Test Line

0 a) General Description

0 The Loop Around Test Line circuit card enables the measurement of  
0 near-to-far trunk losses from class 4 or 5 offices in a DMS-100  
0 Family switching network. The loop around method of trunk trans-  
0 mission testing requires two trunks to be connected together  
0 (looped) at a distant office so that a measurement can be made at  
0 the originating office.

0 The circuit card occupies one card position in a Maintenance  
0 Trunk Module (MTM) and requires two trunk appearances.

0 b) References

0 None

0 c) Provisioning Considerations:

0 ( i) Versions of the card currently available are as follows:

0 NT2X75AA Loop Around Test Line Mu-Law  
0 NT2X75BA Loop Around Test Line A-Law

0 There is one loop around circuit (two trunk appearances)  
0 per card.

0 ( ii) The Loop Around Transmission Test Line Card is required  
0 for DMS-100, DMS-100/200 and DMS-200 offices. Two cir-  
0 cuits are recommended per office.

0 ( iii) The Loop Around Transmission source interface is the  
0 Transmission Test Trunk (TTT).

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0 1.2.7 Transmission Test Trunks

0 (a) General Description

0 The TTT is a 104 test line and test sour consisting of a test  
0 signal generator and a level meter operating digitally samples.  
0 Used also for 100, 102, 103, Synchronous, Non-synchronous and  
0 Transmission Loop Around test line originations. Access is via  
0 the Network.

0 (b) References

0 NTP 297-1001-121 Automatic Trunk Testing Description  
0 NTP 297-1001-516 Trunks Maintenance Reference Manual  
0 NTP 297-2101-516 Line Maintenance Reference Manual

0 (c) Provisioning Considerations:

0 ( i) Each TTT circuit consists of a pair of cards as follows:

- 0 1. PCM Test Signal Generator, NT1X90AA/BA.
- 0 - Generate single freq test tones 0-3996
  - 0 Hz in 4 Hz increments
  - 0 - tone levels 0 to -12.5 dBm @  $\pm 0.1$  dB
  - 0 or +3 to -67.5 dBm @  $\pm 0.5$
  - 0 - filters for quiet termination, 1010 Hz
  - 0 notch and C-msg weighting.
  - 0 - NT1X90AA is for North American
  - 0 application.
  - 0 - NT1X90BA is for International (A-Law)
  - 0 applications.

- 0 2. PCM Level Meter, NT2X96AA/BA
- 0 - measure single frequency tones (zero-
  - 0 crossing detector)
  - 0 - level meter +6 to -88.8 dBm  $\pm 0.01$  dBm
  - 0 - freq meter 0 to 4 KHz @  $\pm 16$  Hz with
  - 0 resolution variable with centre freq
  - 0 - NT2X96AA is for North American
  - 0 applications.
  - 0 - NT2X96BA is for International (A-Law)
  - 0 Applications.

0 ( ii) Provisioned for DMS-100 and DMS-200 offices.

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0 ( iii) Provisioning is based on the requirement DMS Automatic  
0 Trunk Testing (ATT) which is normally scheduled for oper-  
0 ation during off-peak hours. ATT is an optional feature  
0 of DMS-100 and DMS-200 offices. TTT circuits provisioned  
0 per ATT requirements will also satisfy daily manual test  
0 and diagnostic requirements including standard test line  
0 functions. This provisioning will also satisfy the in-  
0 creased requirements of manual testing in a non-ATT of-  
0 fice.

0 ( iv) The following assumptions apply:

0 Automatic trunk testing will be scheduled to run daily  
0 for the entire office.

0 Assume that every active ATT process effectively ties up  
0 one TTT for the duration of its execution regardless of  
0 the test being performed.

0 TTT average holding time per test 20 seconds.

0 Test Interval is the number of continuous hours per day  
0 reserved for ATT testing. Six hours is recommended.

0 ( v) Number of TTT's to be provided is based on the number of  
0 outgoing trunks in the office.

0 # TTT = No. O/G Trunks \* Holding Time/Test  
0 -----  
0 3600 \* Test Interval

0 If the number of TTT is greater than 15, then testing  
0 must be split over two nights with half the trunks tested  
0 each night. In this case half the calculated TTT's are re-  
0 quired.

0 ( vi) Provide a minimum of 2 maximum 15 TTT's per office.

0 Note: Includes the O/G portion of 2 WY trunks.

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0 1.2.8 Transmission Test Unit (TTU)

0 a) General Description

0 The TTU is a programmable digital signal generator and processor  
0 which is capable of performing a variety of transmission measure-  
0 ments and related maintenance functions on line circuits and  
0 trunk circuits. It is utilized in diagnostic routines applied to  
0 Digitone and MF receivers. Access is via the switching network.

0 The NT2X47-- & NT2X56-- Circuit Pack, which mount on a Mainte-  
0 nance Trunk Module (MTM), form the Transmission Test Unit (TTU).  
0 The NT2X47 Circuit Pack interfaces to the Central Control (CC)  
0 which specifies the type of testing procedure required of the  
0 TTU. Once specified by the CC, the NT2X47 will control the gen-  
0 eration and reception of tones necessary for the test and pass  
0 them on to the Digital Filter CP (NT2X56). The NT2X56 will fil-  
0 ter, process and execute the instructions and generated tones re-  
0 ceived from the NT2X47.

0 b) References

0 NTP 297-1001-121 Automatic Trunk Testing Description  
0 NTP 297-1001-455 DMS-100 Office Parameters Reference Manual  
0 NTP 297-1001-516 Trunks Maintenance Reference Manual  
0 NTP 297-2101-516 Line Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) Each TTU circuit consists of a Control Signal Generator  
0 Card and a Digital Filter. The TTU mounts on a MTM.

0 Transmission Test Unit Control Signal Generator,  
0 NT2X47AA/AB/AC/BA:

- 0 - generates single frequency test tones 4 to
- 0 3996 Hz, in steps of 4 Hz
- 0 - tone levels -60 dBm to +3 dBm at  $\pm 0.25$  dB
- 0 - quiet termination

0 Transmission Test Unit Digital Filter, NT2X56AA/AB/BA:

- 0 - processes tone data in the frequency range
- 0 4 Hz to 4 KHz
- 0 - can process combinations of 10 filter

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0 functions simultaneously.

0 ( ii) The following pair of interconnected cards can be provi-  
0 sioned together to form a TTU for the listed test proce-  
0 dure type.

| 0 | CP       | DF       | Test Proceedure Type         |
|---|----------|----------|------------------------------|
| 0 | NT2X47AA | NT2X56AA | ATME2 (Rated MD)             |
| 0 | NT2X47AB | NT2X56AA | ATME2 (DMS-300 Offices)      |
| 0 | NT2X47AC | NT2X56AB | ATME2 (104 Test Line) &      |
| 0 |          |          | ATMS (105 Test Line)         |
| 0 | NT2X47AD | NT2X56AB | ALT (Automatic Line Testing) |
| 0 |          |          | ATMS (105 Test Line)         |
| 0 | NT2X47BA | NT2X56BA | International (A-Law)        |
| 0 |          |          | ATMS.                        |
| 0 | NT2X47AB | NT2X56BA | International (A-Law)        |
| 0 |          |          | ATME2.                       |

0 1. The NT2X47AD and NT2X56AB cards can functionally re-  
0 place the existing NT2X47AA, NT2X56AA and the  
0 NT2X47AC,NT2X56AB TTU cards. All three pairs of  
0 these cards can exist together in the same office.  
0 However, NT2X47AA must be paired with NT2X56AA;  
0 NT2X47AC with NT2X56AB; and NT2X47AD with NT2X58AB.

0 2. The addition of Echo Return Loss (ERL) and Singing  
0 Return Loss (SRL) tests to the Automatic Transmission  
0 Measurement System (ATMS) (i.e. 105 Test line) has  
0 prompted the introduction of the Transmission Test  
0 Unit Control Processor (NT2X47AD). The ERL & SRL in-  
0 volve measuring the return loss of a bandlimited  
0 white noise signal over a trunk circuit.

0 The optional feature, ATMS, can be provided to exist-  
0 ing offices by only adding packs (NT2X47AD, NT2X56AB)  
0 sufficient for ATMS. Existing TTU packs (NT2X47AA,  
0 NT2X56AA and NT2X47AC, NT2X56AB) need not be  
0 retrofited in order to provide the ATMS feature.

0 3. Although the ATMS packs can be selected for regular  
0 TTU functions, this will only be allowed when  
0 non-ATMS TTU packs are not available.

0 4. The ATMS feature will be available in BCS 10 as an  
0 optional feature package. The only pre-requisite is

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0 that the Common Basic feature package must also be  
0 provided.

0 5. All initial and extension offices will provision the  
0 NT2X47AD and NT2X56AB for TTU requirements.

0 6. The NT2X47AB and NT2X56AA cards are required for the  
0 Automatic Transmission Measuring and Signalling Test-  
0 ing Equipment (ATME) feature in a DMS-300 Gateway of-  
0 fice.

0 7. The NT2X47BA and NT2X56BA cards are required for the  
0 standard A-law TTU for International offices. The  
0 ATMS feature can be provided for this International  
0 TTU. NT2X47BA does not support the ATME2 test. In-  
0 stead, the Mu-law TTU for domestic offices, NT2X47AB,  
0 in combination with the NT2X56BA A-law Transmission  
0 Test Filter, is to be provided for this application.

0 ( iii) Provisioning of TTU's for Automatic Line Testing (ALT)

0 The ALT has two (2) versions of diagnostics. Short and  
0 extended. In order to check the Pulse Coded Modulation  
0 (PCM) path to and from the line cards, as well as the an-  
0 analog path of the Voice Frequency (VF) transformer the  
0 short diagnostic routine performs the following tests;

- 0 o Trans-hybrid loss test
- 0 o Attenuation 7DB pad test
- 0 o Noise (notch & weighted) test
- 0 o Ring Supervision (ring relay) test

0 It is suggested to provide the maximum of one (1) TTU per  
0 LTU (for both Host and Remote LTUs), or:

0 TTU for ALT Total No. of Lines X Holding Time/Test  
0 (short diag = -----  
0 test) 3600 X Test Interval

0 where,

0 Total No. of lines includes all Local, Remote and  
0 Subscriber Carrier lines to be tested by the short  
0 diagnostic routine.



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0 Holding Time/Test is seven (7) seconds for a short  
0 diagnostic test.

0 Test interval is in hours (6 hours are recommended).

0 The Extended diagnostic routine will check all of the  
0 line circuit for correct operation while performing the  
0 following tests.

0 o Trans-hybrid loss test  
0 o Attenuation 7DB pad test  
0 o Noise (notch & weighted) test  
0 o Ring Supervision (ring relay) test  
0 o Cutoff relay test  
0 o Battery feed resistor test  
0 o Loop detector test  
0 o Reversal relay test  
0 o Ground start relay test  
0 o Ground start detector test  
0 o Flux cancellation circuitry test  
0 o +48V relay test  
0 o Ring supervision (ring relay) test  
0 o Test access relay test  
0 o Subscriber loop test  
0 o Loop signalling at line card  
0 o Loop signalling at key set  
0 o LCM buffer full flag high test  
0 o LCM buffer full flag low test

0 The holding time to execute an extended diagnostic test  
0 is 25 seconds.

0 TTU for ALT Total No. of Lines X Holding Time/Test  
0 (extended = -----  
0 diag test) 3600 X Test Interval

0 where,

0 Total No. of lines includes all Local, Remote and  
0 Subscriber Carrier lines to be tested by the extended  
0 diagnostic routine.

0 Holding Time/Test is 25 seconds for a extended diag-  
0 nostic test.

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0 Test interval is in hours.

0 If ALT has been activated then, at any point in time, several different test resources will be in operation. Manual testing of lines has precedence for the completion of system resources. Thus, ALT will be suspended for the duration of the manual test. On completion of the manual test the ALT will resume.

0 The ALT software feature is contained as part of package NTX054AA - Line Test Position (LTP). For U.S. offices, the LTP software is contained in all DMS-100 & DMS-100/200 Master Package Selections.

0 ( iv) Provisioning of TTU's for an Office Requiring Automatic Transmission Measurements System (ATMS) (i.e. 105 Test Line).

0 ATMS provides 2 way transmission loss and noise measurements on an outgoing or an outgoing portion of a 2 way trunk to the distant 105 terminating test line.

0 Total No. Forecast Outgoing Trunks  
0 ----- X Holding Time/Test  
0 TTU for 5  
0 ATMS (105 = -----  
0 test) 3600 X Test Interval

0 where,

0 Total No. of outgoing or outgoing portion of 2 way trunks. This quantity is divided by five (5) so that one fifth of the trunks will be tested per day.

0 Holding Time/Test is 20 seconds for an ATMS test.

0 Test interval is in hours.

0 ATMS will measure the following;

0 o Transmission loss  
0 o Noise  
0 o Echo return loss

0

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- 0 o Singing point return loss  
0 o High and low frequency loss

0 ATMS or 105 test line software is optionally available in  
0 the following packages;

0 NTX136AA - Automatic Transmission Measurement  
0 System  
0 NTX903AA - Transmission Measurements  
0 NTX052AB - Remote Office Test Line

0 ( v) For A DMS-200 office (toll only) without the ATMS fea-  
0 ture, provide one TTU. This is required only for MF re-  
0 ceiver diagnostics.

0 ( vi) Total quantity of TTU's to be provided for an office with  
0 or without the ALT feature and with the ATMS feature is  
0 equal to the quantity determined in item (iii) plus the  
0 quantity determined in item (iv).

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0 1.2.9 102 Test Trunk (Milliwatt)

0 a) General Description

0 The 102 Test Trunk (Milliwatt) provides either a 1004 Hz milli-  
0 watt at 1004 Hz or a quiet termination for maintenance applica-  
0 tions in a DMS-100 and DMS-200 office.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) The 102 Test Trunk (Milliwatt) cards available are:

|   |                                   |          |
|---|-----------------------------------|----------|
| 0 | 102 Test Trunk                    | NT1X00AA |
| 0 | 102 Test Trunk                    | NT1X00AB |
| 0 | International 102 Test Trunk      | NT1X00AE |
| 0 | 102 Terminating - 10 dB Test Line | NT1X00AF |
| 0 | 102 Terminating - 20 dB Test Line | NT1X00AG |
| 0 | 102 Terminating - 15 dB Test Line | NT1X00AH |
| 0 | 102 Test Trunk (China)            | NT1X00KA |

0 ( ii) Each card contains one test circuit which can be con-  
0 nected to either or both of two trunk appearances. The  
0 card occupies one card position in a Maintenance Trunk  
0 Module (MTM) which connects up to 30 trunk appearances to  
0 one Network port.

0 ( iii) The features of the 102 test trunk cards are:

0 1. Maintenance applications include:

0 - Common office milliwatt supply  
0 - General testing and calibration  
0 - Trunk and line tests  
0 - Test position requirements  
0 - Automatic testing

0 2. Stable milliwatt test tone level.  
0 No variation.

0 3. Connection of test circuit and application of  
0 tests under software control, via signal  
0 distributions (sd) from MTM.

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0 4. Signal Specifications - 102 Test Trunk

| 0 | Version       | Freq            | Level           |
|---|---------------|-----------------|-----------------|
| 0 | NT1X00AA & AB | 1004 Hz-0.02 Hz | 0 dBm-0.01 db   |
| 0 | NT1X00AE      | 1020 Hz-0.02 Hz | -10 dBm-0.01 db |
| 0 | NT1X00AF      | 1004 Hz-0.02 Hz | -10 dBm-0.01 db |
| 0 | NT1X00AG      | 1004 Hz-0.02 Hz | -20 dBm-0.01 db |
| 0 | NT1X00AH      | 1004 Hz-0.02 Hz | -15 dBm-0.01 db |

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0 1.3 Line Test Unit (LTU)/Multi-line Test Unit (MTU)

0 a) General Description

0 These circuits are used to perform DC and AC voltage measurements  
0 as well as resistance, capacitance and frequency measurements on  
0 subscriber loops and line circuits. Connection is DC-metallic  
0 via the DMS Metallic Test Access Network (MTA) and the access re-  
0 lay in the line card.

0 The Multi-line Test Unit (MTU) is to replace the existing Line  
0 Test Unit. The Multi-line Test Unit will perform all of the  
0 functions of the existing LTU with greater speed and accuracy.  
0 In addition it may be used to test Electronic Business Set (EBS)  
0 lines and it may be used for OPM battery maintenance.

0 The LTU is used for North American applications only. The MTU is  
0 applicable to the Canadian Markets only and for ISDN applications  
0 in the U.S. only.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) Applies to DMS-100 and DMS-100/200 offices only.

0 ( ii) Each LTU circuit consists of a pair of interconnected  
0 cards:

0 NT2X10AB Line Test Unit - Analog  
0 NT2X11AC/AD Line Test Unit - Digital Card

0 Each MTU circuit consists of a pair of interconnected  
0 cards:

0 NT2X10BA Multi-line Test Unit - Analog  
0 NT2X11BA Multi-line Test Unit - Digital Card

0 The NT2X11AD provides the feature of supplying battery  
0 voltage to the EBS sets while their line card is being  
0 tested, thus preventing the volume reset of the EBS. The  
0 NT2X11AD is backward compatible with all previous ver-  
0 sions of the NT2X11 and should be ordered for all new ap-  
0 plications (for U.S. applications only). Existing offices  
0 using software package NTX106AA should be upgraded to  
0 NT2X11AD circuit packs.

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0 The MTU may be added to offices with existing LTU's (for  
0 Canadian applications only). A host office must be  
0 equipped with BCS-19 or later software to support the  
0 MTU. A remote office must be equipped with BCS-21 or  
0 later software. The MTU circuit packs require a -48V SP  
0 connection that the LTU does not require.

0 ( iii) MTU for 2B1Q Lines on a LCME.

0 For every MTA that has a LCME on the vertical there must  
0 be at least one MTU on a horizontal of that MTA. Each MTU  
0 (NT2X10BA and NT2X11BA card set) has two test access  
0 ports; that is two (2) sets of tip and ring. Thus it can  
0 test two 2B1Q lines at the same time. A LTU that has ac-  
0 cess to an MTA that has a LCME on the vertical will NOT  
0 be used to perform any metallic testing on the 2B1Q  
0 lines. Any rover test units (ones shared across MTAs)  
0 that has access to the MTA that has a LCME on it must be  
0 a MTU for it to be used on the LCME.

0 For the U.S. market, the MTUs are to be used for 2B1Q ap-  
0 plications only. No LTUs can be assigned to an MTA that  
0 has an LCME on the vertical. No MTA that has an LCME on  
0 the vertical can be daisy-chained to other MTAs that does  
0 not have an LCME on the vertical.

0 The physical installation of MTUs in MTMs is no different  
0 for 2B1Q than for POTS.

0 ( iv) The LTU analog card and the LTU digital card each occu-  
0 pies one card slot. They are mounted on a Maintenance  
0 Trunk Module (MTM), or a Remote Service Module (RSM) (in  
0 a RLM) or a Remote Maintenance Module (RMM) (in a RLCM,  
0 RSC, OPM).

0 The MTU analog card and the MTU digital card each occu-  
0 pies one card slot. They are mounted on a Maintenance  
0 Trunk Module (MTM), or a Remote Maintenance Module (RMM)  
0 (in a RLCM, RSC, OPM).

0 ( v) Provisioning of Line Test Unit (LTU) utilizing NT2X46AB  
0 MTA.

$$\begin{array}{rcccl} \text{LTU} & = & \text{No. SMS S/W Sites} & & \text{No. SMU S/W Sites} \\ & & \underline{\hspace{2cm}} & + & \underline{\hspace{2cm}} & + \\ & & 20 & & 20 & \end{array}$$

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$$\frac{\text{No. SMR}}{20} + \frac{\text{No. LCM}}{10} + \frac{\text{No. LM}}{10} + 1$$

Provisioning of Line Test Unit (LTU utilizing NT3X09BA 8 X 8 Metallic Test Access CP.

$$\text{LTU} = \frac{\text{No. SMS S/W Sites}}{16} + \frac{\text{No. SMU S/W Sites}}{16} +$$

$$\frac{\text{No. SMR}}{16} + \frac{\text{No. LCM}}{8} + \frac{\text{No. LM}}{8} + 1$$

( vi) Provisioning of Multi-line Test Unit (LTU):

#### Method 1

It is recommended that one (1) MTU circuit be assigned as a dedicated MTU for two NT3X09BA Metallic Test Access cards. This will serve up to eight (8) LCMs. In addition provision one (1) non-dedicated (rover) MTU circuit per office.

For RLCM and OPM offices provision one (1) dedicated MTU circuit (the rover MTU is not required).

For RSC offices provision as per host office.

$$\# \text{ of MTU Circuits} = \frac{\# \text{ of LCMs}}{8} + 1$$

$$\# \text{ of NT2X10BA/NT2X11BA Pairs} = \frac{\# \text{ of MTU Circuits}}{2}$$

#### Method 2

Telco requirements may dictate that all of the lines in an office be testable in a given time for test. This will require provisioning enough MTU circuits to meet this requirement based on the following formula:

$$\# \text{ MTU} = \frac{\# \text{ of Lines} \times \text{Test Hold Time (Secs)}}{\text{}} + 1$$





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0 1.3.1 International Metallic Test Unit (IMTU)

0 a) General Description

0 These circuits are used to perform DC and AC voltage measurements  
0 and metering signals measurements as well as resistance,  
0 capacitance and frequency measurements on subscriber loops and  
0 line circuits. Connection is DC-metallic via the DMS Metallic  
0 Test Access Network (MTA) and the access relay in the line card.

0 The IMTU is for International applications only.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) The IMTU consist of a pair of interconnected cards:

0 NT4X97AA Metallic Test Unit Controller  
0 NT4X98BB Metallic Test Unit Analog  
0 (NT4X98AA is to be replaced by NT4X98BB.)

0 The IMTU has two separate tip and ring appearances that  
0 time share the same measurement circuits. This time  
0 sharing is transparent to the system and, as a result,  
0 the IMTU appears as two separate measurement circuits.

0 ( ii) The MTU analog card and the MTU control card each occupy  
0 1 card slot. They are mounted as a functional pair on a  
0 International Maintenance Trunk Module (IMTM) (located at  
0 Host) or a Remote Maintenance Module (RMM) (located at  
0 IRLCM, IOPM).

0 ( iii) It is recommended that one (1) IMTU circuit be assigned  
0 as a dedicated IMTU for two NT3X09BA Metallic Test Access  
0 cards. This will serve up to eight (8) LCMs. In addition,  
0 provision one (1) non-dedicated (rover) IMTU circuit  
0 per office.

0 For IRLCM offices provision a minimum of one (1) IMTU  
0 pair per site. A non-dedicated IMTU (rover) is not required  
0 for single IRLCM configurations. For multiple  
0 IRLCM configurations, provision the number of IMTUs (including  
0 a rover circuit) based on the following methods:

0  
0 RELEASE 28.01  
0 93 12 030 Method 10 # of LCMs  
0 # of IMTU Circuits = ----- + 1  
0 80 # of IMTU Circuits  
0 # of NT4X97/NT4X98 Pairs = -----  
0 20 Method 20 Telco requirements may dictate that all of the lines in  
0 an office be testable in a given time for test. This will  
0 require provisioning enough IMTU circuits to meet this  
0 requirement based on the following formula. Be sure to  
0 ensure that Method 1 (above) has been observed.0 # Lines x Test Hold Time (Secs)  
0 # IMTU Ckts = ----- + 1  
0 3600 \* Time-For-Test (Hrs)0 # IMTU Circuits  
0 # of NT4X97/NT4X98 Pairs =-----  
0 20 Typical Test Hold Times0 Long  
0 Diagnostic  
0 Test LIT Test  
0  
0 Type 'A' Line Card 26 Secs 6-8 Secs  
0 Type 'B' Line Card 32 Secs 6-8 Secs  
0 EBS Line Card 106 Secs 6-8 Secs

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0 1.3.2 Transmission Termination Test Trunk

0 a) General Description

0 The NT2X71AA Transmission Termination Test Trunk has two func-  
0 tions:

0 a) To test DMS-100 and DMS-200 offices using open  
0 and short circuit terminations.

0 b) To provide a balanced test termination for a  
0 DMS-100 office.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) The NT2X71AA occupies one card position in a Trunk Module  
0 (TM) and may be plugged into a 2-wire, 4-wire or 8-wire  
0 TM.

0 ( ii) Required for DMS-100, DMS-100/200 and DMS-200 offices.

0 ( iii) One circuit of each type per office is recommended.

0 ( iv) Features of the NT2X71AA:

0 - Provides open circuit, AC short circuit or  
0 909 ohm + 2.15 uF terminations.

0 - Software selectable pads, 1 to 7 db in 1 db  
0 steps.

0 - One circuit, open and short, per card.

0 ( v) Used in both the test source and the test office. In the  
0 DMS test source office the MAP/TTP monitor facility is  
0 used to detect the presence of a singing condition.

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0 1.3.3 Metallic Test Access (MTA)

0 a) General Description

0 The MTA provides a dc path between the line circuit and test  
0 equipment, such as a LTU or a #14 Local Test Desk (LTD), via the  
0 test access bus. When subscriber lines are tested, the path is  
0 via a digital line and an applique circuit.

0 The MTA can also be used to access subscriber loops, while by-  
0 passing the line card, and to connect a jack to the loop. Simi-  
0 larly, a tone can be transmitted on the subscriber loop while  
0 bypassing the line card.

0 The MTA is used in domestic and international DMS-100 and  
0 DMS-100/200 offices.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) The MTA may be configured in either of two ways:

0 A NT2X46AB minibar switch mounted in a miscellaneous  
0 equipment frame (MIS) in the host office or a Remote Ser-  
0 vice Equipment Frame (RSE) at a Remote Line Module (RLM).  
0 It is used in conjunction with a NT2X50AB driver card  
0 that is mounted in a MTM or RSM.

0 A NT3X09AA or NT3X09BA type driver card are each equipped  
0 with a network of relays that comprise a matrix. The  
0 NT3X09AA card has 8 horizontal connections for test  
0 equipment and 4 vertical connections for LCD. The  
0 NT3X09BA card has 8 horizontal connections for test  
0 equipment and 8 vertical connections for LCD. The  
0 NT3X09AA Remote Metallic Access card is mounted on a RMM  
0 at a RLCM, a IRLCM, a RSC, or an OPM. The NT3X09BA 8X8  
0 metallic test access card is mounted in a MTM in a host  
0 office, a RSM at a RLM or a RMM at a RLCM, a IRLCM, a RSC  
0 or an OPM. (Presently NT3X09BA is not applicable to RLCM  
0 and IRLCM for Canadian Offices).

0 ( ii) The NT3X09BA is designed to replace the MTA Unit  
0 (NT2X46AB) and the Remote MTA Card (NT3X09AA) where ap-



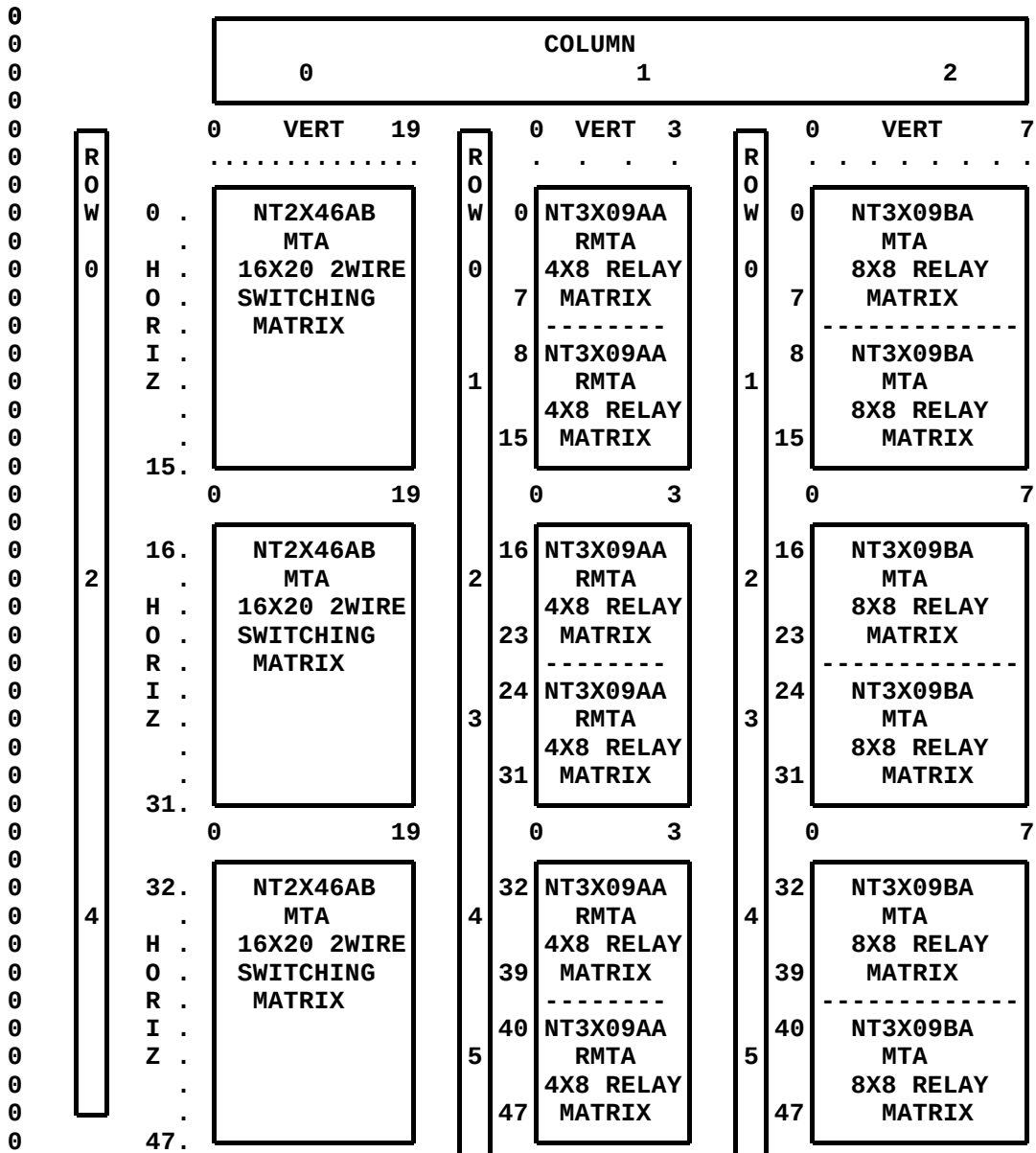


FIGURE 35.1

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0 ( v) Currently, one Line Test Unit (LTU) is assigned to hori-  
0 zontal number zero of each minibar switch (NT2X46AB) on a  
0 dedicated basis. Hence, on each NT2X46AB, this LTU will  
0 have test access to up to ten (10) LM's and/or LCM's.

0 For NT3X09BA, one LTU is assigned to horizontal number  
0 zero of the first NT3X09BA card and multiplied to hori-  
0 zontal number zero of the next NT3X09BA card in the next  
0 column. Hence, one dedicated LTU is assigned to two (2)  
0 NT3X09BA cards such that this LTU will have test access  
0 to up to eight (8) LM's and/or LCM's. For every two (2)  
0 NT3X09BA cards, provide one (1) LTU.

0 Each additional LTU can be assigned to horizontal numbers  
0 from two (2) on upwards.

0 ( vi) Provisioning a NT2X46AB MTA.

$$\begin{aligned} \text{MTA} &= \frac{\text{No. SMS S/W Sites}}{20} + \frac{\text{No. SMU S/W Sites}}{20} + \\ &\quad \frac{\text{No. SMR}}{20} + \frac{\text{No. LCM}}{10} + \frac{\text{No. LM}}{10} \end{aligned}$$

0 Provisioning a NT3X09BA 8 X 8 Metallic Test Access.

$$\begin{aligned} \text{MTA} &= \frac{\text{No. SMS S/W Sites}}{8} + \frac{\text{No. SMU S/W Sites}}{8} + \\ &\quad \frac{\text{No. SMR}}{8} + \frac{\text{No. LCM}}{4} + \frac{\text{No. LM}}{4} \end{aligned}$$

0 ( vii) Intermediate Distribution Frame (IDF) Implementation  
0 (U.S. Application Only)

0 The existing cabling method does not support the testing  
0 of non-integrated SLC 96 subscriber loop carrier systems  
0 using an AT&T test tool called Pair Gain Test Controller  
0 (PGTC).

0 To allow the testing of the universal SLC 96 subscriber  
0 carrier system using a PGTC, the total NT3X09BA multiple  
0 cable length must not exceed the figures shown in Table



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0 35.2 of this document. Otherwise, an Intermediate Dis-  
0 tribution Frame (IDF) (i.e. Customer provided) close to  
0 the DMS line-up will be required.

0 The total multiple cable length is the sum of all multi-  
0 ple cables to the distribution frame, both horizontal and  
0 vertical.

0 The overall MTA circuit distance must be calculated based  
0 on the longest metallic path from any PGTC to any uni-  
0 versal SLC 96 Central Office Terminal Channel Unit (COT  
0 CU) in the central office.

0 The MTA multiple cables can be minimized by placing the  
0 TME that house the MTAs close to the cable racks and the  
0 MDF as much as possible.

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| 0 Overall<br>0 MTA circuit<br>0 distance **<br>0 in feet<br>0 ----- | Position of MTA<br>horizontal<br>appearance on<br>MTA path<br>----- | Maximum total<br>multiple cable<br>length* in 24<br>AWG in feet<br>----- | Maximum total<br>multiple cable<br>length* in 26<br>AWG in feet<br>----- |
|---------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 0 2400                                                              | closer to PGTC                                                      | 900                                                                      | 1000                                                                     |
| 0                                                                   | closer to COT CU                                                    | 900                                                                      | 1150                                                                     |
| 0 2100                                                              | closer to PGTC                                                      | 1050                                                                     | 1150                                                                     |
| 0                                                                   | closer to COT CU                                                    | 1150                                                                     | 1400                                                                     |
| 0 1800                                                              | closer to PGTC                                                      | 1350                                                                     | 1450                                                                     |
| 0                                                                   | closer to COT CU                                                    | 1350                                                                     | 1600                                                                     |
| 0 1500                                                              | closer to PGTC                                                      | 1600                                                                     | 1600                                                                     |
| 0                                                                   | closer to COT CU                                                    | 1650                                                                     | 1850                                                                     |
| 0 1200                                                              | closer to PGTC                                                      | 1750                                                                     | 1900                                                                     |
| 0                                                                   | closer to COT CU                                                    | 1800                                                                     | 2050                                                                     |
| 0 900                                                               | closer to PGTC                                                      | 2100                                                                     | 2100                                                                     |
| 0                                                                   | closer to COT CU                                                    | 2100                                                                     | 2250                                                                     |
| 0 600                                                               | closer to PGTC                                                      | 2400                                                                     | 2300                                                                     |
| 0                                                                   | closer to COT CU                                                    | 2400                                                                     | 2450                                                                     |
| 0 300                                                               | closer to PGTC                                                      | 2550                                                                     | 2550                                                                     |
| 0                                                                   | closer to COT CU                                                    | 2550                                                                     | 2650                                                                     |

0 Table showing maximum MTA cabling limitations  
0 from any PGTC to any universal SLC 96 COT CU

0 Table 35.2

0 \* The total multiple cable length is the sum of all multiple cables  
0 to the distribution frame, both horizontal and vertical.

0 \*\* The overall MTA circuit distance must be calculated based on the  
0 longest metallic path from any PGTC (Pair Gain Test Controller)  
0 to any universal SLC 96 COT CU (Central Office Terminal Channel  
0 Unit) in the central office.

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0 1.3.4 Wideband Test Access

0 a) General Description

0 The Wideband Test Access (WTA) Panel will replace the use of the  
0 Main Distributing Frame (MDF) for metallic cross-connecting of  
0 test circuits (such as the Line Test Unit/Multiline Test Unit  
0 (LTU/MTU)), Metallic Test Access (MTA), and line equipment in DMS  
0 offices.

0 The WTA Panel is a cross-connect panel which will provide the me-  
0 tallic cross-connect capability for the testing of DMS wideband  
0 subscriber services such as ISDN and Datapath as well as existing  
0 voice frequency DMS-100 subscriber services. It is mandatory for  
0 the testing of ISDN and is recommended for the testing of  
0 Datapath service. The existing MDF cabling method will not be  
0 able to support the testing of these services mainly because of  
0 the transmission impairment caused by the excessive switching of-  
0 fice cabling.

0 This method of cross-connecting office wiring for the test cir-  
0 cuits, MTA, and test access cables will drastically reduce the  
0 amount of office cabling resulting from the existing MDF method.

0 This panel will mount on the Miscellaneous Equipment (MIS) Frame  
0 NT0X02AB. With the panel mounted on an MIS frame within the DMS  
0 equipment frame lineups, all the cabling to the MDF will be elim-  
0 inated and this will result in much shorter office wiring for the  
0 testing of subscriber services.

0 b) References

0 c) Provisioning Considerations:

0 ( i) The Wideband Test Access (WTA) Panel will replace the use  
0 of the Main Distributing Frame (MDF) for metallic cross-  
0 connecting of test circuits (such as the Line Test  
0 Unit/Multiline Test Unit (LTU/MTU)), Metallic Test Access  
0 (MTA), and line equipment in DMS offices.

0 The WTA Panel is a cross-connect panel which will provide  
0 the metallic cross-connect capability for the testing of  
0 DMS wideband subscriber services such as ISDN and  
0 Datapath as well as existing voice frequency DMS-100 sub-  
0 scriber services. It is mandatory for the testing of  
0 ISDN and is recommended for the testing of Datapath ser-

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0 vice. The existing MDF cabling method will not be able  
0 to support the testing of these services mainly because  
0 of the transmission impairment caused by the excessive  
0 switching office cabling.

0 This method of cross-connecting office wiring for the  
0 test circuits, MTA, and test access cables will dras-  
0 tically reduce the amount of office cabling resulting  
0 from the existing MDF method.

0 ( ii) There are two (2) versions of the WTA Panel:

0 NT7X76AA WTA Panel

0 NT7X76BA WTA Panel (Dedicated LTU/MTU)

0 NT7X76AA will allow the cross-connection of up to 30  
0 NT3X09BA MTA circuits in a matrix of three (3) horizontal  
0 NT3X09BA rows by ten (10) vertical NT3X09BA columns. This  
0 is equivalent to the cross-connection of 24 horizontal  
0 test appearances to 80 vertical appearances. The NT3X09BA  
0 card has 8 horizontals and 8 verticals.

0 NT7X76AA will allow the cross-connection of up to 30  
0 NT3X09AA MTA circuits in a matrix of three (3) horizontal  
0 NT3X09AA rows by ten (10) vertical NT3X09AA columns. This  
0 is equivalent to the cross-connection of 24 horizontal  
0 test appearances to 40 vertical appearances. The NT3X09AA  
0 card has 8 horizontals and 4 verticals.

0 NT7X76BA is similar to NT7X76AA with one exception. The  
0 first horizontal test appearance of the 24 horizontal  
0 test appearances of the NT7X76BA panel is grouped into  
0 five (5) subgroups, each with two (2) horizontal 0's and  
0 16 verticals (if NT3X09BA cards are used for cross-  
0 connection purposes) or 8 verticals (if NT3X09AA cards  
0 are used for cross-connection purposes). Each horizontal  
0 subgroup can have a dedicated LTU/MTU. Hence, up to five  
0 (5) dedicated LTU/MTUs can be connected to NT7X76BA. If  
0 NT3X09BA cards are used, each dedicated LTU/MTU will have  
0 access to 16 verticals or 8 Line Concentrating Modules  
0 (LCMs) within each horizontal subgroup 0. If NT3X09AA  
0 cards are used, each dedicated LTU/MTU will have access  
0 to 8 verticals or 4 LCMs within each horizontal subgroup  
0 0.

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- 0 (iii) The NT7X76AA WTA Panel will not be used for the dedicated  
0 LTU/MTU function.

0 The NT7X76BA WTA Panel (Dedicated LTU/MTU)  
0 will be used for the dedicated LTU/MTU function.

0 The NT7X76AA will also be used if the office requires  
0 more than one (1) (horizontal) row of WTA Panels or more  
0 than 24 horizontal test appearances.

- 0 (iv) The number of WTA Panels can be expanded horizontally (in  
0 rows) and/or vertically (in columns) in a matrix.

0 For offices without dedicated LTU/MTUs, only NT7X76AA  
0 would be required for expansion both horizontally and  
0 vertically.

0 For offices with dedicated LTU/MTUs, the first row of WTA  
0 Panels would be of the NT7X76BA type. If connection to  
0 more dedicated LTU/MTUs was required, NT7X76BA Panels  
0 would be used for the second row of WTA Panels. Other-  
0 wise, the NT7X76AA Panel should be used. Our current  
0 standard is to have dedicated LTU/MTUs on the first row  
0 of the matrix of WTA Panels (i.e. NT7X76BA) and not to  
0 have dedicated LTU/MTUs on the second and all subsequent  
0 rows of the matrix of WTA Panels (i.e. NT7X76AA).

- 0 ( v) The WTA Panel will replace the Intermediate Distribution  
0 Frame (IDF) for the testing of the universal SLC 96 sub-  
0 scriber loop carrier system which uses an AT&T test tool  
0 called Pair Gain Test Controller (PGTC).

0 The existing engineering rules for the use of the IDF  
0 should be applied to the use of the WTA Panel. For more  
0 information, see ECM-276 on subject 8X8 Metallic Test Ac-  
0 cess Circuit Pack, NT3X09BA.

- 0 ( vi) The WTA panel will mount on the Miscellaneous Equipment  
0 (MIS) Frame NT0X02AB. With the panel mounted on an MIS  
0 frame within the DMS equipment frame lineups, all the ca-  
0 bling to the MDF will be eliminated and this will result  
0 in much shorter office wiring for the testing of sub-  
0 scriber services.

0 For initial and extension offices requiring new MIS  
0 Frames, the WTA Panels should be mounted on standard  
0 shelf positions 65,51,32,18, and 04 first on the front

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0 and then on the back of the MIS Frame. Hence, up to a  
0 maximum of ten (10) WTA Panels can be equipped on one (1)  
0 MIS Frame.

0 For ease of engineering cables, the WTA Panels will be  
0 assigned from the top position down on the MIS Frame.

0 Although a Frame Supervisory Panel (FSP) is not required  
0 for the WTA Panel, an FSP can be mounted in shelf posi-  
0 tion 45 if other devices (which can mount on the MIS  
0 Frame) require an FSP. Hence, if the MIS Frame is not  
0 fully provisioned with WTA Panels, other valid hardware  
0 units can be mounted.

0 For installation on existing MIS Frames in existing of-  
0 fices, the WTA Panels can be mounted on any available  
0 shelf position of the MIS Frame, preferably the top shelf  
0 positions.

- 0 ( vii) To minimize the office wiring required for line testing,  
0 the Maintenance Trunk Modules (MTM) that are provisioned  
0 with NT3X09AA/BA cards and LTU/MTUs should be reduced to  
0 a minimum and placed in the adjacent TME/DCE Frames next  
0 to the MIS Frames containing WTA Panels.

0 The Line Concentrating Equipment Frames (LCE) and ISDN  
0 Line Concentrating Equipment Frames (LCEI) should be  
0 clustered around the MIS Frames containing WTA Panels in  
0 order to minimize the cabling to these panels.

0 Hence, the signal loss caused by office wiring should be  
0 reduced to the minimum that is possible. The signal loss  
0 should be less than one (1) db in most offices.

0 (viii) Discrimination Numbering

0 WTA Panels NT7X76AA/BA will be numbered from 000 on up  
0 (e.g. WTA 000, WTA 001, etc.).

- 0 ( ix) For offices larger than 75,000 lines and requiring more  
0 than three (3) WTA Panels, the straight forward WTA ma-  
0 trix configuration cannot be used due to the software  
0 limitation of a maximum of 32 multiples which can be  
0 datafilled for each horizontal subgroup.

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0 The way to solve this problem is to split the total num-  
0 ber of multiples into either groups of 32 (using Method  
0 1) or groups of 31 (using Method 2).

0 WTA Panel Configuration for Offices with Line Size >  
0 75,000

0 Method 1

0 Using Method 1, the multiples can be divided evenly into  
0 two (2) groups of up to 32 multiples within each group.  
0 Each WTA Panel allows the cross-connection of up to ten  
0 (10) multiples except for the fourth panel which will  
0 only have two (2) multiples. Hence, WTA Panels  
0 "B", "C", "D", and "E" will provide cross-connections for  
0 32 multiples.

0 Access to the line circuits is provided via the extended  
0 verticals of WTA Panel "A" as illustrated. Therefore, the  
0 test circuits connected to WTA Panel "A" will have access  
0 to more than 75,000 lines by using the extended vertical  
0 and horizontal connections.

0 WTA Panel Configuration for Offices with Line Size >  
0 75,000

0 Method 2

0 Using Method 2, WTA Panel "A" is connected to WTA Panel  
0 "B" in such a way as to provide for the cross-connections  
0 for the first group of 31 multiples via WTA Panels  
0 "A", "B", "C", and "D" as in a normal matrix configuration.

0 For the second group of 32 multiples via WTA Panels  
0 "F", "G", "H", and "I", the extended verticals are used.

0 Differences Between Methods 1 and 2

0 Method 1 will require one (1) more WTA Panel which is  
0 panel "E" and three (3) more NT3X09BA cards, six (6) in-  
0 stead of three (3), connected to panel "A".

0 Using Method 1, line testing involving the first and sec-  
0 ond groups of 32 multiples will be subjected to the mul-  
0 tiple cabling within the group or a maximum of 32  
0 multiple cables. Using Method 2, line testing involving  
0 the second group of 32 multiples will also involve the

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0 first group of 31 multiples or will be subjected to a  
0 maximum of 63 multiple cables.

0 Generally, Method 1 would be preferred over Method 2 due  
0 to the effect on line testing. However, Method 2 may be  
0 worth considering if an LCE expansion is done properly to  
0 reduce the effect of multiple cabling on line testing.

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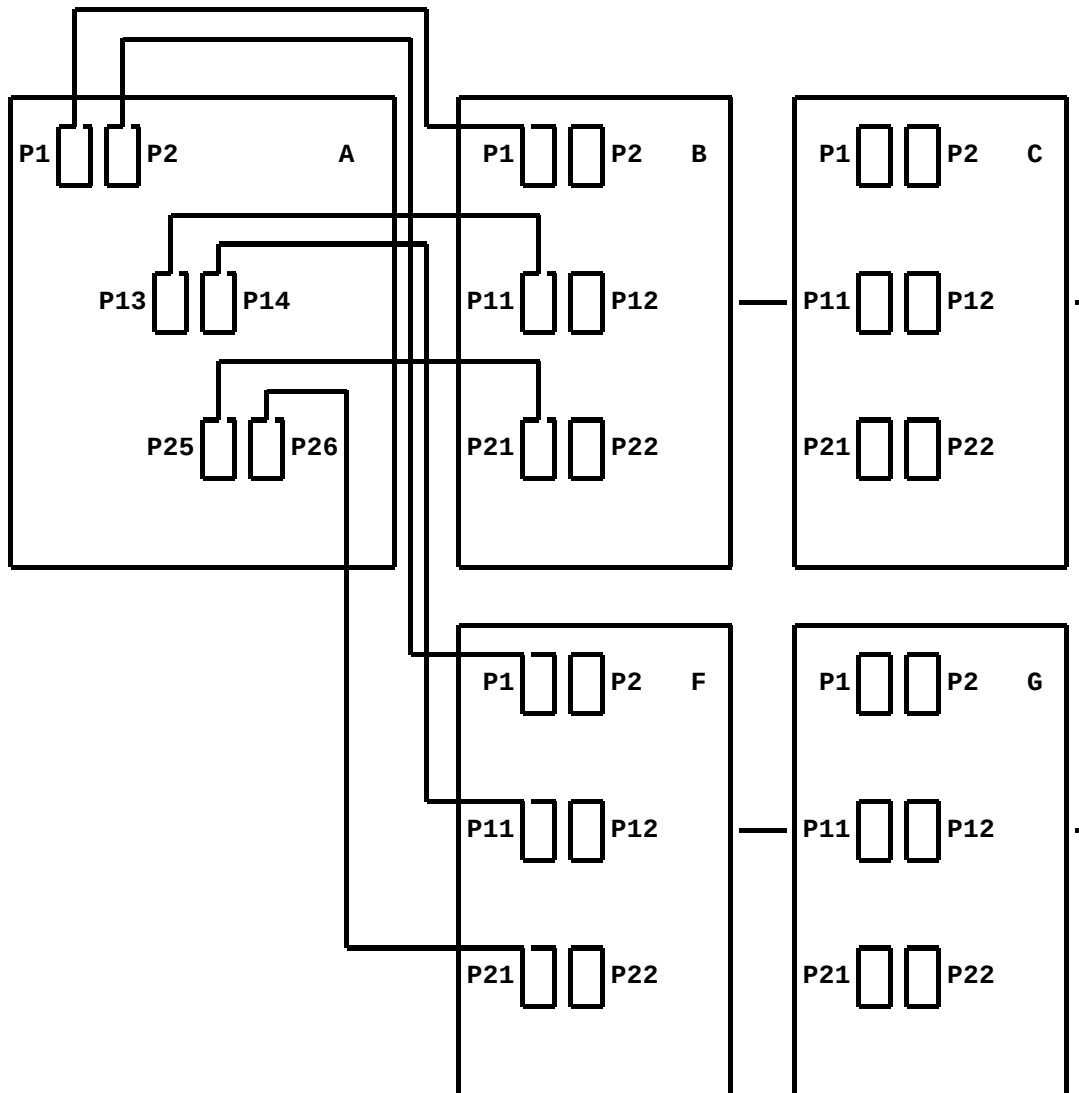
0

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### Method 1

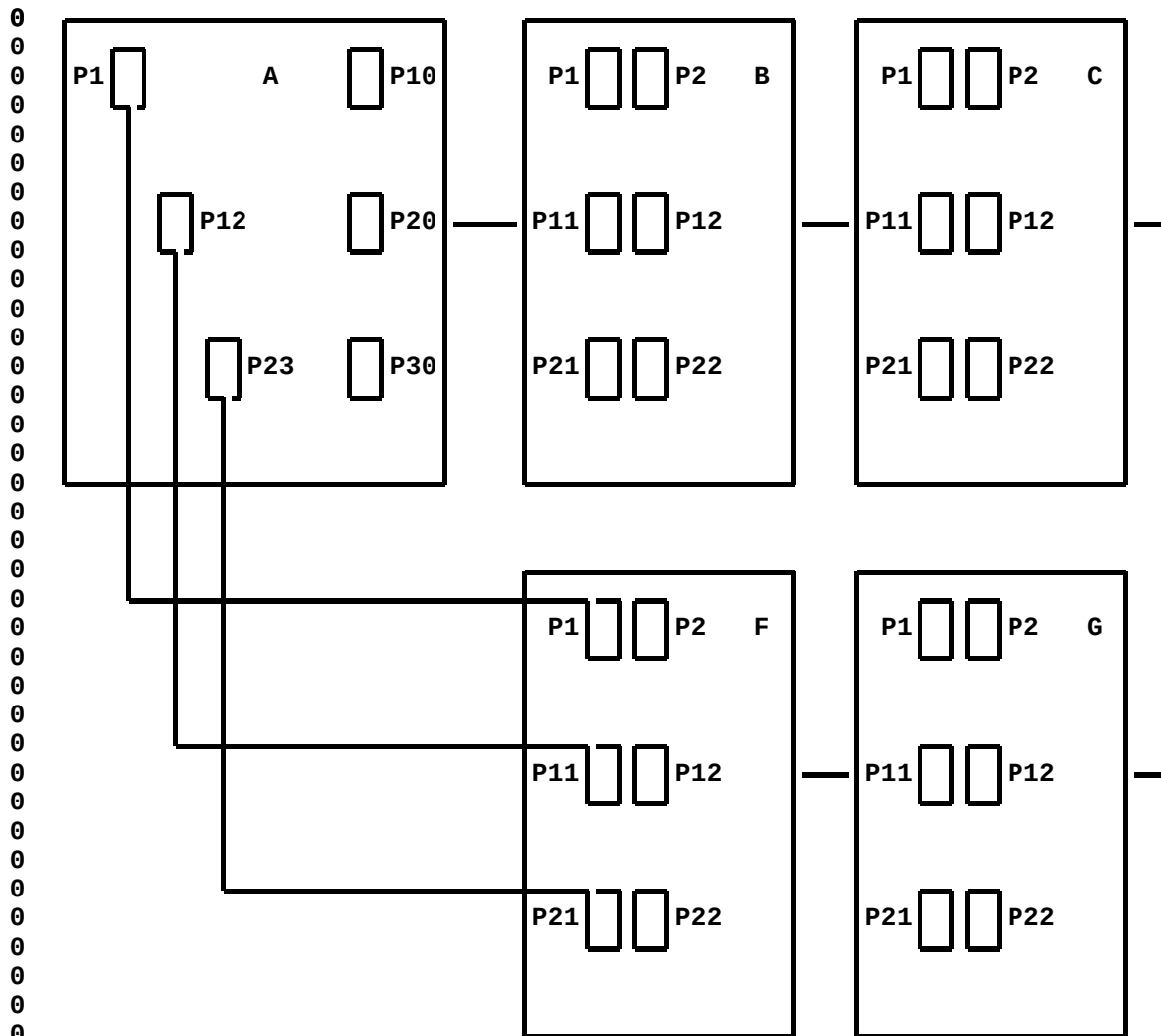


WTA Panels D and E (to the right of WTA Panel C) and WTA Panels H and I (to the right of WTA Panel G) are not shown.

The connections between WTA Panels "A" and "B" and between WTA Panels "A" and "F" are for illustration purposes only. That is, the first group of eight (8) verticals on WTA "A" will be datafilled as extended verticals and connected to the first group of eight (8) horizontal datafilled as extended horizontal on WTA "B". The second group of eight (8) verticals of WTA "A" will be connected to the first group of eight (8) horizontal of WTA "F". Similarly, the third and fourth group of eight (8) verticals on WTA "A" will be connected to the second group of eight (8) horizontal of WTA "B" and "F" respectively. The fifth and sixth group of eight (8) verticals on WTA "A" will be connected to the third group of eight (8) horizontal on WTA "B" and "F" respectively. The actual connections are made from connectors P43 to P44 of WTA "A" to connectors P31 to P42 and P97 to P108 of WTA "B" and "F".

0 WTA Panel Configuration for Offices with Line Size >  
0 75,000

0 Method 2



0 WTA Panel D (to the right of WTA Panel C) and WTA Panels  
0 H and I (to the right of WTA Panel G) are not shown.

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0 The connections between WTA Panels "A" and "F" are for  
0 illustration purposes only. That is, the first group of  
0 eight (8) verticals datafilled as extended verticals on  
0 WTA "A" is connected to the first group of eight (8) hor-  
0 izontals datafilled as extended horizontals on WTA "F".  
0 Similarly, the second group of eight (8) verticals on WTA  
0 "A" is connected to the second group of eight (8) hori-  
0 zontals on WTA "F". The third group of eight (8) verti-  
0 cals on WTA "A" is connected to the third group of eight  
0 (8) horizontals on WTA "F". The actual connections will  
0 be made from connectors P43 to P48 on WTA "A" to connec-  
0 tors P31 to P42 and connectors P97 to P108 on WTA "F".

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0 1.3.5 101 Communication Test Line

0 a) General Description

0 The 101 Communication Test Line (CTL) circuit provides a 2-wire  
0 voice and signaling interface between the Trunk Module (TM) and a  
0 Maintenance and Administration Position (MAP) configured as a  
0 Line Test Position (LTP) or a Trunk Test Position (TTP). The Map  
0 may be at the same location as the TM or remote from it.

0 The Circuit is used in all DMS-100 Family offices as an originat-  
0 ing communication trunk or as a terminating type 101 trunk.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual  
0 NTP 297-2101-516 Line Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) There are two versions of the circuit:

0 NT5X30AA Used in North American applications.

0 NT5X30BA Used in International applications.

0 ( ii) Each circuit card contains one CTL circuit, and is  
0 plugged into a 2-wire, 4-wire, or 8-wire TM.

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## 0 ( iii) Features:

|   |                       |          |             |
|---|-----------------------|----------|-------------|
| 0 |                       | NT5X30AA | NT5X30BA    |
| 0 | -Impedance            | 900 Ohms | complex     |
| 0 | -Compatibility with   |          |             |
| 0 | Telephone Set         | 500 Type | BT700 Type  |
| 0 | Key equipment         | 1A2      | UK Approved |
| 0 | Foreign Exchange      | Yes      | No          |
| 0 | carrier channel units |          |             |
| 0 | -Built in ringing     | 20 Hz    | 25 Hz       |
| 0 | supply                |          |             |
| 0 | -Forward disconnect   | Yes      | No          |
| 0 | (re-ring)             |          |             |

0 Each card contains transmission and signaling functions  
0 to enable outgoing calls to be originated from a LTP or a  
0 TTP, and for incoming calls to be completed to it.

## 0 ( iv) Applications of NT5X30

## 0 1. 101 Test Line (Terminating)

0 As a minimum requirement provide one circuit per Main-  
0 tenance and Administration Position (MAP) which is to  
0 be used for trunk testing (TTP). Each Trunk to have  
0 access to all such positions.

## 0 2. 101 Communication Trunk (Originations)

## 0 Local Offices:

0 As a minimum requirement provide one circuit for each  
0 MAP which is to be used for general maintenance or  
0 line testing.

## 0 Toll Offices

0 As a minimum requirement provide one circuit for each  
0 MAP which is to be used for general maintenance or  
0 trunk testing.

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0 MAP/Headset Monitor Interface

0 One interface circuit is required for each headset  
0 provided for service analysis monitors and test mon-  
0 itors at the MAP (See Section 3.6, I/O Devices for  
0 more information).

0 ( v) For NT5X30AA one compromise balance network NT2X77, of  
0 the appropriate type must be provided for each card or-  
0 dered (see Section 3.5 (1.3.1 Analog Trunks) for more in-  
0 formation on the compromised Balance Networks).

0 For NT5X30BA one compromise balance network NT2X77BB must  
0 be provided for each card ordered.

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0 1.3.6 Miscellaneous Scan Detector Card

0 a) General Description

0 Scanner circuits enable the DMS Central Control to sense the  
0 state or change of state of external equipment.

0 b) References

0 NTP 297-1001-451 DMS-100 Family Common Customer Data  
0 Schema  
0 NTP 297-2101-451 DMS-100 Local Customer Data Schema  
0 NTP 297-2181-451 DMS-100 International Customer Data  
0 Schema  
0 NTP 297-2301-451 DMS-300 Gateway Customer Data  
0 Schema  
0 Section 3.7 Office Maintenance

0 c) Provisioning Considerations:

0 ( i) Three switch selectable detector modes:

- 0 - loop detector  
0 - ground detector  
0 - battery detector

0 ( ii) Each DMS miscellaneous scan card provides fourteen scan  
0 points configured as two scan circuits known as "Scan  
0 Groups" with seven points per group. In certain applica-  
0 tions software limitations restricts a group to a spe-  
0 cific function and unused points in that group cannot be  
0 assigned to other functions.

0 ( iii) DMS supports a maximum of 1024 scan points (146 scan  
0 groups). This includes seven scan points (one scan  
0 group) associated with each standard alarm card provi-  
0 sioned:

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0 NT3X82AA  
0 NT3X82AB  
0 NT3X83AA  
0 NT3X84AA  
0 NT3X85AA

0 For more information on the Standard Alarm cards, refer  
0 to Section 3.7, Office Maintenance.

0 ( iv) Miscellaneous Scan Card is NT0X10AA. One slot per card.  
0 Mounts on MTM, OAU, RSM.

0 ( v) For alarms which require scan points, see NTP  
0 297-1001-451 DMS-100 Family Common Customer Data Schema,  
0 Section 034 Alarm Scan Group Table.

0 ( vi) For line features which require scan points, see the Scan  
0 Group Table, Section 127 in the following NTPs:

0 NTP 297-2101-451  
0 NTP 297-2141-451  
0 NTP 297-2151-451  
0 NTP 297-2181-451

0 The quantity of scan points required for line features is  
0 divided by seven (7) to determine the number of scan cir-  
0 cuits or groups required.

0 ( vii) For network management functions which require scan  
0 points, see the Network Management Scan Table, Section  
0 039 in the following NTPs:

0 NTP 297-1001-451  
0 NTP 297-2141-451  
0 NTP 297-2151-451  
0 NTP 297-2181-451  
0 NTP 297-2301-451

0 The quantity of scan points required for network manage-  
0 ment functions is divided by seven (7) to determine the  
0 number of scan circuits or groups required.

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0 (viii) Each A.P.C. ROTL unit, model 1066-ROTL/52A, comes  
0 equipped with two ROTL test ports.

0 One scan group (four points plus three dedicated spares)  
0 must be provided for each A.P.C. ROTL test port. Provide  
0 one additional scan point per ROTL unit if an alarm  
0 interface is required.

0 ( ix) For more information on the provisioning of Scan  
0 Points, refer to Section 3.7, Office Maintenance.

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0 1.3.7 Signal Distributor Card

0 a) General Description

0 Signal Distributor circuits enable the DMS Central Control to  
0 control external equipment by activating relays, lamps, audibles  
0 etc.

0 b) References

0 NTP 297-1001-451 DMS-100 Family Common Customer Data  
0 Schema  
0 NTP 297-2101-451 DMS-100 Local Customer Data Schema  
0 NTP 297-2181-451 DMS-100 International Customer Data  
0 Schema  
0 NTP 297-2201-451 DMS-200 Toll Customer Data Schema  
0 Section 3.7 Office Maintenance

0 c) Provisioning Considerations:

0 ( i) Four (4) SD modes selected by switches:

0 ( i) normally open ground operation  
0 ( ii) normally closed ground operation  
0 (iii) normally open loop operation  
0 ( iv) normally closed loop operation

0 ( ii) Each DMS SD card provides fourteen SD points configured  
0 as two SD circuits known as "SD Groups" with seven points  
0 per group. In certain applications software restricts a  
0 group to a specific function and unused points in that  
0 group cannot be assigned to other functions.

0 ( iii) DMS supports a maximum of 1024 SD points (146 SD groups).  
0 This includes the SD groups associated with each standard  
0 alarm card provided:

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0 NT3X82AA  
0 NT3X82AB  
0 NT3X83AA  
0 NT3X84AA  
0 NT3X85AA

0 For more information on the Standard Alarm Cards, refer  
0 to Section 3.7, Office Maintenance.

0 ( iv) Signal Distribution Card types are as follows:

0 Signal Distribution Card, Type I: NT2X57AA  
0 SD Card with OAU Monitor Circuit: NT2X57AB  
0 Signal Distribution Card, Type II: NT2X55AA

0 SD Card Type I and SD Card Type II mount on the Mainte-  
0 nance Trunk Module (MTM, Remote Maintenance Module (RMM)  
0 and Remote Service Module (RSM).

0 The Type I SD card is fitted with miniature flat-spring  
0 board-mounted relays for applications requiring lower  
0 output contact ratings and resistive loads.

0 OAU monitor circuit (code NT2X57AB only) provides an out-  
0 put to external equipment if communication between OAU  
0 and CCC is interrupted.

0 the Type II SD card is fitted with mercury-wetted-contact  
0 relays for applications requiring higher output contact  
0 ratings.

0 ( v) For alarms which require SD points. see NTP 297-1001-451  
0 DMS-100 Family Common Customer Data Schema, Section 036,  
0 Alarm Signal Distributor Group Table.

0 ( vi) For line features which require SD points, see Signal  
0 Distributing Group Table, Section 128, in the following  
0 NTPs:

0 NTP 297-2101-451  
0 NTP 297-2141-451  
0 NTP 297-2151-451  
0 NTP 297-2181-451

0 The quantity of SD points required for line features is  
0 divided by seven (7) to determine the number of SD cir-  
0 cuits or groups required.

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0 ( vii) One SD point for each line hunt group that requires a re-  
0 mote line overflow hardware register is to be provided.

0 (viii) Each A.P.C. ROTL unit, model 1066-ROTL/52A, comes  
0 equipped with two ROTL test ports.

0 One SD group (four points plus three dedicated spares)  
0 for each A.P.C. ROTL test port is to be provided.

0 ( ix) For network management functions which require SD points,  
0 see NTP 297-2201-451 DMS-200 Customer Data Schema, Sec-  
0 tion 217, Network Management Signal Distributor Table.

0 The quantity of SD points required is divided by seven  
0 (7) to determine the number of SD circuits required.

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0 1.3.8 Multi-Frequency (MF) Receiver

0 a) General Description

0 MF receivers, when connected to incoming trunks (analog and dig-  
0 ital) via the network, receive and interpret multi-frequency ad-  
0 dress signalling on these trunks.

0 b) References

0 Chapter 3, Section 3.5 Peripheral Modules  
0 NTP 297-1001-132 DMS-100 Family Blue Box Fraud  
0 Detection Feature Description

0 c) Provisioning Considerations:

0 ( i) Receiver access required for all incoming MF calls on all  
0 incoming and 2-way trunks.

0 ( ii) One receiver dedicated to each CAMA position.

0 ( iii) One to three receivers dedicated whenever the Blue Box  
0 Fraud Detection feature is activated. See NTP  
0 297-1001-132 DMS-100 Family Blue Box Fraud Detection Fea-  
0 ture Description.

0 ( iv) Versions of the card currently available are as follows:

0 NT2X48AA MF Receiver, Mu-law applications,  
0 two card position  
0 NT2X48BA MF Receiver, Mu-law applications,  
0 single card position  
0 NT2X48CA MF Receiver, A-law applications, two  
0 card position

0 ( v) The MF receivers can be mounted in either a Maintenance  
0 Trunk Module (MTM) or Trunk Module (TM) of the DMS-100  
0 Family of switching equipment.

0 ( vi) The Universal Tone Receiver (UTR) is a combined service  
0 circuit that can perform the function of a Digitone Re-  
0 ceiver for lines and a MF Receiver for trunks. (Refer to  
0 the Universal Tone Receiver subsection within this chap-  
0 ter for more information on the UTR.) MF Receivers are  
0 still required to service the following:

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- 0 - analog trunk groups existing on TM/MTM
- 0 shelves
- 0 - lines equipped on LM modules
- 0 - trunk groups equipped on DCM modules
- 0 - Mechanized Calling Card Service (MCCS)
- 0 - Subscriber Carrier Modules (SMS,SMR,SMU)
- 0 - incoming and the incoming portion of two way
- 0 service and test circuits (i.e. Remote
- 0 Office Test Line and Blue Box Fraud
- 0 Prevention)
- 0 - incoming RONI grunk groups
- 0 - Super CAMA - two way incoming DP outgoing DP
- 0 trunk groups

0 ( vii) MF Receivers are provisioned based on traffic. Refer to  
0 Chapter 2 Table N, MF Receiver - CCS Capabity Tables and  
0 Table M, MF Receiver Holding Time.

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0 1.3.9 Digitone Receiver

0 a) General Description

0 These circuits receive and interpret the digitone signals pulsed  
0 on a customer line equipped with the digitone feature.

0 b) References

0 Chapter 3, Section 3.5 Peripheral Modules

0 c) Provisioning Considerations:

0 ( i) Digitone Receiver required for all originating digitone  
0 signalling.

0 ( ii) Receiver provisioned to handle total load for all calls  
0 generated by digitone lines.

0 ( iii) Versions of the card currently available are as follows:

0 NT2X48AB Digitone Receiver, Mu-law  
0 applications, two card position  
0 NT2X48BB Digitone Receiver, Mu-law  
0 applications, single card position  
0 NT2X48CB Digitone Receiver, Mu-law  
0 applications, British Telecom, two  
0 card position  
0 NT2X48CC Digitone Receiver, A-Law  
0 applications, two card position

0 Each card contains four (4) Digitone Receiver Circuits.

0 ( iv) The digitone receivers can be mounted in either a Maintenance Trunk Module (MTM) or Trunk Module (TM) of the DMS-100 Family of switching equipment.

0 ( v) The Universal Tone Receiver (UTR) is a combined service circuit that can perform the function of a Digitone Receiver for lines and a MF Receiver for trunks. (Refer to the Universal Tone Receiver subsection within this chapter for more information on the UTR.) Digitone Receivers are still required to service the following:

0 - analog trunk groups existing on TM/MTM  
0 shelves



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- 0 - lines equipped on LM modules
- 0 - trunk groups equipped on DCM modules
- 0 - Mechanized Calling Card Service (MCCS)
- 0 - Custom Charge Calling (CCC)
- 0 - Subscriber Carrier Modules (SMS,SMR,SMU)
- 0 - incoming and the incoming portion of two way
- 0 service and test circuits (i.e. Remote
- 0 Office Test Line and Blue Box Fraud
- 0 Prevention)
- 0 - any FX type trunks (e.g. DS1FX0, FX0GS,
- 0 FX0LS, FXSGS, FXSLS)

0 ( vi) To support CCC it is necessary to provide digitone re-  
0 ceivers that are attached as service circuits to a CCC  
0 call during periods when digitone signalling is permitted  
0 or expected.

0 Typically, DMS toll TOPS offices and the toll side of  
0 local/toll TOPS offices are not provisioned with digitone  
0 receivers. The introduction of CCC will necessitate the  
0 inclusion of this new resource in DMS toll offices.

0 The digitone receiver used is the NT2X48AB.

0 A separate group of digitone receivers dedicated to CCC  
0 should be engineered in each office.

0 ( vii) Digitone Receivers are provisioned based on traffic. Re-  
0 fer to Chapter 2, Table P, Digitone Receivers - CCS Ca-  
0 pacity Tables and Table O, Digitone Receiver Holding  
0 Time.

0 Digitone receivers serving CCC traffic will be provi-  
0 sioned on a loss basis in DMS toll TOPS and local/toll  
0 TOPS offices. Use Poisson Table V in Chapter 2. The CCC  
0 traffic used is calculated as follows:

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$$\begin{array}{l} \text{CCC Traffic} = \text{WAHT} \times \text{ABSBHA} \\ \hline 100 \end{array}$$

0 where

$$\text{WAHT} = (\text{P(W/O)} \times \text{HT1}) + (\text{P(W)} \times \text{HT2})$$

0 = Weighted Average Holding Time of  
0 digitone receivers

0 ABSBHA is the total Average Busy Season Busy Hour At-  
0 tempts (ABSBHA) for all 0+, 01+, ANI traffic with an in-  
0 dication of CCC capable. This will be the sum of all  
0 incoming trunk groups as well as local originating traf-  
0 fic in the case of DMS-100/200/TOPS.

0 P(W/O) is the probability that the 0+ or 01+ call marked  
0 as CCC capable is actually a subscriber dialed CCC call.  
0 This is difficult to predict and a value of 0.15 to 0.60  
0 can be used.

0 P(W) is the probability that the 0+ or 01+ call marked as  
0 CCC capable is an operator handled call. The sum of P(W)  
0 and (PW/O) should be one.

0 HT1 = digital receiver holding time for CCC  
0 calls

0 = 22.05 seconds if the sequence calling  
0 feature is disabled

0 or = 42.55 seconds if the sequence calling  
0 feature is enabled

0 HT2 = digital receiver holding time for non-  
0 CCC calls when marked as CCC capable

0 = 4 seconds

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0 1.3.10 Conference Circuit Provisioning

0 a) General Description

0 Conference circuit is required to provide centrex or MDC custom-  
0 ers with transfer, consultation hold, call add-on, to provide  
0 POTS customers with 3-way calling or 6-way calling. Also required  
0 for TOPS positions, Service Analysis positions and Attendant Con-  
0 soles.

0 b) References

0 Chapter 2 Traffic Criteria and Capacities

0 Chapter 3, Section 3.3 Operator Services  
0 Section 3.4 Meridian Business Services

0 c) Provisioning Considerations:

0 ( i) There are two (2) versions of the circuit:

0 NT3X67AA used in North American applications  
0 NT3X67BA used in International applications

0 The NT3X67BB is fully backwards compatible to NT3X67BA  
0 which it replaces. In addition, it provides the Toll  
0 Break In (TBI) tone required to implement the Toll Break  
0 In - Background Tone feature. This feature is supported  
0 in BCS-25 or later software.

0 There is one (1) circuit per card. Each card occupies  
0 three (3) card slots in a Maintenance Trunk Module (MTM)  
0 or Trunk Module (TM) and requires six 4-wire PCM trunk  
0 appearances.

0 ( ii) The 6-party Conference Circuit provides a conference fa-  
0 cility on a single card for use with DMS-100 Family of-  
0 fices. Up to five conference circuits can be tandemed to  
0 permit conference connections for three to twenty-six  
0 parties.

0 ( iii) The Conference Circuit card is designed to function as  
0 one (1) 6-port conference circuit or two (2) 3-port con-  
0 ference circuits.

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- 0 ( iv) One 3-port conference circuit is required per service  
0 analysis position.

0 One 3-port conference circuit is required per Attendant  
0 Console. One circuit is required per console. See MBS,  
0 Section 3.4, for more information.

0 Conference Circuits are required for TOPS positions. See  
0 Operator Equipment, Section 3.3, for more information.

- 0 ( v) The 3-Way Call Chaining feature is provided in software  
0 packages NTX820AA (MDC offices) and NTX808AA (POTS of-  
0 fices). This feature will allow a non-controlling party  
0 in a simple 3-way call or existing chain to flash hook  
0 and initiate another 3-way call provided the non-  
0 controlling party either has the 3-Way Calling (3WC) line  
0 option or a call transfer option datafilled on his line  
0 or customer group.

0 Number of 3-Port Conference Circuits required for 3-Way  
0 Call Chaining = Number of 3-Way Call Chaining Groups  
0  $\times (D-2)$ .

0 where:

0 Number of 3-Way Call Chaining Groups =  
0  $(A * B * C) / D$   
0 (round up to next integer)

0 A = the number of lines with 3-Way Calling  
0 capability

0 B = the % Feature Penetration for 3-Way Call  
0 Chaining from the number of lines in (A)  
0 (i.e. % of lines in (A) that are normally  
0 in use)

0 C = the % Feature Activation for 3-Way Call  
0 Chaining

0 D = the average number of conferees in a 3-Way  
0 Call Chaining Group.

0 \* Features of Group Intercom All Calls under NTX878AC are  
0 affected in the same way.

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0 ( vi) Provision the NT3X67AA Six Port Conference CP per the  
0 following formula whenever more than one (1) member of a  
0 Bridge Group is to be bridged together using Multi-Party  
0 Bridged (MPB) Services (NTX297AA). These Six Port Con-  
0 ference CPs shall be configured as two (2) Three Port  
0 Conference Circuits.

0 # Six Port Conf. CP =  $(0.5 \times A) + (B) + (1.5 \times C)$

0 Where A = Number of Two (2) Party MPB Groups  
0 B = Number of Three (3) Party MPB Groups  
0 C = Number of Four (4) Party MPB Groups

0 Round up to the nearest whole number for the total  
0 NT3X67AA Six Port Conference CPs that are required for  
0 each office that requires Multi-Party Bridged Services.

0 ( vii) Refer to Traffic Table V in the Traffic Criteria and Ca-  
0 pacity section, in Chapter 2, for the number of confer-  
0 ence circuits required for traffic based on ABSBH usage  
0 (Refer to Chapter 2, Item 2.4 for Conference Circuit  
0 Grade of Service Objectives.)

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0 1.3.11 Tone Generator

0 a) General Description

0 The Tone Generator Circuit (TGC) provides tones for general pur-  
0 pose use. The circuit card is mounted on a MTM.

0 The TGC generates tones for the following purposes:

- 0 - permanent signal
- 0 - conference calling
- 0 - Dual Tone Multifrequency (DTMF) signalling (SSMF-4)
- 0 - call waiting

0 b) References

0 Chapter 2 Traffic Criteria and Capacities

0 Section 3.2 - Software

0 Chapter 3, Section 3.4 Meridian Business Services

0 GS3X68 Tone Generator

0 c) Provisioning Considerations:

- 0 ( i) Versions of the Tone Generator Circuit cards are as fol-  
0 lows:

| 0 Product               |          |         |          |
|-------------------------|----------|---------|----------|
| 0 Description           | Code     | Uses    |          |
| 0 Dual Tone             | NT3X68AB | General | (Mu-law) |
| 0 Multifrequency (DTMF) |          |         |          |
| 0 Generator             |          |         |          |
| 0 Call Waiting Tone     | NT3X68AC | General | (Mu-law) |
| 0 Generator             |          |         |          |

0 For more information, refer to GS3X68.

- 0 ( ii) Digitone (DTMF) senders are used in Integrated Business  
0 Network offices to outpulse digits on the trunks and on  
0 CO trunks to a Class 5 office.

0 The DTMF sender grade of service is based on delay or  
0 loss criteria:

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0 a) ABSBH p=0.001, of Table V, Trunk Capacity Tables CCS  
0 Per Hour (Poisson Theory) (Chapter 2).

0 b) HDBH p=0.01, of Table V, Trunk Capacity Tables CCS  
0 Per Hour (Poisson Theory) (Chapter 2).

0 When provisioning DTMF Senders for a DMS100 MDC office  
0 using the Outpulsing DTMF On A Line feature and/or the  
0 Attendant Console End-T0-End Signaling (ACEES) feature  
0 both of which are contained in S/W Pkg NTX101AA, then the  
0 following formula shall be used:

$$\begin{array}{l} \text{DTMFS} \\ \text{CCS} = \end{array} \left[ \frac{\text{TT}(\% \text{ OG ABSBH CCS})100}{\text{TT-AVG-HT}} \right] + \left[ \frac{\text{ACEES-ABSBH-CCS}}{\text{ACEES-AVG-HT}} \right] \times \text{AVG-DTMFS-HT}$$

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0 where,

0 DTMFS CCS DTMF Senders requirements in CCS.

0 ACEES-ABSBH-CCS The sum of the traffic during the Aver-  
0 age Busy Hour Busy Season in CCS from  
0 all Attendant Consoles equipped with the  
0 Attendant Console End-To-End Signaling  
0 (ACEES) feature

0 ACEES-AVG-HT The Average Holding Time of all calls  
0 originating from all Attendant Consoles  
0 equipped with the ACEES feature in sec-  
0 onds.

0 TT Total Tie Trunks Traffic in CCS (TT) requiring Out-  
0 pulsing DTMF on a Line

0 % OG ABSBH CCS The percentage of Total Tie Trunk traf-  
0 fic that is Outgoing (OG), during Aver-  
0 age Busy Season Busy Hour (ABSBH), which  
0 require the outpulsing of DTMF.

0 TT-AVG-HT The Average Holding Time of the Total  
0 Tie Trunks

0 AVG-DTMFS-HT The Average Holding Time of the DTMF  
0 Senders (DTMFS). (Average sender hold-  
0 ing time of three seconds is assumed.)

0 If the number of senders for traffic figures exceed 25  
0 circuits, then the number of circuits should be deter-  
0 mined using the following formula:

0 #DTMF Senders = DTMFS CCS  
0 -----  
0 AVG-DTMFS-HT

0 DTMF sender card has four circuits per card. Two slots  
0 per card. Mounts on MTM.

0 DMS-250 trunks which are mounted on DCMs, DTCs or LTCs  
0 and require DTMF outpulsing do not require the DTMF  
0 Sender Card NT3X68AB.

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0 As of BCS-16 (or later) for other DMS applications, dig-  
0 ital trunks which require DTMF outpulsing on the DTC or  
0 LTC do not required the DTMF Sender Card NT3X68AB.

0 The required tones for the above two situations will be  
0 outpulsed from the respective peripheral modules.

0 ( iii) The Call Waiting Tone Generator CP is required to provide  
0 the following call progression tones for Plain Old Tele-  
0 phone Service (POTS) Custom Calling, Meridian Data  
0 Centrex (MDC) and DMS Private Branch Exchange (PBX) ap-  
0 plications:

- 0 a) Account  
0 b) Busy Verification  
0 c) Call Waiting  
0 d) Camp-On  
0 e) Confirmation (350 + 440 Hz)  
0 f) Queue Recall (350 + 440 Hz)  
0 g) Special Dial (350 + 440 Hz)  
0 h) Teen Service

0 Time switch broadcasting is used to distribute tones to  
0 multiple users.

0 Each Call Waiting Tone Generator Circuit Pack contains  
0 four circuits and requires two Maintenance Trunk Module  
0 (MTM) card slots.

0 For redundancy purposes, a minimum of eight circuits (two  
0 CPs) are to be provided for non-MDC offices and a minimum  
0 of twelve circuits (three CPs) are to be provided for MDC  
0 offices.

0 ( iv) For calling tone in Custom Calling Services, provide one  
0 Tone Generator Call Waiting card per office.

0 The capacity of the Call Waiting Tone Generator card pro-  
0 vided for Custom Calling Services is sufficient to handle  
0 the requirements for Attendant Consoles (see Section  
0 3.4).

0 ( v) The number of Call Waiting Tone Circuit (CWT) required  
0 for POTS offices:

0 # of calls  
0 % of terminating

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0 
$$\# \text{ of CWT for Camp-ON} = \frac{(1 + (B/100)) \times A \times C}{D \times 3,600,000 \text{ ms}} \quad (\text{round up to next integer})$$

0 
$$\# \text{ of CWT for CWD/CWO} = \frac{J \times K \times Q}{L \times 3,600,000 \text{ ms}} \quad (\text{round up to next integer})$$

0 
$$\# \text{ of CWT for CWT} = \frac{R \times J \times P}{L \times 3,600,000 \text{ ms}} \quad (\text{round up to next integer})$$

0 
$$\# \text{ of CWT for IED} = (\# \text{ of CWT for CWT} \times 0.2) \times 2$$

0 Where:

0 A = # of Attendant Camp-On calls in one hour.  
0 B = % of Attendant Camp-On calls that will be recalled.  
0 C = Length of the Camp-On tone in milliseconds.  
0 (maximum 1500 ms., recommended default = 300ms)  
0 D = Average # of connections on a Camp-On tone circuit  
0 during the ABSBH.  
0 E = # of lines with Dial Call Waiting (CWD)  
0 F = # of lines with Call Waiting Originating (CWO)  
0 G = # of MDC lines  
0 H = # of Originating-Terminating calls per ABSBH that reach  
0 a busy MDC line.  
0 J = Average # of Call Waiting tones applied per call.  
0 (minimum 1, maximum 2, recommended default = 1.8)  
0 K = Length of the CWD/CWO tone in milliseconds.  
0 (maximum 1500 ms., recommended default = 300ms)  
0 L = Average # of connections on a Call Waiting tone circuit  
0 during the ABSBH.  
0 M = # of MDC lines with Call Waiting Terminating.  
0 N = # of lines in the office.  
0 O = # of Terminating calls per ABSBH that reach a busy line.  
0 P = Length of the Call Waiting Terminating tone in milli-  
0 seconds. (maximum 1500 ms., recommended default = 300ms)  
0 Q = (F + (E x 0.25)) x H / G (round up to next integer)  
0 R = (O x M) / N (round up to next integer)

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0 The number of Call Waiting Tone Generator Circuit Packs  
0 for an MDC office is equal to the number of CWT circuits  
0 required for POTS office ((v) above) plus the number of  
0 CWT required for MDC office (above) divided by 4 (i.e.,  
0 four circuits per card). The minimum number of CWT cir-  
0 cuit packs to provision per MDC office is 3.

0 (vii) If TEEN Service software is provided, Call Waiting Tone  
0 Generator cards are required (minimum of one (1) card per  
0 Secondary Directory Numbers (SDN) must be provided; it is  
0 recommended that one card per SDN be provided for a total  
0 of four (4) cards per office). Refer to the Software  
0 Feature section (3.2) for more information on TEEN Ser-  
0 vice.

0 The calculation for CWT on the Primary Directory Number  
0 (PDN) is the same as provisioning CWT for POTS lines ((v)  
0 above).

0 The number of CWT circuits required for the Secondary Di-  
0 rectory Number number 1 (SDN1) is:

$$\begin{array}{rcl} \text{\# of SDN1 calls} & & \\ \text{\# of CWT} & \begin{array}{l} \text{getting call} \\ \text{waiting (ABSBH)} \end{array} & \times \text{Holding Time} \\ \text{for SDN1} = & \text{-----} & \\ & 3,600,000 \text{ ms} & \end{array}$$

0 Where:

$$\begin{array}{rcl} \text{Holding Time} = & \begin{array}{l} \text{duration of} \\ \text{tone for SDN1} \end{array} & \times \begin{array}{l} \text{Avg call} \\ \text{wait tones} \\ \text{-----} \\ \text{calls} \end{array} \\ & = 300 \text{ ms} \times 1.8 & \\ & = 540 \text{ ms} & \end{array}$$

0 A minimum of one CWT cards are required for SDN1 lines.  
0 (There are four CWT circuits per card).

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0 The number of CWT circuits required for the Secondary Di-  
0 rectory Number number 2 (SDN2) is:

$$\begin{array}{l} \text{\# of SDN2 calls} \\ \text{getting call} \quad \times \quad \text{Holding Time} \\ \text{\# of CWT waiting (ABSBH)} \\ \text{for SDN2} = \frac{\text{-----}}{\text{3,600,000 ms}} \end{array}$$

0 Where:

$$\begin{array}{l} \text{Holding Time} = \frac{\text{duration of tone for SDN2} \times \text{Avg call wait tones}}{\text{calls}} \\ = 500 \text{ ms} \times 1.8 \\ = 900 \text{ ms} \end{array}$$

0 A minimum of one CWT cards are required for SDN2 lines.  
0 (There are four CWT circuits per card).

0 The number of CWT circuits required for the Secondary Di-  
0 rectory Number number 3 (SDN3) is:

$$\begin{array}{l} \text{\# of SDN3 calls} \\ \text{getting call} \quad \times \quad \text{Holding Time} \\ \text{\# of CWT waiting (ABSBH)} \\ \text{for SDN3} = \frac{\text{-----}}{\text{3,600,000 ms}} \end{array}$$

0 Where:

$$\begin{array}{l} \text{Holding Time} = \frac{\text{duration of tone for SDN3} \times \text{Avg call wait tones}}{\text{calls}} \\ = 700 \text{ ms} \times 1.8 \\ = 1260 \text{ ms} \end{array}$$

0 A minimum of one CWT cards are required for SDN3 lines.  
0 (There are four CWT circuits per card).

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0 1.3.12 Receiver Off Hook (ROH) Tone Generator

0 a) General Description

0 These circuits are required to provide receiver off-hook tones to  
0 subscriber lines in an attempt to alert subscribers by annoying  
0 tones of existing permanent signal conditions caused by receivers  
0 being left off the hook

0 b) References

0 Chapter 2 Traffic Criteria & Capacities

0 c) Provisioning Considerations:

0 ( i) The cards available are as follows:

0 Receiver Off-Hook Tone NT1X00AC

0 ( ii) Time Switch Broadcasting (TSB) is used to distribute tone  
0 simultaneous to multiple users.

0 ( iii) The maximum number of simultaneous connections per tone  
0 source is limited to 16 for old networks (NT0X48) and to  
0 32 for new networks (NT5X13) (i.e. for a non deloading  
0 NSG).

0 ( iv) If an office has both old and new networks, the maximum  
0 number of simultaneous connections per tone source is  
0 limited to 16 for a non deloading NSG.

0 ( v) Receiver Off Hook Tone card is NT1X00AC. Two circuits  
0 per card. One slot per card. Mounts on MTM.

0 ( vi) The number of ROH circuits can be calculated by using the  
0 following formula:

0 Use of ROH Circuits = ROH Tone Attempts/Hour x  
0 ROH Holding Time

0 ROH tone grade of service (ABSBH) criterion is:

0  $P(t > 0) = 0.009$  (Erlang C)

0 Therefore, use Table V, Chapter 2 to determine required  
0 number of ROH tone connections.

0 Divide total ROH tone connections by 16 or 32 as applica-  
0 ble to obtain total number of ROH tone circuits.

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0 1.3.13 Receiver Off Hook (ROH) Tone Generator

0 a) General Description

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0 subscriber lines in an attempt to alert subscribers by annoying  
0 tones of existing permanent signal conditions caused by receivers  
0 being left off the hook

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0 number of simultaneous connections per tone source is  
0 limited to 16 for a non deloading NSG.

0 ( v) Receiver Off Hook Tone card is NT1X00AC. Two circuits  
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0 ROH Holding Time

0 ROH tone grade of service (ABSBH) criterion is:

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0 Therefore, use Table V, Chapter 2 to determine required  
0 number of ROH tone connections.



0 Divide total ROH tone connections by 16 or 32 as applica-  
0 ble to obtain total number of ROH tone circuits.

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0 1.3.14 Digital Tone Detector and Sender Series NT5X29

0 a) General Description

0 The NT5X29 series of Digital Tone Detector and Sender cards provides multi-purpose, multi-channel service circuits for identifying and generating standard single or two-frequency tones.

0 The card contains independently controlled detector and sender circuits, which operate in conjunction with the Maintenance Trunk Module (MTM) of the DMS-100 Family digital switching system.

0 The tone detector receives various single and two frequency tones in Pulse Code Modulated (PCM) digital format from the MTM, identifies them, and signals the level, frequency and type of the tone back to the MTM.

0 The tone sender generates standard test or signalling tones in PCM format, on receipt of the appropriate control data work from the MTM.

0 The card is located in certain preferred positions in the MTM shelf, and plugs into the shelf backplane connectors.

0 b) References

0 GS5X29 Digital Tone Detector and Sender  
0 Series NT5X29

0 c) Provisioning Considerations:

0 ( i) Versions of the card currently available and their applications are as follows:

0 NT5X29AA: Tone detector and generator for Common Channel  
0 Interoffice Signalling (CCIS) continuity  
0 checker.

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0 NT5X29AB: Tone detector for service observing circuits.  
0 Used by Remote Operator Number Identification  
0 (RONI) and AB01.1032 DMS-100 equipment with  
0 Traffic Operator Position System (TOPS).

0 NT5X29AC: Tone detector for audible ringing, answer and  
0 digitone multi-frequency tones.

0 NT5X29BA: Audio Tone Detector (ATD) for U.K. (Mercury  
0 Centrex).

0 ( ii) The Digital Tone Detector and Sender has the following  
0 features:

0 - All-digital operation, compatible with  
0 DMS-100 equipment.

0 - Simultaneously processes 16 channels of  
0 tonal data in PCM format.

0 - Can process a single-frequency tone or  
0 determine the difference frequency of a  
0 two-frequency tone signal.

0 - Generates standard signalling or test tones  
0 on command.

0 ( iii) When an Audio Tone Detector CP NT5X29AC is mounted on an  
0 MTM, then either TM Processor CP NT0X70AC or TM Control-  
0 ler CP NT4X65A is required. The NT0X70AA must be re-  
0 placed with an NT0X70AC for BCS-28 or higher.

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0 1.3.15 Digital Recorded Announcement (DRA) System Provisioning

0 a) General Description

0 Digital Recorded Announcement (DRA) system provides recorded an-  
0 nouncement messages. It consists of a Speech Processor, a Micro-  
0 processor Controller and Speech Memory. The permanent Speech  
0 Memory is on NT1X76 PROM cards. Non volatile recordable Speech  
0 Memory is on the NT1X79 EEPROM card. Recordable Speech Memory is  
0 on NT1X77 RAM cards. The Speech Processor and Microprocessor  
0 Controller are both on the NT1X75 DRA Controller Board. One DRA  
0 Controller Board plus one or more (up to a maximum of eight (8))  
0 PROM, EEPROM and (or) RAM Speech Memory cards are equipped on a  
0 special MTM shelf.

0 b) References

0 Chapter 2 Traffic Criteria and Capacities  
0 Chapter 3, Section 3.3 Operator Services  
0 NTP 297-1001-527 Digital Recorded Announcement Machine  
0 Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) The controller CP can address up to one megabyte (M-byte)  
0 is speech memory (eight cards) and can be configured (by  
0 means of switches) to function either as an 8, 16, 24 or  
0 30 circuit (speech channel) interface. The selected  
0 quantity represents the number of different announcements  
0 (types) which can be simultaneously connected to sub-  
0 scribers. All announcements from the source DRA are con-  
0 fined to the same time switch or Network Sub Group (NSG)  
0 (the one to which the MTM housing the DRA is connected).  
0 Circuit assignment is flexible and a given announcement  
0 type can be assigned to more than one circuit.

0 ( ii) One controller card is required per DRA system and can  
0 accommodate up to a maximum of eight DRA ROM and (or) RAM  
0 memory cards. The various types of controller cards are  
0 as follows:

|                                 |          |
|---------------------------------|----------|
| 0 Digital Recorded Announcement | NT1X75AA |
| 0 Controller                    |          |
| 0 Enhanced DRA Controller       | NT1X75BA |
| 0 A-Law DRA controller          | NT1X75DA |

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0 ( iii) The NT1X76 card can be either a 128K or 256K EPROM card.  
0 128K represents about 32 seconds of speech plus silence,  
0 test tone, prompt tone and 32 Special Information Tones  
0 (SIT). The 32 seconds can be divided into segments or  
0 subphrases as small as 32ms to allow building of more  
0 than 32 seconds of announcements. This is accomplished  
0 by recording only once standard announcement subphrases  
0 required in several announcements such as "We're sorry"  
0 or "The number you have dialed", that may be desired in  
0 many announcements.

0 ( iv) The various types of DRA PROM memory cards are as fol-  
0 lows:

0 Digital Recorded Announcement PROM NT1X76AA  
0 Memory  
0 (Standard English Announcements)

0 Digital Recorded Announcement PROM NT1X76BA  
0 Memory  
0 (Standard French Announcements)

0 Digital Recorded Announcement PROM NT1X76AB  
0 Memory  
0 (U.S. Bell Standard Announcements)

0 Digital Recorded Announcement PROM NT1X76AE  
0 Memory  
0 (ACTS Standard Announcements)

0 Digital Recorded Announcement PROM NT1X76CA  
0 Memory  
0 (Standard MCCS English Announcements)

0 Digital Recorded Announcement PROM NT1X76AF  
0 Memory  
0 (AOSSVR English Announcements-Part 1)

0 Digital Recorded Announcement PROM NT1X76AG  
0 Memory  
0 (AOSSVR English Announcements-Part 2)

0 Digital Recorded Announcement PROM NT1X76BF  
0 Memory  
0 (AOSSVR French Announcements -Part 1)

0 Digital Recorded Announcement PROM NT1X76BG

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0 Memory  
0 (AOSSVR French Announcements -Part 2)

0 The pre-recorded standard announcements for each card  
0 type can be found in NTP 297-1001-527.

0 If bilingual announcement are required, then both  
0 NT1X76AA and NT1X76BA cards must be associated with the  
0 same DRA controller card.

0 ( v) NT1X77AA DRA Recordable Memory

0 Each RAM card can be used to store messages recorded on-  
0 line. It can hold up to 31 seconds of recording (based  
0 on 4 bits/sample and 8K samples/second). RAM speech mem-  
0 ory is provisioned based on a total recording time in  
0 seconds per DRA system. An announcement can run over two  
0 NT1X77AA cards.

0 ( vi) NT1X79AA DRA Electrically Erasable PROM (EEPROM) Card

0 Electrically Erasable Programmable Real Only Memory  
0 (EEPROM) is used as memory, allowing the customer to re-  
0 cord or rerecord messages. This card can hold up to 31  
0 seconds of recording. EEPROM speech memory is provi-  
0 sioned based on total recording time in seconds per DRA  
0 system. An announcement can run over two NT1X79AA cards  
0 associated with the same controller card. However, it  
0 must not be split over two controllers.

0 ( vii) For AOSS Voice Response, the DRA modules will consist of  
0 a controller card and four (4) double density PROM speech  
0 cards. (AOSSVR is for Canadian applications only.)

0 Provide one (1) DRA Controller Card, NT1X75BA.

0 If English announcements are required, provide one card  
0 each of NT1X76AF and NT1X76AG.

0 If French announcements are required, provide one card  
0 each of NT1X76BF and NT1X76BG.

0 If both English and French announcements are required,  
0 provide one card each of NT1X76AF, NT1X76AG, NT1X76BF and  
0 NT1X76BG.

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0 To determine the maximum number of AOSSVR announcement  
0 cards that may be engineered onto one MTM shelf, use the  
0 following chart. For each of the speech memory cards  
0 supplied for one shelf, add the virtual card credit (128K  
0 - eight bit). The total must not exceed eight (8). For  
0 example, one card each of NT1X76AF, NT1X76AG, NT1X76BF  
0 and NT1X76BG total eight, so no more cards may be added.

0 AOSSVR Speech Memory Card

| CARD | PEC      | VCARD CREDIT |
|------|----------|--------------|
| ROM  | NT1X76AF | 2            |
| ROM  | NT1X76AG | 2            |
| ROM  | NT1X76BF | 2            |
| ROM  | NT1X76BG | 2            |

0 A DRA Module used for the AOSS Voice Response feature  
0 cannot be used for other applications. Features such as  
0 Mechanized Calling Card Service (MCCS) and Automatic Coin  
0 Toll Service (ACTS) must use different DRA devices.

0 For AOSS Voice Response, the Telco cannot make up his own  
0 customized voice announcements.

0 For more information on AOSSVR, refer to Section 3.3, Op-  
0 erator Services.

- 0 (viii) One DRA machine is required per Mechanized Credit Card  
0 Service (MCCS) announcement machine. One Enhanced DRA  
0 Controller Card and one MCCS Standard Announcement CP  
0 Card is required per MCCS announcement machine. The DRA  
0 EEPROM card is an optional circuit pack, required only if  
0 the customer wishes to offer voice responses not included  
0 on the MCCS Standard Announcement circuit pack.

0 To determine the maximum number of MCCS announcement  
0 cards that may be engineered onto one MTM shelf, use the  
0 following chart. For each of the speech memory cards  
0 supplied for one shelf, add the virtual card credit (128K  
0 - eight bit). The total must not exceed eight. For ex-  
0 ample, one NT1X76CA plus five NT1X79AA cards total seven,  
0 so one more card may be added if its vcard credit is only  
0 one.

0 MCCS Speech Memory Card

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0 CARD PEC VCARD CREDIT

0 ROM NT1X76CA 2

0 EEPROM NT1X79AA 1

0 Each MCCS announcement machine has 30 service circuit  
0 ports but one of the 30 is dedicated to maintenance use.  
0 The number of MCCS announcement machines required for  
0 traffic is equal to the number of MCCS announcement ser-  
0 vice circuits required divided by 29 and rounded up to  
0 the next whole number. An additional one MCCS announce-  
0 ment machine is added in order to provide service pro-  
0 tection in the event of failure of one of the MCCS  
0 announcement machines.

0 For more information on the provisioning of the DRA for  
0 the MCCS, refer to Section 3.3 , Operator Services.

0 ( ix) The Automatic Coin Toll Service (ACTS) DRAM will provide  
0 pre-programmed announcements for the initial contact of  
0 time and charges for the call, to quote and collect over-  
0 time charges and to give customer notification of elapsed  
0 time. Each ACTS DRAM requires one Enhanced DRA Control-  
0 ler Card and one DRA PROM Memory ACTS Standard Announce-  
0 ment Card. To determine the maximum number of ACTS  
0 announcement cards that may be engineered onto one ACTS  
0 DRA MTM, use the following chart. The total virtual card  
0 credit for the DRA must not exceed eight.

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0 ACTS Speech Memory Card

0 CARD PEC VCARD CREDIT

0 ROM NT1X76AE 2

0 EEPROM NT1X79AA 1

0 For more information on the provisioning of the DRA for  
0 the ACTS, refer to Section 3.3, Operator Services.

- 0 ( x) The Custom Local Area Signalling Services (called CLASS  
0 in the US) or the Call Management Services (called CMS in  
0 Canada) DRA (hereafter referred to as CLASS DRA) will pro-  
0 vide announcements available for CLASS features to indi-  
0 cate successful or denied operation.

0 For BCS-27, the NT1X75BA DRAM Controller must be provi-  
0 sioned for all CLASS applications.

0 There are two (2) groups of announcements, Phase 1 CLASS  
0 DRA announcements and Phase 2 CLASS DRA announcements.  
0 If the CLASS/CMS feature is required, at least one group  
0 of announcements (i.e. Phase 1 or Phase 2) must be pro-  
0 vided. The Customer can either have Phase 1 announce-  
0 ments or Phase 2 announcements or both.

0 For more information on the provisioning of the DRA for  
0 the CLASS/CMS feature, refer to the Peripheral Modules  
0 Features in this section.

- 0 ( xi) An announcement type will appear at a network port over a  
0 single time slot connection from an MTM. Network broad-  
0 casting will be used to distribute each announcement type  
0 to the various lines and trunks requesting this service.

- 0 ( xii) Grade of Service Objective

0 If not specified by the customer, assume the following  
0 G.O.S. per announcement type:

0 Less than 1% (ABSBH) or 5% (HDBH) of attempts should see  
0 all circuits busy. This assumes that failures overflow  
0 to tone circuits. In a toll office, this applies on a  
0 10HDBH basis.

- 0 (xiii) The maximum number of simultaneous connections that can  
0 be made to announcements should not exceed 16 plus 8, 16,

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0 24 or 30 for the old network and 32 plus 8, 16, 24 or 30  
0 for the new network for the non deloading option.

0 ( xiv) Each announcement type will be considered as a separate  
0 trunk group.

0 ( xv) Traffic Capacity Per DRA

0 (1) Without The Network Deloading Option

0 Network deloading is not required if the traffic load  
0 on the DRA does not exceed the traffic limits shown  
0 in Tables T and U, Total DRA Traffic (CCS) For Net-  
0 work (NT0X48) and Total DRA Traffic (CCS) For Network  
0 (NT5X13) respectively, in Chapter 2, for the number  
0 of ports deloaded per NSG equal to 0 for the old and  
0 new network respectively.

0 (2) With The Network Deloading Option

0 Traffic capacities for the DRA with a different num-  
0 ber of ports deloaded per NSG are shown in Tables T  
0 and U for the old and new network respectively.

0 For the non deloading option, if more than one DRA  
0 system is required per office, each should be as-  
0 signed to a different network module.

0 ( xvi) The number of DRA systems to be provisioned will be es-  
0 tablished as a function of:

0 (1) Number of Announcements

0 Note that the maximum number of announcements per DRA  
0 system is 30.

0 (2) Total Number of Recording Seconds

0 Note that the recording time available per DRA system  
0 given that all the memory cards are RAM cards is 248  
0 seconds (8 RAM cards x 31 seconds = 248 seconds).

0 (3) Traffic Capacity

- 0 (a) Traffic load per announcement
- 0 (b) Maximum traffic load per NSG
- 0 (c) Grade of service (G.O.S.) objectives

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0 (4) Reliability

0 We recommend that our standard offering should be a  
0 single DRA system. However, each DRA system may be  
0 duplicated for reliability/maintenance purposes if  
0 requested by the customer.

0 (xvii) In summary, the number of DRA required per office is the  
0 maximum of one of the three formulas below:

0 1) Total No. of Announcements Required/Office

0 30

0 = No. of DRAs  
0 (round up to next highest integer)

0 2) Total No. of Recording Seconds

0 248 Seconds

0 = No. of DRAs  
0 (round up to next highest integer)

0 3) Total Usage (CCS) For All Announcements

0 Traffic Capacity (CCS) Per DRA

0 = No. of DRAs  
0 (round up to next highest integer)

0 (xviii) The CCC DRA machine will provide digitally recorded an-  
0 nouncements for use during handling of automated credit  
0 card calls.

0 Each CCC announcement machine has thirty service circuit  
0 ports but one of the thirty is dedicated to maintenance  
0 use. The number of CCC announcement machines required  
0 for traffic is equal to the number of CCC announcement  
0 service circuits required divided by twenty-nine and  
0 rounded up to the next whole number. An additional one  
0 CCC announcement machine is added in order to provide  
0 service protection in the event of failure of one of the  
0 CCC announcement machines.

0 Provide one Enhanced Digital Recorded Announcement Con-  
0 troller CP NT1X75BA per CCC announcement machine.

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0 One CCC Standard English Announcement CP, NT1X76AH or one  
0 CCC Standard French Announcement CP, NT1X76BH is required  
0 per CCC announcement machine. If both English and French  
0 announcements are required, then provide NT1X76AH and  
0 NT1X76BH. These circuit packs contain all the voice mes-  
0 sages to support the CCC feature set. The memory used is  
0 double density, Erasable Programmable Read Only Memory  
0 (EPROM).

0 The Custom Announcement CP NT1X79AA is an optional cir-  
0 cuit pack, required only if the customer wishes to office  
0 voice responses not included on the CCC Standard An-  
0 nouncement circuit pack. The number of seconds of re-  
0 cording time required divided by thirty-one seconds is  
0 equal to the number of Custom Announcement CP required  
0 per CCC group.

0 To determine the maximum number of CCC announcement cards  
0 that may be engineered onto one MTM shelf, use the fol-  
0 lowing chart. The total virtual call credit must not ex-  
0 ceed eight.

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0 The number of DRAM required per group is determined by  
0 the number of Custom Announcement CP required per group.

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0 1.3.16 Enhanced DRAM (EDRAM)

0 a) General Description

0 The Enhanced Digital Recorded Announcement Machine (EDRAM) is a  
0 single slot circuit pack DMS peripheral module used for providing  
0 voice messages or instructions to the subscriber, thus reducing  
0 the need for an operator's assistance. Announcements are stored  
0 in digital format in memory using PCM coding so as to allow fast  
0 and random access of announcements, both in playback or recording  
0 stages.

0 The EDRAM card will replace the existing Digital Recorded An-  
0 nouncement (DRA) Module for providing voice messages and recorded  
0 announcements in all DMS-100 Family switches.

0 The EDRAM provides the equivalent functions and capabilities of  
0 the existing Digital Recorded Announcement (DRA) Module; i.e.  
0 exactly the same duration of announcement time as for the DRA  
0 (4.3 minutes) and 30 announcement channels for announcement  
0 playback/recording.

0 The EDRAM is a stand alone peripheral module (PM), having its own  
0 DS-30 link interface with the network (i.e. having a network port  
0 appearance on the network). It can be plugged into one (1) of  
0 the twelve (12) provisionable trunk card slots on the MTM/DRA  
0 shelf. The DS-30 cable for EDRAM is plugged directly into the  
0 backplane pins at the back of the shelf corresponding to the slot  
0 of the EDRAM.

0 Although the EDRAM can mount onto existing DRA shelves, no new  
0 DRA shelves should be ordered. For new and existing offices,  
0 provision only MTM shelves to mount the EDRAM.

0 The current DRA Module consists of the DRA shelf and circuit  
0 packs. The DRA shelf is a modified version of the Maintenance  
0 Trunk Module (MTM). It must be equipped with the appropriate MTM  
0 controller circuit packs and power converter circuit packs to  
0 provide the basic MTM functions.

0 The announcement functions are provided by the provisionable DRA  
0 controller and announcement cards. Each DRA Module consists of a  
0 DRA controller card (NT1X75\_\_) and up to eight (8) single density  
0 or four double density provisionable announcement memory cards.  
0 Each single density memory card provides 30 seconds of announce-

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0 ment capacity; each double density memory card provides 60 sec-  
0 onds of announcement capacity.

0 - NT1X75BA - DRA controller card

0 - NT1X76XX - contains standard factory programmed an-  
0 nouncements in non-alterable memories (EPROM). The an-  
0 nouncements are identified by the "XX" PEC code suffix  
0 and these announcements cannot be altered.

0 - NT1X77AA - provides storage for on-site customer re-  
0 corded announcements in volatile memory (RAM).

0 - NT1X79AA - provides storage for on-site customer re-  
0 corded announcements in non-volatile memory (EEPROM).

0 Each fully equipped DRA Module provides 30 announcement channels  
0 and 4 minutes of announcement time.

0 The single card slot EDRAM Module is equivalent to a fully  
0 equipped DRA Module.

0 The EDRAM will provide a super-set of features that in-  
0 clude or is equivalent to all existing features of the DRA shelf.  
0 The features can be categorized into the following areas:

0 -Loader features  
0 -MTM features  
0 -DRA features

0 The loader will download the EDRAM application firmware load, and  
0 the specified announcement load from the DMS tape/disk to the  
0 EDRAM memory.

0 The loader will provide management of announcement files. Up to  
0 a maximum of any eight (8) announcement files can be loaded to a  
0 specified EDRAM. Each announcement file corresponds to a version  
0 of NT1X76 card. Hence, announcements no longer need to be iden-  
0 tified by the NT1X76 DRA EPROM PEC code. The factory recorded  
0 announcements on the NT1X76 DRA EPROM cards are replaced with an-  
0 nouncement files on DMS tape that can be downloaded to the EDRAM.  
0 This provides the flexibility of changing announcements at any  
0 time without retrofitting the DRA EPROM cards which contain fac-  
0 tory programmed announcements.

0 The EDRAM will emulate the Maintenance Trunk Module (MTM) fea-  
0 tures required for DRA applications, which includes:



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- 0 -Loading and executing PM EXECs
- 0 -Setting up speech connections needed for call processing
- 0 -Performing PM sanity functions such as sending Who-Am-I, I-Am-  
0 Here messages to Central Control (CC)
- 0 -Network integrity and parity generation/checking
- 0 -Perform CC instructions through CC-PP primitives execution and  
0 handle command protocol violation checking
- 0 -PM load checksum tests.

0 The EDRAM will emulate all existing required DRA features, which  
0 includes:

- 0 -On site recording of announcements
- 0 -Playing announcements
- 0 -Configuration query
- 0 -Trunk level diagnostics.

0 The EDRAM is a second generation DRA circuit pack. It introduces  
0 the concept of a single circuit pack Peripheral Module (PM) which  
0 has the dual appearance as a PM as well as a trunk. Although it  
0 is located on an MTM/DRA shelf, it is directly connected to the  
0 network through a DS-30 link. Hence, it will have two (2) Main-  
0 tenance & Administration Position (MAP) appearances on the same  
0 hardware. It will appear as a PM, just like the MTM/DRA, since  
0 it is directly connected to the network, and it will also appear  
0 as a trunk, just like other provisionable trunk cards on the  
0 MTM/DRA, since it mounts on the MTM/DRA.

0 The EDRAM has its own pair of DS-30 links for connecting to both  
0 planes of the Network Module (NM), and communicates with the Cen-  
0 tral Control/Central Message Controller (CC/CMC) directly via the  
0 message channel of this DS-30 link.

0 It is to be plugged into any one of the twelve (12) provisionable  
0 trunk slots of the MTM/DRA shelf and uses this shelf for the pur-  
0 poses of housing, logic power, and cable mounting. In order to  
0 keep within the maximum power dissipation of 110 watts per  
0 MTM/DRA shelf, there can be up to a maximum of eleven (11) EDRAM  
0 cards.

0 The DS-30 cable for the EDRAM can be plugged directly into the  
0 pins at the back of the MTM/DRA backplane at the slot correspond-  
0 ing to the position of the EDRAM. The other end of the DS-30 ca-  
0 ble is terminated at the Peripheral Speech Link (PSL) Panel  
0 mounted on the Speech Link Connecting (SLC) Frame or at the En-  
0 hanced Network (ENET) depending on office requirements.



## None

( i) The EDRAM will be provisioned using the same provisioning rules as for the existing DRA Module as given in the Engineering Manual and NTP 297-1001-450 entitled DMS-100 Family Provisioning.

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- 0 ( ii) The EDRAM Module provides 30 announcement channels and  
0 4.3 minutes of announcement time for announcement  
0 playback/recording.
- 0 ( iii) For each DMS office, provision the number of EDRAM as re-  
0 quired to accommodate the standard announcements.
- 0 ( iv) Depending on the optional recorded announcement features  
0 ordered by the Customer for his office, provision addi-  
0 tional EDRAM Modules as required. The optional features  
0 are: Auxiliary Operator Service System Voice Response  
0 (AOSS VR), Custom Charge Calling (CCC), Automatic Coin  
0 Toll Service (ACTS), Mechanized Calling Card Service  
0 (MCCS), and Automatic Intercept Service (AIS). Since each  
0 of the preceding features requires all 30 announcement  
0 channels of the EDRAM, each feature requires an exclusive  
0 EDRAM Module that cannot be used for other announcements.  
0 For further information, refer to Section 1.3 Cross-  
0 Reference Publications.
- 0 ( v) Other optional features that need additional announce-  
0 ments are Call Forward Remote Activation (CFRA) in  
0 BCS-28, Custom Local Area Signalling Services (CLASS)  
0 features Phase I in BCS-28, and CLASS features Phase II  
0 in BCS-30. For further information, refer to ECM-473 on  
0 subject Residential Enhanced Services and ECM-332 on sub-  
0 ject CLASS - U.S./CMS - Canada.
- 0 ( vi) As a Customer requested option, each EDRAM may be dupli-  
0 cated for reliability. It is mostly needed for toll of-  
0 fices where it is important to get the message sent to  
0 the subscriber.
- 0 (vii) The EDRAM card is to be inserted into one (1) of the  
0 twelve (12) provisionable trunk card slots of the MTM/DRA  
0 shelf. In order to keep within the maximum power dissipa-  
0 tion of 110 watts per MTM/DRA shelf, there can be up to  
0 a maximum of eleven (11) EDRAM cards.
- 0 ( viii) Although the EDRAM can mount onto existing DRA shelves,  
0 no new DRA shelves should be ordered. For new and exist-  
0 ing offices, provision only MTM shelves to mount the  
0 EDRAM.
- 0 ( ix) The EDRAM has its own pair of DS-30 links for connecting  
0 to both planes of the Network Module (NM), and communi-  
0 cates with the Central Control/Central Message Controller

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0 (CC/CMC) directly via the message channel of this DS-30  
0 link.

0 ( x) The DS-30 cable for the EDRAM can be plugged directly  
0 into the pins at the back of the MTM/DRA backplane at the  
0 slot corresponding to the position of the EDRAM. The  
0 other end of the DS-30 cable is terminated at the Periph-  
0 eral Speech Link (PSL) Panel mounted on the Speech Link  
0 Connecting (SLC) Frame or at the Enhanced Network (ENET)  
0 depending on office requirements.

0 ( xi) MECHANICAL DIMENSIONS

0 Height 12.50 in. (317.5 mm)  
0 Width 1.125 in. (29 mm)  
0 Depth 10.00 in. (254 mm)

0 Power 10.0 Watts (from +5V/-5V logic power)

0 The circuit pack can mount onto one (1) of the twelve  
0 (12) provisionable trunk slots in MTM/DRA shelves. In  
0 order to keep within the maximum power dissipation of 110  
0 watts per MTM/DRA shelf, there can be up to a maximum of  
0 eleven (11) EDRAM cards.

0 ( xii) The addition of this peripheral module should have mini-  
0 mal impact on memory provisioning. Refer to the normal  
0 memory algorithms.

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0 1.3.17 Digital Tone Transceiver

0 a) General Description

0 The Digital Tone Transceiver Circuit Pack (NT3X08AA) functions as  
0 an essential component of the Automatic Coin Toll Service (ACTS).  
0 Its General purpose is to count coin deposits from coin operated  
0 telephones (coin stations) and report the amount collected to the  
0 DMS-100 Central Control (CC). Refer to Section 3, Operations  
0 Equipment for more information on ACTS.

0 b) References

0 Chapter 3, Section 3.3 Operator Services

0 c) Provisioning Considerations:

- 0 ( i) The coin detection circuit pack (CDC - NT3X08AA) will  
0 physically occupy one card slot on a MTM.
- 0 ( ii) The CDC will use eight time slots and therefore four (4)  
0 consecutive card slots are required. A maximum of three  
0 (3) CDC circuit packs can be housed in any MTM. If it is  
0 desired, the CDC card can be placed on a MTM with other  
0 cards provided the next three slots following the CDC are  
0 empty and provisioning rules for these other packs are  
0 followed.
- 0 ( iii) Digitone or rotary coin stations may be used, however,  
0 all stations MUST be able to provide dual frequency coin  
0 deposit signals to allow detection by the CDC circuit  
0 pack.
- 0 ( iv) The CDC contains eight (8) circuits provisionable for  
0 ACTS on each circuit pack.
- 0 ( v) Mu-law/A-law capability.
- 0 ( vi) The CDC requires no distributing frame cabling.
- 0 ( vii) For more information on the CDC card, refer to ACTS in  
0 Section 3.3, Operator Services.

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0 1.3.18 Automatic Identification of Outward Dialling (AIOD) Data  
0 Receiver

0 a) General Description

0 The NT2X01AA Automatic Identification of Outward Dialling (AIOD)  
0 Data Receiver Trunk Circuit is used to terminate a data channel  
0 between a Private Branch Exchange (PBX) and a Central Office  
0 (CO). It provides the signalling supervision and data receiver  
0 required to accept, via the C25 type signalling mode, the infor-  
0 mation required to identify the PBX station number of the station  
0 originating an outgoing call. It also provides an incoming sig-  
0 nalling and voice grade facility interface between a Maintenance  
0 Trunk Module (MTM) of a DMS-100 Family switch and the data send-  
0 ing circuit of the far-end or connecting PBX.

0 b) References

0 Section 3.2 Software

0 c) Provisioning Considerations:

0 ( i) The AIOD Data Receiver - C25 (NT2X01AA) circuit pack is  
0 required to support the AIOD feature.

0 One NT2X01AA card has four (4) circuits. Each circuit  
0 terminates a data channel or link between a PBX and a  
0 central office, providing the signalling supervision and  
0 data receiver required to accept, via the C25 type sig-  
0 nalling mode, the information required to identify the  
0 PBX station number of the station originating the outgo-  
0 ing call.

0 The circuit provides an incoming signalling and voice  
0 grade facility interface between a MTM of a DMS-100 Fam-  
0 ily switch and the data sending circuit of the far end or  
0 connecting PBX.

0 The circuit is designed to interface with the 118A Inter-  
0 connecting Unit or equivalent PBX AIOD equipment which  
0 utilizes C25 signalling.

0 eg. typical connecting circuit SD1E239-01

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0 ( ii) Each NT2X01AA card provides four (4) incoming 2-wire  
0 trunk type appearances for four (4) data channels and oc-  
0 cupies the space of two (2) card slots in a MTM.

0 ( iii) Each PBX requires a minimum of one (1) data channel.

0 ( iv) A maximum of six (6) AIOD circuit packs, i.e. 24 AIOD  
0 receivers, can be accommodated in a MTM. DMS will sup-  
0 port a maximum of sixty data links.

0 Based on average PBX traffic samples, a MTM equipped with  
0 the maximum of six (6) NT2X01AA packs will support ap-  
0 proximately 460,000 PBX lines or stations.

0 ( v) Limitations on the capacity of the AIOD feature for DMS  
0 may arise within the PBX ANI equipment or the particular  
0 connecting arrangement provided. For example, BXP  
0 463-380-101 for the 118A Interconnecting Unit states "One  
0 Connecting Arrangement C25 and its associated voice grade  
0 private line has the capacity to handle the identifica-  
0 tion for up to 250 outgoing trunks depending upon the  
0 call attempts and the traffic load on the CO".

0 ( vi) Based on a typical PBX line to outgoing trunk ratio of 10  
0 to 1, the maximum capacity of the C25 Connecting Arrange-  
0 ment (as quoted above), and the traffic load on the CO,  
0 the full MTM with 24 data links would handle  $250 \times 24 =$   
0 6000 trunks (for 60,000 PBX lines or stations). With  
0 sixty data links, this would increase to a maximum of  
0 15,000 trunks.

0 ( vii) Provisioning of the AIOD Data Receiver C25 card is de-  
0 pendent upon the security or backup arrangement selected  
0 by the customer. Four arrangements are supported by DMS:

0 1) Single Data Line, Single Receiver

0 In this configuration, a single data link is provided  
0 between the PBX and the DMS office, with a single  
0 AIOD receiver servicing that link.

0 Should an unrecoverable fault condition occur on a  
0 particular data channel, the channel is taken out-of-  
0 service, and billing assigned to the default PBX  
0 billing number for the duration of the fault. Main-  
0 tenance action is required to replace the card (all

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0 four data channels on the card being affected) and to  
0 return the AIOD receiver to service.

0 The disadvantage of this method is that when one PBX  
0 channel fails, all four (4) channels on the AIOD card  
0 must be affected to replace the faulty card.

0 However, the reliability of the equipment is expected  
0 to be high enough to justify this approach, and sin-  
0 gle channel faults are expected to be rare.

## 0 2) Single Data Link, Parallel Wired Standby Receiver

0 This method provides a standby AIOD receiver, in ad-  
0 dition to the active receiver, dedicated to each in-  
0 service data link. The standby is located in a  
0 separate MTM (preferably powered from a different bus  
0 than the 'active MTM'), but wired in parallel from  
0 the MDF to all four (4) data links. The receiver  
0 channels, when in a standby mode, are disabled.

0 When a fault occurs in an active receiver channel, CC  
0 software redirects the AIOD data to the standby re-  
0 ceiver by setting the faulty circuit man-busy and re-  
0 turning the standby to service (and raises an alarm  
0 condition). Maintenance action consists of forcing  
0 all four (4) channels onto their standby receivers in  
0 order to change the faulty card without degrading the  
0 service of the other three (3) channels.

0 This method does not, however, protect against data  
0 link faults occurring remotely to any particular re-  
0 ceiver channel.

## 0 3) Duplicate Data Link and Receiver

0 This method supports more than one AIOD data link for  
0 a particular PBX.

0 Depending upon the logic of the PBX AIOD sending  
0 equipment, the second data link may be used in a  
0 standby mode, as in method 2, and also allows a PBX  
0 to maintain AIOD traffic even when one data link is  
0 down.

## 0 4) Duplicated Data Link and Receiver, Parallel Wired 0 Standby Receiver



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0 In this configuration, an active receiver and a  
0 standby receiver are provided for each of the dupli-  
0 cated data links. This method is a combination of  
0 method 2 and method 3.

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0 1.3.19 Control Processor and Digital Signal Processor Cards

0 a) General Description

0 The Control Processor Card and the Digital Signal Processor Cards  
0 provides communication between an analog modem, digital modem or  
0 terminal and the DMS switch.

0 b) References

0 Chapter 3, Section 3.3 Operator Services  
0 Chapter 3, Section 3.4 Meridian Business Services

0 c) Provisioning Considerations:

0 ( i) The Control Processor NT3X02AA, is a four port I/O con-  
0 troller capable of handling duplex communication to four  
0 modems or terminals simultaneously.

0 The Digital Signal Processor NT3X03AA is a four port dig-  
0 ital interface used to enable the NT3X02AA Control  
0 Processor to handle duplex communications simultaneously  
0 to four modems or terminals via TM or DCM to Digital  
0 Channel Bank trunks.

0 ( ii) A Control Processor (NT3X02AA) and a Digital Signal  
0 Processor (NT3X03AA) plugs into two adjacent slots within  
0 a Maintenance Trunk Module (MTM).

0 ( iii) The NT3X02AA can be utilized in stand alone mode, without  
0 the NT3X03AA, by connecting either analog modems or ter-  
0 minals, with RS-232 compatible interfaces, directly to  
0 the four channel RS-232 interface on board the NT3X02AA.

0 Selection of the four channel RS-232 interface is accom-  
0 plished by the absence of the NT3X03AA in the adjacent  
0 slot. Conversely, selection of the digital network path  
0 interface is automatic with the insertion of the  
0 NT3X03AA.

0 ( iv) A digital modem provides a data interface between Busi-  
0 ness Service Attendant Consoles (BSAC) and the Central  
0 Processing Unit (CPU).

0 The digital modem is comprised of a Control Processor  
0 card, NT3X02AA, and a Digital Signal Processor card,

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0 NT3X03AA. Together, each pair of cards make up four dig-  
0 ital modems and are mounted on two adjacent slots on an  
0 MTM. Maximum of two (2) pairs per MTM in MDC offices.

0 ( v) A digital modem provides a data interface between TOPS  
0 positions and TOPS teletypewriters (TTY) and the Central  
0 Processing Unit (CPU).

0 The digital modem is comprised of a pair of cards, a Con-  
0 trol Processor card, NT3X02AA and a Digital signal  
0 Processor card, NT3X03AA. Together, each pair of cards  
0 make up four digital modems and are mounted on two adja-  
0 cent slots on an MTM. Maximum of four (4) pairs per MTM  
0 in TOPS offices or a maximum of two (2) pairs in combined  
0 MDC/TOPS offices.

0 ( vi) The Dial-Up Autoquote feature uses the NT3X02AA Signal  
0 Processor in conjunction with an analog modem.

0 The NT3X02AA is used in a stand alone configuration,  
0 therefore, a NT3X03AA must not be provisioned and the TM  
0 card slot to the right of the NT3X02AA must be vacant.  
0 The NT3X02AA is equipped with four (4) EIA ports and  
0 therefore, one (1) NT3X02AA CP can handle up to four (4)  
0 dial-up autoquote circuits.

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0 1.3.20 Circuit Switched Digital Data Service (CSDDS)

0 a) General Description

0 The Circuit Switched Digital Data Service (CSDDS) provides data  
0 switching service via the digital portion of the DDD network.  
0 Refer to NTP 297-2111-100 for a description of the DMS Circuit  
0 Switched Digital Data Service feature.

0 b) References

0 NTP 297-2111-100 DMS Circuit Switched Digital Data  
0 Service

0 c) Provisioning Considerations:

0 ( i) Data is interfaced through a Digital Data Line Card  
0 (DDLC), NT3X05AC.

0 The DDLC interfaces a 4-wire unconditioned facility with  
0 a subscriber terminal unit or a DATAROUTE\*\* facility. It  
0 is used in conjunction with a voice line card to provide  
0 the necessary 6-wire interface required by CSDDS.

0 ( ii) One DDLC occupies one card position in a Maintenance  
0 Trunk Module (MTM) and requires one trunk appearance. Up  
0 to twelve DDLC can be located in one MTM. It cannot  
0 mount on an MTM which already houses TTT cards (i.e.  
0 NT1X90AA and NT2X96AA).

0 ( iii) There is one circuit per DDLC card. Two interface cir-  
0 cuits are required between each subscriber loop and the  
0 DMS-100 for the CSDDS feature.

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0 (\*\* DATAROUTE is a trademark of Bell Canada)  
0 Host - Maintenance and Misc. Equipment  
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0 ( iv) The features of the DDLC are as follows:

- 0 - Provides full duplex synchronous data  
0 transmission at 2.4, 4.8 and 9.6 KB/sec bit  
0 rates over 4-wire unconditioned loops.
- 0 - DC isolation via 1:1 transformer.
- 0 - Automatic line equalization.
- 0 - Signalling error detection.
- 0 - Front panel access to DDLC or loop.
- 0 - Line protection on loop side.
- 0 - Meets metallic specification for transmit  
0 levels.
- 0 - Inout/Output impedance of the 4-wire  
0 interface is 135 ohms.
- 0 - Software selectable bit rate control.

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0 1.3.21 Dialable Line Circuit Identification (NTX277AA)

0 a) General Description

0 Software package NTX277AA contains the Dialable Cable Locator  
0 Tone feature and the Dialable Short Circuit feature.

0 The Dialable Cable Locator Tone feature eliminates the need for  
0 manual intervention at the central office when tracing a specific  
0 tip and ring cable pair. This feature is activated by dialing,  
0 from a line circuit, an access code plus a seven digit Directory  
0 Number (DN). Once activated, a tone is supplied over the dialed  
0 DN.

0 The dialable Short Circuit feature eliminates the need for manual  
0 intervention at the central office when placing a short across  
0 the tip and ring leads of a desired line. This feature is also  
0 activated by dialing, from a line circuit, an access code plus a  
0 seven digit Directory Number (DN). Once activated a timed short  
0 circuit is supplied over the dialed DN.

0 b) References

0 None

0 c) Provisioning Considerations:

0 ( i) DMS-100 or DMS-100/200 offices containing software pack-  
0 age NTX277AA must be provisioned with the following hard-  
0 ware:

- 0 1) One (1) Incoming/Outgoing Test Trunk (NT2X90AD)  
0 2) One (1) Horizontal on a Metallic Test Access Unit  
0 3) An external tone Generator capable of generating a  
0 frequency between 480 Hz and 1300 Hz (it is recom-  
0 mended that the Telco provide this Tone Generator and  
0 the Telco must provide matching tone Locator Probes).

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0 1.3.22 Trunk Modules

0 a) General Description

0 The Trunk Module provides the interface between analog trunks and  
0 the Network.

0 The TM performs tasks such as digit reception from dial pulse in-  
0 coming trunks, control tasks of dial pulse transmission on outgo-  
0 ing trunks and digital tone distribution.

0 The TM accommodates service circuits such as MF receivers, an-  
0 nouncement trunks, and test circuits either on a dedicated TM or  
0 in common with analog trunks. Each TM has the capacity of inter-  
0 facing 30 analog trunks or device circuits with one 32-channel  
0 2.56 Mb/s speech link to the network. A maximum of five are ac-  
0 commodated in a bay.

0 b) References

0 c) Provisioning Considerations:

0 ( i) Each module is contained in a single equipment shelf and  
0 interfaces the network via one speech link.

0 ( ii) Each TM can accommodate up to fifteen analog trunk cards  
0 and handle up to thirty circuits. Since it interfaces  
0 the NET via one speech link (thirty channels), there is  
0 no concentration and therefore is not sensitive to traf-  
0 fic.

0 ( iii) TM Types

0 Three basic TM types are specified as dictated by the  
0 TM-to-DF cabling arrangement:

0 1. Trunk Module 2 Wire (TM2)

- 0 - 30 pairs of leads cabled to the DF
- 0 - 4 leads per card slot
- 0 - intended for trunks with 2 leads

0 2. Trunk Module 4 Wire (TM4)

- 0 - 60 pairs of leads cables to the DF

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- 0 - 8 leads per card slot
- 0 - intended for trunks with 4 & fewer leads

0 3. Trunk Module 8 Wire (TM8)

- 0 - 120 pairs of leads cabled to the DF
- 0 - 16 leads per card slot
- 0 - intended for trunks with 8 & fewer leads

0 4. International Trunk Module 8 Wire (ITM8)

- 0 - same as the TM8
- 0 - used for International applications

0 These TM arrangements are intended to reduce DF size and  
0 TM-to-DF cable runs and their respective costs by reduc-  
0 ing redundant loads and terminations.

0 The ATM, T8A and T8A (TME) are special versions of the  
0 TM8 shelf. The DMS-300 Gateway offices use the T8A  
0 shelves. The Integrated Business  
0 Services (IBS) use the T8A (TM8) shelves (these shelves  
0 are used to house NT5X25AA cards only).

0 ( iv) TM-DF Association

0 Since DF cabling is arranged on a TM basis, trunks which  
0 terminate on different DF complexes cannot be connected  
0 to the same TM. Therefore, determination of the number  
0 of TM and trunk cards has to be done on a per DF basis.

0 For service reliability it is recommended that a minimum  
0 of two (2) TM8 (or its equivalent) be provided per of-  
0 fice.

0 Trunk Modules are provisioned for total terminations  
0 based on the forecast of analog trunk requirements for  
0 the busy season prior to exhaust.

0 ( v) These slots will be provided by new TMs. It should be  
0 noted that empty slots on a TM8 can house cards which can  
0 go on TM4 or TM2 shelves, etc.

0 ( vi) A minimum of two Tm8 shelves or its equivalent should be  
0 provided per DF for service reliability.



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0 (vii) Assignment is restricted to either one NT2X48AA or one  
0 NT2X48AB or two NT1X31AA cards per TM.

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0 1.3.23 Maintenance Trunk Module

0 a) General Description

0 The Maintenance Trunk Module is similar to the TM in operation,  
0 however, its primary function is to interface service, test and  
0 maintenance circuits and scanner and signal distributor cards.  
0 There is also a Digital Recorded Announcement Module (DRAM) which  
0 operates like the MTM, however, this shelf is primarily intended  
0 to house Digital Recorded Announcement (DRA) cards. Assignment  
0 restrictions are imposed on certain other cards which function in  
0 pairs.

0 b) References

0 c) Provisioning Considerations:

0 ( i) The principal differences of the MTM from the TM module  
0 are:

- 0 1. fewer provisionable card slots (12 instead of 15)
- 0 2. more powerful 5V supply to handle more complex card  
0 functions
- 0 3. cables to the DF on a slot basis, as required, with  
0 many more leads per slot
- 0 4. different Peripheral Software load supports different  
0 circuit types and functions
- 0 5. inter-card bus supports circuits whose function is  
0 split over two cards

0 Each module is contained in a single equipment shelf  
0 and interfaces the network via one speech link.

0 ( ii) Card slots are cabled to the DF only when necessary to  
0 satisfy interface requirements.

0 In an office served by more than one DF, the Telco is ad-  
0 vised for administrative reasons to terminate card slots  
0 of a particular MTM on the same DF.

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0 ( iii) MTM mounted cards on average have higher power dissipation making it possible to exceed the maximum set for the shelf. To avoid this, MTM shelves must be provisioned and cards assigned so as to limit card dissipation to 110 watts per shelf.

0 ( iv) Trunk enable lines control the Trunk Logic Circuit (TLC) and hence the function of TM and MTM mounted cards (enables, TLC and circuit per card are closely related). Thirty (30) enable lines are distributed to the provisionable slots in a pre-defined cyclic pattern.

0 As a result each card requires one card slot for every two enable lines it must connect to avoid duplicate connections to the same enable line. The next higher numbered slot or slots must be left empty when required. The exceptions are:

0 a) cards which function in pairs

0 b) slot 16, the last slot in the MTM, can accommodate cards requiring up to eight enables (not valid for cards with more than eight circuits and cards which physically require more than one slot)

0 ( v) A minimum of two MTM shelves must be provided for service reliability.

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0 CHAPTER 10

0 HOST - SERVICE CIRCUITS

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Host - Service Circuits  
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## 0 1.0 Host - Service Circuits

0 1.1 Equipment Provisioning0 1.1.1 TOPS Tone and Scrambler0 (a) General Description

0 The purpose of the TOPS Tone & Scrambler is to scramble the  
0 speech of a subscriber as heard by the operator during verifica-  
0 tion and to introduce an alerting tone to the subscriber when an  
0 operator must "barge-in" on an established connection.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations

0 ( i) Provisioning of the Tone & Scrambler circuit is based on  
0 the actual verification traffic as given by the customer.  
0 The holding time of the circuit is approximately equal to  
0 the average holding time of the line under verification  
0 by the operator. Provide the required quantity of  
0 NT3J00AB circuits per calculations using given parameters  
0 at P.001.

0 ( ii) The NT3J00AA card cage is used to house the Tone &  
0 Scrambler circuit packs. Provide one 91) shelf for every  
0 ten (10) NT3J00AB.

0 ( iii) As an interface to the circuit, provide one (1) NT2X88  
0 4-W E&M trunk (2 circuits) for each NT3J00AB.

0 ( iv) One (1) scan point per NT3J00AA is required to detect an  
0 alarm condition on the unit.

0 For further information on the scan points, refer to Pe-  
0 ripheral Modules - Host, Section 3.5 of this NTP.

0 ( v) In order to ensure limited Operator Verification capabil-  
0 ities in the event of an "A" or "B" power failure, the  
0 following decommmendations may be offered to the customer:



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0 1. Provide a minimum of two (2) NT3J00AA card  
cages per office and power all card cages  
from alternating power feeds.
- 0  
0 2. Provide a minimum of two (2) NT3J00AB  
scrambler CPs per office.
- 0  
0 3. Spread all scrambler CPs evenly over all  
card cages.
- 0 ( vi) Full tone & scrambler redundancy is not required. Instead  
0 ensure that the calculated scrambler requirements are  
0 distributed evenly between the "A" and "B" feeds. Recom-  
0 mendations 1 and 2 are not requirements and therefore  
0 should only be offered as an option.
- 0 ( vii) The NT3J00AA card cage will be mounted in a standard MIS  
0 frame and is seven (7) inches high and twenty-six (26)  
0 inches wide. the NT3J00AB is packaged on a double wide  
0 circuit pack and should be located in odd slots 03  
0 through 21. A NT3J0044 power supply is always provided  
0 in slot 01 of the card cage.
- 0 (viii) TOPS Tone & Scrambler feature is contained in package  
0 NTX030CC.

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0 2.0 Trunk Modules

0 2.1 Introduction

0 The Trunk Module (TM) encodes and multiplexes incoming speech  
0 from a maximum of 30 analog trunks into an eight-bit PCM format.  
0 The TM then combines them with internal control signals as well  
0 as the trunk supervisory and control for transmission at 2.56  
0 Mb/s to the network.

0 In the other direction, the 30 digital speech signals and the two  
0 control channel signals received from the network are demulti-  
0 plexed and decoded by the TM into 30 individual channels of com-  
0 bined analog speech and signalling.

0 DMS maintenance and test circuits and interface trunk circuits  
0 for stand alone test equipment mount on DMS Maintenance Trunk  
0 Modules and Trunk Modules. Normally these circuits are not  
0 PIPable and specified quantities should reflect requirements for  
0 the busy season prior to exhaust. The Remote Service Module  
0 (RSM) houses office maintenance, alarm and service circuits re-  
0 quired for remote offices employing RLMS.

0 In an office served by more than one DF, the Telco is advised for  
0 administrative reasons to terminate all MTM on the same DF. For  
0 similar reasons the Telco may wish to associate all TM-mounted  
0 circuits provisioned in this section with the same DF, including  
0 MTM.

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0 2.2 Features

0 2.2.1 Service Circuits

0 DMS service circuits are packaged in printed circuit cards which  
0 generally mount on Maintenance Trunk Module (MTM). The exceptions  
0 are:

- 0 1. digital echo suppression cards which mount on Digital  
0 Echo Suppressor Shelves (DES),
- 0 2. three-port conference circuit cards and MF and Digitone  
0 receiver cards which mount both on TMs and MTMs. (Note:  
0 six-port conference circuit cards mount only on MTMs.)

0 With the exception of digital echo suppression cards, service  
0 circuits are not PIPable and specified quantities should reflect  
0 requirements for the busy season prior to exhaust.

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0 2.2.2 Signal Distributor Card

0 a) General Description

0 Signal Distributor circuits enable the DMS Central Control to  
0 control external equipment by activating relays, lamps, audibles  
0 etc.

0 b) References

0 NTP 297-1001-451 DMS-100 Family Common Customer Data  
0 Schema  
0 NTP 297-2101-451 DMS-100 Local Customer Data Schema  
0 NTP 297-2181-451 DMS-100 International Customer Data  
0 Schema  
0 NTP 297-2201-451 DMS-200 Toll Customer Data Schema  
0 Section 3.7 Office Maintenance

0 c) Provisioning Considerations:

0 ( i) Four (4) SD modes selected by switches:

0 ( i) normally open ground operation  
0 ( ii) normally closed ground operation  
0 (iii) normally open loop operation  
0 ( iv) normally closed loop operation

0 ( ii) Each DMS SD card provides fourteen SD points configured  
0 as two SD circuits known as "SD Groups" with seven points  
0 per group. In certain applications software restricts a  
0 group to a specific function and unused points in that  
0 group cannot be assigned to other functions.

0 ( iii) DMS supports a maximum of 1024 SD points (146 SD groups).  
0 This includes the SD groups associated with each standard  
0 alarm card provided:

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0 NT3X82AA  
0 NT3X82AB  
0 NT3X83AA  
0 NT3X84AA  
0 NT3X85AA

0 For more information on the Standard Alarm Cards, refer  
0 to Section 3.7, Office Maintenance.

0 ( iv) Signal Distribution Card types are as follows:

0 Signal Distribution Card, Type I: NT2X57AA  
0 SD Card with OAU Monitor Circuit: NT2X57AB  
0 Signal Distribution Card, Type II: NT2X55AA

0 SD Card Type I and SD Card Type II mount on the Mainte-  
0 nance Trunk Module (MTM, Remote Maintenance Module (RMM)  
0 and Remote Service Module (RSM).

0 The Type I SD card is fitted with miniature flat-spring  
0 board-mounted relays for applications requiring lower  
0 output contact ratings and resistive loads.

0 OAU monitor circuit (code NT2X57AB only) provides an out-  
0 put to external equipment if communication between OAU  
0 and CCC is interrupted.

0 the Type II SD card is fitted with mercury-wetted-contact  
0 relays for applications requiring higher output contact  
0 ratings.

0 ( v) For alarms which require SD points. see NTP 297-1001-451  
0 DMS-100 Family Common Customer Data Schema, Section 036,  
0 Alarm Signal Distributor Group Table.

0 ( vi) For line features which require SD points, see Signal  
0 Distributing Group Table, Section 128, in the following  
0 NTPs:

0 NTP 297-2101-451  
0 NTP 297-2141-451  
0 NTP 297-2151-451  
0 NTP 297-2181-451

0 The quantity of SD points required for line features is  
0 divided by seven (7) to determine the number of SD cir-  
0 cuits or groups required.

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0 (vii) One SD point for each line hunt group that requires a re-  
0 mote line overflow hardware register is to be provided.

0 (viii) Each A.P.C. ROTL unit, model 1066-ROTL/52A, comes  
0 equipped with two ROTL test ports.

0 One SD group (four points plus three dedicated spares)  
0 for each A.P.C. ROTL test port is to be provided.

0 (ix) For network management functions which require SD points,  
0 see NTP 297-2201-451 DMS-200 Customer Data Schema, Sec-  
0 tion 217, Network Management Signal Distributor Table.

0 The quantity of SD points required is divided by seven  
0 (7) to determine the number of SD circuits required.

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0 2.2.3 Multi-Frequency (MF) Receiver

0 a) General Description

0 MF receivers, when connected to incoming trunks (analog and dig-  
0 ital) via the network, receive and interpret multi-frequency ad-  
0 dress signalling on these trunks.

0 b) References

0 Chapter 3, Section 3.5 Peripheral Modules  
0 NTP 297-1001-132 DMS-100 Family Blue Box Fraud  
0 Detection Feature Description

0 c) Provisioning Considerations:

0 ( i) Receiver access required for all incoming MF calls on all  
0 incoming and 2-way trunks.

0 ( ii) One receiver dedicated to each CAMA position.

0 ( iii) One to three receivers dedicated whenever the Blue Box  
0 Fraud Detection feature is activated. See NTP  
0 297-1001-132 DMS-100 Family Blue Box Fraud Detection Fea-  
0 ture Description.

0 ( iv) Versions of the card currently available are as follows:

0 NT2X48AA MF Receiver, Mu-law applications,  
0 two card position  
0 NT2X48BA MF Receiver, Mu-law applications,  
0 single card position  
0 NT2X48CA MF Receiver, A-law applications, two  
0 card position

0 ( v) The MF receivers can be mounted in either a Maintenance  
0 Trunk Module (MTM) or Trunk Module (TM) of the DMS-100  
0 Family of switching equipment.

0 ( vi) The Universal Tone Receiver (UTR) is a combined service  
0 circuit that can perform the function of a Digitone Re-  
0 ceiver for lines and a MF Receiver for trunks. (Refer to  
0 the Universal Tone Receiver subsection within this chap-  
0 ter for more information on the UTR.) MF Receivers are  
0 still required to service the following:

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- 0 - analog trunk groups existing on TM/MTM
- 0 shelves
- 0 - lines equipped on LM modules
- 0 - trunk groups equipped on DCM modules
- 0 - Mechanized Calling Card Service (MCCS)
- 0 - Subscriber Carrier Modules (SMS,SMR,SMU)
- 0 - incoming and the incoming portion of two way
- 0 service and test circuits (i.e. Remote
- 0 Office Test Line and Blue Box Fraud
- 0 Prevention)
- 0 - incoming RONI trunk groups
- 0 - Super CAMA - two way incoming DP outgoing DP
- 0 trunk groups

0 ( vii) MF Receivers are provisioned based on traffic. Refer to  
0 Chapter 2 Table N, MF Receiver - CCS Capabity Tables and  
0 Table M, MF Receiver Holding Time.

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0 2.2.4 Digitone Receiver

0 a) General Description

0 These circuits receive and interpret the digitone signals pulsed  
0 on a customer line equipped with the digitone feature.

0 b) References

0 Chapter 3, Section 3.5 Peripheral Modules

0 c) Provisioning Considerations:

0 ( i) Digitone Receiver required for all originating digitone  
0 signalling.

0 ( ii) Receiver provisioned to handle total load for all calls  
0 generated by digitone lines.

0 ( iii) Versions of the card currently available are as follows:

0 NT2X48AB Digitone Receiver, Mu-law  
0 applications, two card position  
0 NT2X48BB Digitone Receiver, Mu-law  
0 applications, single card position  
0 NT2X48CB Digitone Receiver, Mu-law  
0 applications, British Telecom, two  
0 card position  
0 NT2X48CC Digitone Receiver, A-Law  
0 applications, two card position

0 Each card contains four (4) Digitone Receiver Circuits.

0 ( iv) The digitone receivers can be mounted in either a Mainte-  
0 nance Trunk Module (MTM) or Trunk Module (TM) of the  
0 DMS-100 Family of switching equipment.

0 ( v) The Universal Tone Receiver (UTR) is a combined service  
0 circuit that can perform the function of a Digitone Re-  
0 ceiver for lines and a MF Receiver for trunks. (Refer to  
0 the Universal Tone Receiver subsection within this chap-  
0 ter for more information on the UTR.) Digitone Receivers  
0 are still required to service the following:

0 - analog trunk groups existing on TM/MTM  
0 shelves

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- 0 - lines equipped on LM modules
- 0 - trunk groups equipped on DCM modules
- 0 - Mechanized Calling Card Service (MCCS)
- 0 - Custom Charge Calling (CCC)
- 0 - Subscriber Carrier Modules (SMS,SMR,SMU)
- 0 - incoming and the incoming portion of two way
- 0 service and test circuits (i.e. Remote
- 0 Office Test Line and Blue Box Fraud
- 0 Prevention)
- 0 - any FX type trunks (e.g. DS1FX0, FX0GS,
- 0 FX0LS, FXSGS, FXSLS)

0 ( vi) To support CCC it is necessary to provide digitone re-  
0 ceivers that are attached as service circuits to a CCC  
0 call during periods when digitone signalling is permitted  
0 or expected.

0 Typically, DMS toll TOPS offices and the toll side of  
0 local/toll TOPS offices are not provisioned with digitone  
0 receivers. The introduction of CCC will necessitate the  
0 inclusion of this new resource in DMS toll offices.

0 The digitone receiver used is the NT2X48AB.

0 A separate group of digitone receivers dedicated to CCC  
0 should be engineered in each office.

0 ( vii) Digitone Receivers are provisioned based on traffic. Re-  
0 fer to Chapter 2, Table P, Digitone Receivers - CCS Ca-  
0 pacity Tables and Table O, Digitone Receiver Holding  
0 Time.

0 Digitone receivers serving CCC traffic will be provi-  
0 sioned on a loss basis in DMS toll TOPS and local/toll  
0 TOPS offices. Use Poisson Table V in Chapter 2. The CCC  
0 traffic used is calculated as follows:

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$$\begin{array}{l} \text{CCC Traffic} = \text{WAHT} \times \text{ABSBHA} \\ \hline 100 \end{array}$$

0 where

$$\text{WAHT} = (\text{P(W/O)} \times \text{HT1}) + (\text{P(W)} \times \text{HT2})$$

0 = Weighted Average Holding Time of  
0 digitone receivers

0 ABSBHA is the total Average Busy Season Busy Hour At-  
0 tempts (ABSBHA) for all 0+, 01+, ANI traffic with an in-  
0 dication of CCC capable. This will be the sum of all  
0 incoming trunk groups as well as local originating traf-  
0 fic in the case of DMS-100/200/TOPS.

0 P(W/O) is the probability that the 0+ or 01+ call marked  
0 as CCC capable is actually a subscriber dialed CCC call.  
0 This is difficult to predict and a value of 0.15 to 0.60  
0 can be used.

0 P(W) is the probability that the 0+ or 01+ call marked as  
0 CCC capable is an operator handled call. The sum of P(W)  
0 and (PW/O) should be one.

0 HT1 = digital receiver holding time for CCC  
0 calls

0 = 22.05 seconds if the sequence calling  
0 feature is disabled

0 or = 42.55 seconds if the sequence calling  
0 feature is enabled

0 HT2 = digital receiver holding time for non-  
0 CCC calls when marked as CCC capable

0 = 4 seconds

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0 2.2.5 Conference Circuit Provisioning

0 a) General Description

0 Conference circuit is required to provide centrex or MDC custom-  
0 ers with transfer, consultation hold, call add-on, to provide  
0 POTS customers with 3-way calling or 6-way calling. Also required  
0 for TOPS positions, Service Analysis positions and Attendant Con-  
0 soles.

0 b) References

0 Chapter 2 Traffic Criteria and Capacities

0 Chapter 3, Section 3.3 Operator Services  
0 Section 3.4 Meridian Business Services

0 c) Provisioning Considerations:

0 ( i) There are two (2) versions of the circuit:

0 NT3X67AA used in North American applications  
0 NT3X67BA used in International applications

0 The NT3X67BB is fully backwards compatible to NT3X67BA  
0 which it replaces. In addition, it provides the Toll  
0 Break In (TBI) tone required to implement the Toll Break  
0 In - Background Tone feature. This feature is supported  
0 in BCS-25 or later software.

0 There is one (1) circuit per card. Each card occupies  
0 three (3) card slots in a Maintenance Trunk Module (MTM)  
0 or Trunk Module (TM) and requires six 4-wire PCM trunk  
0 appearances.

0 ( ii) The 6-party Conference Circuit provides a conference fa-  
0 cility on a single card for use with DMS-100 Family of-  
0 fices. Up to five conference circuits can be tandemed to  
0 permit conference connections for three to twenty-six  
0 parties.

0 ( iii) The Conference Circuit card is designed to function as  
0 one (1) 6-port conference circuit or two (2) 3-port con-  
0 ference circuits.

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- 0 ( iv) One 3-port conference circuit is required per service  
0 analysis position.

0 One 3-port conference circuit is required per Attendant  
0 Console. One circuit is required per console. See MBS,  
0 Section 3.4, for more information.

0 Conference Circuits are required for TOPS positions. See  
0 Operator Equipment, Section 3.3, for more information.

- 0 ( v) The 3-Way Call Chaining feature is provided in software  
0 packages NTX820AA (MDC offices) and NTX808AA (POTS of-  
0 fices). This feature will allow a non-controlling party  
0 in a simple 3-way call or existing chain to flash hook  
0 and initiate another 3-way call provided the non-  
0 controlling party either has the 3-Way Calling (3WC) line  
0 option or a call transfer option datafilled on his line  
0 or customer group.

0 Number of 3-Port Conference Circuits required for 3-Way  
0 Call Chaining = Number of 3-Way Call Chaining Groups  
0  $\times (D-2)$ .

0 where:

0 Number of 3-Way Call Chaining Groups =  
0  $(A * B * C) / D$   
0 (round up to next integer)

0 A = the number of lines with 3-Way Calling  
0 capability

0 B = the % Feature Penetration for 3-Way Call  
0 Chaining from the number of lines in (A)  
0 (i.e. % of lines in (A) that are normally  
0 in use)

0 C = the % Feature Activation for 3-Way Call  
0 Chaining

0 D = the average number of conferees in a 3-Way  
0 Call Chaining Group.

0 \* Features of Group Intercom All Calls under NTX878AC are  
0 affected in the same way.



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0 2.2.6 Tone Generator

0 a) General Description

0 The Tone Generator Circuit (TGC) provides tones for general pur-  
0 pose use. The circuit card is mounted on a MTM.

0 The TGC generates tones for the following purposes:

- 0 - permanent signal
- 0 - conference calling
- 0 - Dual Tone Multifrequency (DTMF) signalling (SSMF-4)
- 0 - call waiting

0 b) References

0 Chapter 2 Traffic Criteria and Capacities

0 Section 3.2 - Software

0 Chapter 3, Section 3.4 Meridian Business Services

0 GS3X68 Tone Generator

0 c) Provisioning Considerations:

- 0 ( i) Versions of the Tone Generator Circuit cards are as fol-  
0 lows:

| 0 Product               |          |         |          |
|-------------------------|----------|---------|----------|
| 0 Description           | Code     | Uses    |          |
| 0 Dual Tone             | NT3X68AB | General | (Mu-law) |
| 0 Multifrequency (DTMF) |          |         |          |
| 0 Generator             |          |         |          |
| 0 Call Waiting Tone     | NT3X68AC | General | (Mu-law) |
| 0 Generator             |          |         |          |

0 For more information, refer to GS3X68.

- 0 ( ii) Digitone (DTMF) senders are used in Integrated Business  
0 Network offices to outpulse digits on the trunks and on  
0 CO trunks to a Class 5 office.

0 The DTMF sender grade of service is based on delay or  
0 loss criteria:

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0 a) ABSBH p=0.001, of Table V, Trunk Capacity Tables CCS  
0 Per Hour (Poisson Theory) (Chapter 2).

0 b) HDBH p=0.01, of Table V, Trunk Capacity Tables CCS  
0 Per Hour (Poisson Theory) (Chapter 2).

0 When provisioning DTMF Senders for a DMS100 MDC office  
0 using the Outpulsing DTMF On A Line feature and/or the  
0 Attendant Console End-T0-End Signaling (ACEES) feature  
0 both of which are contained in S/W Pkg NTX101AA, then the  
0 following formula shall be used:

$$\begin{array}{l} \text{DTMFS} \\ \text{CCS} = \end{array} \left[ \frac{\text{TT}(\% \text{ OG ABSBH CCS})100}{\text{TT-AVG-HT}} \right] + \left[ \frac{\text{ACEES-ABSBH-CCS}}{\text{ACEES-AVG-HT}} \right] \times \text{AVG-DTMFS-HT}$$



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0 where,

0 DTMFS CCS DTMF Senders requirements in CCS.

0 ACEES-ABSBH-CCS The sum of the traffic during the Aver-  
0 age Busy Hour Busy Season in CCS from  
0 all Attendant Consoles equipped with the  
0 Attendant Console End-To-End Signaling  
0 (ACEES) feature

0 ACEES-AVG-HT The Average Holding Time of all calls  
0 originating from all Attendant Consoles  
0 equipped with the ACEES feature in sec-  
0 onds.

0 TT Total Tie Trunks Traffic in CCS (TT) requiring Out-  
0 pulsing DTMF on a Line

0 % OG ABSBH CCS The percentage of Total Tie Trunk traf-  
0 fic that is Outgoing (OG), during Aver-  
0 age Busy Season Busy Hour (ABSBH), which  
0 require the outpulsing of DTMF.

0 TT-AVG-HT The Average Holding Time of the Total  
0 Tie Trunks

0 AVG-DTMFS-HT The Average Holding Time of the DTMF  
0 Senders (DTMFS). (Average sender hold-  
0 ing time of three seconds is assumed.)

0 If the number of senders for traffic figures exceed 25  
0 circuits, then the number of circuits should be deter-  
0 mined using the following formula:

0 #DTMF Senders = DTMFS CCS  
0 -----  
0 AVG-DTMFS-HT

0 DTMF sender card has four circuits per card. Two slots  
0 per card. Mounts on MTM.

0 DMS-250 trunks which are mounted on DCMs, DTCs or LTCs  
0 and require DTMF outpulsing do not require the DTMF  
0 Sender Card NT3X68AB.

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0 As of BCS-16 (or later) for other DMS applications, dig-  
0 ital trunks which require DTMF outpulsing on the DTC or  
0 LTC do not required the DTMF Sender Card NT3X68AB.

0 The required tones for the above two situations will be  
0 outpulsed from the respective peripheral modules.

0 ( iii) The Call Waiting Tone Generator CP is required to provide  
0 the following call progression tones for Plain Old Tele-  
0 phone Service (POTS) Custom Calling, Meridian Data  
0 Centrex (MDC) and DMS Private Branch Exchange (PBX) ap-  
0 plications:

- 0 a) Account  
0 b) Busy Verification  
0 c) Call Waiting  
0 d) Camp-On  
0 e) Confirmation (350 + 440 Hz)  
0 f) Queue Recall (350 + 440 Hz)  
0 g) Special Dial (350 + 440 Hz)  
0 h) Teen Service

0 Time switch broadcasting is used to distribute tones to  
0 multiple users.

0 Each Call Waiting Tone Generator Circuit Pack contains  
0 four circuits and requires two Maintenance Trunk Module  
0 (MTM) card slots.

0 For redundancy purposes, a minimum of eight circuits (two  
0 CPs) are to be provided for non-MDC offices and a minimum  
0 of twelve circuits (three CPs) are to be provided for MDC  
0 offices.

0 ( iv) For calling tone in Custom Calling Services, provide one  
0 Tone Generator Call Waiting card per office.

0 The capacity of the Call Waiting Tone Generator card pro-  
0 vided for Custom Calling Services is sufficient to handle  
0 the requirements for Attendant Consoles (see Section  
0 3.4).

0 ( v) The number of Call Waiting Tone Circuit (CWT) required  
0 for POTS offices:

0 # of calls  
0 % of terminating

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$$\begin{array}{l} \text{lines} \quad \text{to a busy} \\ \# \text{ of CWT} = \text{with CWT} \times \text{line (ABSBH)} \times 540\text{ms} \\ \hline 3,600,000 \text{ ms} \end{array}$$

0 Each Call Waiting tone is 300 milliseconds, and on aver-  
0 age we apply 1.8 tones per call wait call. The total  
0 tone duration is (300 X 1.8) or 540 milliseconds. Multi-  
0 ply 1e by 540 and divide by the number of milliseconds in  
0 an hour (One hour = 60 minutes X 60000 milliseconds =  
0 3600000 milliseconds) to determine the number of Call  
0 Waiting Tone circuits required.

0 The number of Call Waiting Tone Generator Circuit Packs  
0 required for a non-MDC office is equal to the number of  
0 CWT circuits (calculated above) divided by 4 (i.e., four  
0 circuits per card). The minimum number of CWT circuit  
0 packs to provision for a non-MDC office is 2.

- 0 ( vi) The number of Call Waiting Tone Circuits (CWT) required  
0 for MDC is equal to the quantity required for Camp-ON,  
0 Dial Call Waiting and Call Waiting Originating (CWD/CWO),  
0 Call Waiting Terminating tones (CWTT), and Internal/ Ex-  
0 ternal Distinctive Call Waiting Tones (IED).

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$$\# \text{ of CWT for Camp-ON} = \frac{(1 + (B/100)) \times A \times C}{D \times 3,600,000 \text{ ms}} \quad (\text{round up to next integer})$$

0 
$$\# \text{ of CWT for CWD/CWO} = \frac{J \times K \times Q}{L \times 3,600,000 \text{ ms}} \quad (\text{round up to next integer})$$

0 
$$\# \text{ of CWT for CWT} = \frac{R \times J \times P}{L \times 3,600,000 \text{ ms}} \quad (\text{round up to next integer})$$

0 
$$\# \text{ of CWT for IED} = (\# \text{ of CWT for CWT} \times 0.2) \times 2$$

0 Where:

0 A = # of Attendant Camp-On calls in one hour.  
0 B = % of Attendant Camp-On calls that will be recalled.  
0 C = Length of the Camp-On tone in milliseconds.  
0 (maximum 1500 ms., recommended default = 300ms)  
0 D = Average # of connections on a Camp-On tone circuit  
0 during the ABSBH.  
0 E = # of lines with Dial Call Waiting (CWD)  
0 F = # of lines with Call Waiting Originating (CWO)  
0 G = # of MDC lines  
0 H = # of Originating-Terminating calls per ABSBH that reach  
0 a busy MDC line.  
0 J = Average # of Call Waiting tones applied per call.  
0 (minimum 1, maximum 2, recommended default = 1.8)  
0 K = Length of the CWD/CWO tone in milliseconds.  
0 (maximum 1500 ms., recommended default = 300ms)  
0 L = Average # of connections on a Call Waiting tone circuit  
0 during the ABSBH.  
0 M = # of MDC lines with Call Waiting Terminating.  
0 N = # of lines in the office.  
0 O = # of Terminating calls per ABSBH that reach a busy line.  
0 P = Length of the Call Waiting Terminating tone in milli-  
0 seconds. (maximum 1500 ms., recommended default = 300ms)  
0 Q =  $(F + (E \times 0.25)) \times H / G$  (round up to next integer)  
0 R =  $(O \times M) / N$  (round up to next integer)

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0 The number of Call Waiting Tone Generator Circuit Packs  
0 for an MDC office is equal to the number of CWT circuits  
0 required for POTS office ((v) above) plus the number of  
0 CWT required for MDC office (above) divided by 4 (i.e.,  
0 four circuits per card). The minimum number of CWT cir-  
0 cuit packs to provision per MDC office is 3.

0 (vii) If TEEN Service software is provided, Call Waiting Tone  
0 Generator cards are required (minimum of one (1) card per  
0 Secondary Directory Numbers (SDN) must be provided; it is  
0 recommended that one card per SDN be provided for a total  
0 of four (4) cards per office). Refer to the Software  
0 Feature section (3.2) for more information on TEEN Ser-  
0 vice.

0 The calculation for CWT on the Primary Directory Number  
0 (PDN) is the same as provisioning CWT for POTS lines ((v)  
0 above).

0 The number of CWT circuits required for the Secondary Di-  
0 rectory Number number 1 (SDN1) is:

$$\begin{array}{rcl} \text{\# of SDN1 calls} & & \\ \text{getting call} & \times & \text{Holding Time} \\ \text{\# of CWT waiting (ABSBH)} & & \\ \text{for SDN1} = & \text{-----} & \\ & 3,600,000 \text{ ms} & \end{array}$$

0 Where:

$$\begin{array}{rcl} \text{Holding Time} = & \text{duration of} & \text{Avg call} \\ & \text{tone for SDN1} & \text{wait tones} \\ & & \text{-----} \\ & & \text{calls} \\ & = 300 \text{ ms} \times 1.8 & \\ & = 540 \text{ ms} & \end{array}$$

0 A minimum of one CWT cards are required for SDN1 lines.  
0 (There are four CWT circuits per card).

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0 The number of CWT circuits required for the Secondary Di-  
0 rectory Number number 2 (SDN2) is:

$$\begin{array}{rcl} \text{\# of SDN2 calls} & & \\ \text{getting call} & \times & \text{Holding Time} \\ \text{\# of CWT waiting (ABSBH)} & & \\ \text{for SDN2} = & \text{-----} & \\ & 3,600,000 \text{ ms} & \end{array}$$

0 Where:

$$\begin{array}{rcl} \text{duration of} & & \text{Avg call} \\ \text{Holding Time} = \text{tone for SDN2} \times & \text{-----} & \text{wait tones} \\ & \text{calls} & \\ & = 500 \text{ ms} \times 1.8 & \\ & = 900 \text{ ms} & \end{array}$$

0 A minimum of one CWT cards are required for SDN2 lines.  
0 (There are four CWT circuits per card).

0 The number of CWT circuits required for the Secondary Di-  
0 rectory Number number 3 (SDN3) is:

$$\begin{array}{rcl} \text{\# of SDN3 calls} & & \\ \text{getting call} & \times & \text{Holding Time} \\ \text{\# of CWT waiting (ABSBH)} & & \\ \text{for SDN3} = & \text{-----} & \\ & 3,600,000 \text{ ms} & \end{array}$$

0 Where:

$$\begin{array}{rcl} \text{duration of} & & \text{Avg call} \\ \text{Holding Time} = \text{tone for SDN3} \times & \text{-----} & \text{wait tones} \\ & \text{calls} & \\ & = 700 \text{ ms} \times 1.8 & \\ & = 1260 \text{ ms} & \end{array}$$

0 A minimum of one CWT cards are required for SDN3 lines.  
0 (There are four CWT circuits per card).

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0 2.2.7 Receiver Off Hook (ROH) Tone Generator

0 a) General Description

0 These circuits are required to provide receiver off-hook tones to  
0 subscriber lines in an attempt to alert subscribers by annoying  
0 tones of existing permanent signal conditions caused by receivers  
0 being left off the hook

0 b) References

0 Chapter 2 Traffic Criteria & Capacities

0 c) Provisioning Considerations:

0 ( i) The cards available are as follows:

0 Receiver Off-Hook Tone NT1X00AC

0 ( ii) Time Switch Broadcasting (TSB) is used to distribute tone  
0 simultaneous to multiple users.

0 ( iii) The maximum number of simultaneous connections per tone  
0 source is limited to 16 for old networks (NT0X48) and to  
0 32 for new networks (NT5X13) (i.e. for a non deloading  
0 NSG).

0 ( iv) If an office has both old and new networks, the maximum  
0 number of simultaneous connections per tone source is  
0 limited to 16 for a non deloading NSG.

0 ( v) Receiver Off Hook Tone card is NT1X00AC. Two circuits  
0 per card. One slot per card. Mounts on MTM.

0 ( vi) The number of ROH circuits can be calculated by using the  
0 following formula:

0 Use of ROH Circuits = ROH Tone Attempts/Hour x  
0 ROH Holding Time

0 ROH tone grade of service (ABSBH) criterion is:

0  $P(t > 0) = 0.009$  (Erlang C)

0 Therefore, use Table V, Chapter 2 to determine required  
0 number of ROH tone connections.

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0 Divide total ROH tone connections by 16 or 32 as applica-  
0 ble to obtain total number of ROH tone circuits.

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0 2.2.8 Receiver Off Hook (ROH) Tone Generator

0 a) General Description

0 These circuits are required to provide receiver off-hook tones to  
0 subscriber lines in an attempt to alert subscribers by annoying  
0 tones of existing permanent signal conditions caused by receivers  
0 being left off the hook

0 b) References

0 Chapter 2 Traffic Criteria & Capacities

0 c) Provisioning Considerations:

0 ( i) The cards available are as follows:

0 Receiver Off-Hook Tone NT1X00AC

0 ( ii) Time Switch Broadcasting (TSB) is used to distribute tone  
0 simultaneous to multiple users.

0 ( iii) The maximum number of simultaneous connections per tone  
0 source is limited to 16 for old networks (NT0X48) and to  
0 32 for new networks (NT5X13) (i.e. for a non deloading  
0 NSG).

0 ( iv) If an office has both old and new networks, the maximum  
0 number of simultaneous connections per tone source is  
0 limited to 16 for a non deloading NSG.

0 ( v) Receiver Off Hook Tone card is NT1X00AC. Two circuits  
0 per card. One slot per card. Mounts on MTM.

0 ( vi) The number of ROH circuits can be calculated by using the  
0 following formula:

0 Use of ROH Circuits = ROH Tone Attempts/Hour x  
0 ROH Holding Time

0 ROH tone grade of service (ABSBH) criterion is:

0  $P(t > 0) = 0.009$  (Erlang C)

0 Therefore, use Table V, Chapter 2 to determine required  
0 number of ROH tone connections.

0 Divide total ROH tone connections by 16 or 32 as applica-  
0 ble to obtain total number of ROH tone circuits.

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0 2.2.9 Digital Tone Detector and Sender Series NT5X29

0 a) General Description

0 The NT5X29 series of Digital Tone Detector and Sender cards provides multi-purpose, multi-channel service circuits for identifying and generating standard single or two-frequency tones.

0 The card contains independently controlled detector and sender circuits, which operate in conjunction with the Maintenance Trunk Module (MTM) of the DMS-100 Family digital switching system.

0 The tone detector receives various single and two frequency tones in Pulse Code Modulated (PCM) digital format from the MTM, identifies them, and signals the level, frequency and type of the tone back to the MTM.

0 The tone sender generates standard test or signalling tones in PCM format, on receipt of the appropriate control data work from the MTM.

0 The card is located in certain preferred positions in the MTM shelf, and plugs into the shelf backplane connectors.

0 b) References

0 GS5X29 Digital Tone Detector and Sender  
0 Series NT5X29

0 c) Provisioning Considerations:

0 ( i) Versions of the card currently available and their applications are as follows:

0 NT5X29AA: Tone detector and generator for Common Channel  
0 Interoffice Signalling (CCIS) continuity  
0 checker.

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0 NT5X29AB: Tone detector for service observing circuits.  
0 Used by Remote Operator Number Identification  
0 (RONI) and AB01.1032 DMS-100 equipment with  
0 Traffic Operator Position System (TOPS).

0 NT5X29AC: Tone detector for audible ringing, answer and  
0 digitone multi-frequency tones.

0 NT5X29BA: Audio Tone Detector (ATD) for U.K. (Mercury  
0 Centrex).

0 ( ii) The Digital Tone Detector and Sender has the following  
0 features:

0 - All-digital operation, compatible with  
0 DMS-100 equipment.

0 - Simultaneously processes 16 channels of  
0 tonal data in PCM format.

0 - Can process a single-frequency tone or  
0 determine the difference frequency of a  
0 two-frequency tone signal.

0 - Generates standard signalling or test tones  
0 on command.

0 ( iii) When an Audio Tone Detector CP NT5X29AC is mounted on an  
0 MTM, then either TM Processor CP NT0X70AC or TM Control-  
0 ler CP NT4X65A is required. The NT0X70AA must be re-  
0 placed with an NT0X70AC for BCS-28 or higher.

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0 2.2.10 Digital Tone Transceiver

0 a) General Description

0 The Digital Tone Transceiver Circuit Pack (NT3X08AA) functions as  
0 an essential component of the Automatic Coin Toll Service (ACTS).  
0 Its General purpose is to count coin deposits from coin operated  
0 telephones (coin stations) and report the amount collected to the  
0 DMS-100 Central Control (CC). Refer to Section 3, Operations  
0 Equipment for more information on ACTS.

0 b) References

0 Chapter 3, Section 3.3 Operator Services

0 c) Provisioning Considerations:

- 0 ( i) The coin detection circuit pack (CDC - NT3X08AA) will  
0 physically occupy one card slot on a MTM.
- 0 ( ii) The CDC will use eight time slots and therefore four (4)  
0 consecutive card slots are required. A maximum of three  
0 (3) CDC circuit packs can be housed in any MTM. If it is  
0 desired, the CDC card can be placed on a MTM with other  
0 cards provided the next three slots following the CDC are  
0 empty and provisioning rules for these other packs are  
0 followed.
- 0 ( iii) Digitone or rotary coin stations may be used, however,  
0 all stations MUST be able to provide dual frequency coin  
0 deposit signals to allow detection by the CDC circuit  
0 pack.
- 0 ( iv) The CDC contains eight (8) circuits provisionable for  
0 ACTS on each circuit pack.
- 0 ( v) Mu-law/A-law capability.
- 0 ( vi) The CDC requires no distributing frame cabling.
- 0 ( vii) For more information on the CDC card, refer to ACTS in  
0 Section 3.3, Operator Services.

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0 2.2.11 Alarm Scan and Signal Distribution Points

0 (a) General Description

0 Alarm and control inputs are generated by hardwired alarm con-  
0 tacts in the DMS hardware, by the operation of manual control  
0 switches, or by the alarm circuits of miscellaneous associated  
0 equipment. These are detected through Scan Points and interfaced  
0 to the alarm system software. The software responds to an alarm  
0 condition or a control actuation by operating or releasing the  
0 appropriate Signal Distribution Points. This initiates or termi-  
0 nates the corresponding audible and visual alarm or control func-  
0 tion.

0 (b) References

0 NTP 297-1001-122 DMS-100 Family Alarm  
0 System Description

0 (c) Provisioning Considerations

- 0 ( i) The operating company must provide data for assignment of  
0 alarm scan and signal distribution points detailing the  
0 number of points required, the type of alarm, and the de-  
0 sired severity treatment (critical, major or minor).
- 0 ( ii) For basic alarm system provide a minimum of one Signal  
0 Distributor (SD) Card Type I (NT2X57AA) per system and  
0 assign to a slot on MTM(1).
- 0 ( iii) A second NT2X57AA, providing 14 spare SD points, may be  
0 provided if required.
- 0 ( iv) For basic alarm system, provide a minimum of one Miscel-  
0 laneous Scan Detector Card (NT0X10AA) per system and as-  
0 sign to a slot on MTM (1).
- 0 ( v) Provide an additional NT0X10AA if a remote distribution  
0 bay (RDB) is to be provided and/or if any of equipment  
0 rows G, H, J through M are to be equipped.
- 0 ( vi) Provide another NT0X10AA if any of rows N, P through Z,  
0 AA, BB are to be equipped.
- 0 ( vii) Provide another NT0X10AA if at least one of the rows CC  
0 through HH, JJ through NN and PP through RR is to be  
0 equipped.

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0 (viii) Additional scan points for alarms external to DMS may be  
0 assigned, preferably to the alarm MTMs. If space is not  
0 available, any MTM may be used but note that an MTM with-  
0 out a Dead System Card (NT3X82AA/AB) has no OAU shelf  
0 monitor.

0 ( ix) Note that DMS currently supports a total maximum of 1024  
0 scan points.

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0 CHAPTER 11

0 HOST - TOLL SPECIALS

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Host - Toll Specials  
Chapter 11



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0 HOST - TOLL SPECIALS  
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## 0 1.0 Host - Toll Specials

0 1.1 Equipment Provisioning0 1.1.1 Analog Trunks0 (a) General Description

0 Trunk cards provide features that are required to achieve the  
0 necessary functional compatibility for each analog trunk group.  
0 Applique circuits are used as adapters to provide an interface  
0 between a DMS-100 Family trunk circuit and a specific item of  
0 Northern Telecom (NT) or other manufacturer's equipment, or for  
0 special purpose (e.g. Board-to-Board Testing).

0 (b) References

0 NTP 297-1001-152 Trunk Selection and Compatibility  
0 NTP 297-2101-516 Line Maintenance Reference Manual

0 Chapter 3, Section 3.7 Office Maintenance

0 (c) Provisioning Considerations:

0 ( i) Refer to NTP 297-1001-152, DMS-100 Family Trunk Selection  
0 and Compatibility for a list of available applique cir-  
0 cuits, trunk cards and the features provided by the trunk  
0 hardware of each card.

0 ( ii) One Balance Network plug-in (daughter board) must be pro-  
0 visioned for each 2-wire trunk circuit on each card as  
0 follows:

0 a) For H88 loaded cable select Precision Balance Network -  
0 H88, NT2X80AA,

0 b) For International applications select the following Bal-  
0 anced Networks:

0

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- c) For other loaded or non-loaded arrangements select **Compromise Balance Network, NT2X77** as follows:

| DISTANCES<br>UP TO | TRUNK IMPEDANCE |          |
|--------------------|-----------------|----------|
|                    | 600 OHM         | 900 OHM  |
| 750 feet           | NT2X77AD        | NT2X77AC |
| 9000 feet          | NT2X77AB        | NT2X77AA |

( iii) The following trunk functions and features help determine the selection of the correct trunk card. These functions and features are common to all trunks within a trunk group:

- 1) Number of trunks in the trunk group.
- 2) Trunk Function:

## INTERTOLL

IT = InterToll  
IW = Leave Word  
OA = Operator Assis.  
TT = Toll Tandem

**INTERLOCAL**

IT = Interoffice  
(direct)  
MT = Intertandem  
TG = Tandem  
Completing  
TO = Tandem  
Originating  
LA = LAMA

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## 0 TOLL CONNECTING

## MISCELLANEOUS

0 CA = CAMA  
0 DD = DDD Access  
0 OO = Operator Office  
0 RC = Recording  
0 Completing  
0 SP = Traffic Serv Pos  
0 TC = Toll Completing  
0 TS = Toll Switching  
0 TM = TS and TC  
0 AN = Announcement  
0 (machine)  
0 IN = Information  
0 IR = Intercept  
0 VR = Verification  
0 TK = Test Desk  
0 MAP = Maintenance  
0 & Admin. Pos  
0 DID = Direct  
0 Inward  
0 Dialing

## 0 INTERNATIONAL

0 SL = Signalling Link

## 0 3) Trunk Direction:

0 Identifies the traffic on the trunk group in relation  
0 to the DMS:

0 IC - Incoming  
0 OG - Outgoing  
0 2WY - Two Way

## 0 4) Two-Wire (2W) or Four-Wire (4W) Trunk.

## 0 5) Impedance:

0 The terminating impedance at the trunk group in ohms:

0 600 ohms  
0 900 ohms

## 0 6) Signalling Type:

0 MF - Multifrequency  
0 DP - Dial pulse  
0 NO - None  
0 CC - Common channel signalling  
0 DT - Digitone  
0 KP - MF from Key Pulse Switchboard  
0 MFA - Multifrequency ANI  
0 DPA - Digipulse ANI

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0 KPA - MF ANI from Key Pulse Switchboard  
0 RB - Reverse Battery  
0 HL - High Low  
0 There are two types of loop  
0 signalling with a maximum loop of  
0 3800 ohms. 'RB', Reverse Battery  
0 which is normal for machine  
0 switching or 'HL', High Low which is  
0 normal for recording completing to a  
0 3CL.  
0 EM - For a DMS trunk with E&M leads type  
0 I modified (2 wire)  
  
0 II - For a DMS trunk with E&M leads type  
0 II modified (4 wire)  
0 SF - For single frequency built into the  
0 DMS trunk  
0 N6 - For CCITT No. 6 signalling system  
0 (DMS-300 only)

0 7) Start Pulse Signal:

0 The type of pulse start signal required by the far  
0 end:

0 ID - Immediate Dial  
0 DD - Delay Dial  
0 WK - Wink

0 8) Coin Control:

0 The type of coin control signalling used by the far  
0 end circuits:

0 T&R - Tip and Ring  
0 IB - Inband  
0 3W - 3rd Wire  
0 WK - Multiwink

0 9) Ringing:

0 The far end circuits ringing type:

0 SX - Simplex  
0 IB - Inband  
0 T&R - Tip and Ring  
0 RF - Ring Forward

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0 10) Echo Suppressor Control:

0 Echo Suppressor Control (ESC) can be provided for  
0 4-wire E&M and CCITT No. 5 and No. 6 trunks.

0 DMS-100 Family Digital Echo Suppressors (DES) can be  
0 provided where the transmission round trip delay ex-  
0 ceeds 45 msecs.

0 ( iv) The input/output (I/O) test trunk is a NT2X90 card  
0 mounted in an 8-wire Trunk Module (TM) at the host of-  
0 fice, in a RMM at a RLCM or in a RSM at a RLM. It pro-  
0 vides a DMS interface with non-DMS local testing  
0 equipment such as:

- 0 - #14 Local Test Desk
- 0 - #3 Local Test Cabinet
- 0 - Centralized Automatic Loop Reporting System

0 It enables the maintenance personnel who operate the  
0 non-DMS test equipment to access subscriber lines via the  
0 MTA. Provide one I/O Test Trunk for each test trunk  
0 which DMS interfaces mentioned above.

0 The LTP Talk/Monitor MTA interface provides an alternate  
0 interface connection to a subscriber line without going  
0 through the line circuit for purposes of monitoring and  
0 testing. Access is via the Metallic Test Access Unit  
0 (MTA) and the line card access relay. Normally multiples  
0 to the line side of the Line Test Unit (LTU). One I/O  
0 Test Trunk is required for each LTU ordered.

0 For more information, refer to NTP 297-2101-516.

0 Operator Verification Access provides a high impedance  
0 monitor-only connection between an incoming operator ver-  
0 ification trunk and a subscriber line via the MTA and the  
0 line card access relay. It is recommended that one ac-  
0 cess interface circuit (I/O Test Trunk) be provided for  
0 each operator verification trunk required. Correspond-  
0 ingly one MTA test multiple must be provided for each  
0 interface required. See MTA, Section 1.3.9 and Section  
0 3.7, Office Maintenance for more information on the MTA  
0 provisioning.



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0 ( v) DMS supports the Automation Products Co., model  
0 1066-ROTL/52A ROTL and 105 Test Line. Each ROTL can  
0 serve up to 640 trunks per day based on an eight hour  
0 test shift. The interface circuit is the ROTL I/F Trunk  
0 NT3X91AA which has two (2) circuits per card.

0 Three trunk circuits are required for each ROTL; one for  
0 each of two test ports plus one for a standard 105 Test  
0 Line port.

0 One additional trunk circuit is required for each addi-  
0 tional 105 Test Line provided; up to a total of six.

0 For more information on the ROTL unit, refer to Section  
0 3.7, Office Maintenance.

0 ( vi) One Trunk Card NT2X83AA (two circuits per card) is to be  
0 provided for each interface trunk circuit required to  
0 interface the Automatic Number Announcement (ANA) system.  
0 For more information on ANA circuit, refer to Section  
0 3.7, Office Maintenance.

0 ( vii) Jack ended 4-wire trunk appearances are extended to each  
0 Maintenance and Administration Position (MAP) used for  
0 line testing (LTP) and (or) trunk testing (TTP) to facil-  
0 itate the connection of portable test sets into the sys-  
0 tem.

0 For DMS-100 and DMS-100/200 offices Jack Ended Trunk,  
0 NT1X54AA, (2 circuits per card) must be provided.

0 For DMS-200 offices NT1X54AA cards may be used on TM8's  
0 or MTM's, or the 4-wire E&M trunk, NT2X72AA (2 circuits  
0 per card) may be provided only if mounted on TM8.

0 Refer to the Input/Output Section (3.6) for more informa-  
0 tion on Jack Ended Trunks.

0 (viii) One CAMA Position signalling Trunk, NT2X65AA (one circuit  
0 per card, mounts on TM8) and one CAMA CW SUSP LT TRK,  
0 NT2X66AA (one circuit per card, mounts on TM2, TM4, TM8)  
0 is required per CAMA position.

0 ( ix) Analog trunks can be used to provide and interface be-  
0 tween the TOPS positions and the DMS switching network  
0 and the TOPS TTY's and the DMS switching network. Two  
0 analog trunks, one for voice and one for data, are re-

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0 quired for each TOPS position. An exception is the Force  
0 Management Position which requires only one trunk for  
0 data, no voice. One analog trunk is required for each  
0 TOPS TTY (with the exception of the SNAC TTY which re-  
0 quires one I/O port appearance instead). Refer to the  
0 Operator Services section (3.5) to determine whether the  
0 TOPS position or the TOPS TTY will interface with the DMS  
0 switching network via analog trunks or not. Use the  
0 4-wire E&M trunk NT2X72 (two circuits per card) which  
0 mounts on the TM8.

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0 1.1.2 International Metallic Test Unit (IMTU)

0 a) General Description

0 These circuits are used to perform DC and AC voltage measurements  
0 and metering signals measurements as well as resistance,  
0 capacitance and frequency measurements on subscriber loops and  
0 line circuits. Connection is DC-metallic via the DMS Metallic  
0 Test Access Network (MTA) and the access relay in the line card.

0 The IMTU is for International applications only.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) The IMTU consist of a pair of interconnected cards:

0 NT4X97AA Metallic Test Unit Controller  
0 NT4X98BB Metallic Test Unit Analog  
0 (NT4X98AA is to be replaced by NT4X98BB.)

0 The IMTU has two separate tip and ring appearances that  
0 time share the same measurement circuits. This time  
0 sharing is transparent to the system and, as a result,  
0 the IMTU appears as two separate measurement circuits.

0 ( ii) The MTU analog card and the MTU control card each occupy  
0 1 card slot. They are mounted as a functional pair on a  
0 International Maintenance Trunk Module (IMTM) (located at  
0 Host) or a Remote Maintenance Module (RMM) (located at  
0 IRLCM, IOPM).

0 ( iii) It is recommended that one (1) IMTU circuit be assigned  
0 as a dedicated IMTU for two NT3X09BA Metallic Test Access  
0 cards. This will serve up to eight (8) LCMs. In addition,  
0 provision one (1) non-dedicated (rover) IMTU circuit  
0 per office.

0 For IRLCM offices provision a minimum of one (1) IMTU  
0 pair per site. A non-dedicated IMTU (rover) is not required  
0 for single IRLCM configurations. For multiple  
0 IRLCM configurations, provision the number of IMTUs (including  
0 a rover circuit) based on the following methods:

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0 Method 1

0 # of LCMs  
0 # of IMTU Circuits = ----- + 1  
0 8

0 # of IMTU Circuits  
0 # of NT4X97/NT4X98 Pairs = -----  
0 2

0 Method 2

0 Telco requirements may dictate that all of the lines in  
0 an office be testable in a given time for test. This will  
0 require provisioning enough IMTU circuits to meet this  
0 requirement based on the following formula. Be sure to  
0 ensure that Method 1 (above) has been observed.

0 # Lines x Test Hold Time (Secs)  
0 # IMTU Ckts = ----- + 1  
0 3600 \* Time-For-Test (Hrs)

0 # IMTU Circuits  
0 # of NT4X97/NT4X98 Pairs =-----  
0 2

0 Typical Test Hold Times

|                    |                            |          |
|--------------------|----------------------------|----------|
|                    | Long<br>Diagnostic<br>Test | LIT Test |
| Type 'A' Line Card | 26 Secs                    | 6-8 Secs |
| Type 'B' Line Card | 32 Secs                    | 6-8 Secs |
| EBS Line Card      | 106 Secs                   | 6-8 Secs |

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0 1.1.3 Receiver Off Hook (ROH) Tone Generator

0 a) General Description

0 These circuits are required to provide receiver off-hook tones to  
0 subscriber lines in an attempt to alert subscribers by annoying  
0 tones of existing permanent signal conditions caused by receivers  
0 being left off the hook

0 b) References

0 Chapter 2 Traffic Criteria & Capacities

0 c) Provisioning Considerations:

0 ( i) The cards available are as follows:

0 Receiver Off-Hook Tone NT1X00AC

0 ( ii) Time Switch Broadcasting (TSB) is used to distribute tone  
0 simultaneous to multiple users.

0 ( iii) The maximum number of simultaneous connections per tone  
0 source is limited to 16 for old networks (NT0X48) and to  
0 32 for new networks (NT5X13) (i.e. for a non deloading  
0 NSG).

0 ( iv) If an office has both old and new networks, the maximum  
0 number of simultaneous connections per tone source is  
0 limited to 16 for a non deloading NSG.

0 ( v) Receiver Off Hook Tone card is NT1X00AC. Two circuits  
0 per card. One slot per card. Mounts on MTM.

0 ( vi) The number of ROH circuits can be calculated by using the  
0 following formula:

0 Use of ROH Circuits = ROH Tone Attempts/Hour x  
0 ROH Holding Time

0 ROH tone grade of service (ABSBH) criterion is:

0  $P(t > 0) = 0.009$  (Erlang C)

0 Therefore, use Table V, Chapter 2 to determine required  
0 number of ROH tone connections.

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0 Divide total ROH tone connections by 16 or 32 as applica-  
0 ble to obtain total number of ROH tone circuits.

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0 1.1.4 Digital Tone Detector and Sender Series NT5X29

0 a) General Description

0 The NT5X29 series of Digital Tone Detector and Sender cards provides multi-purpose, multi-channel service circuits for identifying and generating standard single or two-frequency tones.

0 The card contains independently controlled detector and sender circuits, which operate in conjunction with the Maintenance Trunk Module (MTM) of the DMS-100 Family digital switching system.

0 The tone detector receives various single and two frequency tones in Pulse Code Modulated (PCM) digital format from the MTM, identifies them, and signals the level, frequency and type of the tone back to the MTM.

0 The tone sender generates standard test or signalling tones in PCM format, on receipt of the appropriate control data work from the MTM.

0 The card is located in certain preferred positions in the MTM shelf, and plugs into the shelf backplane connectors.

0 b) References

0 GS5X29 Digital Tone Detector and Sender  
0 Series NT5X29

0 c) Provisioning Considerations:

0 ( i) Versions of the card currently available and their applications are as follows:

0 NT5X29AA: Tone detector and generator for Common Channel  
0 Interoffice Signalling (CCIS) continuity  
0 checker.

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0 NT5X29AB: Tone detector for service observing circuits.  
0 Used by Remote Operator Number Identification  
0 (RONI) and AB01.1032 DMS-100 equipment with  
0 Traffic Operator Position System (TOPS).

0 NT5X29AC: Tone detector for audible ringing, answer and  
0 digitone multi-frequency tones.

0 NT5X29BA: Audio Tone Detector (ATD) for U.K. (Mercury  
0 Centrex).

0 ( ii) The Digital Tone Detector and Sender has the following  
0 features:

0 - All-digital operation, compatible with  
0 DMS-100 equipment.

0 - Simultaneously processes 16 channels of  
0 tonal data in PCM format.

0 - Can process a single-frequency tone or  
0 determine the difference frequency of a  
0 two-frequency tone signal.

0 - Generates standard signalling or test tones  
0 on command.

0 ( iii) When an Audio Tone Detector CP NT5X29AC is mounted on an  
0 MTM, then either TM Processor CP NT0X70AC or TM Control-  
0 ler CP NT4X65A is required. The NT0X70AA must be re-  
0 placed with an NT0X70AC for BCS-28 or higher.

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0 1.1.5 Universal Tone Receivers

0 (a) General Description

0 The Universal Tone Receiver (UTR) is a combined service circuit  
0 that can perform the function of a Digitone Receiver for lines  
0 and a MF Receiver for trunks.

0 The Universal Tone Receiver (UTR) circuit pack is provisioned for  
0 R2 call setup. Each UTR pair has thirty circuits. For more in-  
0 formation on the UTR, refer to Section 3.5.

0 (b) Reference

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 ( i) The UTR is provisionable in pairs (maximum two (2) pairs)  
0 on the DTC, LGC, (IDTC, ILGC) and LTC modules. All lines  
0 and trunks connected to the module will be serviced by  
0 the UTR within the module. This includes all lines in  
0 LCMS, RLCMS, and OPMS.

0 ( ii) UTRs will slightly reduce the DTC/LGC/LTC and RSC periph-  
0 eral real time capacity. A real time work up should be  
0 performed to ensure sufficient capacity. Refer to Sys-  
0 tems Engineering Letter, Issue #01, Subject "Guidelines  
0 for XPM Real Time Capacity Study - BCS-22" (Date: May 22,  
0 1987).

0 ( iii) Lines and trunks on a RSC are serviced by UTR cards lo-  
0 cated in the RCC module of the RSC. There is no traffic  
0 overflow to the host office.

0 ( iv) Although the UTR can perform the function of a Digitone  
0 Receiver (NT2X48AA) and the function of a MF Receiver  
0 (NT2X48AB), there is no traffic overflow from UTRs onto  
0 existing Digitone Receivers nor existing MF Receivers.  
0 The Digitone Receivers and MF Receivers mounted on MTMs  
0 and TMs are still required to service the following:

- 0 - analog trunk groups existing on TM/MTM shelves
- 0 - lines equipped on LM modules
- 0 - trunk groups equipped on DCM modules
- 0 - Mechanized Calling Card Service (MCCS)

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0 | - Subscriber Carrier Modules (SMS, SMR, SMU)  
0 | - incoming and the incoming portion of 2 way service  
0 | and test circuits (i.e. Remote Office Test Line and  
0 | Blue Box Fraud  
0 | Prevention). Refer to Section 3.5 (1.3.14) for the  
0 | Digitone  
0 | Receiver and Section 3.5 (1.3.13) for the MF Re-  
0 | ceiver.

0 | ( v) The following is a list of trunk types which require a  
0 | receiver that are supported by the UTR

| 0 | TRUNK GROUP | TRUNK NAME/DESCRIPTION                                                               |
|---|-------------|--------------------------------------------------------------------------------------|
| 0 | A5          | 2 WAY AMR5MF                                                                         |
| 0 | ATC         | Access Tandem to Carrier                                                             |
| 0 | SC          | INCOMING CAMA MF<br>2 WAY CAMA TOLL MF IN MF OUT<br>2 WAY CAMA TOLL MF IN DP OUT     |
| 0 | IT          | INTERTOLL 2 WAY MF IN MF OUT<br>INTERTOLL INCOMING MF<br>INTERTOLL WINK MF IN DP OUT |
| 0 | IT250       | IT250 DMS250/TOPS INTERTOLL                                                          |
| 0 | IMT         | (DMS250 trunk group)                                                                 |
| 0 | DAL         | (DMS250 trunk group)                                                                 |
| 0 | CAMA(250)   | (DMS250 CAMA trunk group)                                                            |
| 0 | OC          | 2 WAY MF CAMA                                                                        |
| 0 | OI          | COLLOCATED OI SWITCHBOARD<br>COLLOCATED SWBD TOLL OFFICE<br>MF VERIFICATION OPERATOR |
| 0 | OP          | Outgoing or 2 WAY MF TSPS/TOPS                                                       |
| 0 | PX          | 2 WAY DIGITAL PBX                                                                    |
| 0 | AOSS        | AOSS INCOMING MF                                                                     |
| 0 | TDDO        | TANDEM 2 Stage DDO                                                                   |

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0| TI INCOMING MF  
0| T101 101 Communications Test Line  
0| T2 LOCAL 2 WAY MF  
0| TOPS TOPS TRUNK INCOMING MF  
0| TOPS TRUNK 2 WAY MF IN MF OUT  
0| TOPS TRUNK 2 WAY MF IN DP OUT  
0| ZI 0+/0- Tandem to TOPS/TSPS  
0| IBNTI INCOMING IBN  
0| INCOMING IBN DT  
0| IBNT2 2 WAY IBN  
0| 2 WAY IBN DT  
0| INT101 INTL 101 Test Line  
0| AVINSW 2 WAY Interswitch MF  
0| AVOVS 2 WAY OVERSEAS MF TRUNK  
0| AVNOS 2 WAY CROSSBAR MF TRUNK  
0| AVPBX 2 WAY or INCOMING PBX MF TRUNK  
0| AVTNDM 2 WAY Tandem MF Trunk

0| Any incoming or incoming portion of a 2 way trunk group  
0| requiring a receiver not listed above will require  
0| Digitone or MF receivers.

0| ( vi) The number of UTR circuits is obtained by calculating the  
0| UTR holding time and multiplying by the average number of  
0| calls per hour. In general it is always safe to provide  
0| two (2) pairs of UTR cards if unsure of the traffic de-  
0| mands.

0| For incoming R2 calls the UTR holding time is as follows:

0| 1. From seizure to final digit collection  
0| plus

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- 0 2. From final digit collection to - trunk  
0 selection if R1 or N5 outgoing, - seize  
0 acknowledgement if R2 outgoing.

0 For outgoing R2 calls the UTR holding time is as follows:

- 0 1. The UTR is held until told to release by  
0 the far office or timeout if we are the  
0 controlling signal office (i.e. R1 to R2  
0 calls).

0 The number of UTRs used on average is given by the fol-  
0 lowing formula:

$$\begin{array}{lcl} \# \text{ of UTR} & & \text{SI} & & \text{S0} \\ \text{Circuits} = \text{NI} \times \text{-----} \times \text{EI} + \text{NO} \times \text{-----} \times \text{EO} \\ \text{required} & & \text{HI+SI} & & \text{HO+S0} \end{array}$$

0 where,

0 NI = Number of incoming R2 trunks (or 2-way  
0 used as incoming)

0 SI = Signalling time in seconds of incoming  
0 trunks

0 HI = Holding time (talking) of incoming trunks  
0 in seconds

0 EI = Erlang occupancy figure of incoming  
0 trunks

0 NO = Number of outgoing R2 trunks (or 2-way  
0 used as outgoing)

0 S0 = Signalling time in seconds of outgoing  
0 trunks

0 HO = Holding time (talking) of outgoing trunks  
0 in seconds

0 EO = Erlang occupancy figure of outgoing trunks

- 0 ( vii) This circuit pack is only required for CCITT No. 6 Sig-  
0 nalling.

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0 CHAPTER 12

0 HOST - MAINTENANCE TRUNK TEST CIRCUITS

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Host - Maintenance Trunk Test Circuits  
Chapter 12

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## 0 1.0 Host - Maintenance Trunk Test Circuits

0 1.1 Equipment Provisioning0 1.1.1 TOPS Loop Around Requirements0 (a) General Description

0 When TOPS is equipped on a DMS-100/200 configuration, loop around  
0 trunks (NT6X50AA for TOPS, NT6X27AA for ITOPS) must be provi-  
0 sioned to route traffic between the DMS-100 and the DMS-200 por-  
0 tion of the switch. Provisioning of the number of loop around  
0 trunks is based upon the traffic requirements. All line-to-TOPS  
0 and TOPS-to-line calls must be routed via the loop around  
0 trunks).

0 The provisioning of TOPS loop around trunks in DMS-100/200 TOPS  
0 offices is required to support all TOPS to line traffic and a  
0 portion of the line to TOPS traffic.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host  
0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 ( i) The attached charts detail loop around requirements.  
0 Calculate the total traffic in CCS for each station type  
0 requiring loop around trunks. Refer to the applicable  
0 grade of service tables to determine the required number  
0 of loop around trunks.

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0 Table 33.5 Line To TOPS

| <u>STATION TYPE</u>                | <u>CALL TYPE</u>  | <u>LOOP AROUND<br/>REQUIRED</u> |
|------------------------------------|-------------------|---------------------------------|
| Coin                               | 0+,0-,1+,01+,011+ | No                              |
| Coin (ACTS,MCCS)                   | All               | No                              |
| Hotel                              | 0+,0-,1+,01+,011+ | No                              |
| MBS Lines                          | 0+,0-,01+         | Yes                             |
| ONI/ANIF                           | 0+,0-,1+,01+,011+ | Yes                             |
| 1FR (Featured)*                    | 0+,0-,01+         | Yes                             |
| 1FR (POTS),<br>INC,DTMF (w/o Feat) | All               | No                              |

0 All lines in an equal access office requiring operator  
0 assistance require loop around trunks.

0 Table 33.6 TOPS To Line

| <u>TRUNK GROUP</u>                        | <u>CALL STATION TYPE</u>                                                        | <u>LOOP AROUND<br/>REQUIRED</u> |
|-------------------------------------------|---------------------------------------------------------------------------------|---------------------------------|
| Intertoll                                 | Inward                                                                          | Yes                             |
| TOPS<br>(Terminating<br>on POTS<br>Lines) | Coin 0+-,1+<br>Hotel 0+-,1+<br>Non-Coin 0+-,1+<br>ONI/ANIF 0+-,1+<br>PBX 0+-,1+ | Yes<br>Yes<br>Yes<br>Yes<br>Yes |
| TOPS<br>(Terminating<br>on MBS Lines)     | All Calls                                                                       | Yes                             |
| Verification                              | VFY                                                                             | Yes                             |

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## 0 \*1FR Featured

- 0 - Automatic Line . Remote Meter Pulsing
- 0 - Call Forwarding . Remote Register, SD Point
- 0 - Calling Line Identification . Requested Suspension
- 0 - Circuit Switched Digital . Speed Calling - Short List
- 0 Data Service
- 0 - Emergency Service (911) With . Speed Calling - Long List
- 0 Ringdown
- 0 - Studies (AMA Record, Line . Sleeve Lead Control
- 0 Usage)
- 0 - Sleeve Lead For Public Fire . Stop Hunt
- 0 - Reporting System . Subscriber Line Usage
- 0 - Outwats . Special Billing Number
- 0 - Random Make Busy . Warm Line

## 0 ( ii) Loop Around Provisioning

0 1. Outgoing operator traffic can be obtained in the fol-  
0 lowing ways:

- 0 a) Directly from Telco/Customer
- 0 b) Calculation based on data from the Questionnaire
- 0 (0-, 0+ 5 to 10D, 01 + 12D. 1+CAMA). Use Table
- 0 33.5 to calculate percent of lines requiring loop
- 0 around:

0 
$$\frac{(\text{IFR lines} + \text{MBS lines} + \text{ONI/ANIF}) \times \text{traffic}}{\text{outgoing outgoing}} \times \frac{\text{origin.}}{(\text{CCS})}$$

- 0 c) Approximate Method:

0 
$$\frac{\text{Total origin.}}{\text{lines} \times \text{traffic} \times .05\% (\text{traffic to operator})} \times \frac{\text{Total (50\%)}}{\text{in CCS}}$$

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0 2. Incoming operator traffic can be obtained in the fol-  
0 lowing ways:

0 a) Approximate Method: 10% of toll completing traf-  
0 fic.

0 b) Calculation based on data from the Questionnaire  
0 (0-, 0+5, 7D). Use Table 33.6 to calculate per-  
0 cent of lines requiring loop around:

$$\left[ \begin{array}{l} \text{IFR} \quad \quad \times .15 \times \quad \text{toll} \\ \text{incoming} \quad \quad \quad \text{completing} \\ \quad \quad \quad + \text{MBS incoming} + \text{VFY} \end{array} \right] \times \text{incoming traffic (CCS)}$$

0 3. Calculation of loop around trunks:

0 a) Add line to TOPS (outgoing operator) and TOPS to  
0 line (incoming operator) traffic

0 b) Use Table V, Trunk Capacity (Poisson Theory)  
0 (Chapter 2) with grade of service 0.005 (P0.005).

0 ( iii) For further information on the loop around trunks, refer  
0 to Peripheral Modules - Host, Line Equipment, Section 3.5  
0 of this NTP.

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0 1.1.2 Loop Around Test Line

0 a) General Description

0 The Loop Around Test Line circuit card enables the measurement of  
0 near-to-far trunk losses from class 4 or 5 offices in a DMS-100  
0 Family switching network. The loop around method of trunk trans-  
0 mission testing requires two trunks to be connected together  
0 (looped) at a distant office so that a measurement can be made at  
0 the originating office.

0 The circuit card occupies one card position in a Maintenance  
0 Trunk Module (MTM) and requires two trunk appearances.

0 b) References

0 None

0 c) Provisioning Considerations:

0 ( i) Versions of the card currently available are as follows:

0 NT2X75AA Loop Around Test Line Mu-Law  
0 NT2X75BA Loop Around Test Line A-Law

0 There is one loop around circuit (two trunk appearances)  
0 per card.

0 ( ii) The Loop Around Transmission Test Line Card is required  
0 for DMS-100, DMS-100/200 and DMS-200 offices. Two cir-  
0 cuits are recommended per office.

0 ( iii) The Loop Around Transmission source interface is the  
0 Transmission Test Trunk (TTT).

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0 1.1.3 Transmission Test Trunks

0 (a) General Description

0 The TTT is a 104 test line and test sour consisting of a test  
0 signal generator and a level meter operating digitally samples.  
0 Used also for 100, 102, 103, Synchronous, Non-synchronous and  
0 Transmission Loop Around test line originations. Access is via  
0 the Network.

0 (b) References

0 NTP 297-1001-121 Automatic Trunk Testing Description  
0 NTP 297-1001-516 Trunks Maintenance Reference Manual  
0 NTP 297-2101-516 Line Maintenance Reference Manual

0 (c) Provisioning Considerations:

0 ( i) Each TTT circuit consists of a pair of cards as follows:

- 0 1. PCM Test Signal Generator, NT1X90AA/BA.
- 0 - Generate single freq test tones 0-3996
  - 0 Hz in 4 Hz increments
  - 0 - tone levels 0 to -12.5 dBm @  $\pm 0.1$  dB
  - 0 or +3 to -67.5 dBm @  $\pm 0.5$
  - 0 - filters for quiet termination, 1010 Hz
  - 0 notch and C-msg weighting.
  - 0 - NT1X90AA is for North American
  - 0 application.
  - 0 - NT1X90BA is for International (A-Law)
  - 0 applications.

- 0 2. PCM Level Meter, NT2X96AA/BA
- 0 - measure single frequency tones (zero-
  - 0 crossing detector)
  - 0 - level meter +6 to -88.8 dBm  $\pm 0.01$  dBm
  - 0 - freq meter 0 to 4 KHz @  $\pm 16$  Hz with
  - 0 resolution variable with centre freq
  - 0 - NT2X96AA is for North American
  - 0 applications.
  - 0 - NT2X96BA is for International (A-Law)
  - 0 Applications.

0 ( ii) Provisioned for DMS-100 and DMS-200 offices.

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0  
0 ( iii) Provisioning is based on the requirement DMS Automatic  
0 Trunk Testing (ATT) which is normally scheduled for oper-  
0 ation during off-peak hours. ATT is an optional feature  
0 of DMS-100 and DMS-200 offices. TTT circuits provisioned  
0 per ATT requirements will also satisfy daily manual test  
0 and diagnostic requirements including standard test line  
0 functions. This provisioning will also satisfy the in-  
0 creased requirements of manual testing in a non-ATT of-  
0 fice.

0 ( iv) The following assumptions apply:

0 Automatic trunk testing will be scheduled to run daily  
0 for the entire office.

0 Assume that every active ATT process effectively ties up  
0 one TTT for the duration of its execution regardless of  
0 the test being performed.

0 TTT average holding time per test 20 seconds.

0 Test Interval is the number of continuous hours per day  
0 reserved for ATT testing. Six hours is recommended.

0 ( v) Number of TTT's to be provided is based on the number of  
0 outgoing trunks in the office.

0 # TTT = No. O/G Trunks \* Holding Time/Test  
0 -----  
0 3600 \* Test Interval

0 If the number of TTT is greater than 15, then testing  
0 must be split over two nights with half the trunks tested  
0 each night. In this case half the calculated TTT's are re-  
0 quired.

0 ( vi) Provide a minimum of 2 maximum 15 TTT's per office.

0 Note: Includes the O/G portion of 2 WY trunks.



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0 1.1.4 Transmission Test Unit (TTU)

0 a) General Description

0 The TTU is a programmable digital signal generator and processor  
0 which is capable of performing a variety of transmission measure-  
0 ments and related maintenance functions on line circuits and  
0 trunk circuits. It is utilized in diagnostic routines applied to  
0 Digitone and MF receivers. Access is via the switching network.

0 The NT2X47-- & NT2X56-- Circuit Pack, which mount on a Mainte-  
0 nance Trunk Module (MTM), form the Transmission Test Unit (TTU).  
0 The NT2X47 Circuit Pack interfaces to the Central Control (CC)  
0 which specifies the type of testing procedure required of the  
0 TTU. Once specified by the CC, the NT2X47 will control the gen-  
0 eration and reception of tones necessary for the test and pass  
0 them on to the Digital Filter CP (NT2X56). The NT2X56 will fil-  
0 ter, process and execute the instructions and generated tones re-  
0 ceived from the NT2X47.

0 b) References

0 NTP 297-1001-121 Automatic Trunk Testing Description  
0 NTP 297-1001-455 DMS-100 Office Parameters Reference Manual  
0 NTP 297-1001-516 Trunks Maintenance Reference Manual  
0 NTP 297-2101-516 Line Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) Each TTU circuit consists of a Control Signal Generator  
0 Card and a Digital Filter. The TTU mounts on a MTM.

0 Transmission Test Unit Control Signal Generator,  
0 NT2X47AA/AB/AC/BA:

- 0 - generates single frequency test tones 4 to
- 0 3996 Hz, in steps of 4 Hz
- 0 - tone levels -60 dBm to +3 dBm at  $\pm 0.25$  dB
- 0 - quiet termination

0 Transmission Test Unit Digital Filter, NT2X56AA/AB/BA:

- 0 - processes tone data in the frequency range
- 0 4 Hz to 4 KHz
- 0 - can process combinations of 10 filter

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0 functions simultaneously.

0 ( ii) The following pair of interconnected cards can be provi-  
0 sioned together to form a TTU for the listed test proce-  
0 dure type.

| 0 | CP       | DF       | Test Proceedure Type         |
|---|----------|----------|------------------------------|
| 0 | NT2X47AA | NT2X56AA | ATME2 (Rated MD)             |
| 0 | NT2X47AB | NT2X56AA | ATME2 (DMS-300 Offices)      |
| 0 | NT2X47AC | NT2X56AB | ATME2 (104 Test Line) &      |
| 0 |          |          | ATMS (105 Test Line)         |
| 0 | NT2X47AD | NT2X56AB | ALT (Automatic Line Testing) |
| 0 |          |          | ATMS (105 Test Line)         |
| 0 | NT2X47BA | NT2X56BA | International (A-Law)        |
| 0 |          |          | ATMS.                        |
| 0 | NT2X47AB | NT2X56BA | International (A-Law)        |
| 0 |          |          | ATME2.                       |

0 1. The NT2X47AD and NT2X56AB cards can functionally re-  
0 place the existing NT2X47AA, NT2X56AA and the  
0 NT2X47AC,NT2X56AB TTU cards. All three pairs of  
0 these cards can exist together in the same office.  
0 However, NT2X47AA must be paired with NT2X56AA;  
0 NT2X47AC with NT2X56AB; and NT2X47AD with NT2X58AB.

0 2. The addition of Echo Return Loss (ERL) and Singing  
0 Return Loss (SRL) tests to the Automatic Transmission  
0 Measurement System (ATMS) (i.e. 105 Test line) has  
0 prompted the introduction of the Transmission Test  
0 Unit Control Processor (NT2X47AD). The ERL & SRL in-  
0 volve measuring the return loss of a bandlimited  
0 white noise signal over a trunk circuit.

0 The optional feature, ATMS, can be provided to exist-  
0 ing offices by only adding packs (NT2X47AD, NT2X56AB)  
0 sufficient for ATMS. Existing TTU packs (NT2X47AA,  
0 NT2X56AA and NT2X47AC, NT2X56AB) need not be  
0 retrofited in order to provide the ATMS feature.

0 3. Although the ATMS packs can be selected for regular  
0 TTU functions, this will only be allowed when  
0 non-ATMS TTU packs are not available.

0 4. The ATMS feature will be available in BCS 10 as an  
0 optional feature package. The only pre-requisite is

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0 that the Common Basic feature package must also be  
0 provided.

0 5. All initial and extension offices will provision the  
0 NT2X47AD and NT2X56AB for TTU requirements.

0 6. The NT2X47AB and NT2X56AA cards are required for the  
0 Automatic Transmission Measuring and Signalling Test-  
0 ing Equipment (ATME) feature in a DMS-300 Gateway of-  
0 fice.

0 7. The NT2X47BA and NT2X56BA cards are required for the  
0 standard A-law TTU for International offices. The  
0 ATMS feature can be provided for this International  
0 TTU. NT2X47BA does not support the ATME2 test. In-  
0 stead, the Mu-law TTU for domestic offices, NT2X47AB,  
0 in combination with the NT2X56BA A-law Transmission  
0 Test Filter, is to be provided for this application.

0 ( iii) Provisioning of TTU's for Automatic Line Testing (ALT)

0 The ALT has two (2) versions of diagnostics. Short and  
0 extended. In order to check the Pulse Coded Modulation  
0 (PCM) path to and from the line cards, as well as the an-  
0 analog path of the Voice Frequency (VF) transformer the  
0 short diagnostic routine performs the following tests;

- 0 o Trans-hybrid loss test
- 0 o Attenuation 7DB pad test
- 0 o Noise (notch & weighted) test
- 0 o Ring Supervision (ring relay) test

0 It is suggested to provide the maximum of one (1) TTU per  
0 LTU (for both Host and Remote LTUs), or:

0 TTU for ALT Total No. of Lines X Holding Time/Test  
0 (short diag = -----  
0 test) 3600 X Test Interval

0 where,

0 Total No. of lines includes all Local, Remote and  
0 Subscriber Carrier lines to be tested by the short  
0 diagnostic routine.

0

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0 Holding Time/Test is seven (7) seconds for a short  
0 diagnostic test.

0 Test interval is in hours (6 hours are recommended).

0 The Extended diagnostic routine will check all of the  
0 line circuit for correct operation while performing the  
0 following tests.

0 o Trans-hybrid loss test  
0 o Attenuation 7DB pad test  
0 o Noise (notch & weighted) test  
0 o Ring Supervision (ring relay) test  
0 o Cutoff relay test  
0 o Battery feed resistor test  
0 o Loop detector test  
0 o Reversal relay test  
0 o Ground start relay test  
0 o Ground start detector test  
0 o Flux cancellation circuitry test  
0 o +48V relay test  
0 o Ring supervision (ring relay) test  
0 o Test access relay test  
0 o Subscriber loop test  
0 o Loop signalling at line card  
0 o Loop signalling at key set  
0 o LCM buffer full flag high test  
0 o LCM buffer full flag low test

0 The holding time to execute an extended diagnostic test  
0 is 25 seconds.

0 TTU for ALT Total No. of Lines X Holding Time/Test  
0 (extended = -----  
0 diag test) 3600 X Test Interval

0 where,

0 Total No. of lines includes all Local, Remote and  
0 Subscriber Carrier lines to be tested by the extended  
0 diagnostic routine.

0 Holding Time/Test is 25 seconds for a extended diag-  
0 nostic test.

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0 Test interval is in hours.

0 If ALT has been activated then, at any point in time, several different test resources will be in operation. Manual testing of lines has precedence for the completion of system resources. Thus, ALT will be suspended for the duration of the manual test. On completion of the manual test the ALT will resume.

0 The ALT software feature is contained as part of package NTX054AA - Line Test Position (LTP). For U.S. offices, the LTP software is contained in all DMS-100 & DMS-100/200 Master Package Selections.

0 ( iv) Provisioning of TTU's for an Office Requiring Automatic Transmission Measurements System (ATMS) (i.e. 105 Test Line).

0 ATMS provides 2 way transmission loss and noise measurements on an outgoing or an outgoing portion of a 2 way trunk to the distant 105 terminating test line.

0 Total No. Forecast Outgoing Trunks  
0 ----- X Holding Time/Test  
0 TTU for 5  
0 ATMS (105 = -----  
0 test) 3600 X Test Interval

0 where,

0 Total No. of outgoing or outgoing portion of 2 way trunks. This quantity is divided by five (5) so that one fifth of the trunks will be tested per day.

0 Holding Time/Test is 20 seconds for an ATMS test.

0 Test interval is in hours.

0 ATMS will measure the following;

0 o Transmission loss  
0 o Noise  
0 o Echo return loss

0

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- 0 o Singing point return loss  
0 o High and low frequency loss

0 ATMS or 105 test line software is optionally available in  
0 the following packages;

0 NTX136AA - Automatic Transmission Measurement  
0 System  
0 NTX903AA - Transmission Measurements  
0 NTX052AB - Remote Office Test Line

0 ( v) For A DMS-200 office (toll only) without the ATMS fea-  
0 ture, provide one TTU. This is required only for MF re-  
0 ceiver diagnostics.

0 ( vi) Total quantity of TTU's to be provided for an office with  
0 or without the ALT feature and with the ATMS feature is  
0 equal to the quantity determined in item (iii) plus the  
0 quantity determined in item (iv).

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0 1.1.5 102 Test Trunk (Milliwatt)

0 a) General Description

0 The 102 Test Trunk (Milliwatt) provides either a 1004 Hz milli-  
0 watt at 1004 Hz or a quiet termination for maintenance applica-  
0 tions in a DMS-100 and DMS-200 office.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) The 102 Test Trunk (Milliwatt) cards available are:

|   |                                   |          |
|---|-----------------------------------|----------|
| 0 | 102 Test Trunk                    | NT1X00AA |
| 0 | 102 Test Trunk                    | NT1X00AB |
| 0 | International 102 Test Trunk      | NT1X00AE |
| 0 | 102 Terminating - 10 dB Test Line | NT1X00AF |
| 0 | 102 Terminating - 20 dB Test Line | NT1X00AG |
| 0 | 102 Terminating - 15 dB Test Line | NT1X00AH |
| 0 | 102 Test Trunk (China)            | NT1X00KA |

0 ( ii) Each card contains one test circuit which can be con-  
0 nected to either or both of two trunk appearances. The  
0 card occupies one card position in a Maintenance Trunk  
0 Module (MTM) which connects up to 30 trunk appearances to  
0 one Network port.

0 ( iii) The features of the 102 test trunk cards are:

0 1. Maintenance applications include:

0 - Common office milliwatt supply  
0 - General testing and calibration  
0 - Trunk and line tests  
0 - Test position requirements  
0 - Automatic testing

0 2. Stable milliwatt test tone level.  
0 No variation.

0 3. Connection of test circuit and application of  
0 tests under software control, via signal  
0 distributions (sd) from MTM.

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0 4. Signal Specifications - 102 Test Trunk

| 0 | Version       | Freq            | Level           |
|---|---------------|-----------------|-----------------|
| 0 | NT1X00AA & AB | 1004 Hz-0.02 Hz | 0 dBm-0.01 db   |
| 0 | NT1X00AE      | 1020 Hz-0.02 Hz | -10 dBm-0.01 db |
| 0 | NT1X00AF      | 1004 Hz-0.02 Hz | -10 dBm-0.01 db |
| 0 | NT1X00AG      | 1004 Hz-0.02 Hz | -20 dBm-0.01 db |
| 0 | NT1X00AH      | 1004 Hz-0.02 Hz | -15 dBm-0.01 db |



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0 1.1.6 Mechanized Loop Testing (MLT)

0 (a) General Description

0 Mechanized Loop Testing (MLT) refers to the interface of the  
0 Western Electric Mechanized Loop Testing System (MLT 1 or MLT 2)  
0 to a DMS-100F Switch. This interface is required so that the  
0 Western Electric MLT 1 or MLT 2 can gain metallic access and test  
0 subscriber lines working out of a DMS-100F. This interface and  
0 test trunk arrangements support all MLT 1 or MLT 2 tests. The  
0 tests run on the subscriber loops include measuring foreign AC  
0 and DC voltage, resistance, etc.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules

0 (c) Provisioning Considerations

0 ( i) The Western Electric Mechanized Loop Testing System (MLT  
0 1 or MLT 2) will interface to the DMS-100F Switch via a  
0 modified test trunk. A NT2X90AD test multiple will pro-  
0 vide all functions currently supported by previous vin-  
0 tages of the NT2X90 CP and will support the Subscriber  
0 Carrier module loop testing requirements. Subscriber Car-  
0 rier modules refer to the SMS, SMR, and SMU peripheral  
0 modules in a DMS office.

0 ( ii) For DMS offices containing line cards only, the test mul-  
0 tiple CP is the only requirement for mechanized line  
0 testing.

0 ( iii) For DMS offices containing Subscriber Carrier modules  
0 (with or without line cards), in addition to the test  
0 multiple CP, an applique circuit must also be provisioned  
0 to support line testing results to the Mechanized Loop  
0 Testing system (MLT). The applique will provide DC  
0 signals required to report channel test results to the  
0 MLT system.

0 ( iv) For applique requirements in a DMS office, the engineer  
0 should order the NT3J00BA applique shelf and the  
0 NT3J00BB applique circuit pack. The applique shelf will  
0 house ten (10) applique circuit packs. Offices containing  
0 SMS, SMR and SMU peripherals may share applique facili-  
0 ties. The applique CP is required for any interface test

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0 multiple CP which utilizes Mechanized Loop Testing (MLT)  
0 on subscriber carrier modules SMU, SMS, and SMR.

0 ( v) An applique circuit pack contains two (2) circuits. Each  
0 circuit will interface one test multiple CP provisioned  
0 for line testing to the remote terminals for loop test-  
0 ing. An applique CP is required for each NT2X90AD test  
0 trunk connecting to a MLT.

0 ( vi) A Signal Distribution circuit, (NT2X57AA) is required for  
0 each applique circuit pack provisioned to operate relays  
0 on the CP.

0 ( vii) Access to the subscriber carriers is interfaced via the  
0 DMS metallic test access (MTA). One MTA vertical can ac-  
0 cess one subscriber carrier site. Each site can have a  
0 maximum of ten (10) SLC-96's or ten (10) DMS-1R's.

0 When using the NT2X46AB MTA configuration, if there are  
0 no more than ten (10) SLC-96's per site, one connector  
0 (C01-C10) should be cabled to the DF for every two sites.  
0 One connector can access two MTA verticals. This option  
0 shall only be used for offices having available connec-  
0 tors on existing MTA units.

0 The NT3X09BA MTA configuration shall be used on all ini-  
0 tials and offices adding MTAs. Refer to Section 3.5 Pe-  
0 ripheral Modules for more information.

0 (viii) The applique shelf is mounted in a standard MIS frame and  
0 is seven (7) inches high by twenty six (26) inches wide.  
0 The applique circuit pack is packaged on a double wide  
0 circuit pack. Cards are to be located in odd slots 03  
0 through 21. An NT3J00BC applique power supply is always  
0 provided in slot 01 of the shelf.

0 ( ix) The applique shelf should be fused at 1 1/3 amps with  
0 power terminations at TB1-1 (-48V) and TB1-2 (GRD) using  
0 22 AWG wire.

0 ( x) The applique shelf is cabled to the distributing frame ia  
0 four (4) NT0X26UE 50 pin connectorized cables. These ca-  
0 bles terminate on the following shelf connectors:

0 Connector J1 - cabling circuits 01-06, slots 03,05,07  
0 Connector J2 - cabling circuits 07-12, slots 09,11,13  
0 Connector J3 - cabling circuits 13-18, slots 15,17,19

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0 Connector J4 - cabling circuits 19-20, slot 21

0 Leads for each individual circuit are T, R, TT, RR, SD1,  
0 SD2, SD3, SD4.

0 An 812A cable should also be provided from the NT3J00BA  
0 card cage to the DF for the alarm leads (NO,C).

0 ( xi) Provide one (1) Applique CP and one (1) Applique Power  
0 Supply CP as spares (recommended).

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## 0 2.0 Integrated Bit Error Rate Test Facility

### 0 2.1 Introduction

0 The Integrated Bit Error Rate Test Facility or IBERT is an optional maintenance feature which can be ordered for testing the data loops in a DMS office (i.e. office with DATAPATH features).

0 IBERT is necessary to fulfill two distinct requirements: Datapath bit error rate testing, and Datapath Extension (DPX) maintenance messaging.

0 In conjunction with Datapath maintenance software, Datapath bit error rate testing will provide the DMS craftsperson with the ability to monitor and diagnose from the MAP, the data transmission quality of a selected Datapath line. Current methods of testing Datapath circuits and equipment requires the use of cumbersome external test sets, inaccessible from a MAP and outside the control of any automated DMS/SL-100 maintenance process.

0 A Bit Error Rate Test is a test used to measure the transmission quality of a loop. The basic idea of a BERT is to send a known stream of data over a given loop, and to have this data reflected back to the sender. The received data is then compared with the sent data thereby giving a measure of the transmission quality. By looping back data at different points in the loop and measuring the quality of transmission at each point, faults which may exist on the loop can be isolated.

0 With an external BERT, a piece of test equipment which is not a part of the DMS, regular methods are used to establish a connection between a line to be tested and the test equipment. However, an integrated BERT is a resident piece of equipment in the DMS which is accessed by means of a single command located at the LTPMAN level of the MAP. The benefits of this feature are a simpler method of testing Datapath loops as well as dropping the need for any external test equipment.

0 The IBERT will also be used as a 64 kbps inband signalling interface to the Datapath Extension System (DPX) based on the DE-4E channel bank, providing a maintenance messaging channel between the DMS/SL-100 central control and the DPX. This will give the MAP-situated craftsperson the ability to diagnose the DPX card and the associated Data Unit/Data Line Card (DU/DLC) facility with diagnostics similar to the existing Datapath maintenance or to test the error rate performance of the entire DS1/DPX/DLC/DU facility.

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0 The IBERT can be used to test virtually any type of data line  
0 connected to the DMS which supports the TLINK protocol. This in-  
0 cludes Data Unit, AIM, Data Above Voice, coax eliminator Data  
0 Units and loop extended Data Units (those extended using the Line  
0 Interface Unit and Data Terminating Unit method).

0 Note that the intent of providing an integrated BERT is to en-  
0 hance the maintenance capabilities for Datapath. This is not  
0 meant to be used as a tool for networks or speech links within  
0 the DMS. No attempt is made by this feature to provide a BERT  
0 while a data unit is involved in a call with another data unit.  
0 For this type of testing, an external BERT must still be used.

## 0 2.2 Features

0 None.

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## 0 2.3 Equipment Provisioning

### 0 2.3.1 Integrated Bit Error Rate Test Facility

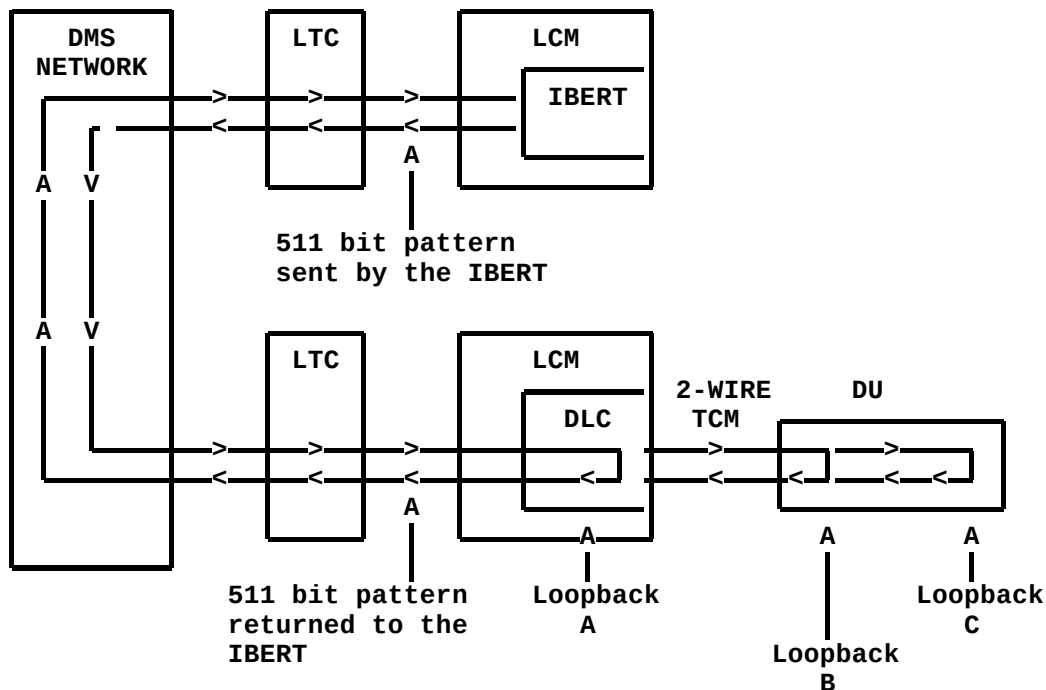
#### 0 (a) General Description

0 The IBERT will perform the following functions:

- 0 - Transmit standard 511 or 2047-bit data test pattern at  
0 50 bps to 19.2 kbps asynchronous or 1.2 kbps to 64 kbps  
0 synchronous using T-link
- 0 - Transmit standard 511 or 2047-bit data test pattern at  
0 64 kbps without T-link handshaking
- 0 - Transmit standard 511 or 2047-bit data test pattern at  
0 56 kbps with a ones density suitable for T-carrier,  
0 without T-link handshaking
- 0 - Receive data in any of the above formats and detect bit  
0 errors and sync losses in the bit stream
- 0 - Count the number of error free seconds and total number  
0 of seconds in a test
- 0 - Derive data timing from the 64 kbps channel rate with  
0 the option to derive clocking from the received data  
0 stream if the far end uses external clocking (indicated  
0 in T-link handshake)
- 0 - When in T-link mode adapt the data transmission and re-  
0 ception rate to the far end equipment
- 0 - Allow the MAP user to do the following:
  - 0 - activate a loopback at the line card or set to be  
0 tested
  - 0 - start BERT as one of the following:
    - 0 1. 64 kbps (no T-link handshake)
    - 0 2. 56 kbps (no T-link handshake)
    - 0 3. T-link adaptive data rate



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Typical Datapath Bit Error Rate Test Setup

Figure 37.16

The loopbacks labelled A, B and C in the figure are respectively a 64 Kilo-bit loopback at the Data Line Card (DLC), a 64 Kilo-bit loopback at the Data Unit (DU) and a loopback at the RS-232C interface of the Data Unit. These loopbacks correspond respectively to the LOOPBK DLC, LOOPBK DU\_64K and LOOPBK DU commands at the LTPMAN level of the MAP.

As can be seen from the diagram, the 511 bit pattern is sent from the IBERT through the network, out to the line in question and is looped back from wherever the loopback is set (either A, B or C) through the network to the IBERT where it is compared with the pattern that was sent.

Optionally, no loopback may be set. This is referred to as a straight away test. In this case, an external BERT is



0 connected to the Data Unit being tested. An external BERT  
0 takes care of receiving the bit pattern sent by the IBERT  
0 and sending its own bit pattern back. This scenario is  
0 generally used for verifying the accuracy of the IBERT.  
0 The external BERT would be used in this case to inject er-  
0 rors into the pattern sent back to the IBERT so that it  
0 can be verified that in fact the IBERT detected the error  
0 and reported it. Note that in this case the external BERT  
0 used must conform to CCITT standards so that it will gen-  
0 erate the same 511 bit pattern used by the IBERT.

0 A list of Datapath products and the loopback points sup-  
0 ported by each is shown in Figure 37.17

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| Datapath Product     | Loopback A:<br>DLC Loopback | Loopback B:<br>64kb Loopback | Loopback C:<br>DU Loopback |
|----------------------|-----------------------------|------------------------------|----------------------------|
| Low Speed Data Unit  | DLC cutoff relay            | DU TCM interface             | RS232 interface            |
| High Speed Data Unit | DLC cutoff relay            | DU TCM interface             | V35 interface              |
| Coax Eliminator      | DLC cutoff relay            | DU TCM interface             | Not Supported              |
| AIM/AILC             | AILC cutoff relay           | Not Supported                | RS422 firmware I/F         |
| DPX                  | DLC cutoff relay            | DU TCM interface             | DU RS232/V35 interface     |
| LIU/DTU              | DLC cutoff relay            | LIU TCM interface            | DTU RS232/V35 interface    |

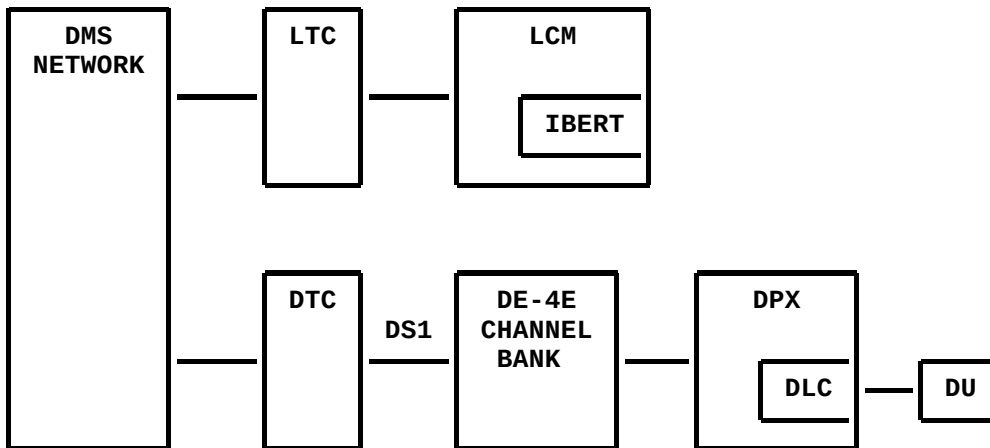
Note: The LIU/DTU combination also supports several other loopbacks including loopbacks within the loop extension data facility. For more information see "Datapath Loop Extension Maintenance", by J. Henderson, FDOC BV1342, October 1985.

#### Datapath Products and Supported Loopback Locations

Figure 37.17

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A pictorial representation of a DPX Maintenance Messaging setup is shown in Figure 37.18.



Typical DPX Maintenance Messaging Setup

Figure 37.18

To perform maintenance diagnostics on the DPX/DLC/DU facility shown in Figure 37.18, the craftsperson would post the associated DU on the MAP and enter the diagnostic command. The maintenance software recognizing this as a DPX would automatically connect an available IBERT to the DPX. All maintenance messages are subsequently sent to the IBERT but addressed to the far end DPX, DLC, or DU and encoded in the W78 bulk data transfer format. The IBERT removes the messages from the bulk data transfer format and passes them on transparently to the DPX via the inband signalling protocol. All messages addressed to the DLC or the DU are passed on transparently by the DPX.

In this example the DLC/DU configuration illustrated could refer to a DLC/low speed DU, DLC/high speed DU, or DLC/coax eliminator.

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0 (b) References

0 "Extension Maintenance", by J. Henderson, FDOC BV1342, October  
0 1985.  
0 |

0 (c) Provisioning Considerations

0 ( i) The hardware of the Integrated BERT (NT6X99AA) resides in  
0 the line drawer (NT6X05AA) of an LCM in a Host office, in  
0 an RSC site, or in an OPM site (or RLCM) taking the phys-  
0 ical space of a two slot line card. The two vertical  
0 slots in the LCM line drawer must be in the same logical  
0 line drawer subgroup (i.e., in the same line subgroup  
0 (LSG)).

0 ( ii) The IBERT must be located in a Line Concentrating Module  
0 (LCM) or Remote Line Concentrating Module (RLCM) which  
0 may or may not be the same LCM or RLCM as the one which  
0 the line it is testing resides. Even though the IBERT  
0 may be located on the same LCM as the line which it is  
0 testing, intraswitching for the connection is not used.  
0 This means that a connection between the IBERT and the  
0 line it is testing will be established through the DMS  
0 network. No connection between the IBERT and the line it  
0 is testing in the LCM, without going through the DMS net-  
0 work, can be established at the present time.

0 ( iii) Although the appearance of the IBERT is that of a line  
0 card, the IBERT is NOT a line card in the normal sense as  
0 there is no subscriber loop or set associated with it.  
0 The only interaction with an IBERT is achieved from a MAP  
0 through the DMS/IBERT messaging interface.

0 ( iv) While BER testing can be performed by either the NT6X99AA  
0 card, which mounts in an LCM, or by the NT4X23AA card,  
0 which mounts in an MTM, there is a software problem that  
0 prevents the NT4X23AA from successfully testing Datapath  
0 Extension trunks. Therefore, it is recommended that the  
0 NT6X99AA be used for DMS-100 and DMS-100/200 offices (lo-  
0 cal and local/toll applications) and the NT4X23AA be used  
0 for DMS-200 offices (toll applications).

0 ( v) A minimum of one (1) NT6X99AA per LCM or 24 per office  
0 (whichever is larger) should be provisioned for basic

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0 test capability in DMS-100 or DMS-100/200 offices. Higher  
0 quantities of test cards will provide faster office cov-  
0 erage.

0 ( vi) For datapath loop testing, due to a high volume of mes-  
0 saging traffic, it is recommended that one (1) IBERT  
0 line card (NT6X99AA) be provisioned per LCM equipped with  
0 a data line card.

0 ( vii) For switch bit error rate testing (in NTX881AC) it is re-  
0 commended that one (1) IBERT line card (NT6X99AA) be pro-  
0 visioned per LCM for every LCM in the office.

0 (viii) Up until BCS-24, the maximum number of IBERT line cards  
0 (NT6X99AA) and DTU BERT Unit (NT4X23AA) circuits (i.e., 2  
0 circuits per card) allowed in an office (Host plus all  
0 associated remotes) is 64.

0 As of BCS-25, the maximum number of NT6X99A cards and  
0 NT4X23AA circuits allowed in an office is 128.

0 For Canadian applications only, if the IBERT line card  
0 requirement exceeds the above software limitations (of 64  
0 and 128 respectively in an office), it is permissible to  
0 perform the associated tests by restructuring the associ-  
0 ated software data tables accordingly (i.e. perform the  
0 required test for the first group of 64 or 128 IBERT line  
0 cards, restructure applicable software data tables for  
0 the next group of 64 or 128 IBERT line cards, perform the  
0 required test, and so on).

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( ix) The data rates supported by IBERT are the following:

| Data Rate<br>(bps) | Asynchronous | Synchronous |
|--------------------|--------------|-------------|
| 50                 | *            |             |
| 75                 | *            |             |
| 110                | *            |             |
| 134.5              | *            |             |
| 150                | *            |             |
| 300                | *            |             |
| 600                | *            |             |
| 1200               | *            | *           |
| 1800               | *            |             |
| 2000               | *            |             |
| 2400               | *            | *           |
| 3600               | *            |             |
| 4800               | *            | *           |
| 7200               | *            |             |
| 9600               | *            | *           |
| 19200              | *            | *           |
| 48000              |              | *           |
| 56000              |              | *           |
| 64000              |              | *           |

( x) The applicable software is in the following software packages:

NTX259AA DATAPATH Extension - DPX

\* NTX881AC Switch Bit Error Rate Maintenance  
(Upgrade of NTX881AB)

\* NTX885AB Switch Path Diagnostics (SPD)  
(Upgrade of NTX885AA)

\* NTXP13AA ENET Switch Path Diagnostics (SPD)

\* When ordering software package NTX881AC, it is recommended that NTX885AB/NTXP13AA be ordered as well.

When ordered by the Customer, the Switch Path Diagnostics (SPD) software package is to be furnished as NTX885AB for non-ENET SuperNode and NT-40 offices and furnished as NTXP13AA for ENET SuperNode offices.

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0 If software package SPD exists in a DMS office prior to  
0 an ENET upgrade, then both NTX885AB and NTP13AA are to  
0 be provided in the retrofit software load to provide both  
0 Network Module (NM) and ENET coverage. NTX885AB is to be  
0 removed on the next BCS application following the up-  
0 grade.

0 The above rules are an example of unautomated rules which  
0 are stored in a document entitled "SW Package Ordering  
0 Rules - Not Automated" in the SMS Documentation Menu in  
0 CODA.

0 Interdependencies for NTX259AA:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX100AA Integrated Business Networks - Basic (IBN)  
0 NTX106AA IBN - Proprietary Business Set  
0 NTX250AA DATAPATH - Basic  
0 NTX270AA New Peripheral Maintenance Package  
0 NTX901AA Local Features 1

0 Interdependencies for NTX881AC:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package  
0 NTX901AA Local Features 1

0 Interdependencies for NTX885AB:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package

0 Interdependencies for NTP13AA:

0 NTXE01AA Enhanced Network - Basic  
0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package

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0 2.3.2 Console Features Requiring Loop-Back Trunks

0 When a console feature, that is not compatible with an Integrated  
0 Digital Services Network User Part (ISUP) trunk, is activated, a  
0 loop-back trunk is required.

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0 2.3.3 Loop-Back Trunk Requirement

0 (a) General Description

0 Loop-back trunks are required in an office utilizing CCS7 Trunk  
0 Signalling to accommodate lines equipped with incompatible fea-  
0 tures in the CCS7 trunk.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 ( i) Provisioning calculations for loop-back trunks are as  
0 follows:

$$\frac{(A+B+C+D+E+F \text{ calls/hr}) \times \text{Avg Hold Time (sec)}}{100}$$

0 = CCS Loop-Back

0 Where:

0 A = HDBH calls utilizing CCS7 trunks that  
0 originate from and terminate on POTS  
0 and/or MDC lines equipped with Basic Three  
0 Way Call.

0 B = HDBH calls utilizing CCS7 trunks that  
0 originate on POTS lines with AIOD.

0 C = HDBH calls utilizing CCS7 trunks that  
0 terminate on POTS and/or MDC lines with  
0 FNT.

0 D = HDBH calls utilizing CCS7 trunks that  
0 originate from coin lines with LCO  
0 feature.

0 E = HDBH calls utilizing CCS7 trunks that  
0 terminate on MDC lines via DISA.

0 F = HDBH calls utilizing CCS7 trunks that  
0 terminate on ESAL lines.

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0 Refer to traffic provisioning tables (Chapter 2) for  
0 trunk capacities to determine the required trunk quanti-  
0 ties for POTS/MDC loop-back trunks.

0 ( ii) Loop-Back Trunk Requirements (BCS-24)

0 The following MDC features are incompatible with CCS7  
0 trunks in BCS-24 and will require loop-back trunks be-  
0 tween the MDC line and the CCS7 trunk:

- 0 1) Basic 3-Way Calling (3WC)
- 0 2) Free Number Termination (FNT)
- 0 3) Direct Inward System Access (DISA)

0 ( iii) Loop-Back Trunk Requirements (BCS-25, BCS-26)

0 Loop-back trunking is required for the following condi-  
0 tions:

- 0 1) ISUP to DISA (trunk is released after digits are col-  
0 lected)
- 0 2) ISUP to LCO
- 0 3) ISUP to AIOD

0 ( iv) Loop-Back Trunk Requirements (BCS-27+)

0 Loop-back trunking is required for the following condi-  
0 tions:

- 0 1) ISUP to DISA (trunk is released after digits are col-  
0 lected)
- 0 2) ISUP to LCO

0 ( v) Loop-Back Trunk Requirements (BCS-31)

0 Loop-back trunking is required for the following condi-  
0 tions:

- 0 1) ISUP to DISA (trunk is released after digits are col-  
0 lected  
0 - only if there are no UTRs provisioned on the DTC  
0 terminating the ISUP trunk.

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0 ( vi) Loop-Back Span Provisioning

0 No. Loop-Back T1 Spans =

0 #Console # POTS-MDC  
0 Loop-Back Trunks + Loop-Back Trunks  
0 ----- (Round Up)  
0 24

0 #Total T1 Spans Req'd = #Loop-Back T1 Spans X 2

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0 2.3.4 Console Features Requiring Loop-Back Trunks

0 (a) General Description

0 Loop-back trunks are required in an office utilizing a console  
0 feature that is not compatible with an Integrated Digital Ser-  
0 vices Network User Part (ISUP) trunk.

0 (b) Reference

0 None

0 (c) Provisioning Considerations:

0 ( i) Console Loop-Back Trunk Provisioning (BCS-24)

0 Loop-back trunks must be provisioned for all ISUP trunks  
0 which require access to the console. These can be di-  
0 vided into four categories:

- 0 1) ISUP trunk to console requiring call  
0 extension
- 0 2) ISUP trunk to console not requiring call  
0 extension
- 0 3) Console extended to an ISUP trunk
- 0 4) Console originated to an ISUP trunk

0 The call rate for console calls can be calculated based  
0 on the number of Attendant Consoles (AC) in the office,  
0 the average length of all console queues in the office  
0 (QL) and the average time required for a console to proc-  
0 ess a call (T), by using the following formulas:

$$\begin{array}{l} 0 \qquad \qquad \qquad \#AC + QL \\ 0 \text{ Terminating Call Rate} = \frac{\text{-----}}{T} \\ 0 \end{array}$$

$$\begin{array}{l} 0 \qquad \qquad \qquad \#AC \\ 0 \text{ Originating Call Rate} = \frac{\text{---}}{T} \\ 0 \end{array}$$

0 These call rates can be multiplied by the percentage of  
0 calls in each of the four categories to determine the  
0 call rate for each category.

0

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0 The holding times may be different for each of the four  
0 call types.

0 1) For ISUP trunk to console calls that do require ex-  
0 tending, the holding time is equivalent to the aver-  
0 age holding time of the call plus the average console  
0 call handling time (T).

0 2) For ISUP trunk to console calls that do not require  
0 extending, the holding time is equivalent to the av-  
0 erage console call handling time (T).

0 3) For console extending to an ISUP trunk, the holding  
0 time is equivalent to the average holding time of an  
0 ISUP trunk to console call that requires extension  
0 less the average console call handling time.

0 4) For console originating to an ISUP trunk, the holding  
0 time is equivalent to the average holding time of the  
0 call plus the average console call handling time (T).

0 The total console loop-back load required can be calcu-  
0 lated by adding the required load for each of the four  
0 categories. The loop-back load for each category can be  
0 calculated using the following:

0 Loop-Back Trunk Load = Call Rate X Holding Time  
0 per Category

0 Total Loop-Back Load = Category 1 + Category 2  
0 + Category 3 +  
0 Category 4

0 After the total console loop-back load is determined, the  
0 total number of trunks can be calculated using the  
0 Poisson Tables. The number of loop-back trunks should  
0 not exceed the number of ISUP trunks.

0 ( iii) Console Loop-Back Trunk Provisioning (BCS-25)

0 For BCS-25, all attendant calls and features require  
0 loop-back treatment only when the calls are being ex-  
0 tended. The loop-back trunk requirement is reduced be-  
0 cause the loop-back trunk is released after the call is  
0 extended.

0 ( iv) Console Loop-Back Trunk Provisioning (BCS-26 to BCS-31)

0  
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0 For BCS-26 to BCS-31, the loop-back requirement is re-  
0 duced. The Code Calling feature, the Conference Hold &  
0 Release feature, and the End-to-End Signaling feature is  
0 the only requirement for loop-back treatment.

0 ( v) Loop-Back Span Provisioning

0 No. Loop-Back T1 Spans =

0 #Console # POTS-MDC  
0 Loop-Back Trunks + Loop-Back Trunks  
0 ----- (Round Up)  
0 24

0 #Total T1 Spans Req'd = #Loop-Back T1 Spans X 2

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0 3.0 Maintenance Trunk Module / Remote Service Module Prov.

0 The MTM and RSM are part of the DMS-100 Family line of products.

0 3.1 HARDWARE PROVISIONING

0

0 3.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 This document introduces several MTM/DRA Common CP fills. In  
0 Canada, the shelves to which these fills are assigned have been  
0 superseded by shelves which support the TM Control CP, NT4X65AB.  
0 Refer to ECM430 for details regarding the latest MTM/DRA shelves  
0 and Common CP fills for new Canadian applications.

0 In the U.S. and International markets, the NT4X65AB TM Control CP  
0 is not used. The MTM/DRA Common CP fills in this ECM thus still  
0 apply to the U.S. and International markets.

0 The Remote Service Module (RSM) shelf and Common CP fill intro-  
0 duced by this ECM apply to both the Canadian and U.S. markets.

0 3.1.2 HARDWARE DEPENDENCIES

0

0 | P and C SIDE PORT REQUIREMENTS

0

0 | Not Applicable

0

0 | DMS BUS PORT REQUIREMENTS

0  
0 | Not Applicable

0 | CIRCUITS PER CARD

0  
0 | Not Applicable

0 | DISCRIMINATION NUMBERING

0  
0 | Not Applicable

0 3.1.3 PROVISIONING CONSIDERATIONS

0

0 2.4.1 MTM Shelves

0 Provisioning rules for new MTM, IMTM and RSM shelves remain the  
0 same. Refer to the attached Engineering Manual sections for de-  
0 tails.

0 The NT2X70AE CP shall be the standard Power Converter for all new  
0 MTM/DRA shelves. Per Telco request, existing MTM/DRA shelves can  
0 be upgraded to the NT2X70AE CP via the NT2X70AZ Power Converter  
0 Kit.

0 When an Audio Tone Detector CP, NT5X29AC, is mounted on an MTM  
0 equipped with a TM Processor CP NT0X70AA, then NT2X58CH, Product

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0 Change Kit to Provide NT0X70AC, must be provided to replace  
0 NT0X70AA with an NT0X70AC.

#### 0 2.4.2 Multi-Circuit Cards

0 The MTM backplane is designed to access up to 30 enable signals  
0 (circuits). Each provisionable MTM slot has access to these 30  
0 enable signals per the following chart.

| 0 | SLOT | ENABLE/CIRCUIT | ENABLE/CIRCUIT ACCESS | TOTAL ENABLES |
|---|------|----------------|-----------------------|---------------|
| 0 | 05   | 00             | 00-29                 | 30            |
| 0 | 06   | 02             | 02-29                 | 28            |
| 0 | 07   | 04             | 04-29                 | 26            |
| 0 | 08   | 06             | 06-13                 | 8             |
| 0 | 09   | 08             | 08-15                 | 8             |
| 0 | 10   | 10             | 10-17                 | 8             |
| 0 | 11   | 12             | 12-19                 | 8             |
| 0 | 12   | 14             | 14-21                 | 8             |
| 0 | 13   | 16             | 16-23                 | 8             |
| 0 | 14   | 18             | 18-25                 | 8             |
| 0 | 15   | 20             | 20-27                 | 8             |
| 0 | 16   | 22             | 22-29                 | 8             |

0 o The ENABLE/CIRCUIT column represents the initial circuit  
0 the slot has access to.

0 o The ENABLE/CIRCUIT ACCESS column represents the entire  
0 range of enable/circuits the slot has access to.

0 o The TOTAL ENABLES column represents the total number of  
0 enable/circuits the slot has access to.

0 The enable signals on the backplane are arranged to allow  
0 2-circuit cards to be placed in adjacent slots, 4-circuit cards  
0 to be placed in alternating slots, and 8-circuit cards to be  
0 placed in every fourth slot, etc. Circuit packs that use less  
0 than the available enables for that slot will access the lowest  
0 available enables.

0 Slots 05,06 and 07 are the only slots that have access to more  
0 than eight (8) enable signals. Therefore, cards such as the  
0 NT5X29 that utilize 16 circuits may only be assigned to slots  
0 05,06 or 07. If the NT5X29 is assigned to slot 05, the next  
0 available slot is 13. If the NT5X29 is assigned to slot 06, the  
0 next available slot is 14. The NT5X29 can not be provisioned to

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0 use less than 16 circuits when it is located in slots 05-07 be-  
0 cause it will always use the 16 enables if it has access to them.  
0 It is possible, however, to assign the NT5X29 to a card slot that  
0 accesses 8 enable signals allowing only 8 circuits on the NT5X29  
0 to be accessed. This would allow more of the MTM to be used for  
0 other cards. When an 8 slot 16 circuit card is located in slot  
0 05 then slots 13-16 are still available for other cards if enough  
0 enables are available. Remember that the MTM PM load should be  
0 verified prior to mixing NT5X29's with any other CP.

#### 0 2.4.3 RSM Shelves

0 Provide the following items per customer and office requirements  
0 (one RSM CP Fill is required for each RSM shelf ordered):

0 NT2X58CF Remote Service Module.....replaces the NT2X58AE  
0 NT2X58CM RSM Common CP.....replaces the NT2X58CE

0 Provisioning rules remain the same. Refer to the attached Engi-  
0 neering Manual sections for details.

0 The NT2X70AE CP shall be the standard Power Converter for all new  
0 RSM shelves. Per Telco request, existing RSM shelves can be up-  
0 graded to the NT2X70AE CP via the NT2X70AZ Power Converter Kit.

#### 0 3.1.4 OFFICE LAYOUT INFORMATION

0 Not applicable.

#### 0 3.1.5 TRAFFIC TABLES

0 Not applicable.

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0 3.2 PRODUCT/SYSTEM SPECIFICATION

0

0 3.2.1 PHYSICAL CHARACTERISTICS

0

0 Not Applicable

0 3.2.2 EMI/EARTHQUAKE INFORMATION

0

0 N/A

0 3.2.3 SPARING INFORMATION

0

0 Standard sparing criteria will be maintained for the MTM/RSM.

0 3.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 The heat dissipation of each MTM or RSM will be based on its con-  
0 tents. For information on the heat dissipation of each card in a  
0 MTM or RSM shelf, refer to Engineering Manual Section  
0 EMA14-01-000. The maximum allowable dissipation for the  
0 provisionable packs in a MTM or RSM shelf is 110 watts.

0

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0 Chapter 12

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0 | 3.2.5 CURRENT DRAIN INFORMATION

0  
0 | The current drain of a fully-equipped MTM shelf is as follows:

0 | 1.4 amps (-48V nominal, unfiltered)  
0 | 5.0 amps (-48V nominal, filtered)

0 3.3 SOFTWARE PROVISIONING

0

0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not Applicable

0 3.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not Applicable

0 3.3.3 MEMORY PROVISIONING

0  
0 Not Applicable

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0 3.4 REAL TIME IMPACT

0 N/A

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0 4.0 Integrated Bit Error Rate Test Facility (IBERT)

0 1. Introduction

0 1.1 The Integrated Bit Error Ratio Test Facility or IBERT is an op-  
0 tional maintenance feature which can be ordered for testing the  
0 data loops in a DMS office (i.e. office with DATAPATH features).

0 1.2 IBERT is necessary to fulfill two distinct requirements:

0 1) Datapath Bit Error Rate Testing

0 2) and Datapath Extension (DPX) Maintenance Messaging.

0 1.3 Datapath Bit Error Rate Testing

0 1) In conjunction with Datapath maintenance software, it will  
0 provide the DMS craftsperson with the ability to monitor and  
0 diagnose from the MAP, the data transmission quality of a se-  
0 lected Datapath line. Current methods of testing Datapath  
0 circuits and equipment requires the use of cumbersome ex-  
0 ternal test sets, inaccessible from a MAP and outside the  
0 control of any automated DMS/SL-100 maintenance process.

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0 2) A Bit Error Rate Test is a test used to measure the trans-  
0 mission quality of a loop. The basic idea of a BERT is to  
0 send a known stream of data over a given loop, and to have  
0 this data reflected back to the sender. The received data is  
0 then compared with the sent data thereby giving a measure of  
0 the transmission quality. By looping back data at different  
0 points in the loop and measuring the quality of transmission  
0 at each point, faults which may exist on the loop can be iso-  
0 lated.

0 3) At present, the only capabilities provided are for an ex-  
0 ternal BERT. An external BERT is a piece of test equipment  
0 which is not a part of the DMS. Regular methods are used to  
0 establish a connection between a line to be tested and this  
0 external piece of test equipment. An integrated BERT, i.e.  
0 resident piece of equipment in the DMS, has been developed.  
0 The purpose of this feature will be to provide access to this  
0 integrated BERT by means of a single command located at the  
0 LTPMAN level of the MAP. The benefit of this will be a sim-  
0 pler method of testing Datapath loops as well as dropping the  
0 need for any external test equipment.

#### 0 1.4 Datapath Extension (DPX) Maintenance Messaging

0 1) The IBERT will also be used as a 64 kbps inband signalling  
0 interface to the Datapath Extension System (DPX) based on the  
0 DE-4E channel bank, providing a maintenance messaging channel  
0 between the DMS/SL-100 central control and the DPX. This will  
0 give the MAP-situated craftsperson the ability to diagnose  
0 the DPX card and the associated Data Unit/Data Line Card  
0 (DU/DLC) facility with diagnostics similar to the existing  
0 Datapath maintenance or to test the error rate performance of  
0 the entire DS1/DPX/DLC/DU facility.

0 1.5 The IBERT can be used to test virtually any type of data line  
0 connected to the DMS which supports the TLINK protocol. This in-  
0 cludes Data Unit, AIM, Data Above Voice, coax eliminator Data  
0 Units and loop extended Data Units (those extended using the Line  
0 Interface Unit and Data Terminating Unit method).

0 1.6 Note that the intent of providing an integrated BERT is to en-  
0 hance the maintenance capabilities for datapath. This is not  
0 meant to be used as a tool for networks or speech links within  
0 the DMS. No attempt is made by this feature to provide a BERT  
0 while a data unit is involved in a call with another data unit.  
0 For this type of testing, an external BERT must still be used.

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0 2. Product Features

0 2.1 The IBERT will perform the following functions:

- 0 1) transmit standard 511 or 2047-bit data test pattern at 50 bps  
0 to 19.2 kbps asynchronous or 1.2 kbps to 64 kbps synchronous  
0 using T-link
- 0 2) transmit standard 511 or 2047-bit data test pattern at 64  
0 kbps without T-link handshaking
- 0 3) transmit standard 511 or 2047-bit data test pattern at 56  
0 kbps with a ones density suitable for T-carrier, without T-  
0 link handshaking
- 0 4) receive data in any of the above formats and detect bit er-  
0 rors and sync losses in the bit stream
- 0 5) count the number of error free seconds and total number of  
0 seconds in a test
- 0 6) derive data timing from the 64 kbps channel rate with the op-  
0 tion to derive clocking from the received data stream if the  
0 far end uses external clocking (indicated in T-link hand-  
0 shake)
- 0 7) when in T-link mode adapt the data transmission and reception  
0 rate to the far end equipment
- 0 8) allow the MAP user to do the following:
  - 0 - activate a loopback at the line card or set to be tested
  - 0 - start BERT as one of the following:
    - 0 1. 64 kbps (no T-link handshake)
    - 0 2. 56 kbps (no T-link handshake)
    - 0 3. T-link adaptive data rate
    - 0 4. default to (1),(2), or (3) according to type of  
0 loopback selected
  - 0 - inject error(s) in the transmitted data pattern
  - 0 - stop BERT
  - 0 - display test results (bit error count, sync loss count,  
0 total number of bits, etc.)



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0 - display the operating data rate of the test

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0 9) support the inband signalling scheme used for DPX maintenance

0 - on request from DMS/SL-100 send pattern at the start of  
0 the call to put the DPX into maintenance mode

0 - accept messages from DMS/SL-100 addressed to the DPX and  
0 transmit them on transparently via inband signalling

0 - detect inband messages from DPX and send them to the  
0 DMS/SL-100

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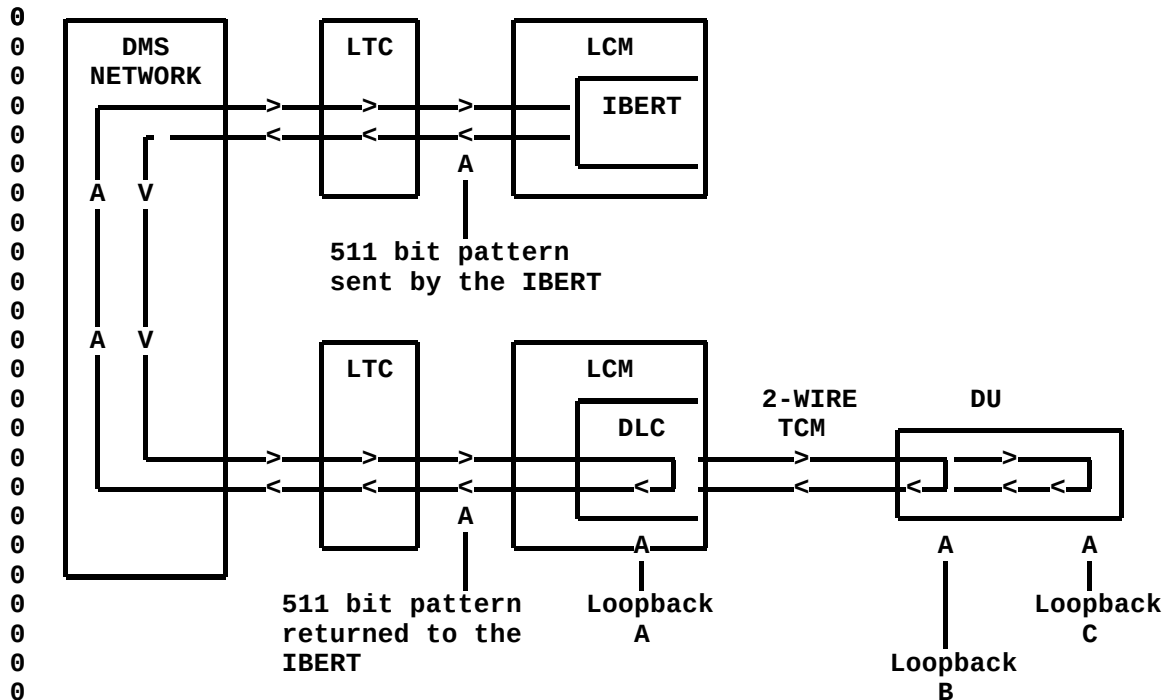
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0 3. Product Description

0 3.1 Datapath Bit Error Rate Testing

0 3.1.1 A pictorial representation of an Integrated BERT is as follows:



0 Typical Datapath Bit Error Rate Test Setup

0 Figure 1

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0 3.1.2 The loopbacks labelled A, B and C are respectively a 64 Kilo-bit loopback at the Data Line Card (DLC), a 64 Kilo-bit loopback at the Data Unit (DU) and a loopback at the RS-232C interface of the Data Unit. These loopbacks correspond respectively to the LOOPBK DLC, LOOPBK DU\_64K and LOOPBK DU commands at the LTPMAN level of the MAP.

0 3.1.3 As can be seen from the diagram, the 511 bit pattern is sent from the IBERT through the network, out to the line in question and is looped back from wherever the loopback is set (either A, B or C) through the network to the IBERT where it is compared with the pattern that was sent.

0 3.1.4 Optionally, no loopback may be set. This is referred to as a straight away test. In this case, an external BERT is connected to the Data Unit being tested. An external BERT takes care of receiving the bit pattern sent by the IBERT and sending its own bit pattern back. This scenario is generally used for verifying the accuracy of the IBERT. The external BERT would be used in this case to inject errors into the pattern sent back to the IBERT so that it can be verified that in fact the IBERT detected the error and reported it. Note that in this case the external BERT used must conform to CCITT standards so that it will generate the same 511 bit pattern used by the IBERT.

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3.1.5 A list of Datapath products and the loopback points supported by each is shown as follows:

| Datapath Product     | Loopback A:<br>DLC Loopback | Loopback B:<br>64kb Loopback | Loopback C:<br>DU Loopback |
|----------------------|-----------------------------|------------------------------|----------------------------|
| Low Speed Data Unit  | DLC cutoff relay            | DU TCM interface             | RS232 interface            |
| High Speed Data Unit | DLC cutoff relay            | DU TCM interface             | V35 interface              |
| Coax Eliminator      | DLC cutoff relay            | DU TCM interface             | Not Supported              |
| AIM/AILC             | AILC cutoff relay           | Not Supported                | RS422 firmware I/F         |
| DPX                  | DLC cutoff relay            | DU TCM interface             | DU RS232/V35 interface     |
| LIU/DTU              | DLC cutoff relay            | LIU TCM interface            | DTU RS232/V35 interface    |

Note: The LIU/DTU combination also supports several other loopbacks including loopbacks within the loop extension data facility. For more information see "Datapath Loop Extension Maintenance", by J. Henderson, FDOC BV1342, October 1985.

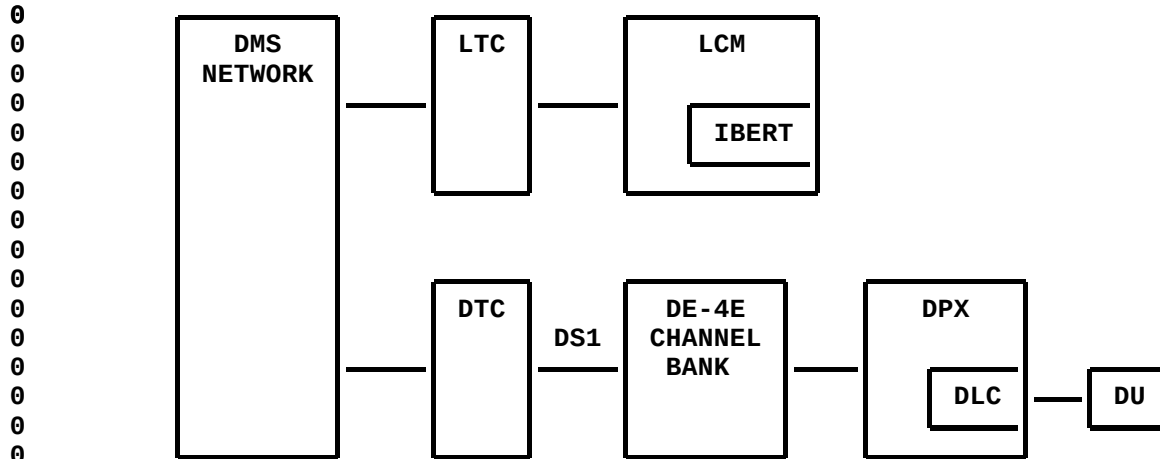
#### Datapath Products and Supported Loopback Locations

Figure 2

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## 0 3.2 Datapath Extension (DPX) Maintenance Messaging

0 3.2.1 A pictorial representation of a DPX Maintenance Messaging setup  
0 is as follows:



0 Typical DPX Maintenance Messaging Setup

0 Figure 3

0 3.2.2 To perform maintenance diagnostics on the DPX/DLC/DU facility  
0 shown above, the craftsperson would post the associated DU on  
0 the MAP and enter the diagnostic command. The maintenance  
0 software recognizing this as a DPX would automatically connect  
0 an available IBERT to the DPX. All maintenance messages are  
0 subsequently sent to the IBERT but addressed to the far end  
0 DPX, DLC, or DU and encoded in the W78 bulk data transfer for-  
0 mat. The IBERT removes the messages from the bulk data trans-  
0 fer format and passes them on transparently to the DPX via the  
0 inband signalling protocol. All messages addressed to the DLC  
0 or the DU are passed on transparently by the DPX.

0 3.2.3 In this example the DLC/DU configuration illustrated could re-  
0 fer to a DLC/low speed DU, DLC/high speed DU, or DLC/coax elim-  
0 inator.

0 4.1 HARDWARE PROVISIONING

0

0 4.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 4.1.2 HARDWARE DEPENDENCIES

0  
0 Not applicable.

0 | P AND C SIDE PORT REQUIREMENTS

0  
0 | Not applicable.

0 | DMS BUS PORT REQUIREMENTS

0  
0 | Not applicable.

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## 0 | CIRCUITS PER CARD

0  
0 | Not applicable.

## 0 | DISCRIMINATION NUMBERING

0  
0 | Not applicable.

0 4.1.3 PROVISIONING CONSIDERATIONS

0  
0 1.1 The hardware of the Integrated BERT (NT6X99AA) resides in the  
0 line drawer (NT6X05AA) of an LCM in a Host office, in an RSC  
0 site, or in an OPM site (or RLCM) taking the physical space of a  
0 two slot line card. The two vertical slots in the LCM line  
0 drawer must be in the same logical line drawer subgroup (i.e., in  
0 the same line subgroup (LSG)).

0 1.2 The IBERT must be located in a Line Concentrating Module (LCM) or  
0 Remote Line Concentrating Module (RLCM) which may or may not be  
0 the same LCM or RLCM as the one which the line it is testing re-  
0 sides. Even though the IBERT may be located on the same LCM as  
0 the line which it is testing, intraswitching for the connection  
0 is not used. This means that a connection between the IBERT and  
0 the line it is testing will be established through the DMS net-  
0 work. No connection between the IBERT and the line it is testing  
0 in the LCM, without going through the DMS network, can be estab-  
0 lished at the present time.

0 1.3 Although the appearance of the IBERT is that of a line card, the  
0 IBERT is NOT a line card in the normal sense as there is no sub-  
0 scriber loop or set associated with it. The only interaction  
0 with an IBERT is achieved from a MAP through the DMS/IBERT mes-  
0 saging interface.



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0 1.4 While BER testing can be performed by either the NT6X99AA card,  
0 which mounts in an LCM, or by the NT4X23AA card, which mounts in  
0 an MTM, there is a software problem that prevents the NT4X23AA  
0 from successfully testing Datapath Extension trunks. Therefore,  
0 it is recommended that the NT6X99AA be used for DMS-100 and  
0 DMS-100/200 offices (local and local/toll applications) and the  
0 NT4X23AA be used for DMS-200 offices (toll applications).

0 1.5 A minimum of one (1) NT6X99AA per LCM or 24 per office (whichever  
0 is larger) should be provisioned for basic test capability in  
0 DMS-100 or DMS-100/200 offices. Higher quantities of test cards  
0 will provide faster office coverage.

0 1.6 For datapath loop testing, due to a high volume of messaging  
0 traffic, it is recommended that one (1) IBERT line card  
0 (NT6X99AA) be provisioned per LCM equipped with a data line card.

0 1.7 For switch bit error rate testing (in NTX881AC) it is recommended  
0 that one (1) IBERT line card (NT6X99AA) be provisioned per LCM  
0 for every LCM in the office.

0 1.8.1 Up until BCS-24 the maximum number of IBERT line cards  
0 (NT6X99AA) and DTU BERT Unit circuits (NT4X23AA) (i.e. 2 cir-  
0 cuits per card) allowed in an office (Host plus all associated  
0 remotes) is 64.

0 For more information on DTU BERT Unit card (NT4X23AA), see  
0 ECM-352 on subject Digital Test Unit BERT Unit CP, NT4X23AA.

0 1.8.2 As of BCS-25, the maximum number of NT6X99AA cards and NT4X23AA  
0 circuits allowed in an office is 128.

0 1.8.3 For Canadian Applications Only

0 If the IBERT line card requirement exceeds the above software  
0 limitations of 64 and 128 respectively in an office, it is per-  
0 missible to perform the associated tests by restructuring the  
0 associated software data tables accordingly (i.e. perform the  
0 required test for the first group of 64 or 128 IBERT line  
0 cards, restructure applicable software data tables for the next  
0 group of 64 or 128 IBERT line cards, perform the required test,  
0 and so on).

0 1.9 The data rates supported by IBERT are the following:

|           |                                                     |           |  |
|-----------|-----------------------------------------------------|-----------|--|
| 0         |                                                     |           |  |
| 0         | <table><tr><td>Data Rate</td><td></td></tr></table> | Data Rate |  |
| Data Rate |                                                     |           |  |

| (bps) | Asynchronous | Synchronous |
|-------|--------------|-------------|
| 50    | *            |             |
| 75    | *            |             |
| 110   | *            |             |
| 134.5 | *            |             |
| 150   | *            |             |
| 300   | *            |             |
| 600   | *            |             |
| 1200  | *            | *           |
| 1800  | *            |             |
| 2000  | *            |             |
| 2400  | *            | *           |
| 3600  | *            |             |
| 4800  | *            | *           |
| 7200  | *            |             |
| 9600  | *            | *           |
| 19200 | *            | *           |
| 48000 |              | *           |
| 56000 |              | *           |
| 64000 |              | *           |

0 4.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 4.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0

0

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0 4.2 PRODUCT/SYSTEM SPECIFICATION

0

0 4.2.1 PHYSICAL CHARACTERISTICS

0

0 Not applicable.

0 4.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

0 4.2.3 SPARING INFORMATION

0

0 Normal sparing algorithms apply.

0 | 4.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 | Not applicable.

0

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0 | 4.2.5 CURRENT DRAIN INFORMATION

0  
0 | Not applicable.

0 4.3 SOFTWARE PROVISIONING

0 4.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 1. The applicable software is in the following software packages:

0 NTX259AA DATAPATH Extension - DPX

0 \* NTX881AC Switch Bit Error Rate Maintenance  
0 (Upgrade of NTX881AB)

0 \* NTX885AB Switch Path Diagnostics (SPD)  
0 (Upgrade of NTX885AA)

0 \* NTPX13AA ENET Switch Path Diagnostics (SPD)

0 \* When ordering software package NTX881AC, it is recommended that  
0 NTX885AB/NTPX13AA be ordered as well.

0 When ordered by the Customer, the Switch Path Diagnostics (SPD)  
0 software package is to be furnished as NTX885AB for non-ENET  
0 SuperNode and NT-40 offices and furnished as NTPX13AA for ENET  
0 SuperNode offices.

0 If software package SPD exists in a DMS office prior to an ENET  
0 upgrade, then both NTX885AB and NTPX13AA are to be provided in  
0 the retrofit software load to provide both Network Module (NM)  
0 and ENET coverage. NTX885AB is to be removed on the next BCS ap-  
0 plication following the upgrade.

0 The above rules are an example of unautomated rules which are  
0 stored in a document entitled "SW Package Ordering Rules - Not  
0 Automated" in the SMS Documentation Menu in CODA.

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## 0 Interdependencies for NTX259AA:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX100AA Integrated Business Networks - Basic (IBN)  
0 NTX106AA IBN - Proprietary Business Set  
0 NTX250AA DATAPATH - Basic  
0 NTX270AA New Peripheral Maintenance Package  
0 NTX901AA Local Features 1

## 0 Interdependencies for NTX881AC:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package  
0 NTX901AA Local Features 1

## 0 Interdependencies for NTX885AB:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package

## 0 Interdependencies for NTXP13AA:

0 NTXE01AA Enhanced Network - Basic  
0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package

0 To determine/verify software package interdependency or master  
0 package content, refer to the reports available from the SOLID  
0 System.

0 4.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Refer to section 4.1.

0

0

0 Host - Maintenance Trunk Test Circuits  
0 Chapter 12

0 4.3.3 MEMORY PROVISIONING

0  
0 Normal memory algorithms apply.

0 4.4 REAL TIME IMPACT

0 Normal real time algorithms apply.

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## 0 5.0 NT1X67 Baud Rate Summary

0 This Engineering Change Memo (ECM) is issued to clarify the baud rate  
0 capabilities of the various versions of the NT1X67 Input/Output con-  
0 troller pack.

0 5.1 HARDWARE PROVISIONING

0

0 5.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 5.1.2 HARDWARE DEPENDENCIES

0  
0 Not applicable.

0 5.1.3 PROVISIONING CONSIDERATIONS

0  
0 The following is a summary of the baud rate capabilities of the  
0 various versions of the NT1X67 I/O controller pack. Each pack,  
0 or group of packs with the same baud rate capability, will be  
0 discussed separately.

## BAUD RATE SUMMARY

-----

0 NT1X67AB and NT1X67CB (status of these cards is A&amp;M)

0 -----

0 These cards have four separate ports used for peripheral terminal  
0 devices such as VDUs, printers, modems, etc. These ports can support  
0 one device per port at variable baud rates using either the EIA or

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0 20mA current loop mode of operation. The current Northern Telecom  
0 specifications dictate that no single port on these cards will  
0 exceed 1200 baud. However, it is possible in special applications for  
0 these cards to support a baud rate of up to 4800 baud on a single  
0 port if the following conditions are met:

- 0 - The terminal must be able to support the higher baud rates.
- 0 - The sum of the baud rates for all ports on a single card  
0 must not exceed 4800 baud. ---

0 Refer to Figure 1 for examples of port configurations. Even though  
0 these capabilities exist, any configuration that specifies a single  
0 port supporting a baud rate greater than 1200 baud will be at the  
0 customer's discretion and/or risk. Northern Telecom will not  
0 guarantee data integrity. ---

0 As a separate issue, terminals used for the operator position must  
0 be configured for a maximum baud rate of 1200 baud due to potential  
0 communication problems that may be created during emergency  
0 situations if higher baud rates are used.

#### 0 NT1X67BC and NT1X67BD

0 -----

0 These cards succeed the previous cards and also have four sepa-  
0 rate ports for peripheral terminal devices. However, these cards  
0 have had firmware modifications that allow terminals to communi-  
0 cate at higher speeds on all ports. The current Northern Telecom  
0 specification for these cards dictates that no single port shall  
0 exceed 2400 baud. The modifications alter the processing speed of  
0 the card as a whole but do not change the maximum baud rate capa-  
0 bilities of a single port. The maximum baud rate that can be  
0 supported by a single port in a special application is 4800  
0 baud. When any single port on a card exceeds 2400 baud the follow-  
0 ing conditions must be met:

- 0 - The terminal must be able to support the higher baud rates.
- 0 - The sum of the baud rates for all ports on a single card  
0 must not exceed 4800 baud. ---

0 Refer to Figure 2 for examples of port configurations. Even though  
0 these capabilities exist, any configuration that specifies a sin-  
0 gle port supporting a baud rate greater than 2400 baud will be at  
0 the customer's discretion and/or risk. Northern Telecom will not  
0 guarantee data integrity. ---



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0  
0 As an added issue, terminals used for operator positions should  
0 still be configured for 1200 baud.

0 The NT1X67BD card should be used in all Auto Dial Back applica-  
0 tions and for special Line Editing functions. The NT1X67BD card  
0 does not replace the NT1X67BC card as the standard I/O Terminal  
0 Controller.

0 NT1X67BB and NT1X67DB  
0 -----

0 The NT1X67BB and NT1X67DB are special cards designed for special  
0 applications. They are not functionally similar to the other  
0 NT1X67 cards and cannot be used as a substitute. Each card has a  
0 single port that will support a baud rate of up to 9600 baud and  
0 communicates using EIA only. These cards are not currently used  
0 for U.S. applications but were applied to early offices using the  
0 DNC-500. This application now uses the NT1X89AA Multiprotocol  
0 Converter. Refer to Figure 3.

0 NT1X67EA  
0 -----

0 The NT1X67EA is a single port, high speed, output-only, asynchronous  
0 terminal controller. This circuit pack is a single channel, high  
0 capacity 9600 baud version that was introduced to meet customer  
0 requirements for realtime tracking of call distribution reports.  
0 Currently for Richardson application only. Refer to Figure 4.

0 NT1X67FA  
0 -----

0 The NT1X67FA card is for Simplified Message Desk Interface (SMDI)  
0 applications only. It is not functionally similar to the other  
0 NT1X67 cards and cannot be used as a substitute. Each card has a  
0 single port that will support a baud rate of up to 1200 full du-  
0 plex. Refer to Figure 5.

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## Example A

|      |   |                      |
|------|---|----------------------|
| PORT | 0 | -- 1200 Baud maximum |
| PORT | 1 | -- 1200 Baud maximum |
| PORT | 2 | -- 1200 Baud maximum |
| PORT | 3 | -- 1200 Baud maximum |

## Example B

|      |   |              |
|------|---|--------------|
| PORT | 0 | -- 600 Baud  |
| PORT | 1 | -- 600 Baud  |
| PORT | 2 | -- 2400 Baud |
| PORT | 3 | -- 1200 Baud |

## Example C

|      |   |              |
|------|---|--------------|
| PORT | 0 | -- 300 Baud  |
| PORT | 1 | -- 600 Baud  |
| PORT | 2 | -- 1200 Baud |
| PORT | 3 | -- 2400 Baud |

## Example D

|      |   |                  |
|------|---|------------------|
| PORT | 0 | -- No Connection |
| PORT | 1 | -- 2400 Baud     |
| PORT | 2 | -- No Connection |
| PORT | 3 | -- 2400 Baud     |

## Example E

|      |   |                  |
|------|---|------------------|
| PORT | 0 | -- No Connection |
| PORT | 1 | -- No Connection |
| PORT | 2 | -- No Connection |
| PORT | 3 | -- 4800 Baud     |

Note 1: These are examples only and not set co

Note 2: Note that the sum of the baud rates for each card does not exceed 4800 baud.

Note 3: Example A illustrates the normal operating condition. All others are for special applications.

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Figure 1 : NT1X67AB and NT1X67CB  
Port Configurations

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## Example A

|      |   |                      |
|------|---|----------------------|
| PORT | 0 | -- 2400 Baud maximum |
| PORT | 1 | -- 2400 Baud maximum |
| PORT | 2 | -- 2400 Baud maximum |
| PORT | 3 | -- 2400 Baud maximum |

## Example B

|      |   |                  |
|------|---|------------------|
| PORT | 0 | -- No Connection |
| PORT | 1 | -- 1200 Baud     |
| PORT | 2 | -- 3600 Baud     |
| PORT | 3 | -- No Connection |

## Example C

|      |   |                  |
|------|---|------------------|
| PORT | 0 | -- No Connection |
| PORT | 1 | -- No Connection |
| PORT | 2 | -- No Connection |
| PORT | 3 | -- 4800 Baud     |

## Example D

|      |   |                  |
|------|---|------------------|
| PORT | 0 | -- 600 Baud      |
| PORT | 1 | -- 600 Baud      |
| PORT | 2 | -- 3600 Baud     |
| PORT | 3 | -- No Connection |

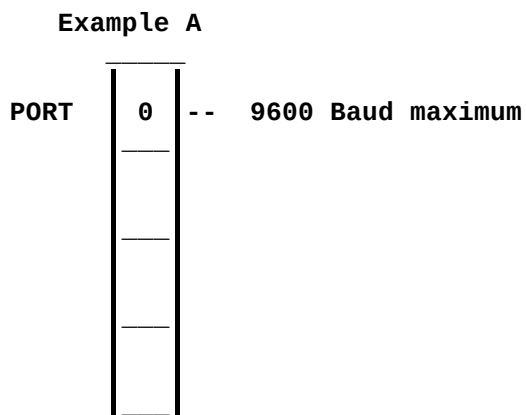
Note 1: These are examples only and not set configurations.

Note 2: Note that for a card that has a port exceeding 2400 baud, the sum of the baud rates for all ports does not exceed 4800 baud.

Note 3: Example A illustrates the normal operating condition. All others are for special applications.

Figure 2 : NT1X67BC and NT1X67BD  
Port Configurations

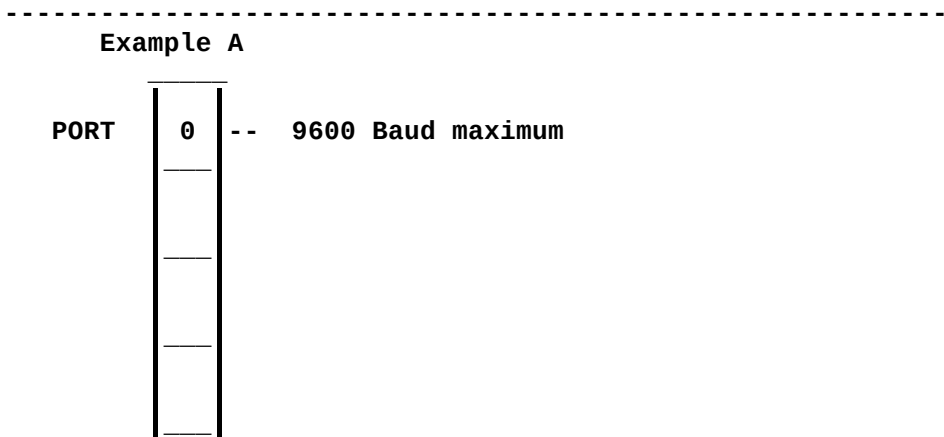
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- 0 Note 1: Only one port available.
- 0 Note 2: EIA communication only.
- 0 Note 3: Used for HDLC X.25 protocol only.

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Figure 3 : NT1X67BB and NT1X67DB  
Port Configurations



- 0 Note 1: Only one port available.
- 0 Note 2: EIA communication only.
- 0 Note 3: Output only.

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Figure 4 : NT1X67EA Port Configuration

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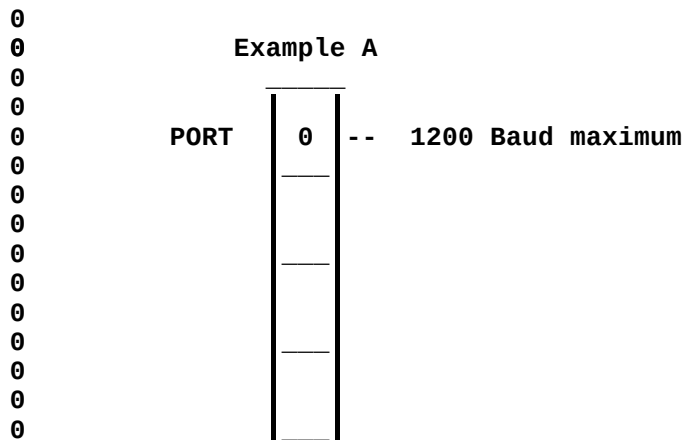
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0 Note 1: Only one port available.

0 Note 2: 1200 Baud Full Duplex.

0 Note 3: SMDI Applications only.

0 Figure 5 : NT1X67FA Port Configuration

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0 5.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 5.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0

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0 5.2 PRODUCT/SYSTEM SPECIFICATION

0

0 5.2.1 PHYSICAL CHARACTERISTICS

0

0 Not applicable.

0 5.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

0 5.2.3 SPARING INFORMATION

0

0 Not applicable.

0 5.3 SOFTWARE PROVISIONING

0

0 5.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Not applicable.

0

0



0 5.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 5.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 5.4 REAL TIME IMPACT

0 Not applicable.

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0 CHAPTER 13

0 HOST - OFFICE ALARM CARDS

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Host - Office Alarm Cards  
Chapter 13

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**Host - Office Alarm Cards**  
**Chapter 13**

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## 0 1.0 Office Alarms

0 1.1 Introduction

0 The DMS Office Alarms system is a collection of hardware devices  
0 and software modules which implement audible and visual indi-  
0 cations of trouble conditions detected within the DMS or its as-  
0 sociated equipment. These indications alert maintenance  
0 personnel and help them to locate and identify the trouble.

0 1.2 Features

0 Office alarms are managed from an alarm control panel which al-  
0 lows the maintenance personnel to control the alarm system.  
0 Alarms can be silenced, transferred to another location, or  
0 grouped from several floors in the building. Visual displays can  
0 be located at the Maintenance and Administration Position (MAP)  
0 and at the exit doors from each floor, in conjunction with audi-  
0 ble alarm panels.

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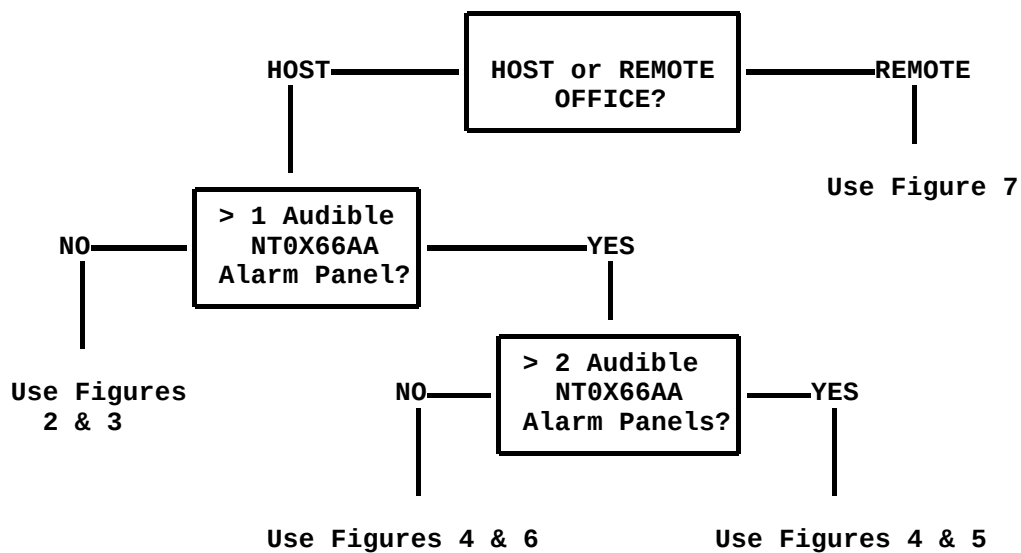
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0 1.3 Equipment Provisioning

0 1.3.1 General Considerations: Host and Remote Offices

0 Alarm hardware is required for a host office, with hardware  
0 choices dependent on office size and customer preference. Alarm  
0 hardware is optional for a remote office. Figures 37.2 through  
0 37.7 on the following pages show the choices for alarm configura-  
0 tions. Rules follow to explain options within the figures. Use  
0 the following decision tree to determine which figures apply to a  
0 particular office.

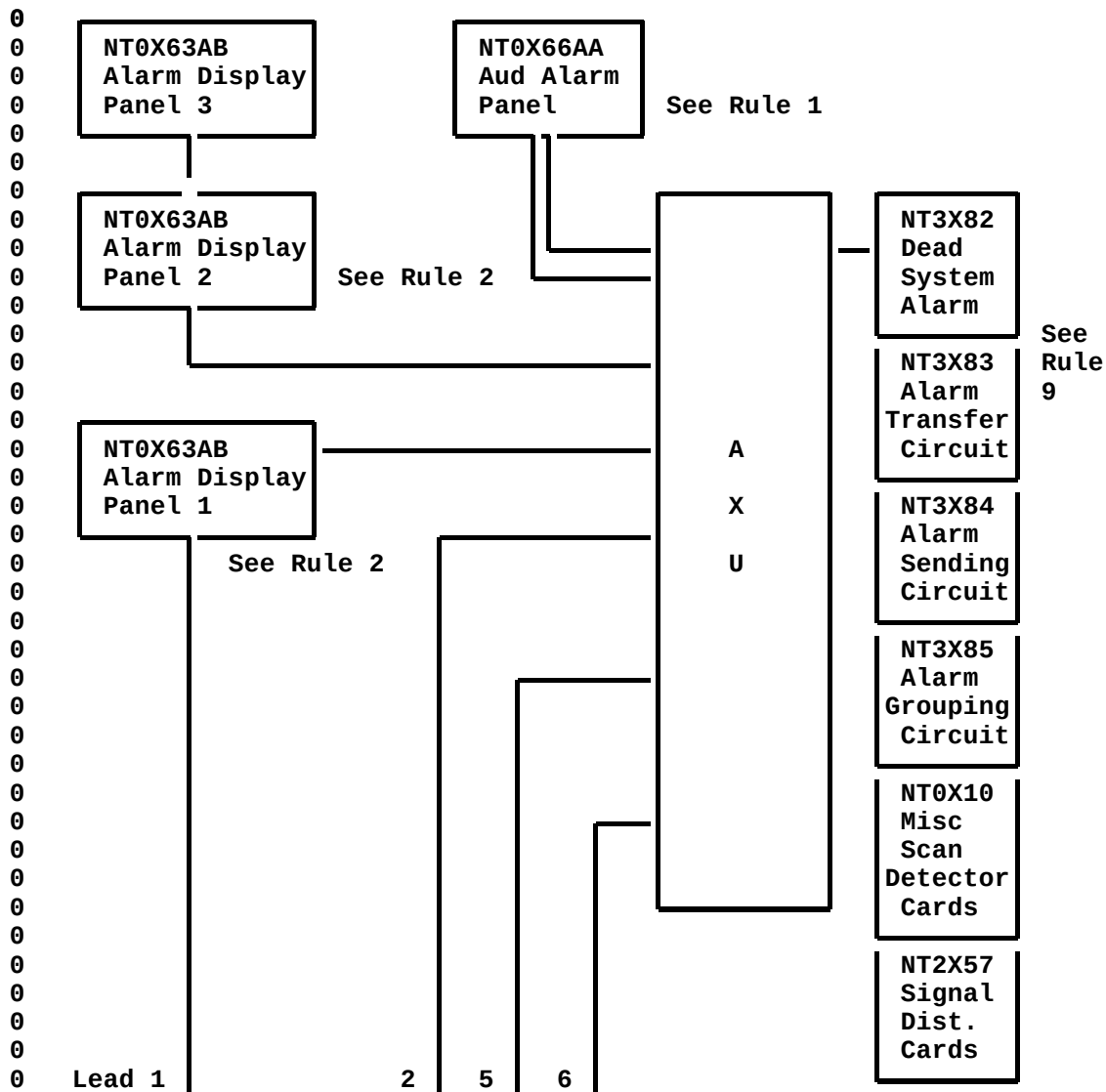
0 FIGURE 37.1 ALARM PROVISIONING DECISION TREE





0 The following figures depict alarm configurations. Refer to the rules  
0 following the figures for explanation of optional hardware within the  
0 figures.

0 Figure 37.2



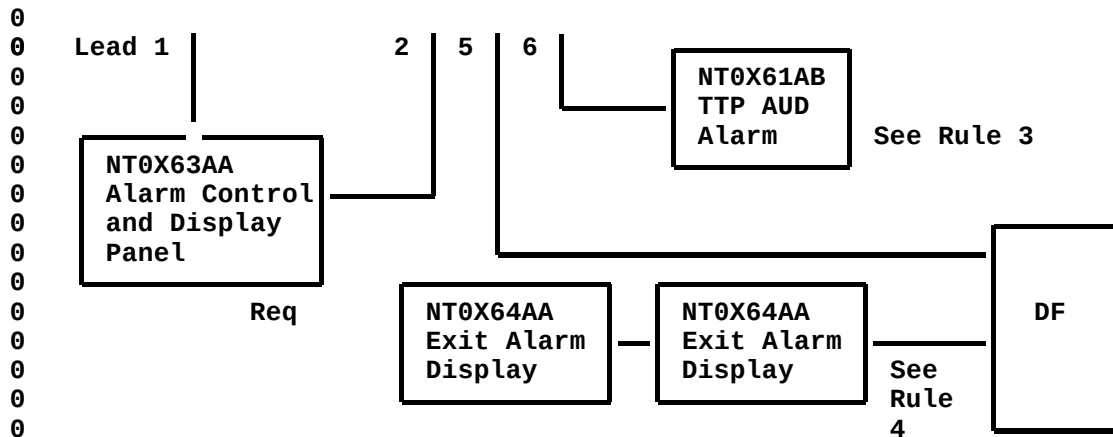
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0 Figure 2 depicts the alarm arrangement for a host office that requires  
0 only one NT0X66AA panel. This figure attaches to Figure 3.  
0 Figure 37.3

0



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0 Figure 37.3 depicts the basic arrangement of alarms required in a host  
0 office. This figure attaches to Figure 37.2 when only one NT0X66AA  
0 panel is required or to Figure 4 when more than one NT0X66AA panel is  
0 required.

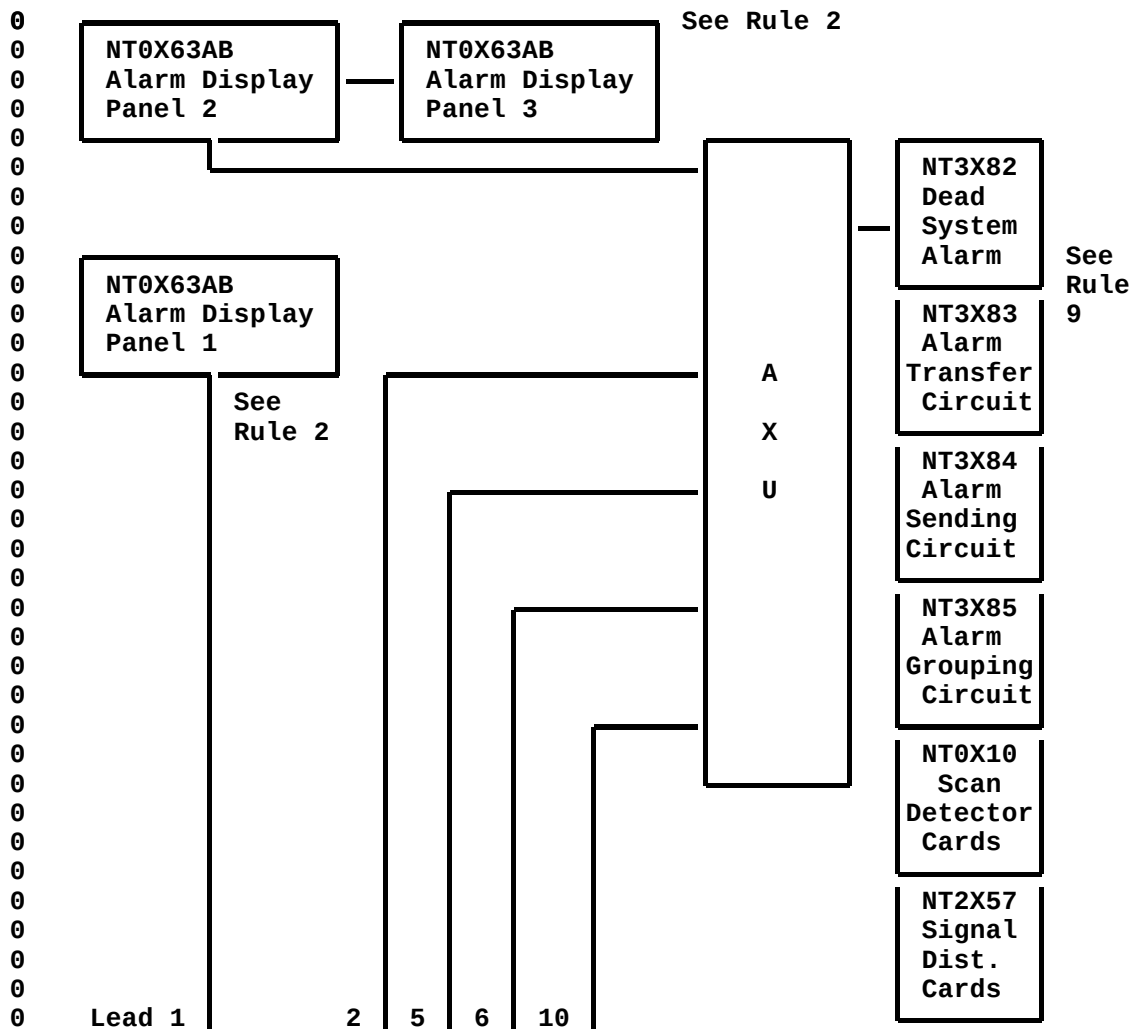
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0 Figure 37.4



0 Figure 4 depicts the alarm arrangement when more than one NT0X66AA  
0 panel is required. This figure attaches to Figure 5 when from three  
0 to six NT0X66AA panels are required or to Figure 6 when two NT0X66AA  
0 panels are required.

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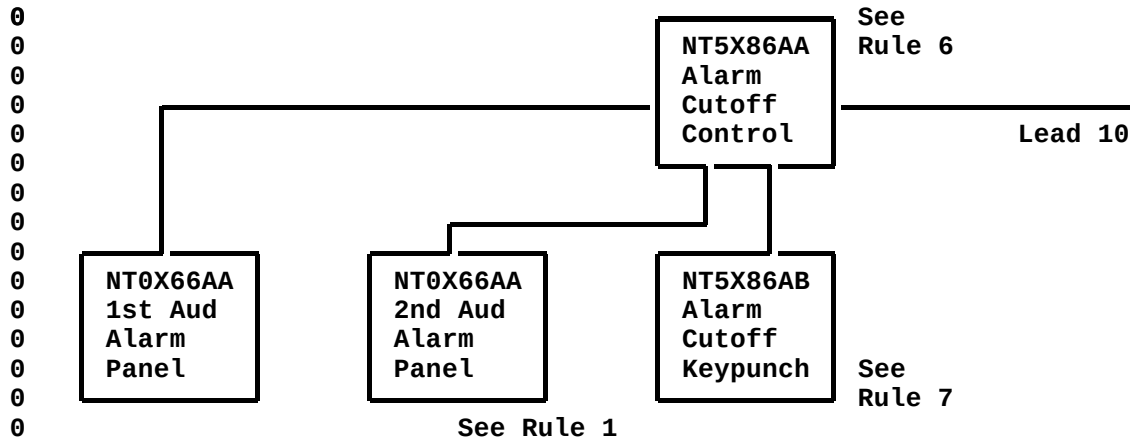
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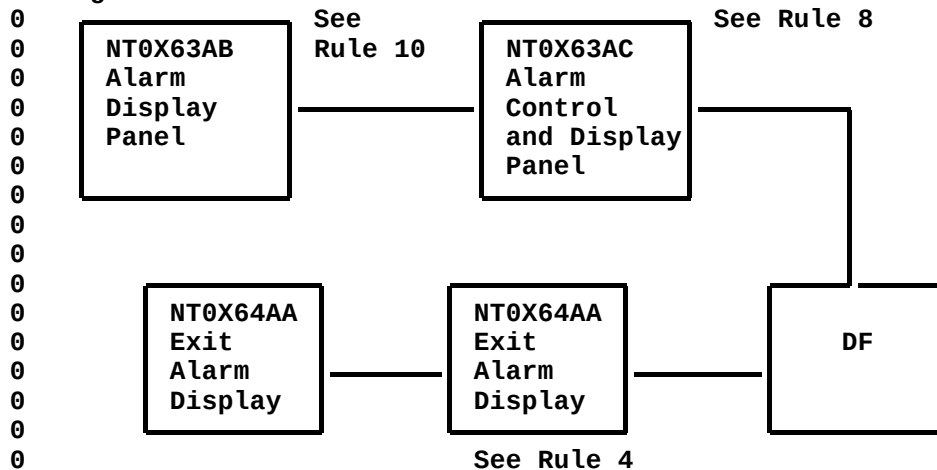
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0 Figure 37.6



0 Figure 37.6 depicts the alarm arrangement when two NT0X66AA panels are required. It must work with Figure 37.4.

0 Figure 37.7



0 Figure 37.7 depicts the alarm arrangement for a remote office. The second NT0X64AA panel is optional.

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0 Refer to the following rules to determine how the optional hardware  
0 depicted in the figures should be ordered.

0 Rules

0 Req These circuits or panels are minimal requirements to  
0 make an alarm system operate.

0 Rule 1 The NT0X66AA Audible Alarm Panel is optional. They are  
0 orderable per customer requirement.

0 Rule 2 The NT0X63AB Alarm Display Panels are optional. They are  
0 orderable per customer requirement.

0 Rule 3 The NT0X61AB TTP Audible Alarm is optional and is  
0 orderable when TTPs are present in an office.

0 Rule 4 The NT0X64AA Exit Alarm Display is optional and may be  
0 ordered as required to allow exit alarm display at main  
0 exit doors on floors of a multi-floored office. A maxi-  
0 mum of four may be provisioned per office. This maximum  
0 may be extended to 14 with the use of an Audible and  
0 Visual Alarm Extension Unit, NT5X85AA.

0 For remote offices, a maximum of five NT0X64AA can be  
0 provisioned. The Alarm Extension Panel, NT5X92AB must  
0 be provided and mounted on an RSE/RME frame if at least  
0 one NT0X64AA is provided for a remote office.

0 Rule 5 The NT5X85AA Alarm Extension Circuit is optional and is  
0 to be ordered when from three to six NT0X66AA Audible  
0 Alarm Panels are required or (and) when five (four for  
0 OAS Version 1) to 14 NT0X64AA Exit Alarm Display Panels  
0 are required in an office. A maximum of one NT5X85AA  
0 circuit can be provisioned per office.

0 Rule 6 The NT5X86AA Alarm Cutoff Control Circuit is optional  
0 and is to be ordered when from two to six NT0X66AA Audi-  
0 ble Alarm Panels are required in an office.

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0 Rule 7 The NT5X86AB Alarm Cutoff Keypunch should be ordered  
0 with the NT5X86AA circuit.

0 Rule 8 The NT0X63AC Alarm Control and Display Panel is optional  
0 for a remote office, but is the only alarm system choice  
0 at a remote site. This panel may also be used in a  
0 small host office, replacing the NT0X63AA panel.

0 Rule 9 The following cards may apply to a host or a remote of-  
0 fice, but will be assigned in the host office.

0 Two Dead System Alarm Circuits are required per office,  
0 one on the primary MTM and one on the secondary MTM.  
0 Either two NT3X82AA Dead System Alarm Circuit cards,  
0 used with the NT0X63AA panel, or two NT3X82AB Dead Sys-  
0 tem Alarm Circuit Common Audible cards, used with the  
0 NT0X63AC panel, are to be provided.

0 Either one NT3X83AA Alarm Transfer Circuit or one  
0 NT3X84AA Alarm Sending Circuit is required per office.  
0 The NT3X83AA circuit is used to transfer major/minor  
0 alarms to a remote office receiving circuit; the  
0 NT3X84AA circuit is used to send a dead system alarm  
0 tone to a distance operator position.

0 One NT3X85AA Alarm Grouping Circuit may be provided in  
0 offices that occupy multiple floors. This card should  
0 be located on a different MTM than the MTM used for the  
0 NT3X83AA or NT3X84AA card.

0 One NT0X10AA Miscellaneous Scan Card Circuit Pack and  
0 one NT2X57AA Signal Distribution Card are required to  
0 mount on the primary MTM for visual and audible alarm  
0 indication. Additional NT0X10AAs may be provisioned as  
0 required. The first NT0X10AA will handle the first six  
0 equipment rows. The second NT0X10AA will handle equip-  
0 ment rows 7-12. The third and fourth NT0X10AA will each  
0 handle 14 additional equipment rows.

0 Remote offices require one NT0X10AA for every 14 scan  
0 points required in the office and one NT2X57AA for every  
0 14 signal distributor points required in the office.

0 Rule 10 One NT0X63AB Alarm Display Panel can be supported

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0 1.3.2 Alarm Control and Display Panels

0 (a) General Description

0 The Alarm Control and Display Panel functions as the main alarm  
0 control and display center. It contains a set of lamps which  
0 display the type and class of alarms detected by the alarm sys-  
0 tem, and a set of switches to provide manual control of alarm  
0 system facilities. The Alarm Display Panel provides detailed  
0 alarm display at various co-located areas, but it has no control  
0 capabilities except Audible Alarm Reset. The Dead System alarm  
0 panels provide a hardware generated alarm to alert maintenance  
0 personnel when the DMS system software is not functioning.

0 (b) References

0 NTP 297-1001-122 DMS-100 Family Alarm  
0 System Description

0 (c) Provisioning Considerations

- 0 ( i) Normally provide one Alarm Control and Display Panel  
0 (NT0X63AA) per system and locate it near the MAP.
- 0 ( ii) Provide Alarm Control and Display Panel with Common Audi-  
0 ble (NT0X63AC) instead of NT0X63AA if the following con-  
0 ditions are met:
- 0 - office is small enough for audible tone to be
  - 0 heard from any location on the floor
  - 0 - unique audibles (different sounds for different
  - 0 alarm types) are not required
  - 0 - alarm grouping with other floors is not required
  - 0 - local data loop switching is not required
- 0 ( iii) Up to three Alarm Display Panels (NT0X63AB) may be provi-  
0 sioned for detailed alarm display when NT0X63AA is pro-  
0 vided.
- 0 ( iv) Normally provide two Dead System with Unique Audible  
0 Alarms (NT3X82AA).
- 0 ( v) Each NT3X82AA requires two slots in the MTM. Assign one  
0 card to each MTM.

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0 ( vi) Provide two Dead System with Common Audible Alarm  
0 (NT3X82AB) instead of NT3X82AA if the following condi-  
0 tions are met:

- 0 - unique audibles (different sounds for different
- 0 alarm types) are not required
- 0 - office local talk lines (two office telephone
- 0 lines which terminate at the MAP voice communi-
- 0 cation module) are not required
- 0 - office is not a toll or local/toll office and
- 0 therefore will not have a Trunk Test Centre (TTC)
- 0 chime.

0 ( vii) Each NT3X82AB requires one slot on the MTM. Provide two  
0 NT3X82AB per office. Assign one card to each MTM.

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0 1.3.3 Audible Alarm Panels

0 (a) General Description

0 The audible alarm panel provides an audible signalling device for  
0 indication of trouble conditions within the DMS office.

0 (b) References

0 NTP 297-1001-122 DMS-100 Family Alarm  
0 System Description

0 (c) Provisioning Considerations

0 ( i) The basic DMS alarm system supports a maximum of 2 Audi-  
0 ble Alarm Panels (NT0X66AA). The first unit is usually  
0 mounted at the MAP. The second unit is optional and is  
0 mounted where required.

0 ( ii) Selective alarm cutoff for up to six Audible Alarm Panels  
0 can be accomplished if desired by provisioning an Audible  
0 Alarm Cutoff Control Circuit (NT5X86AA) which mounts on  
0 the MIS frame, and an Audible Alarm Cutoff Key Panel  
0 (NT5X86AA) which can be located at the MAP (near the  
0 Alarm Control and Display Panel).

0 ( iii) The Trunk Test Centre (TTC) audible alarm panel  
0 (NT0X61AB) provides a TTC chime which signals an incoming  
0 call on a 101 Communication Test Line. Provide a minimum  
0 of one per toll or local/toll office. The DMS alarm sys-  
0 tem can support a maximum of 3 such panels.

0 ( iv) The Common Audible Alarm Panel (NT5X92AA) can be provided  
0 in a remote office when an audible alarm is required at a  
0 location different from the Alarm Control and Display  
0 Panel with Common Audible. A maximum of ten Common Audi-  
0 ble Alarm Panels can be supported per remote office. One  
0 Alarm Extension Panel is required whenever the Common Au-  
0 dible Alarm Panel is provided.

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0 1.3.4 Alarm Extension Circuits

0 (a) General Description

0 The Audible and Visual Alarm Extension Circuit is an applique  
0 circuit which, when mounted on the miscellaneous frame, allows  
0 additional Alarm Control and Display Panels, Audible Alarm Panels  
0 and Exit Alarm Panels to be added to the alarm system.

0 The Alarm Extension Panel is used in remote offices to support  
0 the Common Audible Alarm Panel and Exit Alarm Panels and to allow  
0 additional Alarm Control and Display Panels to be provided.

0 (b) References

0 NTP 297-1001-122 DMS-100 Family Alarm  
0 System Description

0 (c) Provisioning Considerations

0 ( i) The Audible and Visual Alarm Extension Circuit (NT5X85AA)  
0 mounts on the Miscellaneous Equipment Frame (MIS).

0 ( ii) DMS Audible Alarm Panel support can be increased to a  
0 maximum of six by provisioning the Audible and Visual  
0 Alarm Extension Circuit.

0 ( iii) A Pylon RG-2 Ringing Generator, mounted on the MIS frame,  
0 or equivalent 20 Hz ringing generator must be provided  
0 with the Audible and Visual Alarm Extension Circuit when  
0 more than two Audible Alarm Panels are provided.

0 ( iv) Exit Alarm Panel support can be increased to a maximum of  
0 14 by provisioning the Audible and Visual Alarm Extension  
0 Circuit.

0 ( v) The Alarm Extension Panel (NT5X92AB) is used in remote  
0 offices. It mounts on the Remote Service Equipment  
0 (RSE)/Remote Miscellaneous Equipment (RME) frame.

0 ( vi) Provide the Alarm Extension Panel whenever more than one  
0 (maximum two) Alarm Control and Display Panels are re-  
0 quired.

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0 ( vii) The Alarm Extension Panel is required whenever Common Au-  
0 dible Alarm Panels or Exit Alarm Panels are used in the  
0 remote office.

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0 1.3.5 Exit Alarm Panels

0 (a) General Description

0 Exit Alarm Panels are located near the main exit door of each DMS  
0 floor in a multi-floored office. Lights on each panel are illu-  
0 minated corresponding to an alarm condition on a particular  
0 floor.

0 (b) References

0 NTP 297-1001-122 DMS-100 Family Alarm  
0 System Description

0 (c) Provisioning Considerations

0 ( i) The basic DMS alarm system supports 4 Exit Alarm Panels  
0 (NT0X64AA).

0 ( ii) The number of Exit Alarm Panels can be increased to a  
0 maximum of 14 by using the Audible and Visual Alarm Ex-  
0 tension Circuit.

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0 1.3.6 Alarm Grouping0 (a) General Description

0 The Alarm Grouping circuit provides the capability to group  
0 alarms originating in the DMS office with those originating on  
0 preceding (lower) and succeeding (upper) floors which have com-  
0 patible office alarm systems.

0 (b) References

0 NTP 297-1001-122 DMS-100 Family Alarm  
0 System Description

0 (c) Provisioning Considerations

0 ( i) Provide one OAU Alarm Grouping circuit pack (NT3X85AA)  
0 per system if grouping of alarms with succeeding and pre-  
0 ceding floors is to be provided.

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0 1.3.7 Alarm Remoting

0 (a) General Description

0 The Remote Alarm Transfer circuit facilitates the transfer of  
0 major and minor alarm indications from the DMS office and power  
0 plant to a remote alarm receiving circuit in a distant office.  
0 This permits the local office to be unattended. Since the re-  
0 mote alarm receiving circuit monitors only two classes of  
0 alarms, major and minor, the DMS critical alarms are transferred  
0 to the remote location as majors. If alarm grouping is in  
0 effect, alarms originating on preceding and succeeding floors are  
0 also transferred to the remote location. Dead system alarms can  
0 also be transferred, with facility to dial up and check the se-  
0 verity of the alarm from a remote location.

0 (b) References

0 NTP 297-1001-122 DMS-100 Family Alarm  
0 System Description

0 (c) Provisioning Considerations

- 0 ( i) One OAU Remote Alarm Transfer circuit pack (NT3X83AA)  
0 should always be provided to enable transfer of alarms to  
0 a remote location.
- 0 ( ii) If, in addition to system software-generated alarms, Dead  
0 System alarms are to be transferred as well, provide one  
0 OAU Alarm Sending circuit pack (NT3X84AA) instead of the  
0 NT3X83AA.
- 0 ( iii) Two non-dedicated trunks should be allocated for OAU  
0 Alarm Sending, to enable sending and checking alarms via  
0 operator verification trunks.

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0 1.3.8 Alarm Scan and Signal Distribution Points

0 (a) General Description

0 Alarm and control inputs are generated by hardwired alarm con-  
0 tacts in the DMS hardware, by the operation of manual control  
0 switches, or by the alarm circuits of miscellaneous associated  
0 equipment. These are detected through Scan Points and interfaced  
0 to the alarm system software. The software responds to an alarm  
0 condition or a control actuation by operating or releasing the  
0 appropriate Signal Distribution Points. This initiates or termi-  
0 nates the corresponding audible and visual alarm or control func-  
0 tion.

0 (b) References

0 NTP 297-1001-122 DMS-100 Family Alarm  
0 System Description

0 (c) Provisioning Considerations

- 0 ( i) The operating company must provide data for assignment of  
0 alarm scan and signal distribution points detailing the  
0 number of points required, the type of alarm, and the de-  
0 sired severity treatment (critical, major or minor).
- 0 ( ii) For basic alarm system provide a minimum of one Signal  
0 Distributor (SD) Card Type I (NT2X57AA) per system and  
0 assign to a slot on MTM(1).
- 0 ( iii) A second NT2X57AA, providing 14 spare SD points, may be  
0 provided if required.
- 0 ( iv) For basic alarm system, provide a minimum of one Miscel-  
0 laneous Scan Detector Card (NT0X10AA) per system and as-  
0 sign to a slot on MTM (1).
- 0 ( v) Provide an additional NT0X10AA if a remote distribution  
0 bay (RDB) is to be provided and/or if any of equipment  
0 rows G, H, J through M are to be equipped.
- 0 ( vi) Provide another NT0X10AA if any of rows N, P through Z,  
0 AA, BB are to be equipped.
- 0 ( vii) Provide another NT0X10AA if at least one of the rows CC  
0 through HH, JJ through NN and PP through RR is to be  
0 equipped.



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0 (viii) Additional scan points for alarms external to DMS may be  
0 assigned, preferably to the alarm MTMs. If space is not  
0 available, any MTM may be used but note that an MTM with-  
0 out a Dead System Card (NT3X82AA/AB) has no OAU shelf  
0 monitor.

0 ( ix) Note that DMS currently supports a total maximum of 1024  
0 scan points.

0 1.3.9 Inactive System Timing

0 (a) General Description

0 The Inactive System Timing circuit records the duration of dead  
0 system downtime should it occur.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) If this feature is required, provide one Inactive System  
0 Timing Circuit (NT5X69AA) to be mounted on the Miscella-  
0 neous Equipment Frame.

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0 1.3.10 RSC Alarms

0 The Remote Alarm Panel (NT0X63AC) may now be provided for a RSC  
0 Site.

0  
0 1.3.11 Remote Miscellaneous Equipment (RME) Frame (NT0X02AB)

0 The hardware which normally mounts on the RSE frame when used in  
0 conjunction with the old RLM equipment is also valid for use with  
0 the RSC except for the following:

0 1. Metallic Test Access (MTA), NT2X46AB.

0 For use with the RSC, this item has been replaced by the  
0 RMTA, NT3X09AA which mounts on the RMM on the RCE frame.

0 2. Remote Service Module (RSM), NT2X58AE.

0 For use with the RSC, this item has been replaced by the  
0 RMM which mounts on the RCE frame.

0 See Section 3.12, Remote Service Equipment (RSE) Frame  
0 Summary for hardware which can mount on the RME frame.

0  
0 1.3.12 Office Alarm System

0 (a) General Description

0 An Office Alarm System (OAS) is a Trunk Module Equipment (TME)  
0 frame equipped with an Alarm Cross Connect (AXU) shelf and two  
0 (2) Maintenance Trunk Modules (MTM) to provide alarming functions  
0 for the STP office.

0 (b) Reference

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations:

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0 ( i) MTM 00 will act as the primary alarm MTM. MTM 01 will be  
0 designated as the secondary alarm MTM. The following  
0 should be provisioned to ensure that the primary and sec-  
0 ondary MTMs are powered from different power feeds:

0 One (1) NT0X82WB FSP Strapping Information  
0 One (1) A0324131 TB Jumper  
0 Two (2) NT0X95CL Cable Assemblies  
0 One (1) NT7X3406 Cable Assembly

0 ( ii) Equip the primary MTM as follows:

| QTY | PEC      | DESCRIPTION                                                                |
|-----|----------|----------------------------------------------------------------------------|
| 1   | NT3X82AB | OAU Dead System Alarm with<br>Common Audible                               |
|     | or       |                                                                            |
| 1   | NT3X83AA | Remote Alarm Transfer<br>(if remote alarm transfer<br>feature is required) |
| 1   | NT0X10AA | Miscellaneous Scan Point Card                                              |
| 1   | NT2X57AA | Signal Distribution Card                                                   |

0 Equip the secondary MTM with one (1) NT3X82-- OAU Dead  
0 System Alarm circuit pack (must be the same as on the  
0 primary MTM) per customer requirements.

0 In addition, provide one (1) NT0X63\_\_ Alarm Control &  
0 Display Panel (NT0X63AA or NT0X63AC) per customer re-  
0 quirements. The NT0X63AA is ordered when the OAS Dead  
0 System with Unique Audible NT3X82AA is equipped; NT0X63AC  
0 is ordered when the OAS Dead System with Common Audible  
0 NT3X82AB is equipped.

0 ( iii) Miscellaneous Service Circuits

0 Provide one (1) Transmission Test Trunk (TTT) consisting  
0 of one (1) PCM Test Signal Generator NT1X90AA and one (1)  
0 PCM Level Meter NT2X96AA. Equip these on an MTM shelf to  
0 allow in-service testing of the MTMs.

0 ( iv) For more information on Trunk Modules, refer to Section  
0 3.5 Peripheral Modules - Host.

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0 1.3.13 Office Alarm System

0 (a) General Description

0 An Office Alarm System (OAS) is a Trunk Module Equipment (TME)  
0 frame equipped with an Alarm Cross Connect (AXU) shelf and two  
0 (2) Maintenance Trunk Modules (MTM) to provide alarming functions  
0 for the SCP office.

0 (b) Reference

0 None.

0 (c) Provisioning Considerations:

0 ( i) In each SCP-TP provide one TME equipped with at least two  
0 MTM shelves. Refer to the Office Alarm System of the  
0 Signalling Transfer Point (above) for more information on  
0 the Office Alarms for SCP.

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0 2.0 Alarm Provisioning

0 The various alarm configurations, dependent on office type and size,  
0 are shown in this document.

0 2.1 Hardware Provisioning

0

0 2.1.1 Hardware Usage Restrictions

0

0 N/A

0 2.1.2 Hardware Dependencies

0

0 N/A

0 2.1.3 Provisioning Considerations

0

0 Alarm hardware is required for a host office, with hardware  
0 choices dependent on office size and customer preference. Alarm  
0 hardware is optional for a remote office.

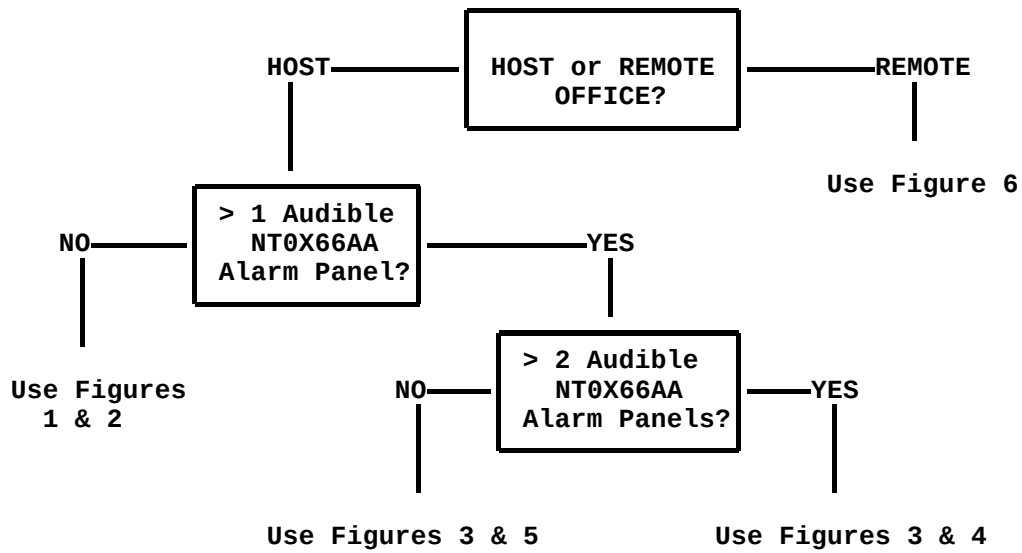
0 Figures 1 through 6 on the following pages depict the choices for  
0 alarm configurations. Rules follow to explain options within the  
0 figures. Use the following decision tree to determine which fig-  
0 ures apply to a particular office.

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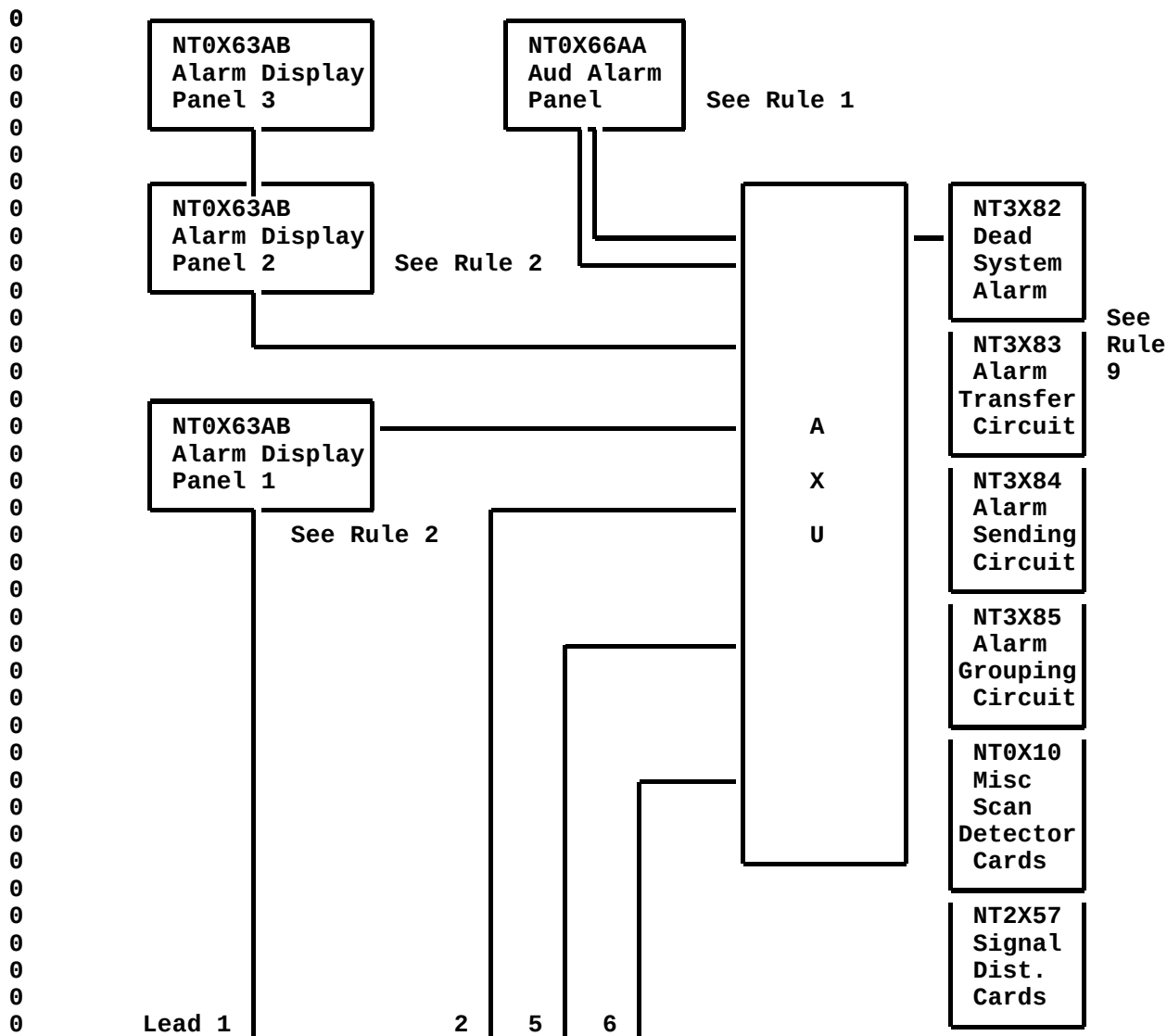
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## Alarm Decision Tree



0 The following figures depict alarm configurations. Refer to the  
0 rules following the figures for explanation of optional hardware  
0 within the figures.

0 Figure 1



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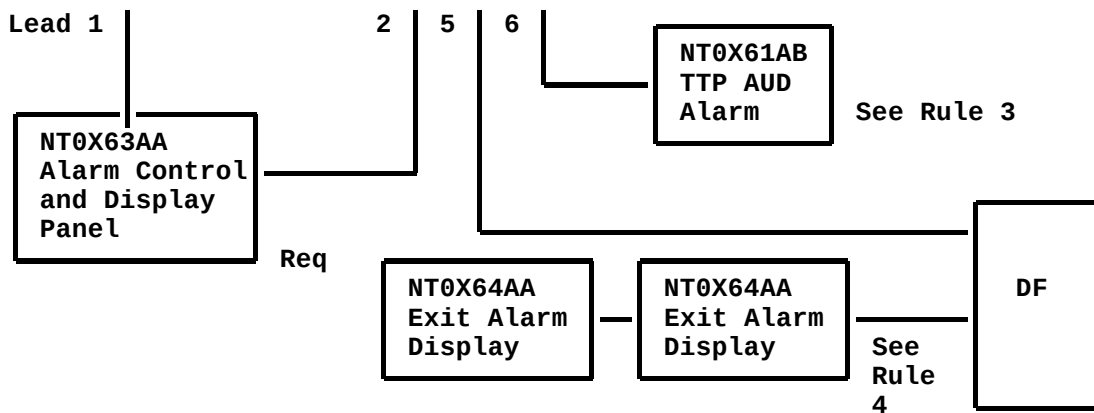
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0 Figure 2

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0 Figure 2 depicts the basic arrangement of alarms required in a host  
0 office. This figure attaches to Figure 1 when only one NT0X66AA  
0 panel is required or to Figure 3 when more than one NT0X66AA panel  
0 is required.

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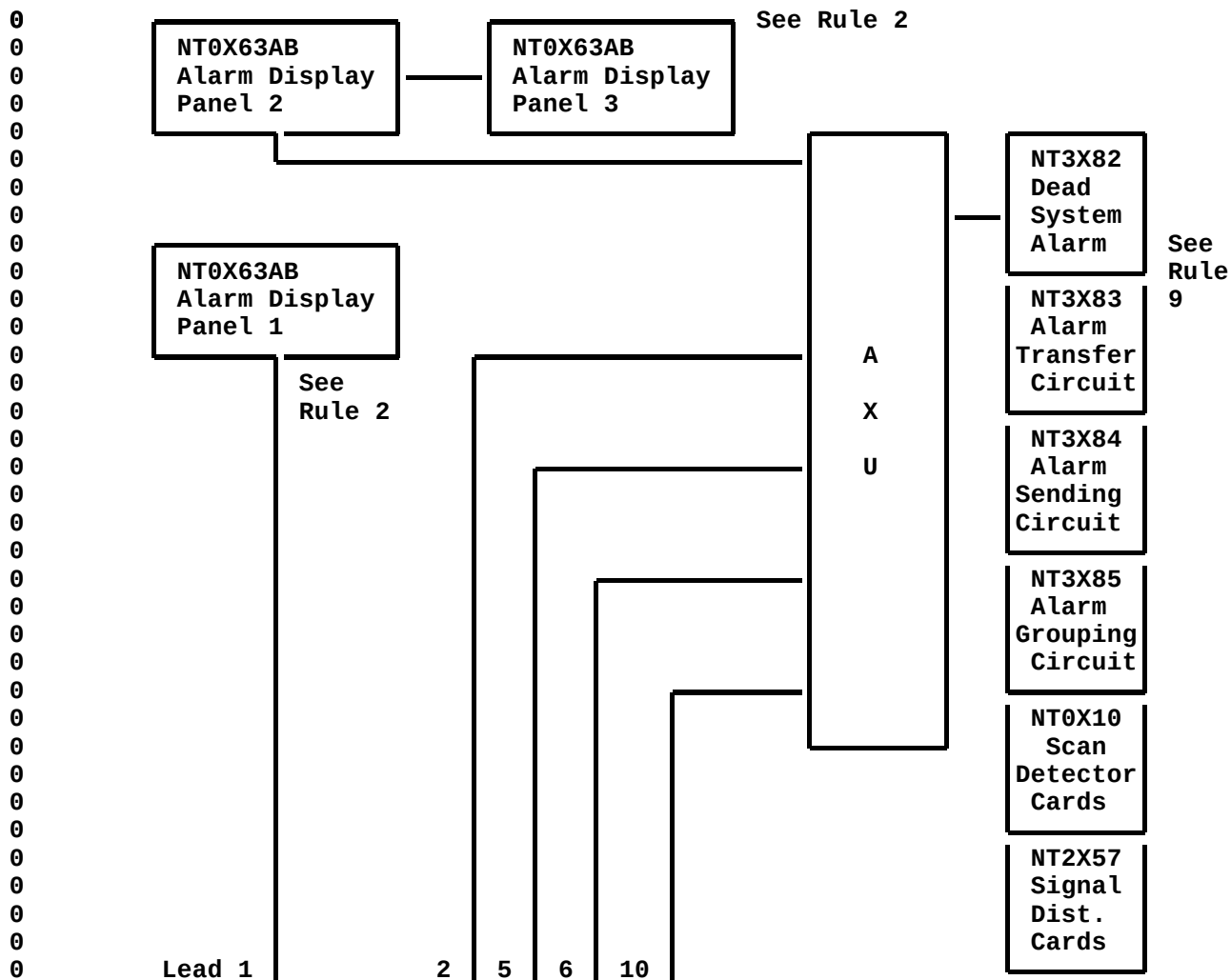
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0 Figure 3

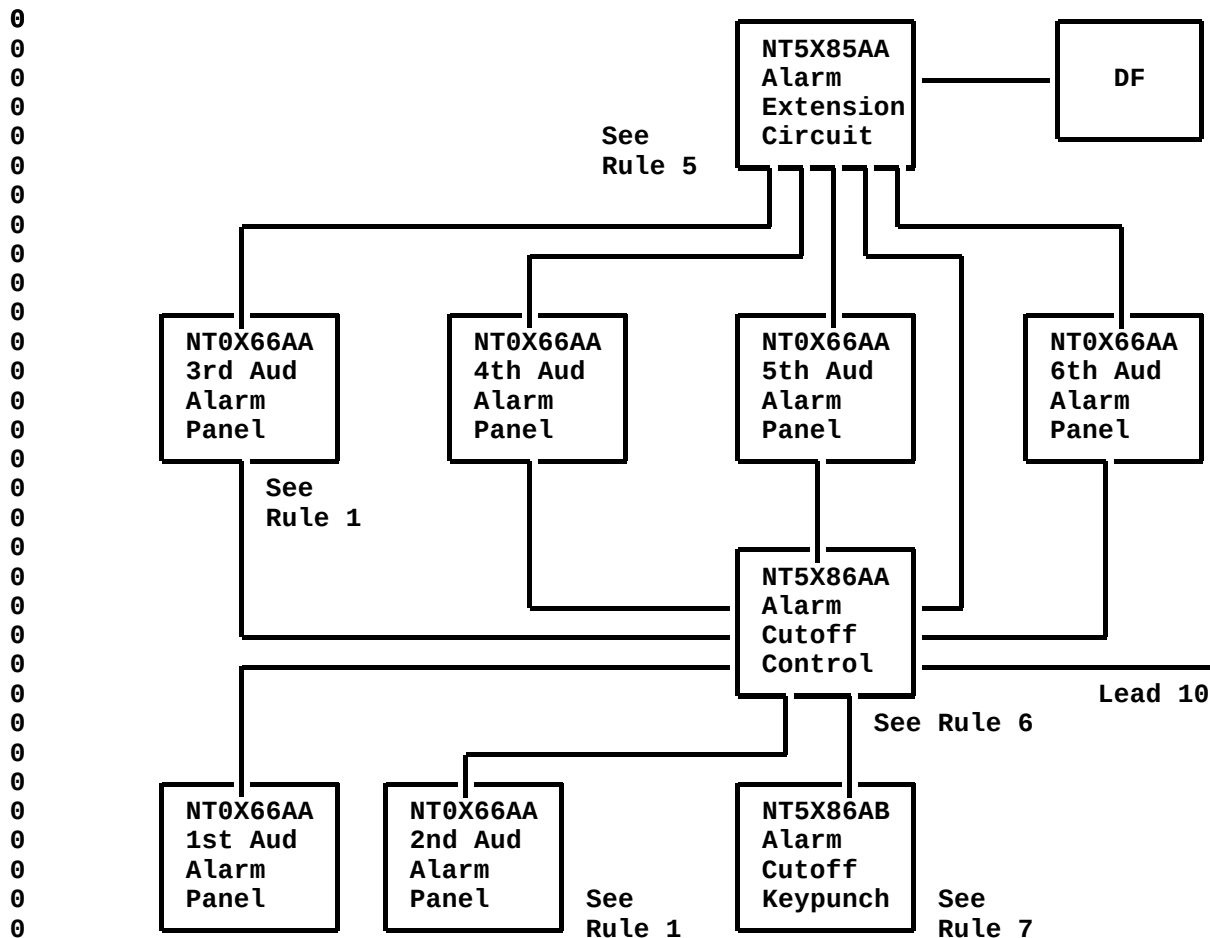


0 Figure 3 depicts the alarm arrangement when more than one NT0X66AA  
0 panel is required. This figure attaches to Figure 4 when from  
0 three to six NT0X66AA panels are required or to Figure 5 when two  
0 NT0X66AA panels are required.

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0 Figure 4



0 Figure 4 depicts the alarm arrangement when from three to six NT0X66AA  
0 panels are required. It must work with Figure 3.

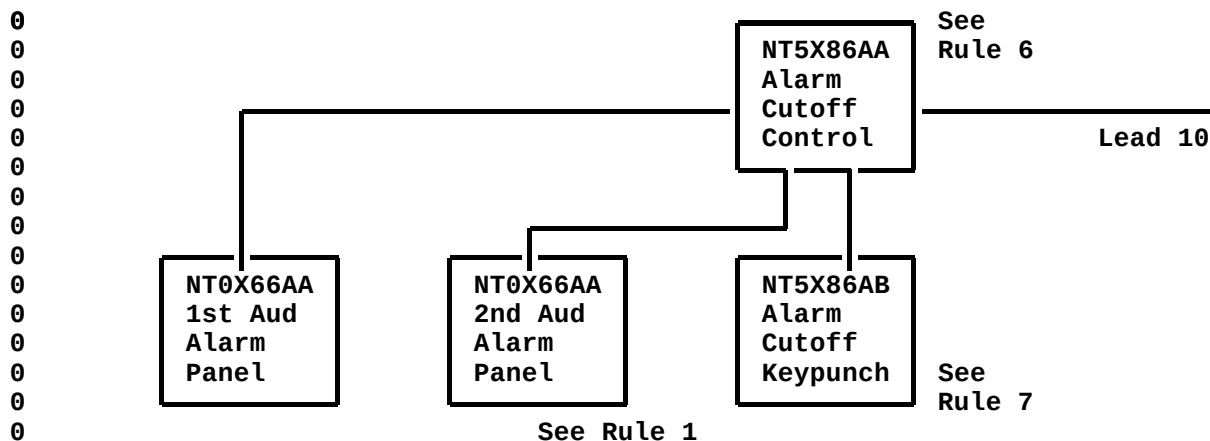
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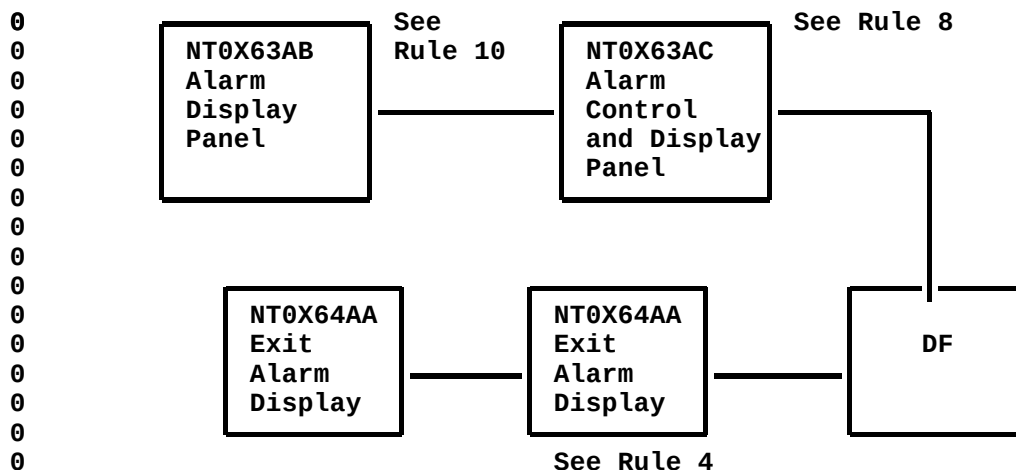
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0 Figure 5



0 Figure 5 depicts the alarm arrangement when two NT0X66AA panels  
0 are required. It must work with Figure 3.

0 Figure 6



0 Figure 6 depicts the alarm arrangement for a remote office. The  
0 second NT0X64AA panel is optional.

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0 Refer to the following rules to determine how the optional hard-  
0 ware depicted in the figures should be ordered.

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## 0 Rules

0 Req These circuits or panels are minimal requirements to  
0 make an alarm system operate.

0 Rule 1 The NT0X66AA Audible Alarm Panel is optional. They are  
0 orderable per customer requirement.

0 Rule 2 The NT0X63AB Alarm Display Panels are optional. They are  
0 orderable per customer requirement.

0 Rule 3 The NT0X61AB TTP Audible Alarm is optional and is  
0 orderable when TTPs are present in an office.

0 Rule 4 The NT0X64AA Exit Alarm Display is optional and may be  
0 ordered as required to allow exit alarm display at main  
0 exit doors on floors of a multi-floored office. A maxi-  
0 mum of four may be provisioned per office. This maximum  
0 may be extended to 14 with the use of an Audible and  
0 Visual Alarm Extension Unit, NT5X85AA.

0 For remote offices, a maximum of five NT0X64AA can be  
0 provisioned. The Alarm Extension Panel, NT5X92AB must  
0 be provided and mounted on an RSE/RME frame if at least  
0 one NT0X64AA is provided for a remote office.

0 Rule 5 The NT5X85AA Alarm Extension Circuit is optional and is  
0 to be ordered when from three to six NT0X66AA Audible  
0 Alarm Panels are required or (and) when five (four for  
0 OAS Version 1) to 14 NT0X64AA Exit Alarm Display Panels  
0 are required in an office. A maximum of one NT5X85AA  
0 circuit can be provisioned per office.

0 Rule 6 The NT5X86AA Alarm Cutoff Control Circuit is optional  
0 and is to be ordered when from two to six NT0X66AA Audi-  
0 ble Alarm Panels are required in an office.

0 Rule 7 The NT5X86AB Alarm Cutoff Keypunch should be ordered  
0 with the NT5X86AA circuit.

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0 Rule 8 The NT0X63AC Alarm Control and Display Panel is optional  
0 for a remote office, but is the only alarm system choice  
0 at a remote site. This panel may also be used in a  
0 small host office, replacing the NT0X63AA panel.

0 Rule 9 The following cards may apply to a host or a remote of-  
0 fice, but will be assigned in the host office.

0 Two Dead System Alarm Circuits are required per office,  
0 one on the primary MTM and one on the secondary MTM.  
0 Either two NT3X82AA Dead System Alarm Circuit cards,  
0 used with the NT0X63AA panel, or two NT3X82AB Dead Sys-  
0 tem Alarm Circuit Common Audible cards, used with the  
0 NT0X63AC panel, are to be provided.

0 Either one NT3X83AA Alarm Transfer Circuit or one  
0 NT3X84AA Alarm Sending Circuit is required per office.  
0 The NT3X83AA circuit is used to transfer major/minor  
0 alarms to a remote office receiving circuit; the  
0 NT3X84AA circuit is used to send a dead system alarm  
0 tone to a distance operator position.

0 One NT3X85AA Alarm Grouping Circuit may be provided in  
0 offices that occupy multiple floors. This card should  
0 be located on a different MTM than the MTM used for the  
0 NT3X83AA or NT3X84AA card.

0 For a basic alarm system, provide a minimum of one misc  
0 scan detector card for rows A-F. Provide an additional  
0 NT0X10AA if a remote dist. bay (RDB) is to be provided  
0 and/or if any of equipment rows G,H,J through M are to  
0 be equipped. Provide another NT0X10AA if any rows N,P  
0 through Z,AA,BB are to be equipped. Provide another if  
0 at least one of the rows,CC

0 Remote offices require one NT0X10AA for every 14 scan  
0 points required in the office and one NT2X57AA for every  
0 14 signal distributor points required in the office.

0 Rule 10 One NT0X63AB Alarm Display Panel can be supported from  
0 the NT0X63AC Alarm Panel, per customer requirement.

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0 2.1.4 Office Layout Information

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0 N/A

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0 2.1.5 Traffic Tables

0  
0 N/A

0 2.2 Product/System Specification

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0 2.2.1 Physical Characteristics

0  
0 N/A

0

0 2.2.2 EMI/Earthquake Information

0  
0 N/A

0



0 2.2.3 Sparing Information

0  
0 N/A

0 2.3 Software Provisioning

0

0 2.3.1 Required Software Packages and Interdependencies

0  
0 N/A

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0 2.3.2 Software Usage Restrictions

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0 N/A

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0 2.3.3 Memory Provisioning

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0 N/A

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0 2.4 Real Time Impact

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0 3.0 EAS - Enhanced Alarm System

0 The Enhanced Alarm System will provide immediate alarm indication  
0 (within 2 seconds) of catastrophic loss of power to the DMS-100 PDC's  
0 regardless of whether the software remains operative. The alarm indi-  
0 cation will include the AUDIBLE (Critical Bell) and VISUAL (Critical  
0 Power Plant Lamp). (Provisions made are for the loss of feeders from  
0 the Power Plant only, not the loss of the power board).

0 Remote contact closures for the dead system alarm normally open and  
0 normally closed and the DMS power fail will provide connectivity for  
0 remote alarm scanners. The three (3) contacts are wired out with a  
0 total of four (4) wires, a wire for each contact and a common wire.  
0 No signal, voltage, or ground is supplied from the DMS via these con-  
0 tacts.

0 An internally detected low voltage alarm indication will be given ev-  
0 ery fifteen minutes indicating the power supply batteries are dis-  
0 charging, as long as the conditions exist and the DMS-100 remains  
0 operational. The present alarm indications for loss of power to either  
0 the MTM shelves or ABS will be maintained.

0 A fuse or breaker panel may be required to be provided at the power  
0 board for the TME frames and ABS power feeds if appropriate fuse posi-  
0 tions are not already available at the power board.

0 EAS requires 20 amp fuses or breakers at the power board for the TME  
0 frames and ABS of each PDC. The ABS and MTM must be powered from the  
0 same power board (power plant) as that serving the DMS-100 via the  
0 TME's FSP. The power will come from a fuse or breaker at the power  
0 supply directly to the TME's FSP.

0 The primary and secondary MTM shelves cannot be powered from the same  
0 fuse or breaker.

0 Currently the feed for the FSP (NT0X42) originates at busbar A, and  
0 provides an Alarm Battery Supply (ABS) for the alarm circuits and  
0 lamps in the other frames.

0 The EAS kit requires a feed from both the A feed and the B feed fused  
0 at 5 amps from the PDC FSP (fuse position 13).

0

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0 3.1 HARDWARE PROVISIONING

0

0 3.1.1 HARDWARE USAGE RESTRICTIONS

0

0 EAS can be applied to existing offices with Version 2 office  
0 alarm systems.

0 Remotes utilizing an NT0X40 FSP (RME Frame) can be provided with  
0 the separate ABS feed portion of the EAS System. These can be any  
0 of the following remote products: RSC RSCI RLCM RLCC.

0 3.1.2 HARDWARE DEPENDENCIES

0

0 The following changes will be introduced to support EAS in exist-  
0 ing offices. The Primary and Secondary Alarm MTM shelves will no  
0 longer derive power from the A or B feed of the PDC. They will be  
0 powered from the same power board (Power Plant) as that serving  
0 the DMS-100 via the TME's FSP. The power will come from a fuse or  
0 circuit breaker at the power board directly to the TME's FSP.  
0 This re-powering will in actuality re-power the entire TME Frame.

0 The System Engineer will need to determine if there are enough  
0 fuse or breaker positions available on the customer's power board  
0 before upgrading an existing office with EAS Phase I.

0 The System Engineer will also need to determine if there are two  
0 (2) fuse positions (1 A feed & 1 B feed) available for the  
0 NT0X42XC EAS Kit. Fuse Position 13 on both the A & B feed is the  
0 preferred position. One (1) NT0X42XC EAS Kit is required for  
0 each PDC in the office to be upgraded to EAS.

0 If fuse positions are not available, arrangements must be made to  
0 provide the fuse positions to support EAS.

0

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0 A question should be added to NTACCESS asking if EAS will be re-  
0 quired in that particular office (upgrade or initial).

0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not Applicable

0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

0 CIRCUITS PER CARD

0  
0 Not Applicable

0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0 3.1.3 PROVISIONING CONSIDERATIONS

0

0

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## 0 HOST OFFICES

0  
0 The following additional equipment will be required when upgrad-  
0 ing an existing host office with EAS:

| QTY | PEC      | DESCRIPTION                                                                                                                                                                                              | FRM              | SHF      | SLOT     |
|-----|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------|----------|
| 1   | PC0X42XC | EAS Product Change Kit                                                                                                                                                                                   |                  |          |          |
| 3   | NT3X82AC | OAU Dead System Alarm CP<br>replaces and backward<br>compatible with NT3X82AA<br>Quantity of 2 + cold spare<br>Primary MTM Shelf (pos 51)<br>Secondary MTM Shf (pos 65)                                  | TME-00<br>TME-01 | 51<br>65 | 05<br>05 |
|     |          | or                                                                                                                                                                                                       |                  |          |          |
| 3   | NT3X82AD | OAU Dead System Alarm CP<br>replaces and backward<br>compatible with NT3X82AB<br>Quantity of 2 + cold spare<br>Primary MTM Shelf (pos 51)<br>Secondary MTM Shf (pos 65)                                  | TME-00<br>TME-01 | 51<br>65 | 05<br>05 |
| 1   | NT3X89AB | AXU Alarm Cross Connect Shf                                                                                                                                                                              | TME-00           | 65       |          |
| 1   | NT0X42XC | EAS Kit per PDC                                                                                                                                                                                          | PDC              | 45R      |          |
| 1   |          | pair of power cables (10 or 12 AWG -48V PDC<br>& -48VR) from one (1) PDC A-feed fuse<br>position, and one (1) PDC B-feed fuse<br>position to the EAS Kit mounted on the<br>PDC FSP fused at 5 amps each. |                  | 45       |          |
| 1   |          | pair of power cables (6 or 8 AWG -48V<br>& -48VR) from a 20 amp fuse at the<br>power plant to the TME 00 FSP.                                                                                            | TME-00           | 45       |          |
| 1   |          | pair of power cables (6 or 8 AWG -48V<br>& -48VR) from a 20 amp fuse at the<br>power plant to the TME 01 FSP.                                                                                            | TME-01           | 45       |          |

0

0 Host - Office Alarm Cards  
0 Chapter 13

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0  
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0 93 12 030 1 power cable (6 or 8 AWG -48V) from a PDC 45  
0 20 amp fuse at the power plant to the  
0 PDC e/w the NT0X42XC kit

## 0 REMOTE OFFICES

0  
0 The following equipment will be required when implementing EAS in  
0 a remote office:

| 0 | QTY | PEC      | DESCRIPTION                           | FRM | SHF SLOT |
|---|-----|----------|---------------------------------------|-----|----------|
| 0 | 1   | PC0X42XC | EAS Product Change Kit                |     |          |
| 0 | 1   | NT0X42XC | EAS Kit per RME e/w PDC               | RME | 45R      |
| 0 | 1   |          | power cable (6 or 8 AWG -48V) from a  | RME | 50       |
| 0 |     |          | 20 amp fuse at the power plant to the |     |          |
| 0 |     |          | RME e/w the NT0X42XC kit              |     |          |

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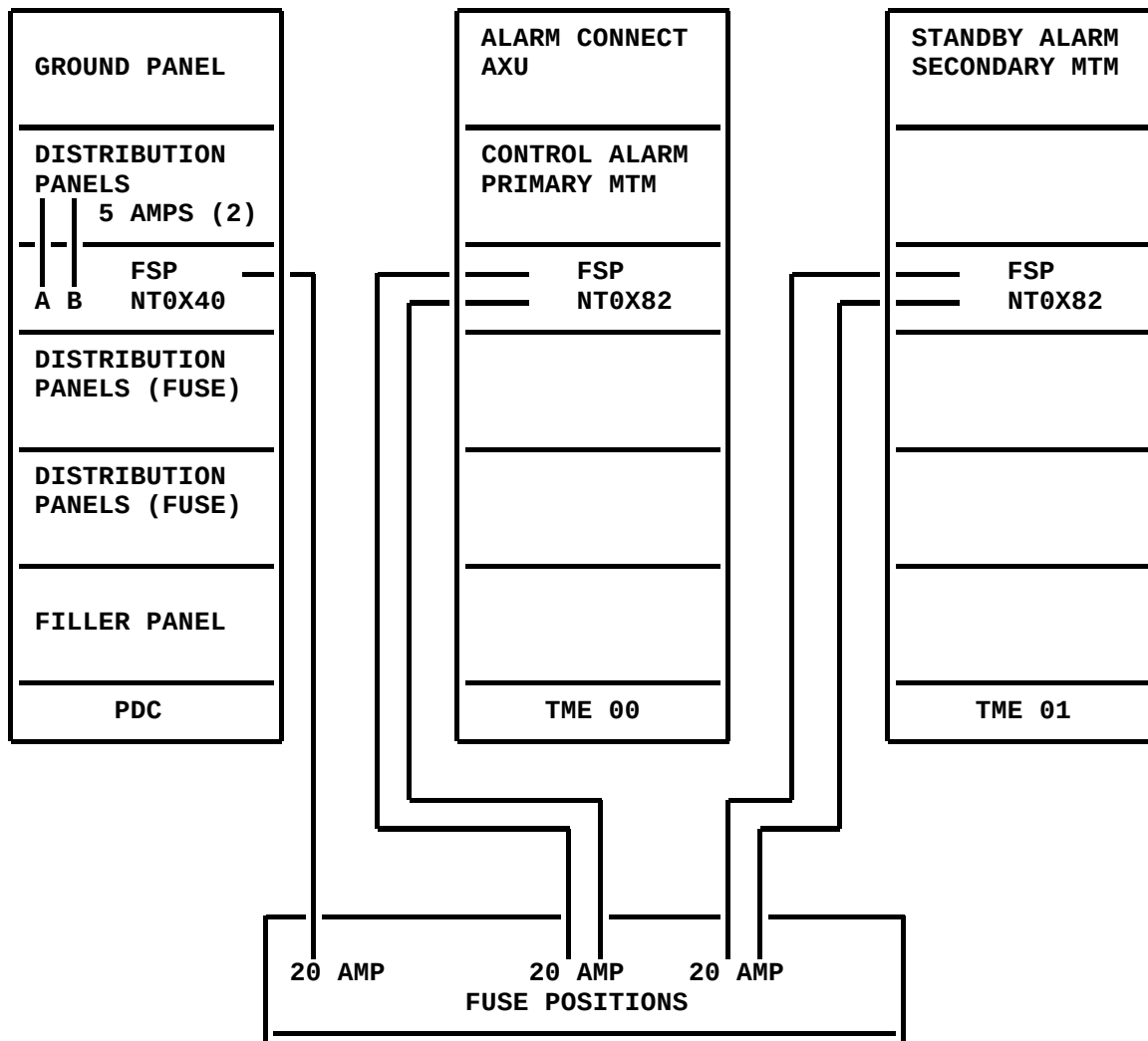
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0 Figure 1: PDC, TME 00 and TME 01 EAS Power Cabling

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0 3.1.5 TRAFFIC TABLES

0  
0 Not Applicable

0 3.2 PRODUCT/SYSTEM SPECIFICATION

0

0 3.2.1 PHYSICAL CHARACTERISTICS

0  
0 The packaging of the OAU and the MTM will remain the same except  
0 for the replacement of the existing NT3X82AA or NT3X82AB with the  
0 new NT3X82AC or NT3X82AD cards. The NT3X89AA AXU will be replaced  
0 with the NT3X89AB Alarm Cross Connect Shelf.

0 EAS will have independent power feeds to the OAU, MTM, and ABS  
0 from the power plant serving the DMS-100 equipment. Audible and  
0 visual alarm indication within 2 seconds of a loss of power to  
0 any or all PDCs. Dedicated contacts for the use of external  
0 alarm scanners for Loss of Power to the DMS (Critical Power  
0 Plant) Alarm indication and Dead System Alarm indication. EAS  
0 also has Internal detection of loss of power and low voltage de-  
0 tection.

0 3.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not Applicable

0

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0 3.2.3 SPARING INFORMATION

0  
0 Provide one (1) of each for spares:

0 NTFX05AA Power Failure Detection Board  
0 NT3X82AC Distinctive Audible Alarm CP  
0 NT3X82AD Common Audible Alarm CP

0 3.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 The TME frames will be powered directly from the power board when  
0 upgrading to EAS, requiring one (1) 20 amp breaker or fuse posi-  
0 tion for each TME frame.

0 A separate power feed is required from the power board to the  
0 NT0X42XC EAS kit requiring one (1) 20 amp breaker or fuse posi-  
0 tion.

0 Two (2) fuse positions (one on the A-Feed and one on the B-Feed  
0 fuse panels) are required for each NT0X42XC kit fused at 5 amps  
0 each.

0 3.2.5 CURRENT DRAIN INFORMATION

0  
0 Not Applicable

0

0

0 3.3 SOFTWARE PROVISIONING

0

0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 No changes to the software is required. The alarm data tables  
0 ALMSC and ALMSCGRP require data fill updates.

0 3.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not Applicable

0 3.3.3 MEMORY PROVISIONING

0

0 Not Applicable

0 3.4 REAL TIME IMPACT

0 Not Applicable

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0 NORTHERN TELECOM

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0 CHAPTER 14

0 HOST - METALLIC TEST ACCESS

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Host - Metallic Test Access  
Chapter 14

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## 0 1.0 Host - Metallic Test Access

0 1.1 Equipment Provisioning0 1.1.1 Metallic Test Access (MTA)0 a) General Description

0 The MTA provides a dc path between the line circuit and test  
0 equipment, such as a LTU or a #14 Local Test Desk (LTD), via the  
0 test access bus. When subscriber lines are tested, the path is  
0 via a digital line and an applique circuit.

0 The MTA can also be used to access subscriber loops, while by-  
0 passing the line card, and to connect a jack to the loop. Simi-  
0 larly, a tone can be transmitted on the subscriber loop while  
0 bypassing the line card.

0 The MTA is used in domestic and international DMS-100 and  
0 DMS-100/200 offices.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) The MTA may be configured in either of two ways:

0 A NT2X46AB minibar switch mounted in a miscellaneous  
0 equipment frame (MIS) in the host office or a Remote Ser-  
0 vice Equipment Frame (RSE) at a Remote Line Module (RLM).  
0 It is used in conjunction with a NT2X50AB driver card  
0 that is mounted in a MTM or RSM.

0 A NT3X09AA or NT3X09BA type driver card are each equipped  
0 with a network of relays that comprise a matrix. The  
0 NT3X09AA card has 8 horizontal connections for test  
0 equipment and 4 vertical connections for LCD. The  
0 NT3X09BA card has 8 horizontal connections for test  
0 equipment and 8 vertical connections for LCD. The  
0 NT3X09AA Remote Metallic Access card is mounted on a RMM  
0 at a RLCM, a IRLCM, a RSC, or an OPM. The NT3X09BA 8X8  
0 metallic test access card is mounted in a MTM in a host

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0 office, a RSM at a RLM or a RMM at a RLCM, a IRLCM, a RSC  
0 or an OPM. (Presently NT3X09BA is not applicable to RLCM  
0 and IRLCM for Canadian Offices).

0 ( ii) The NT3X09BA is designed to replace the MTA Unit  
0 (NT2X46AB) and the Remote MTA Card (NT3X09AA) where ap-  
0 plicable. Therefore, new host offices and remote sites  
0 will be engineered with the NT3X09BA card when generally  
0 available. The NT3X09BA card will work as an extension  
0 to an NT2X46AB minibar switch an/or to an NT3X09AA card.

0 ( iii) The NT2X46AB unit has 16 horizontals and 20 verticals.  
0 It can accommodate up to 10 LM's/RLM's/LCM's and up to 16  
0 test circuits.

0 The NT3X09AA card has 8 horizontals and 4 verticals. It  
0 can accommodate up to 2 LCM's and up to 8 test circuits.

0 The NT3X09BA card has 8 horizontals and 8 verticals. It  
0 can accommodate up to 4 LM's/RLM's/LCM's and up to 8 test  
0 circuits.

0 ( iv) The test access network is organized in a grid formation.  
0 See Figure 35.1.

0 Each MTA Unit, NT2X46AB, is assigned to a column, (0 to  
0 63), and up to four rows (0,2,4,6), per column. Note that  
0 only the even rows are assigned on the NT2X46AB units in  
0 order to allow multiplying to columns of NT3X09's.

0 Each NT3X09AA/BA card is assigned to a column, (0 to 63),  
0 and up to eight rows (0 to 7), per column.

0 All verticals on MTA units within a column are multiplied  
0 together.

0 All horizontals from horizontal number two on upwards on  
0 MTA units are multiplied together.

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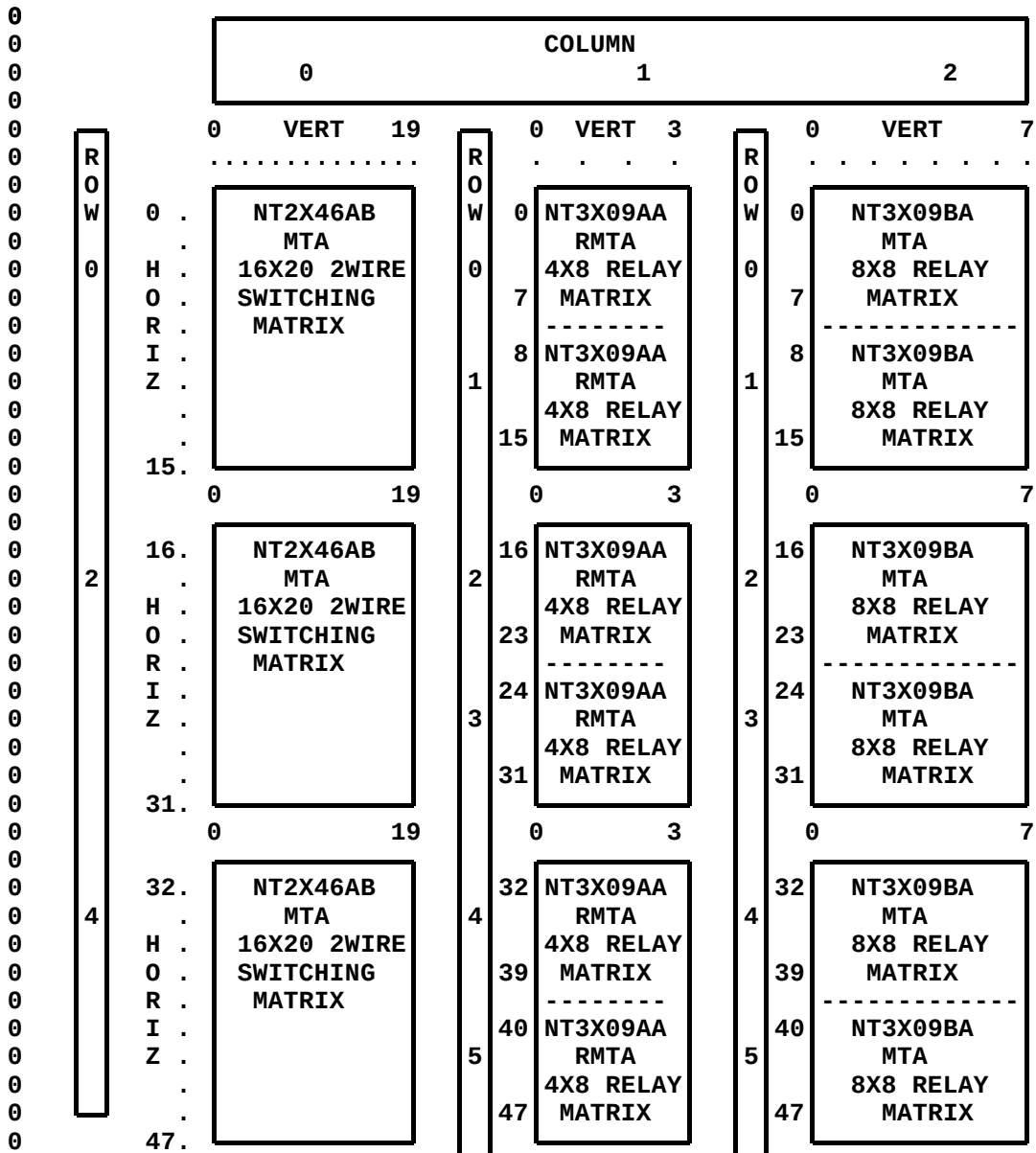


FIGURE 35.1

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0 ( v) Currently, one Line Test Unit (LTU) is assigned to hori-  
0 zontal number zero of each minibar switch (NT2X46AB) on a  
0 dedicated basis. Hence, on each NT2X46AB, this LTU will  
0 have test access to up to ten (10) LM's and/or LCM's.

0 For NT3X09BA, one LTU is assigned to horizontal number  
0 zero of the first NT3X09BA card and multiplied to hori-  
0 zontal number zero of the next NT3X09BA card in the next  
0 column. Hence, one dedicated LTU is assigned to two (2)  
0 NT3X09BA cards such that this LTU will have test access  
0 to up to eight (8) LM's and/or LCM's. For every two (2)  
0 NT3X09BA cards, provide one (1) LTU.

0 Each additional LTU can be assigned to horizontal numbers  
0 from two (2) on upwards.

0 ( vi) Provisioning a NT2X46AB MTA.

$$\begin{array}{r}
 \text{MTA} = \frac{\text{No. SMS S/W Sites}}{20} + \frac{\text{No. SMU S/W Sites}}{20} + \\
 \frac{\text{No. SMR}}{20} + \frac{\text{No. LCM}}{10} + \frac{\text{No. LM}}{10}
 \end{array}$$

0 Provisioning a NT3X09BA 8 X 8 Metallic Test Access.

$$\begin{array}{r}
 \text{MTA} = \frac{\text{No. SMS S/W Sites}}{8} + \frac{\text{No. SMU S/W Sites}}{8} + \\
 \frac{\text{No. SMR}}{8} + \frac{\text{No. LCM}}{4} + \frac{\text{No. LM}}{4}
 \end{array}$$

0 ( vii) Intermediate Distribution Frame (IDF) Implementation  
0 (U.S. Application Only)

0 The existing cabling method does not support the testing  
0 of non-integrated SLC 96 subscriber loop carrier systems  
0 using an AT&T test tool called Pair Gain Test Controller  
0 (PGTC).

0 To allow the testing of the universal SLC 96 subscriber  
0 carrier system using a PGTC, the total NT3X09BA multiple  
0 cable length must not exceed the figures shown in Table

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0 35.2 of this document. Otherwise, an Intermediate Dis-  
0 tribution Frame (IDF) (i.e. Customer provided) close to  
0 the DMS line-up will be required.

0 The total multiple cable length is the sum of all multi-  
0 ple cables to the distribution frame, both horizontal and  
0 vertical.

0 The overall MTA circuit distance must be calculated based  
0 on the longest metallic path from any PGTC to any uni-  
0 versal SLC 96 Central Office Terminal Channel Unit (COT  
0 CU) in the central office.

0 The MTA multiple cables can be minimized by placing the  
0 TME that house the MTAs close to the cable racks and the  
0 MDF as much as possible.

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| 0 Overall<br>0 MTA circuit<br>0 distance **<br>0 in feet<br>0 ----- | Position of MTA<br>horizontal<br>appearance on<br>MTA path<br>----- | Maximum total<br>multiple cable<br>length* in 24<br>AWG in feet<br>----- | Maximum total<br>multiple cable<br>length* in 26<br>AWG in feet<br>----- |
|---------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 0 2400                                                              | closer to PGTC                                                      | 900                                                                      | 1000                                                                     |
| 0                                                                   | closer to COT CU                                                    | 900                                                                      | 1150                                                                     |
| 0 2100                                                              | closer to PGTC                                                      | 1050                                                                     | 1150                                                                     |
| 0                                                                   | closer to COT CU                                                    | 1150                                                                     | 1400                                                                     |
| 0 1800                                                              | closer to PGTC                                                      | 1350                                                                     | 1450                                                                     |
| 0                                                                   | closer to COT CU                                                    | 1350                                                                     | 1600                                                                     |
| 0 1500                                                              | closer to PGTC                                                      | 1600                                                                     | 1600                                                                     |
| 0                                                                   | closer to COT CU                                                    | 1650                                                                     | 1850                                                                     |
| 0 1200                                                              | closer to PGTC                                                      | 1750                                                                     | 1900                                                                     |
| 0                                                                   | closer to COT CU                                                    | 1800                                                                     | 2050                                                                     |
| 0 900                                                               | closer to PGTC                                                      | 2100                                                                     | 2100                                                                     |
| 0                                                                   | closer to COT CU                                                    | 2100                                                                     | 2250                                                                     |
| 0 600                                                               | closer to PGTC                                                      | 2400                                                                     | 2300                                                                     |
| 0                                                                   | closer to COT CU                                                    | 2400                                                                     | 2450                                                                     |
| 0 300                                                               | closer to PGTC                                                      | 2550                                                                     | 2550                                                                     |
| 0                                                                   | closer to COT CU                                                    | 2550                                                                     | 2650                                                                     |

0 Table showing maximum MTA cabling limitations  
0 from any PGTC to any universal SLC 96 COT CU

0 Table 35.2

0 \* The total multiple cable length is the sum of all multiple cables  
0 to the distribution frame, both horizontal and vertical.

0 \*\* The overall MTA circuit distance must be calculated based on the  
0 longest metallic path from any PGTC (Pair Gain Test Controller)  
0 to any universal SLC 96 COT CU (Central Office Terminal Channel  
0 Unit) in the central office.

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0 1.1.2 Wideband Test Access

0 a) General Description

0 The Wideband Test Access (WTA) Panel will replace the use of the  
0 Main Distributing Frame (MDF) for metallic cross-connecting of  
0 test circuits (such as the Line Test Unit/Multiline Test Unit  
0 (LTU/MTU)), Metallic Test Access (MTA), and line equipment in DMS  
0 offices.

0 The WTA Panel is a cross-connect panel which will provide the me-  
0 tallic cross-connect capability for the testing of DMS wideband  
0 subscriber services such as ISDN and Datapath as well as existing  
0 voice frequency DMS-100 subscriber services. It is mandatory for  
0 the testing of ISDN and is recommended for the testing of  
0 Datapath service. The existing MDF cabling method will not be  
0 able to support the testing of these services mainly because of  
0 the transmission impairment caused by the excessive switching of-  
0 fice cabling.

0 This method of cross-connecting office wiring for the test cir-  
0 cuits, MTA, and test access cables will drastically reduce the  
0 amount of office cabling resulting from the existing MDF method.

0 This panel will mount on the Miscellaneous Equipment (MIS) Frame  
0 NT0X02AB. With the panel mounted on an MIS frame within the DMS  
0 equipment frame lineups, all the cabling to the MDF will be elim-  
0 inated and this will result in much shorter office wiring for the  
0 testing of subscriber services.

0 b) References

0 c) Provisioning Considerations:

0 ( i) The Wideband Test Access (WTA) Panel will replace the use  
0 of the Main Distributing Frame (MDF) for metallic cross-  
0 connecting of test circuits (such as the Line Test  
0 Unit/Multiline Test Unit (LTU/MTU)), Metallic Test Access  
0 (MTA), and line equipment in DMS offices.

0 The WTA Panel is a cross-connect panel which will provide  
0 the metallic cross-connect capability for the testing of  
0 DMS wideband subscriber services such as ISDN and  
0 Datapath as well as existing voice frequency DMS-100 sub-  
0 scriber services. It is mandatory for the testing of  
0 ISDN and is recommended for the testing of Datapath ser-

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0 vice. The existing MDF cabling method will not be able  
0 to support the testing of these services mainly because  
0 of the transmission impairment caused by the excessive  
0 switching office cabling.

0 This method of cross-connecting office wiring for the  
0 test circuits, MTA, and test access cables will dras-  
0 tically reduce the amount of office cabling resulting  
0 from the existing MDF method.

0 ( ii) There are two (2) versions of the WTA Panel:

0 NT7X76AA WTA Panel

0 NT7X76BA WTA Panel (Dedicated LTU/MTU)

0 NT7X76AA will allow the cross-connection of up to 30  
0 NT3X09BA MTA circuits in a matrix of three (3) horizontal  
0 NT3X09BA rows by ten (10) vertical NT3X09BA columns. This  
0 is equivalent to the cross-connection of 24 horizontal  
0 test appearances to 80 vertical appearances. The NT3X09BA  
0 card has 8 horizontals and 8 verticals.

0 NT7X76AA will allow the cross-connection of up to 30  
0 NT3X09AA MTA circuits in a matrix of three (3) horizontal  
0 NT3X09AA rows by ten (10) vertical NT3X09AA columns. This  
0 is equivalent to the cross-connection of 24 horizontal  
0 test appearances to 40 vertical appearances. The NT3X09AA  
0 card has 8 horizontals and 4 verticals.

0 NT7X76BA is similar to NT7X76AA with one exception. The  
0 first horizontal test appearance of the 24 horizontal  
0 test appearances of the NT7X76BA panel is grouped into  
0 five (5) subgroups, each with two (2) horizontal 0's and  
0 16 verticals (if NT3X09BA cards are used for cross-  
0 connection purposes) or 8 verticals (if NT3X09AA cards  
0 are used for cross-connection purposes). Each horizontal  
0 subgroup can have a dedicated LTU/MTU. Hence, up to five  
0 (5) dedicated LTU/MTUs can be connected to NT7X76BA. If  
0 NT3X09BA cards are used, each dedicated LTU/MTU will have  
0 access to 16 verticals or 8 Line Concentrating Modules  
0 (LCMs) within each horizontal subgroup 0. If NT3X09AA  
0 cards are used, each dedicated LTU/MTU will have access  
0 to 8 verticals or 4 LCMs within each horizontal subgroup  
0 0.



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- 0 (iii) The NT7X76AA WTA Panel will not be used for the dedicated  
0 LTU/MTU function.

0 The NT7X76BA WTA Panel (Dedicated LTU/MTU)  
0 will be used for the dedicated LTU/MTU function.

0 The NT7X76AA will also be used if the office requires  
0 more than one (1) (horizontal) row of WTA Panels or more  
0 than 24 horizontal test appearances.

- 0 (iv) The number of WTA Panels can be expanded horizontally (in  
0 rows) and/or vertically (in columns) in a matrix.

0 For offices without dedicated LTU/MTUs, only NT7X76AA  
0 would be required for expansion both horizontally and  
0 vertically.

0 For offices with dedicated LTU/MTUs, the first row of WTA  
0 Panels would be of the NT7X76BA type. If connection to  
0 more dedicated LTU/MTUs was required, NT7X76BA Panels  
0 would be used for the second row of WTA Panels. Other-  
0 wise, the NT7X76AA Panel should be used. Our current  
0 standard is to have dedicated LTU/MTUs on the first row  
0 of the matrix of WTA Panels (i.e. NT7X76BA) and not to  
0 have dedicated LTU/MTUs on the second and all subsequent  
0 rows of the matrix of WTA Panels (i.e. NT7X76AA).

- 0 ( v) The WTA Panel will replace the Intermediate Distribution  
0 Frame (IDF) for the testing of the universal SLC 96 sub-  
0 scriber loop carrier system which uses an AT&T test tool  
0 called Pair Gain Test Controller (PGTC).

0 The existing engineering rules for the use of the IDF  
0 should be applied to the use of the WTA Panel. For more  
0 information, see ECM-276 on subject 8X8 Metallic Test Ac-  
0 cess Circuit Pack, NT3X09BA.

- 0 ( vi) The WTA panel will mount on the Miscellaneous Equipment  
0 (MIS) Frame NT0X02AB. With the panel mounted on an MIS  
0 frame within the DMS equipment frame lineups, all the ca-  
0 bling to the MDF will be eliminated and this will result  
0 in much shorter office wiring for the testing of sub-  
0 scriber services.

0 For initial and extension offices requiring new MIS  
0 Frames, the WTA Panels should be mounted on standard  
0 shelf positions 65,51,32,18, and 04 first on the front

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0 and then on the back of the MIS Frame. Hence, up to a  
0 maximum of ten (10) WTA Panels can be equipped on one (1)  
0 MIS Frame.

0 For ease of engineering cables, the WTA Panels will be  
0 assigned from the top position down on the MIS Frame.

0 Although a Frame Supervisory Panel (FSP) is not required  
0 for the WTA Panel, an FSP can be mounted in shelf posi-  
0 tion 45 if other devices (which can mount on the MIS  
0 Frame) require an FSP. Hence, if the MIS Frame is not  
0 fully provisioned with WTA Panels, other valid hardware  
0 units can be mounted.

0 For installation on existing MIS Frames in existing of-  
0 fices, the WTA Panels can be mounted on any available  
0 shelf position of the MIS Frame, preferably the top shelf  
0 positions.

- 0 ( vii) To minimize the office wiring required for line testing,  
0 the Maintenance Trunk Modules (MTM) that are provisioned  
0 with NT3X09AA/BA cards and LTU/MTUs should be reduced to  
0 a minimum and placed in the adjacent TME/DCE Frames next  
0 to the MIS Frames containing WTA Panels.

0 The Line Concentrating Equipment Frames (LCE) and ISDN  
0 Line Concentrating Equipment Frames (LCEI) should be  
0 clustered around the MIS Frames containing WTA Panels in  
0 order to minimize the cabling to these panels.

0 Hence, the signal loss caused by office wiring should be  
0 reduced to the minimum that is possible. The signal loss  
0 should be less than one (1) db in most offices.

0 (viii) Discrimination Numbering

0 WTA Panels NT7X76AA/BA will be numbered from 000 on up  
0 (e.g. WTA 000, WTA 001, etc.).

- 0 ( ix) For offices larger than 75,000 lines and requiring more  
0 than three (3) WTA Panels, the straight forward WTA ma-  
0 trix configuration cannot be used due to the software  
0 limitation of a maximum of 32 multiples which can be  
0 datafilled for each horizontal subgroup.

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0 The way to solve this problem is to split the total num-  
0 ber of multiples into either groups of 32 (using Method  
0 1) or groups of 31 (using Method 2).

0 WTA Panel Configuration for Offices with Line Size >  
0 75,000

0 Method 1

0 Using Method 1, the multiples can be divided evenly into  
0 two (2) groups of up to 32 multiples within each group.  
0 Each WTA Panel allows the cross-connection of up to ten  
0 (10) multiples except for the fourth panel which will  
0 only have two (2) multiples. Hence, WTA Panels  
0 "B", "C", "D", and "E" will provide cross-connections for  
0 32 multiples.

0 Access to the line circuits is provided via the extended  
0 verticals of WTA Panel "A" as illustrated. Therefore, the  
0 test circuits connected to WTA Panel "A" will have access  
0 to more than 75,000 lines by using the extended vertical  
0 and horizontal connections.

0 WTA Panel Configuration for Offices with Line Size >  
0 75,000

0 Method 2

0 Using Method 2, WTA Panel "A" is connected to WTA Panel  
0 "B" in such a way as to provide for the cross-connections  
0 for the first group of 31 multiples via WTA Panels  
0 "A", "B", "C", and "D" as in a normal matrix configuration.

0 For the second group of 32 multiples via WTA Panels  
0 "F", "G", "H", and "I", the extended verticals are used.

0 Differences Between Methods 1 and 2

0 Method 1 will require one (1) more WTA Panel which is  
0 panel "E" and three (3) more NT3X09BA cards, six (6) in-  
0 stead of three (3), connected to panel "A".

0 Using Method 1, line testing involving the first and sec-  
0 ond groups of 32 multiples will be subjected to the mul-  
0 tiple cabling within the group or a maximum of 32  
0 multiple cables. Using Method 2, line testing involving  
0 the second group of 32 multiples will also involve the

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0 first group of 31 multiples or will be subjected to a  
0 maximum of 63 multiple cables.

0 Generally, Method 1 would be preferred over Method 2 due  
0 to the effect on line testing. However, Method 2 may be  
0 worth considering if an LCE expansion is done properly to  
0 reduce the effect of multiple cabling on line testing.

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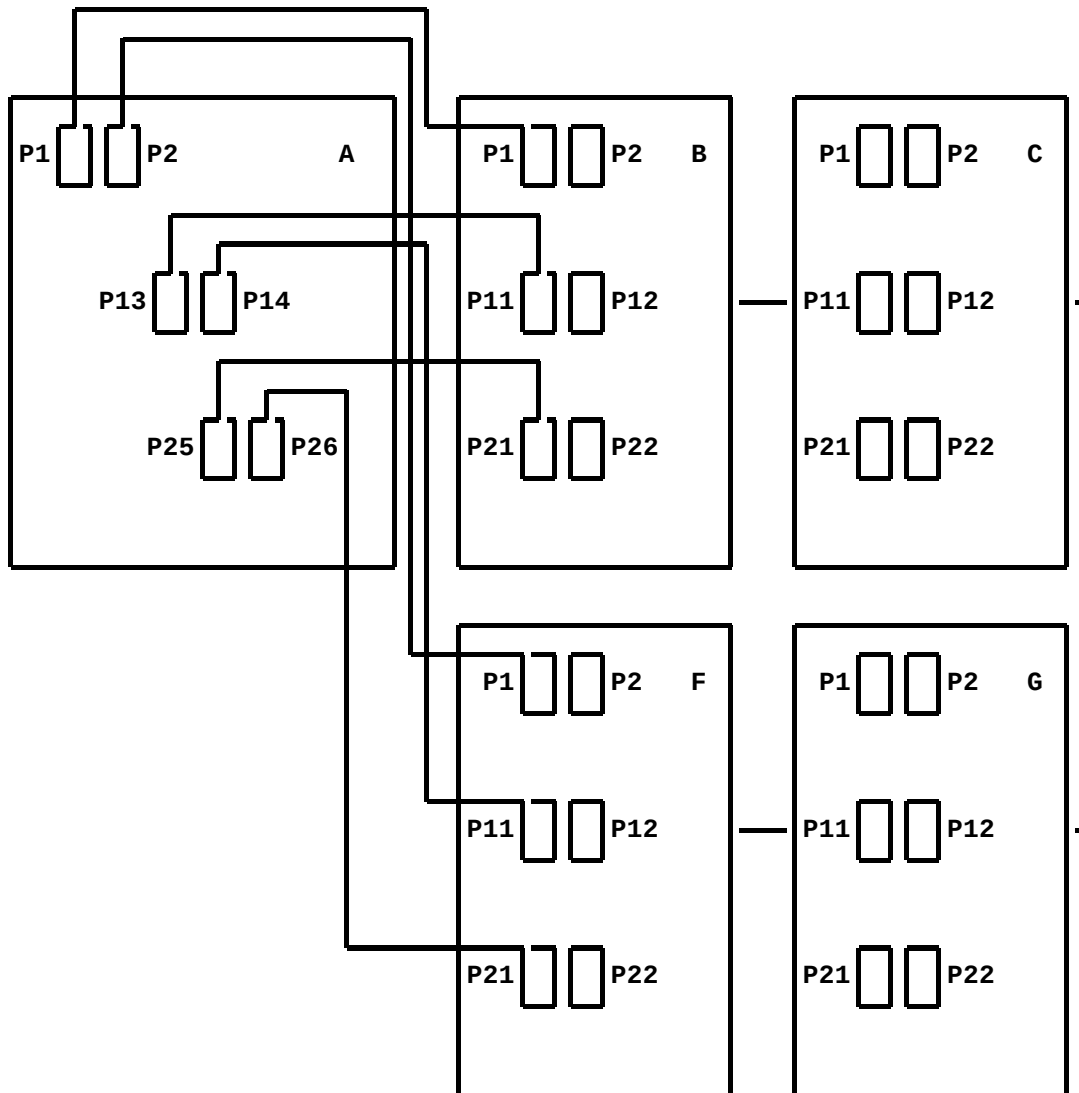
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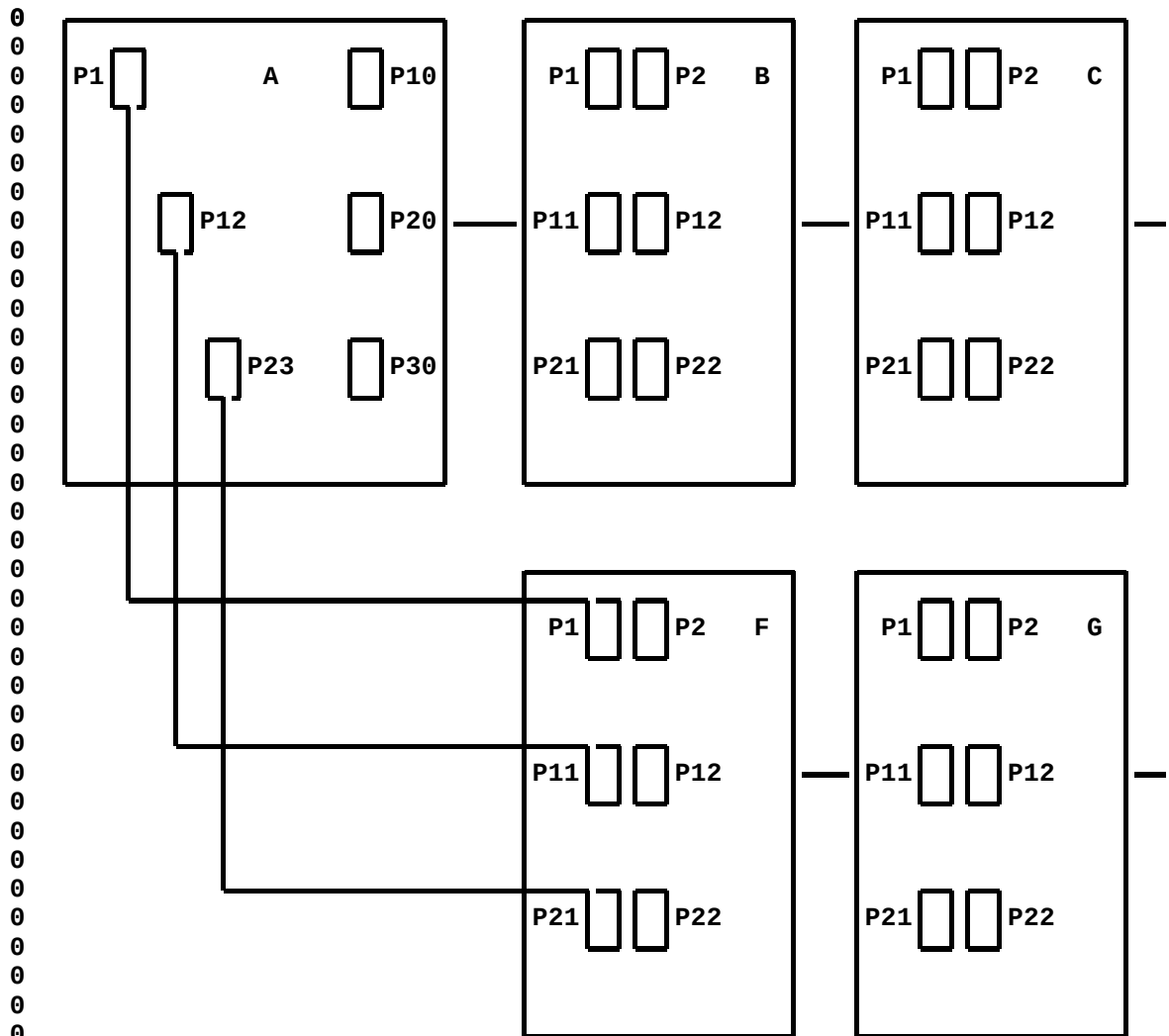
### Method 1



The connections between WTA Panels "A" and "B" and between WTA Panels "A" and "F" are for illustration purposes only. That is, the first group of eight (8) verticals on WTA "A" will be datafilled as extended verticals and connected to the first group of eight (8) horizontal datafilled as extended horizontal on WTA "B". The second group of eight (8) verticals of WTA "A" will be connected to the first group of eight (8) horizontal of WTA "F". Similarly, the third and fourth group of eight (8) verticals on WTA "A" will be connected to the second group of eight (8) horizontal of WTA "B" and "F" respectively. The fifth and sixth group of eight (8) verticals on WTA "A" will be connected to the third group of eight (8) horizontal on WTA "B" and "F" respectively. The actual connections are made from connectors P43 to P44 of WTA "A" to connectors P31 to P42 and P97 to P108 of WTA "B" and "F".

0 WTA Panel Configuration for Offices with Line Size >  
0 75,000

0 Method 2



0 WTA Panel D (to the right of WTA Panel C) and WTA Panels  
0 H and I (to the right of WTA Panel G) are not shown.

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0 The connections between WTA Panels "A" and "F" are for  
0 illustration purposes only. That is, the first group of  
0 eight (8) verticals datafilled as extended verticals on  
0 WTA "A" is connected to the first group of eight (8) hor-  
0 izontals datafilled as extended horizontals on WTA "F".  
0 Similarly, the second group of eight (8) verticals on WTA  
0 "A" is connected to the second group of eight (8) hori-  
0 zontals on WTA "F". The third group of eight (8) verti-  
0 cals on WTA "A" is connected to the third group of eight  
0 (8) horizontals on WTA "F". The actual connections will  
0 be made from connectors P43 to P48 on WTA "A" to connec-  
0 tors P31 to P42 and connectors P97 to P108 on WTA "F".

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0 1.1.3 101 Communication Test Line

0 a) General Description

0 The 101 Communication Test Line (CTL) circuit provides a 2-wire  
0 voice and signaling interface between the Trunk Module (TM) and a  
0 Maintenance and Administration Position (MAP) configured as a  
0 Line Test Position (LTP) or a Trunk Test Position (TTP). The Map  
0 may be at the same location as the TM or remote from it.

0 The Circuit is used in all DMS-100 Family offices as an originat-  
0 ing communication trunk or as a terminating type 101 trunk.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual  
0 NTP 297-2101-516 Line Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) There are two versions of the circuit:

0 NT5X30AA Used in North American applications.

0 NT5X30BA Used in International applications.

0 ( ii) Each circuit card contains one CTL circuit, and is  
0 plugged into a 2-wire, 4-wire, or 8-wire TM.

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## 0 ( iii) Features:

|                                        | NT5X30AA | NT5X30BA    |
|----------------------------------------|----------|-------------|
| -Impedance                             | 900 Ohms | complex     |
| -Compatibility with Telephone Set      | 500 Type | BT700 Type  |
| Key equipment                          | 1A2      | UK Approved |
| Foreign Exchange carrier channel units | Yes      | No          |
| -Built in ringing supply               | 20 Hz    | 25 Hz       |
| -Forward disconnect (re-ring)          | Yes      | No          |

0 Each card contains transmission and signaling functions  
0 to enable outgoing calls to be originated from a LTP or a  
0 TTP, and for incoming calls to be completed to it.

## 0 ( iv) Applications of NT5X30

## 0 1. 101 Test Line (Terminating)

0 As a minimum requirement provide one circuit per Main-  
0 tenance and Administration Position (MAP) which is to  
0 be used for trunk testing (TTP). Each Trunk to have  
0 access to all such positions.

## 0 2. 101 Communication Trunk (Originations)

## 0 Local Offices:

0 As a minimum requirement provide one circuit for each  
0 MAP which is to be used for general maintenance or  
0 line testing.

## 0 Toll Offices

0 As a minimum requirement provide one circuit for each  
0 MAP which is to be used for general maintenance or  
0 trunk testing.

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0 MAP/Headset Monitor Interface

0 One interface circuit is required for each headset  
0 provided for service analysis monitors and test mon-  
0 itors at the MAP (See Section 3.6, I/O Devices for  
0 more information).

0 ( v) For NT5X30AA one compromise balance network NT2X77, of  
0 the appropriate type must be provided for each card or-  
0 dered (see Section 3.5 (1.3.1 Analog Trunks) for more in-  
0 formation on the compromised Balance Networks).

0 For NT5X30BA one compromise balance network NT2X77BB must  
0 be provided for each card ordered.

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0 1.1.4 Miscellaneous Scan Detector Card

0 a) General Description

0 Scanner circuits enable the DMS Central Control to sense the  
0 state or change of state of external equipment.

0 b) References

0 NTP 297-1001-451 DMS-100 Family Common Customer Data  
0 Schema  
0 NTP 297-2101-451 DMS-100 Local Customer Data Schema  
0 NTP 297-2181-451 DMS-100 International Customer Data  
0 Schema  
0 NTP 297-2301-451 DMS-300 Gateway Customer Data  
0 Schema  
0 Section 3.7 Office Maintenance

0 c) Provisioning Considerations:

0 ( i) Three switch selectable detector modes:

- 0 - loop detector  
0 - ground detector  
0 - battery detector

0 ( ii) Each DMS miscellaneous scan card provides fourteen scan  
0 points configured as two scan circuits known as "Scan  
0 Groups" with seven points per group. In certain applica-  
0 tions software limitations restricts a group to a spe-  
0 cific function and unused points in that group cannot be  
0 assigned to other functions.

0 ( iii) DMS supports a maximum of 1024 scan points (146 scan  
0 groups). This includes seven scan points (one scan  
0 group) associated with each standard alarm card provi-  
0 sioned:

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0 NT3X82AA  
0 NT3X82AB  
0 NT3X83AA  
0 NT3X84AA  
0 NT3X85AA

0 For more information on the Standard Alarm cards, refer  
0 to Section 3.7, Office Maintenance.

0 ( iv) Miscellaneous Scan Card is NT0X10AA. One slot per card.  
0 Mounts on MTM, OAU, RSM.

0 ( v) For alarms which require scan points, see NTP  
0 297-1001-451 DMS-100 Family Common Customer Data Schema,  
0 Section 034 Alarm Scan Group Table.

0 ( vi) For line features which require scan points, see the Scan  
0 Group Table, Section 127 in the following NTPs:

0 NTP 297-2101-451  
0 NTP 297-2141-451  
0 NTP 297-2151-451  
0 NTP 297-2181-451

0 The quantity of scan points required for line features is  
0 divided by seven (7) to determine the number of scan cir-  
0 cuits or groups required.

0 ( vii) For network management functions which require scan  
0 points, see the Network Management Scan Table, Section  
0 039 in the following NTPs:

0 NTP 297-1001-451  
0 NTP 297-2141-451  
0 NTP 297-2151-451  
0 NTP 297-2181-451  
0 NTP 297-2301-451

0 The quantity of scan points required for network manage-  
0 ment functions is divided by seven (7) to determine the  
0 number of scan circuits or groups required.

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0 (viii) Each A.P.C. ROTL unit, model 1066-ROTL/52A, comes  
0 equipped with two ROTL test ports.

0 One scan group (four points plus three dedicated spares)  
0 must be provided for each A.P.C. ROTL test port. Provide  
0 one additional scan point per ROTL unit if an alarm  
0 interface is required.

0 ( ix) For more information on the provisioning of Scan  
0 Points, refer to Section 3.7, Office Maintenance.

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## 0 2.0 Wideband Test Access (WTA) Panel

0 The Wideband Test Access (WTA) Panel replaces the use of the Main Dis-  
0 tributing Frame (MDF) for metallic cross-connecting of test circuits  
0 (such as the Line Test Unit/Multiline Test Unit (LTU/MTU)), Metallic  
0 Test Access (MTA), and line equipment in DMS offices.

0 The WTA Panel is a cross-connect panel that provides the metallic  
0 cross-connect capability for the testing of DMS wideband subscriber  
0 services such as Datapath and ISDN as well as existing voice frequency  
0 DMS-100 subscriber services. The WTA is recommended for the testing  
0 of Datapath service and is a must when a PGTC (Pair Gain Test Control-  
0 ler) is used in the Central Office for testing. The existing MDF ca-  
0 bling method cannot support the testing of these services mainly  
0 because of the transmission impairment caused by the excessive switch-  
0 ing office cabling. For example, the WTA reduces the cabling needed  
0 in large offices that have non-integrated SLC-96 subscriber carrier  
0 systems that require the use of the Pair Gain Test Controller (PGTC).

0 This method of cross-connecting office wiring for the test circuits,  
0 MTA, and test access cables drastically reduces the amount of office  
0 cabling resulting from the existing MDF method.

0 This panel mounts on the Miscellaneous Equipment (MIS) Frame NT0X02AB.  
0 With the panel mounted on an MIS frame within the DMS equipment frame  
0 lineups, all unnecessary cabling to the MDF is eliminated and this re-  
0 sults in much shorter office wiring for the testing of subscriber ser-  
0 vices.

## 0 | 2.1 HARDWARE PROVISIONING

0

### 0 | 2.1.1 HARDWARE USAGE RESTRICTIONS

0

0 | Not applicable.

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0 | 2.1.2 HARDWARE DEPENDENCIES

0  
0 | When a WTA Panel is added as an extension to an existing office  
0 | that has:

0 | NT2X52ACs  
0 | NT2X52AGs  
0 | NT2X52APs

0 | TM8 Trunk Module shelves, a NT2X52AU Product Change kit must be  
0 | ordered for each shelf to be connected to the WTA panel. The  
0 | MONTALK trunks cannot be connected to the WTA panel on these  
0 | shelves unless they are retrofitted with this product change kit  
0 | to bring the release of the shelf up to NT2X52AV.

0 | For all new offices using the WTA panel, order the new TM8 shelf,  
0 | NT2X52AV. The NT2X52AV is essentially a NT2X52AG with a NT2X52AU  
0 | product change kit applied to it on the manufacturing shop floor.

## 0 | P AND C SIDE PORT REQUIREMENTS

0  
0 | Not applicable

## 0 | DMS BUS PORT REQUIREMENTS

0  
0 | Not applicable

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## 0 | CIRCUITS PER CARD

0  
0 | Not applicable

## 0 | DISCRIMINATION NUMBERING

0  
0 | Not applicable

0 | 2.1.3 PROVISIONING CONSIDERATIONS

0  
0 | 2.4.1 The Wide-band Test Access (WTA) Panel (NT7X76AA/B0233245) was  
0 developed to replace the functionality of the Main Distribution  
0 Frame (MDF) for metallic cross-connecting of the line equipment  
0 to the Metallic Test Access (MTA) and test heads. The DMS-100  
0 test heads include the Line Test Unit (LTU), the Multi-line Test  
0 Unit (MTU), and the Enhanced Services Test Unit (ESTU).

0 | The introduction of the WTA panel drastically reduces the amount  
0 of Central Office wiring necessary to cross-connect the test bus  
0 side of the line cards to the MDF, the Metallic Test Access  
0 (MTA) and the test heads. The panel can be engineered to be  
0 mounted into the Miscellaneous Equipment (MIS) Frame. When the  
0 MIS Frame is engineered into the DMS Equipment frame line-up,  
0 all the equipment cross-connections are completed locally on the  
0 WTA panel, not at the MDF.

0 | The WTA panel also drastically reduces the amount of CO wiring  
0 necessary to support the channel testing of Universal Digital  
0 Loop Carriers (UDLC) using a Pair Gain Controller (PGTC) and the  
0 channel testing of Integrated Digital Loop Carriers (IDLCs) us-  
0 ing the Loop Test Applique. Again the WTA panel can be engi-  
0 neered into the MIS Frame to eliminate unnecessary wiring  
0 between the CO equipment and the MDF.

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0 2.4.2 There are two (2) versions of the WTA Panel:

0 NT7X76AA WTA Panel

0 NT7X76BA WTA Panel (Dedicated LTU/MTU)

0 The NT7X76AA/BA allows the cross-connection of up to 30 NT3X09BA  
0 MTA circuits in a matrix of three (3) horizontal NT3X09BA rows  
0 by ten (10) vertical NT3X09BA columns. This is equivalent to  
0 the cross-connection of 24 horizontal test appearances to 80  
0 vertical appearances. The NT3X09BA card has 8 horizontals and 8  
0 verticals.

0 The NT3X09AA is not recommended for use with the WTA panel. The  
0 NT3X09AA has a 4X8 matrix as opposed to the NT3X09BA which has  
0 an 8X8 matrix. An NT3X09AA can be connected to the WTA panel us-  
0 ing the NT3X09BA connectorized cable, but once a WTA horizontal  
0 row has a NT3X09AA, only NT3X09AAs can be connected to that par-  
0 ticular horizontal row. The NT3X09AAs and NT3X09BAs cannot be  
0 mixed on the same row of a WTA panel.

0 The NT7X76BA is similar to NT7X76AA with one exception. The  
0 first horizontal test appearance of the 24 horizontal test ap-  
0 pearances of the NT7X76BA panel is grouped into five (5) sub-  
0 groups, each horizontal 0 with access to 16 verticals when  
0 NT3X09BA cards are used for cross-connection purposes. Each  
0 horizontal subgroup can have a dedicated LTU/MTU. Hence, up to  
0 five (5) dedicated LTU/MTUs can be connected to NT7X76BA. If  
0 NT3X09BA cards are used, each dedicated LTU/MTU has access to 16  
0 verticals or 8 Line Concentrating Modules (LCMs) within each  
0 horizontal subgroup 0.

0 For U.S. applications, the NT7X76BA is the standard WTA panel  
0 for all configurations that require dedicated LTU functionality.

0 2.4.3 The NT7X76BA WTA Panel is only used for the dedicated LTU/MTU  
0 function.

0 When the dedicated LTU/MTU function is used, the vertical ap-  
0 pearances are expanded using the NT7X76BA. The horizontal ap-  
0 pearances can be expanded with the NT7X76AA.

0 The NT7X76AA can also be used if the office requires more than  
0 one (1) (horizontal) row of WTA Panels or more than 24 horizon-  
0 tal test appearances.

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0 2.4.4 For offices without dedicated LTU/MTUs, only NT7X76AA would be  
0 required for expansion both horizontally and vertically.

0 For offices with dedicated LTU/MTUs, the first row of the WTA  
0 Panel matrix would be of the NT7X76BA type. Our current stand-  
0 ard is to have dedicated LTU/MTUs on the first row of the matrix  
0 of WTA Panels (i.e. NT7X76BA) and not to have dedicated LTU/MTUs  
0 on the second and all subsequent rows of the matrix of WTA Pan-  
0 els (i.e. NT7X76AA). If connection to more dedicated LTU/MTUs  
0 was required, NT7X76BA Panels would be used for the second row  
0 of WTA Panels. Otherwise, the NT7X76AA Panel should be used.

0 2.4.5 The WTA Panel replaces the Intermediate Distribution Frame (IDF)  
0 for the testing of the universal SLC 96 subscriber loop carrier  
0 system which uses an AT&T test tool called Pair Gain Test Con-  
0 troller (PGTC).

0 The location of the WTA shall be selected such that the overall  
0 cable length from the PGTC to the universal SLC 96 COT CU (Cen-  
0 tral Office Terminal Channel Unit), and the total multiple cable  
0 length is less than 2500 feet (see Figure 1 on page 14-28).  
0 'Multiples' are all the open-ended cables connected to the test  
0 signal path; namely, all the open-ended WTA/MTA cables bridged  
0 on the test signal path between the PGTC and the COT CU. Since  
0 the WTA Panel consists of a 3 row x 10 column matrix of WTA to  
0 MTA connectors, and assuming that all 30 connectors are equipped  
0 with cables, the total number of 'multiples' is:  $(10-1) + (3-1)$   
0 = 11. The decrements by one are necessary because one horizontal  
0 and one vertical multiple belong to the test signal path. The  
0 number of multiples will increase if more WTA panels are used.

0 In existing offices, some equipment relocation may be necessary  
0 in order to comply with the cable length restrictions when PGTCs  
0 are used.

0 Referring to the Figure 1 on page 14-28, the PGTC to COT CU ca-  
0 ble length, L, is composed of the following segments:

0 
$$L = (\text{PGTC to MDF}) + (\text{MDF to 2X90}) + (\text{2X90 to APPLIQUE}) +$$
  
0 
$$(\text{APPLIQUE to WTA}) + 2 \times (\text{WTA to MTA}) + (\text{WTA to LCM}) +$$
  
0 
$$(\text{LCM to MDF}) + (\text{MDF to COT CU})$$

0 The PGTC to COT cable length ("L"), must be calculated based on  
0 the longest metallic patch between the PGTC and the furthest  
0 universal SLC 96 COT CU in the central office.

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0 2.4.6 The WTA panel mounts on the Miscellaneous Equipment (MIS) Frame  
0 NT0X02AB. With the panel mounted on an MIS frame within the DMS  
0 equipment frame lineups, much of the cabling to the MDF can be  
0 eliminated and this results in much shorter office wiring for  
0 the testing of subscriber services.

0 For installation into an existing MIS Frame in an existing of-  
0 fice, the WTA Panel(s) can be mounted on any available shelf po-  
0 sition of the MIS frame, preferably the top shelf position.  
0 Before engineering the Panel(s) into the frame, insure that the  
0 cable trough has adequate room for the necessary WTA Panel cabl-  
0 ing. Remember, the MIS Frame must be in proximity to the MTAs,  
0 test heads, etc..

0 For initial and extension offices requiring new MIS Frames, the  
0 WTA Panels are to be engineered and mounted on standard shelf  
0 positions in the following order:

|   |          |          |
|---|----------|----------|
| 0 | Panel #1 | 65 Front |
| 0 | Panel #2 | 51 Front |
| 0 | Panel #3 | 51 Rear  |
| 0 | Panel #4 | 32 Front |
| 0 | Panel #5 | 32 Rear  |
| 0 | Panel #6 | 18 Front |
| 0 | Panel #7 | 18 Rear  |
| 0 | Panel #8 | 04 Front |

0 Currently WTA cannot be mounted on shelf position 65R because of  
0 the conflict with the ground cable lug. This restriction will be  
0 removed in the future when the workaround is available.

0 Notes:

0 1. A maximum of 8 WTA Panels can be provisioned per NT0X02AB Mis-  
0 cellaneous Frame.

0 2. For ease of engineering cables, the WTA Panels are assigned  
0 from the top of the MIS frame to the bottom.

#### 0 2.4.7 WTA Panel Interconnect Cables:

0 To allow open access to the WTA Panel's connectors, all WTA  
0 panel interconnect cables (e.g. MTA Cables) are to be routed be-  
0 hind the panel(s).

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0 2.4.8 Although a Frame Supervisory Panel (FSP) is not required for the  
0 WTA Panel, an FSP can be mounted in shelf position 45F if other  
0 devices (which can mount on the MIS Frame) require an FSP.  
0 Hence, if the MIS Frame is not fully provisioned with WTA Pan-  
0 els, other valid hardware units can be mounted.

0 2.4.9 To minimize the office wiring required for line testing, the  
0 Maintenance Trunk Modules (MTM) that are provisioned with  
0 NT3X09BA cards and LTU/MTUs should be reduced to a minimum and  
0 placed in the adjacent TME Frames next to the MIS Frames con-  
0 taining WTA Panels.

0 The Line Concentrating Equipment Frames (LCE) and should be  
0 clustered around the MIS Frames containing WTA Panels in order  
0 to minimize the cabling to these panels.

0 Hence, the signal loss caused by office wiring should be reduced  
0 to the minimum that is possible. The signal loss should be less  
0 than one (1) db in most offices.

0 2.4.10 Discrimination Numbering

0 WTA Panels NT7X76AA/BA are numbered from 000 on up (e.g. WTA  
0 000, WTA 001, etc.).

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0 2.4.11 WTA Panel Configuration for Offices with Line Size > 75,000

0 For offices larger than 75,000 lines and requiring more than  
0 three (3) WTA Panels, the straight forward WTA matrix configura-  
0 tion cannot be used due to the software limitation of a maximum  
0 of 32 multiples eight (8) verticals each which can be datafilled  
0 for each horizontal subgroup i.e. 256 verticals.

0 The way to solve this problem is to split the total number of  
0 multiples into either groups of 32 (using Method 1) or groups of  
0 31 (using Method 2).

0 Method 1

0 Using Method 1, the multiples can be divided evenly into two (2)  
0 groups of up to 32 multiples within each group. Each WTA Panel  
0 allows the cross-connection of up to ten (10) multiples except  
0 for the fourth panel which can only have two (2) multiples.  
0 Hence, WTA Panels "B", "C", "D", and "E" provide cross-connections  
0 for 32 multiples.

0 Access to the line circuits is provided via the extended verti-  
0 cals of WTA Panel "A" P1 to the horizontals of WTA Panel "B" as  
0 illustrated. Therefore, the test circuits connected to WTA  
0 Panel "A" have access to more than 75,000 lines by using the ex-  
0 tended vertical and horizontal connections.

0 The connections between WTA Panels "A" and "B" and between WTA  
0 Panels "A" and "F" are for illustration purposes only. That is,  
0 the first group of eight (8) verticals on WTA "A" are datafilled  
0 as extended verticals and connected to the first group of eight  
0 (8) horizontals datafilled as extended horizontals on WTA "B".  
0 The second group of eight (8) verticals of WTA "A" are connected  
0 to the first group of eight (8) horizontals of WTA "F". Simi-  
0 larly, the third and fourth group of eight (8) verticals on WTA  
0 "A" are connected to the second group of eight (8) horizontals  
0 of WTA "B" and "F" respectively. The fifth and sixth group of  
0 eight (8) verticals on WTA "A" are connected to the third group  
0 of eight (8) horizontals on WTA "B" and "F" respectively. The  
0 actual connections are made from connectors P43 to P44 of WTA  
0 "A" to connectors P31 to P42 and P97 to P108 of WTA "B" and "F".

0 Method 2

0 Using Method 2, WTA Panel "A" is connected to WTA Panel "B" in  
0 such a way as to provide for the cross-connections for the first  
0 group of 29 (32-3) multiples via WTA Panels "A", "B", "C", and "D"

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0 as in a normal matrix configuration. Three (3) vertical multi-  
0 ples are used for expansion into the second group.

0 For the second group of 32 multiples via WTA Panels "F", "G",  
0 "H", and "I", the extended verticals from WTA "A" are connected  
0 to the horizontals of WTA "B".

0 The connections between WTA Panels "A" and "F" are for illus-  
0 tration purposes only. That is, the first group of eight (8)  
0 verticals datafilled as extended verticals on WTA "A" is con-  
0 nected to the first group of eight (8) horizontals datafilled as  
0 extended horizontals on WTA "F". Similarly, the second group of  
0 eight (8) verticals on WTA "A" is connected to the second group  
0 of eight (8) horizontals on WTA "F". The third group of eight  
0 (8) verticals on WTA "A" is connected to the third group of  
0 eight (8) horizontals on WTA "F". The actual connections are  
0 made from connectors P43 to P48 on WTA "A" to connectors P31 to  
0 P42 and connectors

0 Differences Between Methods 1 and 2

0 Method 1 requires one (1) more WTA Panel which is panel "E" and  
0 three (3) more NT3X09BA cards, six (6) instead of three (3),  
0 connected to panel "A".

0 Using Method 1, line testing involving the first and second  
0 groups of 32 multiples is subjected to the multiple cabling  
0 within the group or a maximum of 32 multiple cables. Using  
0 Method 2, line testing involving the second group of 32 multi-  
0 ples is also involve the first group of 29 multiples or is sub-  
0 jected to a maximum of 61 multiple cables.

0 Generally, Method 1 would be preferred over Method 2 due to the  
0 effect on line testing. However, Method 2 may be worth consid-  
0 ering if an LCE expansion is done properly to reduce the effect  
0 of multiple cabling on line testing.

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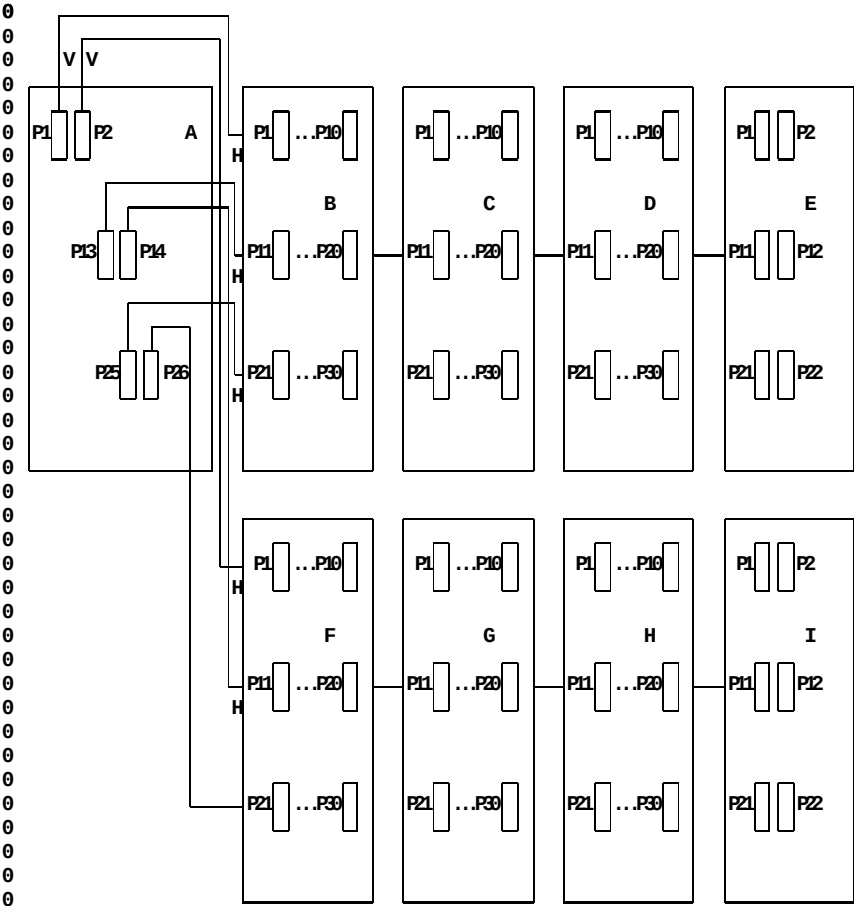
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0 WIA Panel Configuration for Offices with Line Size > 75,000  
0 Method 1

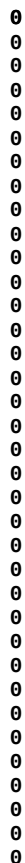


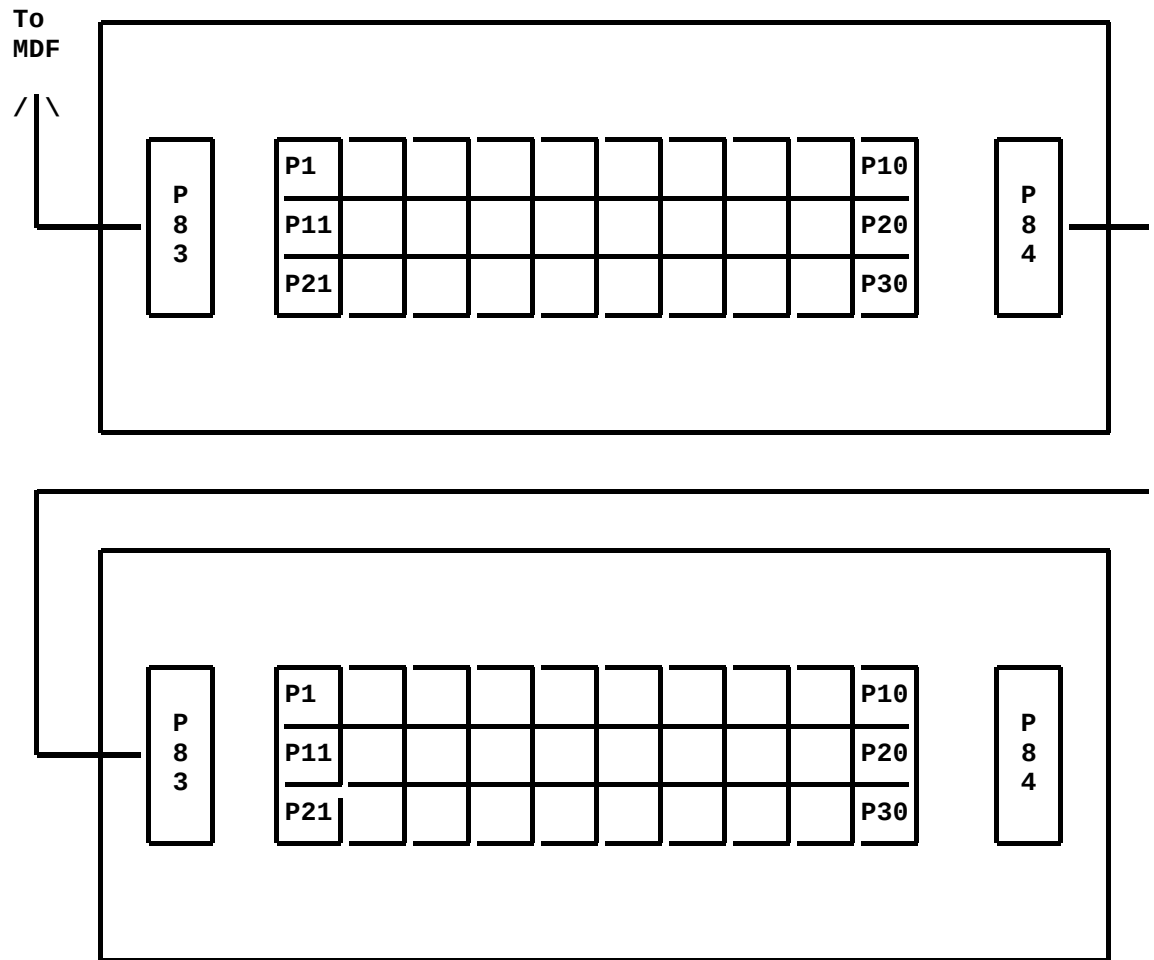
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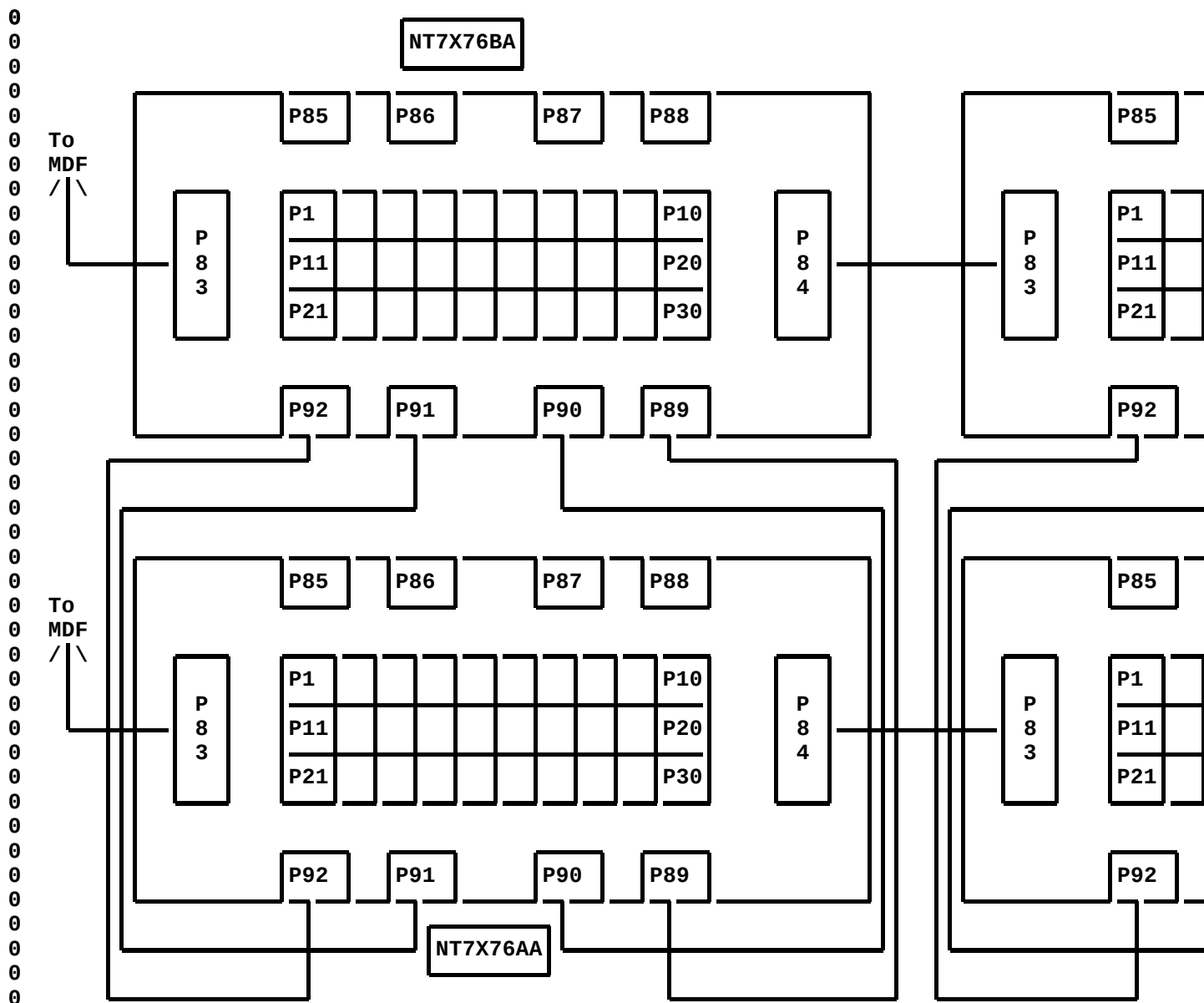
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### 3 BY 20 Matrix Example



## 0

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0 WTA Panel Worksheet0 HORIZONTAL APPEARANCES

- 0 Q1) Number of No. 3 Local Test Cabinet trunks \_\_\_\_\_
- 0 Q2) Number of No. 14 Local Test Cabinet trunks \_\_\_\_\_
- 0 Q3) Number of Operator Verification trunks \_\_\_\_\_
- 0 Q4) Number of Coin Line Test Interface trunks \_\_\_\_\_
- 0 Q5) Number of Mechanized Loop Test trunks \_\_\_\_\_
- 0 Q6) Number of Dialable Tone Locator circuits \_\_\_\_\_  
0 (NTX277AA feature package)
- 0 Q7) Number of Pair Gain Test Controllers (PGTC) \_\_\_\_\_
- 0 Q8) Number of rover LTUs required \_\_\_\_\_  
0 (MTUs are preferred)
- 0 Q9) Number of rover MTU circuits required \_\_\_\_\_  
0 Each MTU has 2 circuits. (1 MTU replaces 2 LTUs)
- 0 Q10) Number of Enhanced Services Test Units (ESTU) \_\_\_\_\_
- 0 Q11) Number of other test circuits \_\_\_\_\_

0 HA (number of NT3X09BA MTA for all horizontal appearances)

0 
$$= (Q1+Q2+Q3+Q4+Q5+Q6+Q7+Q8+Q9+Q10+Q11+1)/8$$
  
0 (rounded to next integer)

0 1 represents the horizontal '0' which  
0 is shared by all dedicated LTUs/MTUs

0 HWTa (number of horizontal WTAs) = HA/3 (rounded to next integer)

0 VERTICAL APPEARANCES

0 VA (number of NT3X09BA MTA for all vertical appearances)

0 
$$= (LCM/4 + LCMI/4 + RCS/8 + SMU/8 + SMR/8)$$
  
0 (rounded to next integer)

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0 VTA (number of vertical VTAs) =  $VA/10$  (rounded to next integer)

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0 Number of WTA PANELS

0 WTA (number of WTA panels) = HWTa X VWTa \_\_\_\_\_

0 MDF Connector Blocks0 Q20) Number of WTA HORIZONTAL panels X 1 \_\_\_\_\_  
0 (requires 48 pins per MDF block)0 Q21) Number of WTA panels with SLC/Urban \_\_\_\_\_  
0 software sites  
0 (requires 160 pins per MDF block)0 Q22) Number of MDF blocks:  $[Q10 \times 48 + Q11 \times 160] / P$  \_\_\_\_\_  
0 (where 'P' varies with the PEC of the DF block  
0 chosen for a particular central office job.)

## 0 Note:

0 RCS - RCS represents the number of Remote Concentrator Software sites.  
0 A Remote Concentrator Software site is a group of SLC-96 Remote  
0 Terminals tested via the same vertical (one vertical may be used  
0 for testing up to 10 co-located SLC-96 Remote Terminals).0 | SMU - Subscriber Multiplexor Urban represents the number of Remote  
0 DMS-1U Software sites. One Remote DMS-1U Software site is a  
0 group of DMS-1U terminals tested via the same vertical.0 | SMR - Subscriber Multiplexor Rural represents the number of Remote  
0 DMS-1R Software sites. One Remote DMS-1R Software site is a  
0 group of DMS-1R terminals tested via the same vertical.

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0 2.1.4 OFFICE LAYOUT INFORMATION

0  
0 See item 2.4 entitled PROVISIONING CONSIDERATIONS.

0 2.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 2.2 PRODUCT/SYSTEM SPECIFICATION

0

0 2.2.1 PHYSICAL CHARACTERISTICS

0  
0 WTA Panel NT7X76AA/BA Physical Dimensions

0 Height 14.00" Width 26.26" Depth 2.25"

0 There is no power required for this panel.  
0 |

0 2.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

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0 2.2.3 SPARING INFORMATION

0  
0 Not applicable.

0 2.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not applicable

0 2.2.5 CURRENT DRAIN INFORMATION

0  
0 Not applicable

0 2.3 SOFTWARE PROVISIONING

0

0 2.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 For office extensions, the following information must be provided  
0 to the Equipment Application Engineer by the Systems Application  
0 Engineer before any work can be done to extend the MTA test ma-  
0 trix in a central office:

0 A listing of all the data tuples in software tables  
0 MTAMDRVE,  
0 MTAHORIZ  
0 MTAVERT

0

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0 The data tuples in table TRKMEM for all the following trunk types  
0 (pseudo CLLIs) must also be provided:

0 DTU  
0 LTU  
0 MLT  
0 LTC  
0 MTU  
0 MONTALK  
0 VER90

0 It is critical to have the latest engineered data for these ta-  
0 bles because the telephone operating company may have made  
0 changes to these tables since the last office extension and the  
0 central office job database may not have the most current engi-  
0 neering information.  
0 Incorrect information can lead to the manufacturing of incorrect  
0 cables, which would have to be re-engineered and re-manufactured.

0 2.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 2.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

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0 2.4 REAL TIME IMPACT

0 Not applicable.

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0 CHAPTER 15

0 HOST - MAINTENANCE LINE TEST CARDS

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Host - Maintenance Line Test Cards  
Chapter 15

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0 HOST - MAINTENANCE LINE TEST CARDS  
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0 1.0 Host - Maintenance Line Test Cards

0 1.1 Line Test Unit (LTU)/Multi-line Test Unit (MTU)

0 a) General Description

0 These circuits are used to perform DC and AC voltage measurements  
0 as well as resistance, capacitance and frequency measurements on  
0 subscriber loops and line circuits. Connection is DC-metallic  
0 via the DMS Metallic Test Access Network (MTA) and the access re-  
0 lay in the line card.

0 The Multi-line Test Unit (MTU) is to replace the existing Line  
0 Test Unit. The Multi-line Test Unit will perform all of the  
0 functions of the existing LTU with greater speed and accuracy.  
0 In addition it may be used to test Electronic Business Set (EBS)  
0 lines and it may be used for OPM battery maintenance.

0 The LTU is used for North American applications only. The MTU is  
0 applicable to the Canadian Markets only and for ISDN applications  
0 in the U.S. only.

0 b) References

0 NTP 297-1001-516 Trunks Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) Applies to DMS-100 and DMS-100/200 offices only.

0 ( ii) Each LTU circuit consists of a pair of interconnected  
0 cards:

0 NT2X10AB Line Test Unit - Analog  
0 NT2X11AC/AD Line Test Unit - Digital Card

0 Each MTU circuit consists of a pair of interconnected  
0 cards:

0 NT2X10BA Multi-line Test Unit - Analog  
0 NT2X11BA Multi-line Test Unit - Digital Card

0 The NT2X11AD provides the feature of supplying battery  
0 voltage to the EBS sets while their line card is being  
0 tested, thus preventing the volume reset of the EBS. The  
0 NT2X11AD is backward compatible with all previous ver-  
0 sions of the NT2X11 and should be ordered for all new ap-



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0 plications (for U.S. applications only). Existing offices  
0 using software package NTX106AA should be upgraded to  
0 NT2X11AD circuit packs.

0 The MTU may be added to offices with existing LTU's (for  
0 Canadian applications only). A host office must be  
0 equipped with BCS-19 or later software to support the  
0 MTU. A remote office must be equipped with BCS-21 or  
0 later software. The MTU circuit packs require a -48V SP  
0 connection that the LTU does not require.

0 ( iii) MTU for 2B1Q Lines on a LCME.

0 For every MTA that has a LCME on the vertical there must  
0 be at least one MTU on a horizontal of that MTA. Each MTU  
0 (NT2X10BA and NT2X11BA card set) has two test access  
0 ports; that is two (2) sets of tip and ring. Thus it can  
0 test two 2B1Q lines at the same time. A LTU that has ac-  
0 cess to an MTA that has a LCME on the vertical will NOT  
0 be used to perform any metallic testing on the 2B1Q  
0 lines. Any rover test units (ones shared across MTAs)  
0 that has access to the MTA that has a LCME on it must be  
0 a MTU for it to be used on the LCME.

0 For the U.S. market, the MTUs are to be used for 2B1Q ap-  
0 plications only. No LTUs can be assigned to an MTA that  
0 has an LCME on the vertical. No MTA that has an LCME on  
0 the vertical can be daisy-chained to other MTAs that does  
0 not have an LCME on the vertical.

0 The physical installation of MTUs in MTMs is no different  
0 for 2B1Q than for POTS.

0 ( iv) The LTU analog card and the LTU digital card each occu-  
0 pies one card slot. They are mounted on a Maintenance  
0 Trunk Module (MTM), or a Remote Service Module (RSM) (in  
0 a RLM) or a Remote Maintenance Module (RMM) (in a RLCM,  
0 RSC, OPM).

0 The MTU analog card and the MTU digital card each occu-  
0 pies one card slot. They are mounted on a Maintenance  
0 Trunk Module (MTM), or a Remote Maintenance Module (RMM)  
0 (in a RLCM, RSC, OPM).

0 ( v) Provisioning of Line Test Unit (LTU) utilizing NT2X46AB  
0 MTA.

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$$LTU = \frac{\text{No. SMS S/W Sites}}{20} + \frac{\text{No. SMU S/W Sites}}{20} +$$

$$\frac{\text{No. SMR}}{20} + \frac{\text{No. LCM}}{10} + \frac{\text{No. LM}}{10} + 1$$

Provisioning of Line Test Unit (LTU utilizing NT3X09BA 8 X 8 Metallic Test Access CP.

$$LTU = \frac{\text{No. SMS S/W Sites}}{16} + \frac{\text{No. SMU S/W Sites}}{16} +$$

$$\frac{\text{No. SMR}}{16} + \frac{\text{No. LCM}}{8} + \frac{\text{No. LM}}{8} + 1$$

( vi) Provisioning of Multi-line Test Unit (LTU):

#### Method 1

It is recommended that one (1) MTU circuit be assigned as a dedicated MTU for two NT3X09BA Metallic Test Access cards. This will serve up to eight (8) LCMs. In addition provision one (1) non-dedicated (rover) MTU circuit per office.

For RLCM and OPM offices provision one (1) dedicated MTU circuit (the rover MTU is not required).

For RSC offices provision as per host office.

$$\# \text{ of MTU Circuits} = \frac{\# \text{ of LCMs}}{8} + 1$$

$$\# \text{ of NT2X10BA/NT2X11BA Pairs} = \frac{\# \text{ of MTU Circuits}}{2}$$

#### Method 2

Telco requirements may dictate that all of the lines in an office be testable in a given time for test. This will

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0 require provisioning enough MTU circuits to meet this re-  
0 quirement based on the following formula:

$$\begin{array}{lcl} \text{# MTU} & \text{\# of Lines x Test Hold Time (Secs)} & \\ \text{Circuits} & = \frac{\text{-----}}{3600 * \text{Time-For-Test (Hrs)}} + 1 \end{array}$$

$$\begin{array}{lcl} & \text{\# MTU Circuits} & \\ \text{\# of NT2X10BA/NT2X11BA Pairs} & = \frac{\text{-----}}{2} \end{array}$$

0 Typical Test Hold Times

|                    | Long Diagnostic Test | LIT Test |
|--------------------|----------------------|----------|
| Type 'A' Line Card | 26 secs              | 6-8 secs |
| Type 'B' Line Card | 32 secs              | 6-8 secs |
| EBS Line Card      | 106 secs             | 6-8 secs |

0 2.0 DMS Building Building Block Engineering - TME

0 Not Applicable

0 2.1 Hardware Provisioning

0

0 2.1.1 Hardware Usage Restrictions

0

0 Not Applicable

0 2.1.2 Hardware Dependencies

0

0 Not Applicable

0 P AND C SIDE PORT REQUIREMENTS

0

0 Not Applicable

0 DMS BUS PORT REQUIREMENTS

0

0 Not Applicable

0

0

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0 CIRCUITS PER CARD

0  
0 Not Applicable

0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0  
0 2.1.3 PROVISIONING CONSIDERATIONS

0  
0 Trunk Module Equipment Questions

0 TME Customer Questions - Worksheet of Telco inputs derived at the  
0 time of order capture.

0 TME Calculations - Worksheet of provisioning algorithms driven  
0 from the results of TME Customer Questions.

0 Engineering Manual Section - Detailed description of the provi-  
0 sioning guidelines adjusted for DMS Building Block Engineering

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- 0 1. Scan Distribution Circuits
- 0 1.1 Scan points for DMS alarms ? \_\_\_\_\_
- 0 1.2 Scan points for Telco alarms ? \_\_\_\_\_
- 0 1.3 Scan points for 1066 ROTL/52A ? (14 minimum) \_\_\_\_\_
- 0 1.4 Scan points for hunting function ? \_\_\_\_\_
- 0 1.5 Scan points for network management function ? \_\_\_\_\_
- 0 1.6 Scan points for automatic board to board  
0 testing ? \_\_\_\_\_
- 0 1.7 Scan points for tone and scrambler funtion ? \_\_\_\_\_
- 0 1.8 Scan points for DPP ? \_\_\_\_\_
- 0 1.9 Scan points for BMC ? \_\_\_\_\_
- 0 1.10 Scan points for VMX function ? \_\_\_\_\_
- 0 1.11 Scan points for modem shelf power failure  
0 function ? \_\_\_\_\_
- 0 1.12 Scan points for AC fail function ? \_\_\_\_\_
- 0 1.13 Scan points for span protection alarm  
0 function ? \_\_\_\_\_
- 0 1.14 Scan points for other funtions not listed  
0 above ? \_\_\_\_\_
- 0 2. Signal Distribution Circuits
- 0 2.1 Signal dist. points for DMS alarms ? \_\_\_\_\_
- 0 2.2 Signal dist. points for Telco alarms ? \_\_\_\_\_
- 0 2.3 Signal dist. points for 1066 ROTL/52A ? \_\_\_\_\_
- 0 2.4 Signal dist. points for hunting function ? \_\_\_\_\_
- 0 2.5 Signal dist. points for network management  
0 function ? \_\_\_\_\_

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- 0 2.6 Signal dist. points for automatic board to \_\_\_\_\_  
0 board testing ?
- 0 2.7 Signal dist. points for carrier line testing \_\_\_\_\_  
0 applique ?
- 0 2.8 Signal dist. points for remote surveillance \_\_\_\_\_  
0 and control ?
- 0 2.9 Signal dist. points for conference and \_\_\_\_\_  
0 alerting systems ?
- 0 2.10 Signal dist. points for other functions not \_\_\_\_\_  
0 listed above ?
- 0 3. Milliwatt Test Line Circuits.
- 0 3.1 Quantity of 102 Milliwatt test lines required ? \_\_\_\_\_
- 0 4. Receiver Off Hook Tone Circuits.
- 0 4.1 ABSBH originating ccs/line for all office \_\_\_\_\_  
0 lines including remotes.
- 0 4.2 ABSBH holding time in seconds for originating \_\_\_\_\_  
0 attempts for all office lines ?
- 0 4.3 Total office line quantity including remote \_\_\_\_\_  
0 lines ?
- 0 4.4 Percentage of originating attempts that \_\_\_\_\_  
0 require receiver off hook tone ?
- 0 5. Transmission Test Trunk Circuits.
- 0 5.1 Quantity of outgoing interoffice trunks ? \_\_\_\_\_
- 0 6. Automatic Identified Outward Dial Circuits.
- 0 6.1 Quantity of C25 type signalling channels from \_\_\_\_\_  
0 PBX for AIOD reception ?
- 0 6.2 Redundancy of above links required ? \_\_\_\_\_
- 0 6.3 Quantity of work sharing mode C25 links from \_\_\_\_\_  
0 PBX for AIOD reception ?

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- 0 6.4 Redundancy of above links required ? \_\_\_\_\_
- 0 7. MF Receiver Circuits.
- 0 7.1 Quantity of CAMA position signalling circuits ? \_\_\_\_\_
- 0 7.2 Quantity of blue box fraud detection MF  
0 receiver circuits ? (1 to 3 per CAMA office) \_\_\_\_\_
- 0 7.3 Average MF receiver holding time in seconds.  
0 (If not known, 3 seconds is recommended) \_\_\_\_\_
- 0 7.4 MF incoming trunk quantity ? (Does not include  
0 DP or SS7 trunks. Does not include trunks on  
0 DTC equipped with UTR) \_\_\_\_\_
- 0 8. Digitone Receiver Circuits.
- 0 8.1 Digitone receiver holding time in seconds ?  
0 (if not known, 7 seconds is recommended) \_\_\_\_\_
- 0 8.2 Digitone line originating HDBH ccs/line ? \_\_\_\_\_
- 0 8.3 Digitone line average holding time in seconds ? \_\_\_\_\_
- 0 8.4 Number of digitone host and remote lines not  
0 served by an LGC equipped with UTR ? \_\_\_\_\_
- 0 8.5 Quantity of digitone receivers for the  
0 unauthorized fraud detection feature ? \_\_\_\_\_
- 0 9. Transmission Test Unit Circuits
- 0 9.1 Length of line diagnostic test.
- 0 9.1.1 Short ? (7 seconds) \_\_\_\_\_
- 0 9.1.2 Long ? (25 seconds) \_\_\_\_\_
- 0 10. Transmission Test Termination Circuits.
- 0 10.1 Quantity for open and short circuit tests ?  
0 (Two recommended per office) \_\_\_\_\_
- 0 11. Loop Around Test Circuits.

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- 0 11.1 Quantity for trunk transmission loss tests ? \_\_\_\_\_  
0 (Two recommended per office)
- 0 12. Digital Modems
- 0 12.1. Quantity of TOPS positions ? \_\_\_\_\_
- 0 12.2. Quantity of MDC attendant consoles ? \_\_\_\_\_
- 0 12.3. Quantity of TOPS printers (excluding SNAC) ? \_\_\_\_\_
- 0 13. TOPS Autoquote Digital Modems.
- 0 13.1 Quantity of TOPS dial-up autoquote circuits ? \_\_\_\_\_
- 0 14. Six Port Conference Circuits
- 0 14.1 Quantity of Service Analysis Positions ? (SAP) \_\_\_\_\_
- 0 14.2 Quantity of Trunk Test Positions ? (TTP) \_\_\_\_\_
- 0 14.3 Quantity of Attendant Consoles ? (BSAC) \_\_\_\_\_
- 0 14.4 Quantity of TOPS positions or TOPS voice links \_\_\_\_\_  
0 served by this office ?
- 0 14.5 Quantity of Service Analysis Evaluation System \_\_\_\_\_  
0 interfaces ?
- 0 14.6 ACTS recall/overtime ABSBH attempts ? \_\_\_\_\_
- 0 14.7 ACTS recall/overtime holding time in seconds ? \_\_\_\_\_  
0 (Amount of time to deposit coins for overtime.)
- 0 14.8 What is the total CCS for conference calls or \_\_\_\_\_  
0 is this quantity to be calculated ? If calc  
0 answer 15.8.1 through 15.8.3, if not enter total  
0 CCS and skip to 15.10.
- 0 14.8.1 Total number of POTS lines with call \_\_\_\_\_  
0 conference feature ?
- 0 14.8.2 POTS conference line ABSBH 2-way CCS per line \_\_\_\_\_
- 0 14.8.3 Probability of conference feature activation \_\_\_\_\_  
0 for calls ? (If unknown, 5% recommended)

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- 0 14.9 ABSBH CCS for call transfer, consult-hold \_\_\_\_\_  
0 and add-on for MDC lines ? (If unknown,  
0 recommend 1% or 2% of total MDC line CCS.
- 0 14.10 For 3 way call chaining, are circuit \_\_\_\_\_  
0 quantities to be specified or calculated ?
- 0 14.10.1 For specify, what is the quantity of \_\_\_\_\_  
0 3 way conference circuits required ?
- 0 14.10.2 For calculated:
- 0 14.10.2.1 Number of MDC lines with 3-way call \_\_\_\_\_  
0 feature ?
- 0 14.10.2.2 Percentage of 3 way call chaining feature \_\_\_\_\_  
0 penetration ?
- 0 14.10.2.3 Percentage of 3 way call chaining feature \_\_\_\_\_  
0 activation ?
- 0 14.10.2.4 Average number of conferees in 3 way call \_\_\_\_\_  
0 chaining group ?
- 0 14.11.3 Number of simultaneous 4 to 6 conferee \_\_\_\_\_  
0 conferences ?
- 0 14.12.4 Number of 6 port conference circuits for \_\_\_\_\_  
0 large conferences ?  
0 (For 7 to 10 conferee conferences provide  
0 2 6 port circuits per simultaneous conference.  
0 For 11 - 30 conferee conferences, subtract 10  
0 from the conference size and divide by 4 and  
0 round up to a whole number. Add 2 to this number  
0 to obtain the required number of 6 port circuits  
0 per simultaneous conferences of that size.)
- 0 14.12.5 Number of Collect calls handled by the \_\_\_\_\_  
0 AABS feature ?
- 0 14.12.6 Number of Third Party Billed calls handled \_\_\_\_\_  
0 by the AABS feature ?
- 0 14.12.7 Average holding time in seconds for Collect \_\_\_\_\_  
0 calls handled by the AABS feature ?

0

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0 14.12.8 Average holding time in seconds for Third \_\_\_\_\_  
0 Party Billed calls handled by the AABS  
0 feature.

0 15. Tone Generator Circuits

0 15.1 MDC Preset Conference required ? (NTX260AA) \_\_\_\_\_

0 15.2 Quantity of tone generator circuits for \_\_\_\_\_  
0 AUTOVON ?

0 16. Digitone Sender Circuits

0 16.1 Quantity of Tie Trunk outgoing ABSBH CCS ? \_\_\_\_\_

0 16.2 Average holding time of Tie Trunk outgoing \_\_\_\_\_  
0 call in seconds ? (If unknown, 180 seconds  
0 recommended).

0 16.3 Average holding time of digitone sender in \_\_\_\_\_  
0 seconds ? (If unknown, 3 seconds recommended.)

0 17. Alarm Circuits

0 17.1 Alarm transfer or alarm sending (Choose only one).

0 17.1.1 Alarm transfer to a remote office receiving \_\_\_\_\_  
0 circuit required ?

0 17.1.2 Alarm sending to a distant operator position \_\_\_\_\_  
0 required ?

0 17.2 Alarm grouping required ? \_\_\_\_\_

0 18. DTU BERT Circuits

0 18.1 Is digital test unit bit error ratio testing \_\_\_\_\_  
0 required ?

0 19. Tone Dectector Circuits

0 19.1 RONI or AUTOVON required ? \_\_\_\_\_

0 20. CAMA Circuits

0

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- 0 20.1 Quantity of CAMA position signaling circuits \_\_\_\_\_  
0 required ? (Equal to the number of RONI  
0 circuits)
- 0 20.2 Quantity Of CAMA suspension and call waiting \_\_\_\_\_  
0 circuits required ? (1 per office).
- 0 21. Analog Trunk Interface Circuits
- 0 21.1.1 Question deleted (Issue 02). \_\_\_\_\_
- 0 21.1.2 Quantity of analog recorded announcement \_\_\_\_\_  
0 interfaces required ?
- 0 21.1.3 Quantity of TOPS position interfaces ? \_\_\_\_\_
- 0 21.1.4 Quantity of TOPS printer interfaces ? \_\_\_\_\_
- 0 21.1.5 Question Deleted (Issue 02). \_\_\_\_\_
- 0 21.1.6 Quantity of VMX voice message interfaces ? \_\_\_\_\_
- 0 21.1.7 Analog echo suppression required on the \_\_\_\_\_  
0 above interfaces ?
- 0 21.1.8 Echo suppression w/o external pad sources \_\_\_\_\_  
0 required for above interfaces ?
- 0 21.2 Quantity of NCIS system interface circuits \_\_\_\_\_  
0 required ?
- 0 21.3 Quantity of 600 ohm 2 wire circuits required ? \_\_\_\_\_
- 0 21.4 Quantity of dial-up autoqoute interface \_\_\_\_\_  
0 circuits required ?
- 0 21.5 Quantity of automatic board to board test \_\_\_\_\_  
0 interface cicuits required ?
- 0 21.6 Quantity of tone and scrambler and/or ACD \_\_\_\_\_  
0 music on hold interface circuits required ?
- 0 22. Incoming/Outgoing Test Trunk Circuits
- 0 22.1 Quantity of No. 3 local test cabinet trunks \_\_\_\_\_  
0 required ?

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- 0  
0  
0
- 22.2 Quantity of No. 14 local test cabinet trunks required ? \_\_\_\_\_
- 0  
0
- 22.3 Quantity of operator verification trunks required ? \_\_\_\_\_
- 0  
0
- 22.4 Quantity of coin line test interface trunks required ? \_\_\_\_\_
- 0  
0
- 22.5 Quantity of mechanized loop test trunks required ? \_\_\_\_\_
- 0  
0
- 22.6 Quantity of dialable tone locator circuits required ? (NTX277AA feature package) \_\_\_\_\_
- 0
- 22.7 Quantity of Pair Gain Test Controllers (PGTC) ? \_\_\_\_\_
- 0
- 22.8 Quantity of other test circuits required ? \_\_\_\_\_
- 0
23. DID/DOD Trunk Circuits
- 0  
0
- 23.1 Quantity of 2 way DID/DOD PBX trunk circuits required ? \_\_\_\_\_
- 0
24. ROTL Trunk Circuits
- 0
- 24.1 ROTL test unit required ? \_\_\_\_\_
- 0  
0
- 24.2 Quantity of additional 105 test trunks required ? \_\_\_\_\_
- 0
25. PBX Trunk Circuits
- 0
- 25.1 Quantity of 1 way PBX trunk circuits required ? \_\_\_\_\_
- 0
26. 101 Test Line Trunk Circuits
- 0  
0
- 26.1 Quantity of 101 originating test line circuits required ? \_\_\_\_\_
- 0  
0
- 26.2 Quantity of 101 terminating test line circuits required ? \_\_\_\_\_
- 0
27. Headset Monitor Interface

0

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0 27.1 Quantity of headset monitor interface trunk \_\_\_\_\_  
0 circuits required ?

0 28. Call Waiting Tone Generator

0 28.1 Teen Service Required ? \_\_\_\_\_

0 29. Mechanized Calling Card Service

0 29.1 Total ABSBH MCCC attempts ? \_\_\_\_\_

0 29.2 Percentage of non-operator handled MCCC calls ? \_\_\_\_\_

0 30. Coin Detection Circuits

0 30.1 Total ABSBH toll coin attempts ? \_\_\_\_\_

0 31. Rover Line Test Units (LTU's).

0 (Note: MTU's are preferred. See question 32)

0 31.1 Quantity of Rover LTU's required ? \_\_\_\_\_

0 (Note: MTU's are preferred. See question 32.1)

0 32. Rover Metallic Test Units (MTU's)

0 32.1 Quantity of Rover MTU's required ? \_\_\_\_\_

0 (Note: one MTU replaces two LTU's)

0 33. Enhanced Services Test Units (ESTU's)

0 33.1 Quantity of ESTU's required ? \_\_\_\_\_

0

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0 Trunk Module Equipment Calculations

0 A. Scan Circuits

0 A.1 Add 1.1 through 1.14 = aa (Total Scan Points)

0 aa/14 (round up) = NT0X10AA

0 B. Signal Distributor Circuits

0 B.1 Add 2.1 through 2.10 = aa (Total SD points)

0 aa/14 (round up) = NT2X57AA

0 C. Milliwat Test Line Circuits

0 C.1 Provide the 3.1 quantity of NT1X00AB

0 D. Receiver Off Hook Tone Circuits

0 D.1  $(4.1)/(4.2/100) = aa$  (attempts per line)

0  $4.3 \times aa = bb$  (total attempts)

0  $bb \times 4.4 = cc$  (ROH attempts)

0  $cc \times .6 = (ROHCCS)$  (.6 = default ROH holding time/100)

0 Refer to Table Y with ROHCCS, result will be  
0 dd (quantity of ROH circuits required).

0  $dd/2 = NT1X00AC$

0 E. Transmission Test Trunks

0 E.1  $(5.1 \times 20)/21600 =$  quantity of NTZZ06GA

0 F. Automatic Identified Outward Dial Circuits

0 F.1  $(6.1) + (6.3) = aa$  (total AIOD Circuits)

0 or if 6.2 or 6.4 = yes,

0  $(2 \times 6.1) + (2 \times 6.3) = aa$  (total AIOD circuits)

0  $aa/4$  (round up) = NT2X01AA

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## 0 G. MF Receiver Circuits

0 G.1 HDBH call attempts per trunk (DTC REAL:QUICK input) = aa

0  $aa \times (7.3/100) = bb$  (CCS per circuit)0  $bb \times (7.4/2) = CCS$ 

0 Refer to Table Z with CCS and 8.4 to obtain quantity  
0 of MF receiver circuits required = cc

0  $cc + 7.1 + 7.2 = dd$  (MF receiver circuits required)0  $dd/4 = NT2X48AA$ 

## 0 H. Digitone Receiver Circuits

0 H.1  $(29.2 \times 37 \text{ seconds}) = aa$ 0  $(1 - 29.2) \times 6 \text{ seconds} = bb$ 0  $aa + bb = cc$  (weighted average holding time MCCS)0  $29.1 \times (cc/100) = CCS$  (digitone receiver CCS MCCS)

0 Reference Table Z with CCS for dd (number of digitone  
0 receiver circuits for MCCS)

0  $(8.2)/(8.3/100) = ee$  (HD attempts per line)0  $(ee \times (8.1/100)) \times 8.4 = CCS$  (digitone receiver CCS lines)

0 Reference Table Z with CCS for ff (number of digitone  
0 receiver circuits for lines).

0  $dd + ff + 8.5 = gg$  (digitone receiver circuits required)0  $gg/4 = NT2X48AB$ 

## 0 J. Transmission Test Unit

0 J.1 (No. LCM lines + No. LM lines + No. SMR lines +  
0 No. SMS lines + No. SMU lines)  $\times (n) / 21600$   
0 (rounded up) = aa

0  $(n) = 9.1.1 \text{ or } 9.1.2.$



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0 (No. outgoing trunks x 4)/21600 (rounded up) = bb

0 aa + bb = NTZZ06FA

0 K. Transmission Test Termination

0 K.1 10.1 = NT2X71AA (minimum of two)

0 L. Loop Around Test

0 L.1 (11.1 / 2) = NT2X75AA (minimum of one)

0 M. Digital Modems

0 M.1 (12.1 + 12.2 + 12.3) / 4 (rounded up) = NTZZ06HA

0 N. TOPS Autoquote Digital Modem

0 O.1 (13.1) / 4 (rounded up) = NT3X02BA

0 P. Coin Detect

0 P.1 (30.1 x .38) = CCS

0 Reference Table Y with CCS = aa (coin detect circuits  
0 required)

0 aa/8 = NT3X08AA

0 Q. Six Port Conference

0 Q.1 (14.6) x (14.7/100) = CCS (ACTS recall/overtime CCS)

0 Reference Table Y with CCS = (three port conf circuits  
0 for ACTS recall/overtime)

0 Q.2.1 If 14.8 = total CCS, reference Table Y for required  
0 number of three port conference circuits.

0 Q.2.2 If 14.8 = calc, (14.8.1 x 14.8.2 x 14.8.3) + 14.9 =  
0 CCS

0 Reference Table Y with CCS for the number of three  
0 port conference circuits required.

0 Q.2.3 (Calculation deleted)

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0 Q.2.4 If 14.10 = specify, 14.10.1 = 3 port conference  
0 circuits required.

0 Q.2.5 If 14.10 = calc,  $((14.8.1 + 14.10.2.1) \times 14.10.2.2$   
0  $\times 14.10.2.3) / 14.10.2.4 = aa$

0  $(14.10.2.4 - 2) \times aa$  (rounded up) = (three port  
0 conference circuits for three way call chaining)

0 Q.2.6  $((14.12.5 \times 14.12.7 / 100) \times .7) +$   
0  $((14.12.6 \times 14.12.8 / 100) \times .7) = CCS$

0 Reference Table Y with CCS = three port conf ckt  
0 required for AABS feature.

0 Q.2.7 14.11.3 = quantity of six port conference circuits

0 Q.2.8 14.11.4 = quantity of six port conference circuits

0 Q.2.9  $(14.1 + 14.2 + 14.3 + 14.4 + 14.5 + Q.1 + Q.2.1 \text{ or}$   
0  $Q.2.2 + Q.2.4 \text{ or } Q.2.5 + Q.2.6) / 2) + Q.2.7 +$   
0  $Q.2.8 = NT3X67AA.$

0 R. Tone Generator

0 R.1 If 15.1 = yes, provide 8 circuits = aa

0  $aa + 15.2 = bb$  (tone generator circuits required)

0  $bb / 4$  (rounded up) = NT3X68AA

0 S. Digitone Senders

0 S.1  $(16.1) / (16.2 / 100) \times (16.3 / 100) = CCS$  (digitone  
0 sender CCS)

0 Reference Table Y with CCS = aa (digitone sender  
0 circuits required)

0  $aa / 4$  (rounded up) = NT3X68AB

0 T. Alarm

0 T.1 If 17.1.1 = yes, provide one NT3X83AA

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0 If 17.1.2 = yes, provide one NT3X84AA

0 If 17.1.3 = yes, provide one NT3X85AA

0 For an initial office, always provide two NT3X82AA

0 U. DTU BERT

0 U.1 If 18.1 = yes,  $(DTC + LTC) / 3.6 + (DCM / 14) = aa$

0 (128 - aa must be less than or equal to the quantity of  
0 NT6X99AA IBERT line cards in this office and any remote  
0 offices associated with this office.)

0  $aa/2 = NT4X23AA$

0 V. Tone Detector

0 V.1 If 19.1 = yes, provide 32 circuits = aa

0  $aa/16 = NT5X29AC$

0 W. CAMA

0 W.1 (20.1) = NT2X65AA and NT2X77AB

0 (20.2) = NT2X66AA

0 X. Analog Trunk Interface

0 X.1  $(21.1.2) + (21.1.3) + (21.1.4) + 21.1.6 = aa$

0  $aa/2 = NT2X72AA$

0 (If CCIS(MS6E) exists in the office, add 12 to aa.)

0 If 21.1.7 = yes, provide NT2X72AB instead of NT2X72AA

0 If 21.1.8 = yes, provide NT2X72AC instead of NT2X72AA

0 X.2 (21.2) = bb  $bb/2 = cc$

0 Provide NT2X81AA = cc and NT2X77AA = 2 x cc

0 X.3 (21.3) = dd  $dd/2 = ee$

0 Provide NT2X81AB = ee and NT2X77AB = 2 x ee

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0 X.4 (21.4) = ff ff/2 = gg

0 Provide NT2X82AA = gg and NT2X77AA = 2 x gg

0 X.5 (21.5) = hh hh/2 = ii

0 Provide NT2X83AA = ii and NT2X77AA = 2 x ii

0 X.6 (21.6) = jj jj/2 = NT2X88AA

0 Y. Incoming/outgoing Test Trunks

0 Y.1 (22.1) + (22.2) + (22.3) + (22.4) + (22.5) + (22.6) +  
0 (22.7) + (22.8) + (31.1) + 2 x (32.1) + (HH.1) +  
0 2 x (II.1) = NT2X90AD and NT2X77AA

0 (Note: The terms (31.1), 2 x (32.1), (HH.1) and  
0 2 x (II.1) reflect the fact that each LTU requires  
0 one (1) NT2X90AD, and each MTU requires two (2)  
0 NT2X90AD's for the MONTALK function)

0 Z. DID/DOD Trunks

0 Z.1 (23.1) = NT2X95AA and NT2X77AA

0 AA. ROTL Trunks

0 AA.1 If 24.1 = yes, provide two circuits = aa

0 AA.2 (24.2) = bb (minimum of one)

0 AA.3 (aa + bb)/2 = NT3X91AA

0 BB. PBX Trunks

0 BB.1 (24.1) = aa aa/2 = NT5X25AA

0 CC. 101 Test Line

0 CC.1 (26.1) + (26.2) = NT5X30AA and NT2X77AA

0 DD. Head Set Monitor Interface (Local Office)

0 DD.1 (27.1) = NT5X30AA and NT2X77AA

0 EE. Call Waiting Tone Generator

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0 EE.1 For Non-MDC office provide 8 circuits

0 For MDC office provide 12 circuits

0 If 28.1 = yes, provide 4 circuits

0  $8 + 4 = 12/4 = 3$  NT3X68AC for non-MDC office

0  $12 + 4 = 16/4 = 4$  NT3X68AC for MDC office

0 FF. MAP Jack Ended Trunk Interface

0 FF.1 Quantity of MAP w/jacks + quantity of LTP w/jacks +  
0 TTP w/jacks = aa

0  $(aa \times 3)/2 = NT1X54AA$

0 GG. Metallic Test Access

0 GG.1  $aa = (\text{No. of LCM})/4 + (\text{No. of LCMI})/4 + (\text{No. RCS})/8 +$   
0  $(\text{No. SMU})/8 + (\text{No. SMR})/8$   
0 (rounded up to the nearest larger interger)

0  $bb = (Y.1 - HH.1 - 2 \times II.1 + (33.1) + 1) / 8$   
0 (rounded up to the nearest larger integer)

0 (Note: The term '1' represents the horizontal "0",  
0 which is shared by all the Dedicated MTU/LTU's.)

0  $aa \times bb = NT3X09BA$

0 (Note:

- 0 - 'aa' is the number of MTA cards, NT3X09BA, necessary  
0 to accomodate all the verticals in the switch. One  
0 NT3X09BA can handle eight (8) verticals. 'aa' is  
0 rounded up to the nearest largest integer.
- 0 - 'bb' is the number of MTA cards, NT3X09BA, necessary  
0 to accomodate all the horizontals in the switch. One  
0 NT3X09BA can handle eight (8) horizontals. 'bb' is  
0 rounded up to the nearest largest integer.
- 0 - 'RCS' stands for Remote Concentrator S/W Site. A  
0 Remote SLC 96 Software Site is a group of SLC 96  
0 Remote Terminals tested via the same vertical. One  
0 vertical may be used for testing up to ten (10)  
0 co-located SLC 96 Remote Terminals.
- 0 - 'SMU' stands for Subscriber Multiplexer - Urban. It

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0 represents the number of Remote DMS-1U Software Sites.  
0 A Remote DMS-1U Software Site is a group of DMS-1U  
0 terminals (maximum 2) tested via the same vertical.  
0 - 'SMR' stands for Subscriber Multiplexer - Rural. It  
0 represents the number of Remote DMS-1R Software  
0 Sites. A Remote DMS-1R Software Site is a group of  
0 Remote DMS-1R terminals (maximum 4) tested via the  
0 same vertical. )

0 HH. Dedicated Line Test Unit (LTU)

0 HH.1 ((No. of LCM/8) + (No. of LCMI/8) + (No. of RCS/16) +  
0 (No. of SMR/16) + (No. of SMU)/16)) (rounded up) + 1 = aa

0 II. Dedicated Metallic Test Unit (MTU)

0 II.1 = HH.1/2

0 (Note: One MTU replaces two LTU's. MTU's are preferred.)

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## 0 JJ. TME Shelves

## 0 JJ.1 MTM shelves

| 0 | NTI      | From | Cards | Slots | Slot  | Dis/ | Dis   |
|---|----------|------|-------|-------|-------|------|-------|
| 0 | PEC      | Sect | Req'd | /card | Total | Card | Total |
| 0 | NT0X10AA | B    | a     | 1     | aa    | 2.0  | ba    |
| 0 | NT1X00AB | D    | b     | 1     | ab    | 4.0  | bb    |
| 0 | NT1X00AC | E    | c     | 1     | ac    | 4.0  | bc    |
| 0 | NTZZ06GA | F    | d     | 2     | ad    | 19.0 | bd    |
| 0 | NT2X01AA | G    | e     | 2     | ae    | 19.0 | be    |
| 0 | NTZZ06EA | JJ   | f     | 2     | af    | 17.5 | bf    |
| 0 | NTZZ06FA | K    | g     | 2     | ag    | 24.0 | bg    |
| 0 | NT2X48AA | H    | h     | 2     | ah    | 12.0 | bh    |
| 0 | NT2X48AB | J    | j     | 2     | aj    | 12.0 | bj    |
| 0 | NT2X57AA | C    | k     | 1     | ak    | 4.5  | bk    |
| 0 | NT2X71AA | L    | l     | 1     | al    | 1.0  | bl    |
| 0 | NT2X75AA | M    | m     | 1     | am    | 4.0  | bm    |
| 0 | NTZZ06HA | N    | n     | 2     | an    | 13.0 | bn    |
| 0 | NT3X02BA | P    | p     | 1     | ap    |      | bp    |
| 0 | NT3X08AA | Q    | q     | 4     | aq    | 15.0 | bq    |
| 0 | NT3X09BA | HH   | r     | 1     | ar    | 11.5 | br    |
| 0 | NT3X67AA | R    | s     | 3     | as    | 7.5  | bs    |
| 0 | NT3X68AA | S    | t     | 2     | at    | 3.0  | bt    |
| 0 | NT3X68AB | T    | u     | 2     | au    | 3.0  | bu    |
| 0 | NT3X68AC | FF   | v     | 2     | av    | 3.0  | bv    |
| 0 | NT3X82AA | U    | w     | 2     | aw    | 9.0  | bw    |
| 0 | NT3X83AA | U    | y     | 1     | ax    | 13.0 | bx    |
| 0 | NT3X84AA | U    | z     | 1     | ay    | 2.0  | by    |
| 0 | NT3X85AA | U    | a1    | 1     | az    | 5.0  | bz    |
| 0 | NT4X23AA | V    | b1    | 1     | aa1   | 10.0 | ba1   |

0 To calculate MTM shelves:

0 Cards Req'd x Slots/card = Slot total

0 Example: a x 1 = aa

0 Total of aa through aa1 = MTMSLOTA

0 MTMSLOTA/12 (round up) = MTMSHELFA

0 For s (NT3X67AA) greater than or equal to MTMSHELFA:

0 MTMSHELFA x 2 = MTMSLOTZ

0 MTMSLOTA - MTMSLOTZ = MTMSLOTB

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0 MTMSLOTB/12 (round up) = MTMSHELFB  
0 MTMSHELF A - MTMSHELF B = MTMSHELFZ  
0 (MTMSLOTB + (MTMSHELFZ x 2)) x 1.1 (round up) =  
0 MTMTOT

0 For s (NT3X67AA) less than MTMSHELF A:  
0 (MTMSLOTA - (s x 2)) x 1.1 (round up) = MTMTOT

0 (1.1 factor is for 10% administrative spare)

0 MTMTOT/12 (round up) = NTZZ06BA

0 Quantity of NT5X29AC = Quantity of NTZZ06AM

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## 0 JJ.2 TM8 shelves

| 0 | NTI      | From | Cards | Slots | Slot  |
|---|----------|------|-------|-------|-------|
| 0 | PEC      | Sect | Req'd | /card | Total |
| 0 | NT1X54AA | GG   | a     | 1     | aa    |
| 0 | NT2X65AA | X    | b     | 1     | ab    |
| 0 | NT2X66AA | X    | c     | 1     | ac    |
| 0 | NT2X72AA | Y    | d     | 1     | ad    |
| 0 | NT2X72AB | Y    | e     | 1     | ae    |
| 0 | NT2X72AC | Y    | f     | 1     | af    |
| 0 | NT2X81AA | Y    | g     | 1     | ag    |
| 0 | NT2X81AB | Y    | h     | 1     | ah    |
| 0 | NT2X82AA | Y    | j     | 1     | aj    |
| 0 | NT2X83AA | Y    | k     | 1     | ak    |
| 0 | NT2X88AA | Y    | l     | 1     | al    |
| 0 | NT2X90AD | Z    | m     | 1     | am    |
| 0 | NT2X95AA | AA   | n     | 1     | an    |
| 0 | NT3X91AA | BB   | p     | 1     | ap    |
| 0 | NT5X25AA | CC   | q     | 1     | aq    |
| 0 | NT5X30AA | DD   | r     | 1     | ar    |

0 To calculate TM8 shelves:

0 Cards Req'd x Slots/card = Slot total

0 Example: a x 1 = aa

0 Total of aa through ar = TM8TOT

0 TM8TOT/15 = TM8 (NT2X52AG)

## 0 KK. AXU Shelf

0 KK.1 If COEO is an initial order, provide one 1 AXU shelf  
0 (NT3X89AA)

0 If COEO is an extension order, provide 0 AXU shelf

## 0 LL. TME Frames

0 LL.1 NTZZ06BA + TM8 + NTZZ06CA + NTZZ06AM = TMETOT

0 TMETOT/4 = TME (TME Frames) (NTZZ06AA), (NTZZ06YA),  
0 (NTZZ06ZA).0 Please note that if an AXU was provided in KK.1, it  
0 shall be mounted on TME 0, Shelf Position 65. This

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shelf space is not included in the TME frame  
calculation as this shelf can mount in the TME frame  
with four TM8 or MTM shelves.

LL.3 (TME x 5) - TMETOT - AXU = Filler Panels (P0575239)  
Table Y - Capacity Table

| Table Y CCS Per Port At GOS Of P .001 |      |       |      |       |      |       |      |
|---------------------------------------|------|-------|------|-------|------|-------|------|
| Ports                                 | CCS  | Ports | CCS  | Ports | CCS  | Ports | CCS  |
| 1                                     | .1   | 31    | 597  | 61    | 1428 | 91    | 2317 |
| 2                                     | 1.6  | 32    | 624  | 62    | 1457 | 92    | 2346 |
| 3                                     | 6.9  | 33    | 650  | 63    | 1486 | 93    | 2377 |
| 4                                     | 15.4 | 34    | 676  | 64    | 1516 | 94    | 2407 |
| 5                                     | 26.6 | 35    | 703  | 65    | 1544 | 95    | 2437 |
| 6                                     | 40.0 | 36    | 729  | 66    | 1574 | 96    | 2468 |
| 7                                     | 54.7 | 37    | 756  | 67    | 1603 | 97    | 2498 |
| 8                                     | 70.9 | 38    | 783  | 68    | 1632 | 98    | 2528 |
| 9                                     | 88.2 | 39    | 810  | 69    | 1661 | 99    | 2559 |
| 10                                    | 107  | 40    | 837  | 70    | 1691 | 100   | 2589 |
| 11                                    | 126  | 41    | 865  | 71    | 1720 | 101   | 2620 |
| 12                                    | 145  | 42    | 892  | 72    | 1750 | 102   | 2650 |
| 13                                    | 166  | 43    | 919  | 73    | 1779 | 103   | 2681 |
| 14                                    | 187  | 44    | 947  | 74    | 1809 | 104   | 2711 |
| 15                                    | 208  | 45    | 975  | 75    | 1838 | 105   | 2742 |
| 16                                    | 231  | 46    | 1003 | 76    | 1868 | 106   | 2772 |
| 17                                    | 253  | 47    | 1030 | 77    | 1898 | 107   | 2803 |

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|    |     |    |      |    |      |     |      |
|----|-----|----|------|----|------|-----|------|
| 18 | 276 | 48 | 1058 | 78 | 1927 | 108 | 2834 |
|----|-----|----|------|----|------|-----|------|

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**QUESTION**

| Table Y    CCS Per Port At GOS Of P .001 |     |    |      |    |      |     |      |
|------------------------------------------|-----|----|------|----|------|-----|------|
| 19                                       | 299 | 49 | 1086 | 79 | 1957 | 109 | 2864 |
| 20                                       | 323 | 50 | 1115 | 80 | 1986 | 110 | 2895 |
| 21                                       | 346 | 51 | 1143 | 81 | 2016 | 111 | 2926 |
| 22                                       | 370 | 52 | 1171 | 82 | 2046 | 112 | 2956 |
| 23                                       | 395 | 53 | 1200 | 83 | 2076 | 113 | 2987 |
| 24                                       | 419 | 54 | 1228 | 84 | 2106 | 114 | 3018 |
| 25                                       | 444 | 55 | 1256 | 85 | 2136 | 115 | 3049 |
| 26                                       | 469 | 56 | 1285 | 86 | 2166 | 116 | 3080 |
| 27                                       | 495 | 57 | 1313 | 87 | 2196 | 117 | 3110 |
| 28                                       | 520 | 58 | 1342 | 88 | 2226 | 118 | 3141 |
| 29                                       | 545 | 59 | 1371 | 89 | 2256 | 119 | 3172 |
| 30                                       | 571 | 60 | 1400 | 90 | 2286 | 120 | 3203 |



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| 0<br>0<br>0<br>0 | No.<br>of<br>Rec | Mean Holding Time In Seconds |       |       |       |       |       |       |
|------------------|------------------|------------------------------|-------|-------|-------|-------|-------|-------|
|                  |                  | 1                            | 2     | 3     | 4     | 5     | 6     | 7     |
| 0                | -----            | -----                        | ----- | ----- | ----- | ----- | ----- | ----- |
| 0                | 40               | 1080                         | 1080  | 1080  | 1080  | 1080  | 1080  | 1080  |
| 0                | 41               | 1107                         | 1107  | 1107  | 1107  | 1107  | 1107  | 1107  |
| 0                | 42               | 1134                         | 1134  | 1134  | 1134  | 1134  | 1134  | 1134  |
| 0                | 43               | 1161                         | 1161  | 1161  | 1161  | 1161  | 1161  | 1161  |
| 0                | 44               | 1188                         | 1188  | 1188  | 1188  | 1188  | 1188  | 1188  |
| 0                | 45               | 1215                         | 1215  | 1215  | 1215  | 1215  | 1215  | 1215  |
| 0                | 46               | 1242                         | 1242  | 1242  | 1242  | 1242  | 1242  | 1242  |
| 0                | 47               | 1269                         | 1269  | 1269  | 1269  | 1269  | 1269  | 1269  |
| 0                | 48               | 1296                         | 1296  | 1296  | 1296  | 1296  | 1296  | 1296  |
| 0                | 49               | 1323                         | 1323  | 1323  | 1323  | 1323  | 1323  | 1323  |
| 0                | 50               | 1350                         | 1350  | 1350  | 1350  | 1350  | 1350  | 1350  |
| 0                | 51               | 1377                         | 1377  | 1377  | 1377  | 1377  | 1377  | 1377  |
| 0                | 52               | 1404                         | 1404  | 1404  | 1404  | 1404  | 1404  | 1404  |
| 0                | 53               | 1431                         | 1431  | 1431  | 1431  | 1431  | 1431  | 1431  |
| 0                | 54               | 1458                         | 1458  | 1458  | 1458  | 1458  | 1458  | 1458  |
| 0                | 55               | 1485                         | 1485  | 1485  | 1485  | 1485  | 1485  | 1485  |
| 0                | 56               | 1512                         | 1512  | 1512  | 1512  | 1512  | 1512  | 1512  |
| 0                | 57               | 1539                         | 1539  | 1539  | 1539  | 1539  | 1539  | 1539  |
| 0                | 58               | 1566                         | 1566  | 1566  | 1566  | 1566  | 1566  | 1566  |
| 0                | 59               | 1593                         | 1593  | 1593  | 1593  | 1593  | 1593  | 1593  |
| 0                | 60               | 1620                         | 1620  | 1620  | 1620  | 1620  | 1620  | 1620  |
| 0                | 61               | 1647                         | 1647  | 1647  | 1647  | 1647  | 1657  | 1647  |
| 0                | 62               | 1674                         | 1674  | 1674  | 1674  | 1674  | 1674  | 1674  |
| 0                | 63               | 1701                         | 1701  | 1701  | 1701  | 1701  | 1701  | 1701  |
| 0                | 64               | 1728                         | 1728  | 1728  | 1728  | 1728  | 1728  | 1728  |
| 0                | 65               | 1755                         | 1755  | 1755  | 1755  | 1755  | 1755  | 1755  |
| 0                | 66               | 1782                         | 1782  | 1782  | 1782  | 1782  | 1782  | 1782  |
| 0                | 67               | 1809                         | 1809  | 1809  | 1809  | 1809  | 1809  | 1809  |
| 0                | 68               | 1836                         | 1836  | 1836  | 1836  | 1836  | 1836  | 1836  |
| 0                | 69               | 1863                         | 1863  | 1863  | 1863  | 1863  | 1863  | 1863  |
| 0                | 70               | 1890                         | 1890  | 1890  | 1890  | 1890  | 1890  | 1890  |
| 0                | 71               | 1917                         | 1917  | 1917  | 1917  | 1917  | 1917  | 1917  |
| 0                | 72               | 1944                         | 1944  | 1944  | 1944  | 1944  | 1944  | 1944  |
| 0                | 73               | 1971                         | 1971  | 1971  | 1971  | 1917  | 1971  | 1971  |
| 0                | 74               | 1998                         | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  |
| 0                | 75               | 2025                         | 2025  | 2025  | 2025  | 2025  | 2025  | 2025  |
| 0                | 76               | 2052                         | 2052  | 2052  | 2052  | 2052  | 2052  | 2052  |
| 0                | 77               | 2079                         | 2079  | 2079  | 2079  | 2079  | 2079  | 2079  |
| 0                | 78               | 2106                         | 2106  | 2106  | 2106  | 2106  | 2106  | 2106  |
| 0                | 79               | 2133                         | 2133  | 2133  | 2133  | 2133  | 2133  | 2133  |
| 0                | 80               | 2160                         | 2160  | 2160  | 2160  | 2160  | 2160  | 2160  |

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| 0<br>0<br>0<br>0 | No.<br>of<br>Rec | Mean Holding Time In Seconds |       |       |       |       |       |       |
|------------------|------------------|------------------------------|-------|-------|-------|-------|-------|-------|
|                  |                  | 8                            | 9     | 10    | 11    | 12    | 13    | 14    |
| 0                | -----            | -----                        | ----- | ----- | ----- | ----- | ----- | ----- |
| 0                | 40               | 1068                         | 1049  | 1032  | 1017  | 1004  | 993   | 983   |
| 0                | 41               | 1102                         | 1082  | 1064  | 1049  | 1036  | 1025  | 1015  |
| 0                | 42               | 1134                         | 1115  | 1097  | 1082  | 1069  | 1057  | 1046  |
| 0                | 43               | 1161                         | 1148  | 1130  | 1114  | 1101  | 1089  | 1078  |
| 0                | 44               | 1188                         | 1181  | 1163  | 1147  | 1133  | 1121  | 1110  |
| 0                | 45               | 1215                         | 1214  | 1196  | 1179  | 1165  | 1153  | 1142  |
| 0                | 46               | 1242                         | 1242  | 1229  | 1212  | 1198  | 1185  | 1174  |
| 0                | 47               | 1269                         | 1269  | 1262  | 1245  | 1230  | 1218  | 1206  |
| 0                | 48               | 1296                         | 1296  | 1295  | 1278  | 1263  | 1250  | 1238  |
| 0                | 49               | 1323                         | 1323  | 1323  | 1311  | 1296  | 1282  | 1270  |
| 0                | 50               | 1350                         | 1350  | 1350  | 1344  | 1328  | 1315  | 1303  |
| 0                | 51               | 1377                         | 1377  | 1377  | 1377  | 1361  | 1347  | 1335  |
| 0                | 52               | 1404                         | 1404  | 1404  | 1404  | 1394  | 1380  | 1367  |
| 0                | 53               | 1431                         | 1431  | 1431  | 1431  | 1427  | 1413  | 1400  |
| 0                | 54               | 1458                         | 1458  | 1458  | 1458  | 1458  | 1445  | 1432  |
| 0                | 55               | 1485                         | 1485  | 1485  | 1485  | 1485  | 1478  | 1465  |
| 0                | 56               | 1512                         | 1512  | 1512  | 1512  | 1512  | 1511  | 1498  |
| 0                | 57               | 1539                         | 1539  | 1539  | 1539  | 1539  | 1539  | 1530  |
| 0                | 58               | 1566                         | 1566  | 1566  | 1566  | 1566  | 1566  | 1563  |
| 0                | 59               | 1593                         | 1593  | 1593  | 1593  | 1593  | 1593  | 1593  |
| 0                | 60               | 1620                         | 1620  | 1620  | 1620  | 1620  | 1620  | 1620  |
| 0                | 61               | 1647                         | 1647  | 1647  | 1647  | 1647  | 1647  | 1647  |
| 0                | 62               | 1674                         | 1674  | 1674  | 1674  | 1674  | 1674  | 1674  |
| 0                | 63               | 1701                         | 1701  | 1701  | 1701  | 1701  | 1701  | 1701  |
| 0                | 64               | 1728                         | 1728  | 1728  | 1728  | 1728  | 1728  | 1728  |
| 0                | 65               | 1755                         | 1755  | 1755  | 1755  | 1755  | 1755  | 1755  |
| 0                | 66               | 1782                         | 1782  | 1782  | 1782  | 1782  | 1782  | 1782  |
| 0                | 67               | 1809                         | 1809  | 1809  | 1809  | 1809  | 1809  | 1809  |
| 0                | 68               | 1836                         | 1836  | 1836  | 1836  | 1836  | 1836  | 1836  |
| 0                | 69               | 1863                         | 1863  | 1863  | 1863  | 1863  | 1863  | 1863  |
| 0                | 70               | 1890                         | 1890  | 1890  | 1890  | 1890  | 1890  | 1890  |
| 0                | 71               | 1917                         | 1917  | 1917  | 1917  | 1917  | 1917  | 1917  |
| 0                | 72               | 1944                         | 1944  | 1944  | 1944  | 1944  | 1944  | 1944  |
| 0                | 73               | 1971                         | 1971  | 1971  | 1971  | 1917  | 1971  | 1971  |
| 0                | 74               | 1998                         | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  |
| 0                | 75               | 2025                         | 2025  | 2025  | 2025  | 2025  | 2025  | 2025  |
| 0                | 76               | 2052                         | 2052  | 2052  | 2052  | 2052  | 2052  | 2052  |
| 0                | 77               | 2079                         | 2079  | 2079  | 2079  | 2079  | 2079  | 2079  |
| 0                | 78               | 2106                         | 2106  | 2106  | 2106  | 2106  | 2106  | 2106  |
| 0                | 79               | 2133                         | 2133  | 2133  | 2133  | 2133  | 2133  | 2133  |
| 0                | 80               | 2160                         | 2160  | 2160  | 2160  | 2160  | 2160  | 2160  |

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0 2.1.4 Office Layout Information

0  
0 Not Applicable

0  
0 2.1.5 Traffic Tables

0  
0 Not Applicable

0 2.2 Product/System Specification

0 Not Applicable

0  
0 2.2.1 Physical Characteristics

0  
0 Not Applicable

0  
0 2.2.2 EMI/Earthquake Information

0  
0 Not Applicable

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0 2.2.3 Sparing Information

0  
0 Not Applicable

0  
0 2.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not Applicable

0  
0 2.2.5 CURRENT DRAIN INFORMATION

0  
0 Not Applicable

0 2.3 Software Provisioning

0 Not Applicable

0  
0 2.3.1 Required Software Packages and Interdependencies

0  
0 Not Applicable

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0 2.3.2 Software Usage Restrictions

0  
0 Not Applicable

0  
0 2.3.3 Memory Provisioning

0  
0 Not Applicable

0 2.4 Real Time Impact

0 Not Applicable

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0 3.0 Multi-line Test Unit - Domestic Application

0 The MTU was originally introduced as a NT4X97AA and NT4X98AA,  
0 however, Market needs dictated that it be modified as follows:

0 1. The NT4X97AA/NT4X98AA are now call Metallic Test Units and  
0 are to be used in the International Markets only.

0 2. The NT4X97AA/NT4X98AA were targeted for the US & Canadian  
0 Markets, but this has changed as follows:

0 a. The NT4X98AA PEC has been changed to NT2X10BA and it co-  
0 exists with the NT4X98AA as a product. However the  
0 NT4X98AA is used in International Markets only and the  
0 NT2X10BA is use in US & Candian Markets.

0 b. The NT4X97AA PEC has been changed to NT2X11BA and it co-  
0 exists with the NT4X97AA as a product. However the  
0 NT4X97AA is used in International Markets only and the  
0 NT2X11BA is use in US & Candian Markets.

0 c. The NT2X10BA and NT2X11BA pair are refered to a Multi-  
0 Line Test Units ((MTUs), and the NT4X97AA and NT4X98AA  
0 pair are refered to a Metallic Test Units (MTUs).  
0 |

0 The MTU consists of two circuit packs NT2X10BA and NT2X11BA. The  
0 MTU has two separate tip and ring appearances that time share the  
0 same measurement circuits. This time sharing is transparent to  
0 the system, and as a result, the MTU appears as two separate  
0 measurement circuits.

0 The MTU may be added to offices with existing LTU's. A host of-  
0 fice must be equipped with BCS-19 or later software to support  
0 the MTU. A remote office must be equipped with BCS-21 or later  
0 software. ar;The MTU is assignable to the MTM or RMM shelf as  
0 a functional pair.

| 0 | Description               | Side  | Slot | # Ckt/Crd | Pwr Dis. |
|---|---------------------------|-------|------|-----------|----------|
| 0 | MTU Analog (NT2X10BA)     | Left  | Odd  | 0         | 15       |
| 0 | MTU Controller (NT2X11BA) | Right | Even | 2         | 9        |

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0 3.1 HARDWARE PROVISIONING

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0 3.1.1 HARDWARE USAGE RESTRICTIONS

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0 The MTU circuit packs require a -48V SP connection that the LTU  
0 does not require.

0 The FSP on all TME frames in the field are arranged to provide  
0 -48V SP to MTM/IMTM shelves in position 65 and 51. Product Change  
0 Kit NT0X82XA extends -48V SP to positions 32, 18 and 04.

0 -48V SP can be provided to a maximum of any four (4) of the five  
0 (5) positions.

0 The MTU circuit packs cannot mount on the Remote Service Module  
0 (RSM).

0 3.1.2 HARDWARE DEPENDENCIES

0

0 The MTU circuit packs will replace the existing LTU circuit packs  
0 NT2X10AB/AC and NT2X11AA/AC/AD.

0

0 3.1.3 PROVISIONING CONSIDERATIONS

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0 Method 1

0 It is recommended that one (1) MTU circuit be assigned as a dedi-  
0 cated MTU for two NT3X09BA Metallic Test Access cards. This will

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0 serve up to eight (8) LCMS. In addition provision one (1) non-  
0 dedicated (rover) MTU circuit per office.

0 For RLCM and OPM offices provision one (1) dedicated MTU circuit  
0 (the rover MTU is not required).

0 For RSC offices provision as per host office.

0 # of LCMS  
0 # of MTU Circuits = ----- + 1  
0 8

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0 # of MTU Circuits  
0 # of NT2X10BA/NT2X11BA Pairs = -----  
0 2

## 0 Method 2

0 Telco requirements may dictate that all of the lines in an office  
0 be testable in a given time for test. This will require provi-  
0 sioning enough MTU circuits to meet this requirement based on the  
0 following formula:

0 # of Lines x Test Hold Time (Secs)  
0 # MTU Circuits = ----- + 1  
0 3600 \* Time-For-Test (Hrs)

0 # of MTU Circuits  
0 # of NT2X10BA/NT2X11BA Pairs = -----  
0 2

## 0 MTU for 2B1Q Lines on a LCME. =par

0 For every MTA that has a LCME on the vertical there must be at  
0 least one MTU on a horizontal of that MTA. Each MTU (NT2X10BA  
0 and NT2X11BA card set) has two test access ports; that is two (2)  
0 sets of tip and ring. Thus it can test two 2B1Q lines at the  
0 same time. A LTU that has access to an MTA that has a LCME on  
0 the vertical will NOT be used to perform any metallic testing on  
0 the 2B1Q lines. Any rover test units (ones shared across MTAs)  
0 that has access to the MTA that has a LCME on it must be a MTU  
0 for it to be used on the LCME.

0 No LTUs can be assigned to an MTA that has an LCME on the verti-  
0 cal. No MTA that has an LCME on the vertical can be daisy-  
0 chained to other MTAs that do not have an LCME on the vertical.

0 The physical installation of MTUs in MTMs for 2B1Q is the same as  
0 for POTS.

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0 Typical Test Hold Times

|                      | Long Diagnostic Test | LIT Test |
|----------------------|----------------------|----------|
| 0 Type 'A' Line Card | 26 secs              | 6-8 secs |
| 0 Type 'B' Line Card | 32 secs              | 6-8 secs |
| 0 EBS Line Card      | 106 secs             | 6-8 secs |

0 -48V SP Connection

0 The MTU circuit packs require a -48V SP connection that the LTU  
0 does not require. When the MTU is assigned to an MTM shelf, the  
0 -48V SP connection must be supplied by a provisionable local ca-  
0 ble to the TME frame FSP. The -48V SP connection is normally  
0 available to shelves in positions 65 and 51.

0 For Field Applications Only

0 Provide one (1) Product Change Kit NT0X82XA to modify the FSP  
0 NT0X82AB on the TME frame NT0X46AB in the field when required to  
0 add -48V SP to the MTM (NT2X58AC/AN/CA) or IMTM (NT2X58AT) shelf  
0 in position 32 and/or 18 and/or 04. This PC Kit is also required  
0 when an MTM or IMTM shelf requiring -48V SP is being added to po-  
0 sition 51.

0 This Product Change Kit modifies TME frames equipped with one (1)  
0 power feed only.

0 The FSP on all TME frames in the field (without FSP Strapping In-  
0 formation NT0X82WA) are arranged to provide -48V SP to MTM/IMTM  
0 shelves in positions 65 and 51. Product Change Kit NT0X82XA ex-  
0 tends -48V SP to positions 32, 18 and 04. It also modifies the  
0 way the -48V SP will be delivered to shelf position 51 from the  
0 FSP (i.e. wiring information NT0X46WC connects NT7X3746 Cable As-  
0 sembly to terminal block TB3 pin 12B of the FSP). Hence, when  
0 -48V SP is required on shelf positions 51, 32, 18 and 04, provide  
0 one (1) PC Kit NT0X82XA.

0 PC Kit NT0X82XA is only applicable to existing TME frames in the  
0 field which do not have FSP Strapping Information NT0X82WA.

0 For Initial Applications (Initial and Extension Jobs)

0 When frame type is "TME" and only one (1) power source (A or B)  
0 is required, provide one (1) FSP Strapping Information NT0X82WA,  
0 two (2) TB Jumpers A0324131, and one (1) each of Cable Assemblies  
0 NT0X95CL and NT0X8211. NT0X82WA includes FSP options B,C,D,L.



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0 Along with the modified FSP, this hardware always provides the  
0 -48V SP to MTM/IMTM shelves in positions 65, 51, 32, 18 and 04.

0 When frame type is "DCE" and two (2) power sources (A and B) are  
0 required, provide one (1) FSP Strapping Information NT0X82WB, one  
0 (1) TB Jumper A0324131, two (2) Cable Assemblies NT0X95CL, and  
0 one (1) Cable Assembly NT7X3406. NT0X82WB includes FSP options  
0 B,E,F,M. Along with the modified FSP, this hardware always pro-  
0 vides the -48V SP to MTM/IMTM shelves in positions 65, 51, 32, 18  
0 and 04.

0 For Initial Applications and Field Applications

0 -48V SP can be provided to a maximum of any four (4) of the five  
0 (5) positions.

0 When -48V SP is required, provision the local cable as follows:

| 0 MTM/IMTM in Shelf Position | PEC      | Qty | Note |
|------------------------------|----------|-----|------|
| 0 65                         | NT0X95BU | 1   | 1,2  |
| 0 65                         | NT0X46WB | 1   | 1,2  |
| 0 51                         | NT7X3746 | 1   | 1,2  |
| 0 51                         | NT0X46WC | 1   | 1,2  |
| 0 32                         | NT0X95BZ | 1   | 2    |
| 0 32                         | NT0X46WD | 1   | 2    |
| 0 18                         | NT0X4631 | 1   | 2    |
| 0 18                         | NT0X46WE | 1   | 2    |
| 0 04                         | NT0X95BU | 1   | 2    |
| 0 04                         | NT0X46WF | 1   | 2    |

0 NOTE:

0 1. Normally provided when these two MTM/IMTM are part of the Version  
0 II Office Alarm System.

0 2. When cable assemblies are to be shipped loose to the field, a  
0 copy of LWJ0X46AB must be requested from Documentation Services  
0 by Customer Engineering to be sent to the job site to provide the  
0 wiring information NT0X46WB/WC/WD/WE/WF specified.

0 When the MTU is assigned to an RMM shelf, provision one (1)  
0 NT6X1438 cable to supply -48V SP power.

0 The following circuit packs require -48V SP power:

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| PEC      | -48V SP |
|----------|---------|
| NT2X10BA | *       |
| NT2X11BA |         |

| PEC    | -48V SP |
|--------|---------|
| NT4X98 | *       |
| NT4X97 |         |

| PEC      | -48V SP |
|----------|---------|
| NT3X83AA | *       |
| NT3X84AA | *       |

0 3.1.4 OFFICE LAYOUT INFORMATION

0  
0

Not applicable.

0 3.1.5 TRAFFIC TABLES

0  
0

Not applicable.

0 3.2 PRODUCT/SYSTEM SPECIFICATION

0

0 3.2.1 PHYSICAL CHARACTERISTICS

0  
0

Not applicable.

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0 3.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 3.2.3 SPARING INFORMATION

0  
0 Standard sparing algorithms shall apply.

0 3.2.4 HEAT DISSIPATION

0  
0 NT2X10BA circuit pack 15 watts  
0 NT2X11BA circuit pack 9 watts

0 3.3 SOFTWARE PROVISIONING

0

0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 A host office must be equipped with BCS-19 or later software to  
0 support the MTU. A remote office must be equipped with BCS-21 or  
0 later software.

0 BCS-31 MTU software load must be installed for a MTU to work with  
0 2B1Q lines. If ALT (Automatic Loop Testing) is required, a dedi-  
0 cated MTU must have the ALTUSE field in MTAHORIZ table selected  
0 as YES. Any LTUs that have access to the LCMES on the MTA verti-  
0 cals must have the ALTUSE field selected as NO.

0 3.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 3.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 3.4 REAL TIME IMPACT

0 Not applicable.

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0 CHAPTER 16

0 HOST - MODULE SHELF

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Host - Module Shelf  
Chapter 16

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0 HOST - MODULE SHELF  
0 Section Contents

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## 0 1.0 Host - Module Shelf

0 1.1 Equipment Provisioning0 1.1.1 Trunk Modules0 a) General Description

0 The Trunk Module provides the interface between analog trunks and  
0 the Network.

0 The TM performs tasks such as digit reception from dial pulse in-  
0 coming trunks, control tasks of dial pulse transmission on outgo-  
0 ing trunks and digital tone distribution.

0 The TM accommodates service circuits such as MF receivers, an-  
0 nouncement trunks, and test circuits either on a dedicated TM or  
0 in common with analog trunks. Each TM has the capacity of inter-  
0 facing 30 analog trunks or device circuits with one 32-channel  
0 2.56 Mb/s speech link to the network. A maximum of five are ac-  
0 commodated in a bay.

0 b) References0 c) Provisioning Considerations:

0 ( i) Each module is contained in a single equipment shelf and  
0 interfaces the network via one speech link.

0 ( ii) Each TM can accommodate up to fifteen analog trunk cards  
0 and handle up to thirty circuits. Since it interfaces  
0 the NET via one speech link (thirty channels), there is  
0 no concentration and therefore is not sensitive to traf-  
0 fic.

## 0 ( iii) TM Types

0 Three basic TM types are specified as dictated by the  
0 TM-to-DF cabling arrangement:

## 0 1. Trunk Module 2 Wire (TM2)

0 - 30 pairs of leads cabled to the DF

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- 0 - 4 leads per card slot
- 0 - intended for trunks with 2 leads

0 2. Trunk Module 4 Wire (TM4)

- 0 - 60 pairs of leads cables to the DF
- 0 - 8 leads per card slot
- 0 - intended for trunks with 4 & fewer leads

0 3. Trunk Module 8 Wire (TM8)

- 0 - 120 pairs of leads cabled to the DF
- 0 - 16 leads per card slot
- 0 - intended for trunks with 8 & fewer leads

0 4. International Trunk Module 8 Wire (ITM8)

- 0 - same as the TM8
- 0 - used for International applications

0 These TM arrangements are intended to reduce DF size and  
0 TM-to-DF cable runs and their respective costs by reduc-  
0 ing redundant loads and terminations.

0 The ATM, T8A and T8A (TME) are special versions of the  
0 TM8 shelf. The DMS-300 Gateway offices use the T8A  
0 shelves. The Integrated Business  
0 Services (IBS) use the T8A (TM8) shelves (these shelves  
0 are used to house NT5X25AA cards only).

0 ( iv) TM-DF Association

0 Since DF cabling is arranged on a TM basis, trunks which  
0 terminate on different DF complexes cannot be connected  
0 to the same TM. Therefore, determination of the number  
0 of TM and trunk cards has to be done on a per DF basis.

0 For service reliability it is recommended that a minimum  
0 of two (2) TM8 (or its equivalent) be provided per of-  
0 fice.

0 Trunk Modules are provisioned for total terminations  
0 based on the forecast of analog trunk requirements for  
0 the busy season prior to exhaust.

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0 ( v) These slots will be provided by new TMs. It should be  
0 noted that empty slots on a TM8 can house cards which can  
0 go on TM4 or TM2 shelves, etc.

0 ( vi) A minimum of two Tm8 shelves or its equivalent should be  
0 provided per DF for service reliability.

0 ( vii) Assignment is restricted to either one NT2X48AA or one  
0 NT2X48AB or two NT1X31AA cards per TM.

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0 1.1.2 Maintenance Trunk Module

0 a) General Description

0 The Maintenance Trunk Module is similar to the TM in operation,  
0 however, its primary function is to interface service, test and  
0 maintenance circuits and scanner and signal distributor cards.  
0 There is also a Digital Recorded Announcement Module (DRAM) which  
0 operates like the MTM, however, this shelf is primarily intended  
0 to house Digital Recorded Announcement (DRA) cards. Assignment  
0 restrictions are imposed on certain other cards which function in  
0 pairs.

0 b) References

0 c) Provisioning Considerations:

0 ( i) The principal differences of the MTM from the TM module  
0 are:

- 0 1. fewer provisionable card slots (12 instead of 15)
- 0 2. more powerful 5V supply to handle more complex card func-  
0 tions
- 0 3. cables to the DF on a slot basis, as required, with many  
0 more leads per slot
- 0 4. different Peripheral Software load supports different  
0 circuit types and functions
- 0 5. inter-card bus supports circuits whose function is split  
0 over two cards

0 Each module is contained in a single equipment shelf  
0 and interfaces the network via one speech link.

0 ( ii) Card slots are cabled to the DF only when necessary to  
0 satisfy interface requirements.

0 In an office served by more than one DF, the Telco is ad-  
0 vised for administrative reasons to terminate card slots  
0 of a particular MTM on the same DF.

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0 ( iii) MTM mounted cards on average have higher power dissi-  
0 pation making it possible to exceed the maximum set for  
0 the shelf. To avoid this, MTM shelves must be provi-  
0 sioned and cards assigned so as to limit card dissipation  
0 to 110 watts per shelf.

0 ( iv) Trunk enable lines control the Trunk Logic Circuit (TLC)  
0 and hence the function of TM and MTM mounted cards (ena-  
0 bles, TLC and circuit per card are closely related).  
0 Thirty (30) enable lines are distributed to the  
0 provisionable slots in a pre-defined cyclic pattern.

0 As a result each card requires one card slot for every  
0 two enable lines it must connect to avoid duplicate con-  
0 nections to the same enable line. The next higher num-  
0 bered slot or slots must be left empty when required. The  
0 exceptions are:

0 a) cards which function in pairs

0 b) slot 16, the last slot in the MTM, can accommodate cards  
0 requiring up to eight enables (not valid for cards  
0 with more than eight circuits and cards which phys-  
0 ically require more than one slot)

0 ( v) A minimum of two MTM shelves must be provided for service  
0 reliability.

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0 2.0 DMS Building Building Block Engineering - TME

0 Not Applicable

0 2.1 Hardware Provisioning

0

0 2.1.1 Hardware Usage Restrictions

0

0 Not Applicable

0 2.1.2 Hardware Dependencies

0

0 Not Applicable

0 P AND C SIDE PORT REQUIREMENTS

0

0 Not Applicable

0 DMS BUS PORT REQUIREMENTS

0

0 Not Applicable

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0 CIRCUITS PER CARD

0  
0 Not Applicable

0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0  
0 2.1.3 PROVISIONING CONSIDERATIONS

0  
0 Trunk Module Equipment Questions

0 TME Customer Questions - Worksheet of Telco inputs derived at the  
0 time of order capture.

0 TME Calculations - Worksheet of provisioning algorithms driven  
0 from the results of TME Customer Questions.

0 Engineering Manual Section - Detailed description of the provi-  
0 sioning guidelines adjusted for DMS Building Block Engineering

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- 0 1. Scan Distribution Circuits
- 0 1.1 Scan points for DMS alarms ? \_\_\_\_\_
- 0 1.2 Scan points for Telco alarms ? \_\_\_\_\_
- 0 1.3 Scan points for 1066 ROTL/52A ? (14 minimum) \_\_\_\_\_
- 0 1.4 Scan points for hunting function ? \_\_\_\_\_
- 0 1.5 Scan points for network management function ? \_\_\_\_\_
- 0 1.6 Scan points for automatic board to board  
0 testing ? \_\_\_\_\_
- 0 1.7 Scan points for tone and scrambler funtion ? \_\_\_\_\_
- 0 1.8 Scan points for DPP ? \_\_\_\_\_
- 0 1.9 Scan points for BMC ? \_\_\_\_\_
- 0 1.10 Scan points for VMX function ? \_\_\_\_\_
- 0 1.11 Scan points for modem shelf power failure  
0 function ? \_\_\_\_\_
- 0 1.12 Scan points for AC fail function ? \_\_\_\_\_
- 0 1.13 Scan points for span protection alarm  
0 function ? \_\_\_\_\_
- 0 1.14 Scan points for other funtions not listed  
0 above ? \_\_\_\_\_
- 0 2. Signal Distribution Circuits
- 0 2.1 Signal dist. points for DMS alarms ? \_\_\_\_\_
- 0 2.2 Signal dist. points for Telco alarms ? \_\_\_\_\_
- 0 2.3 Signal dist. points for 1066 ROTL/52A ? \_\_\_\_\_
- 0 2.4 Signal dist. points for hunting function ? \_\_\_\_\_
- 0 2.5 Signal dist. points for network management  
0 function ? \_\_\_\_\_



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- 0 2.6 Signal dist. points for automatic board to board testing ? \_\_\_\_\_  
0
- 0 2.7 Signal dist. points for carrier line testing applique ? \_\_\_\_\_  
0
- 0 2.8 Signal dist. points for remote surveillance and control ? \_\_\_\_\_  
0
- 0 2.9 Signal dist. points for conference and alerting systems ? \_\_\_\_\_  
0
- 0 2.10 Signal dist. points for other functions not listed above ? \_\_\_\_\_  
0
- 0 3. Milliwatt Test Line Circuits.
- 0 3.1 Quantity of 102 Milliwatt test lines required ? \_\_\_\_\_  
0
- 0 4. Receiver Off Hook Tone Circuits.
- 0 4.1 ABSBH originating ccs/line for all office lines including remotes. \_\_\_\_\_  
0
- 0 4.2 ABSBH holding time in seconds for originating attempts for all office lines ? \_\_\_\_\_  
0
- 0 4.3 Total office line quantity including remote lines ? \_\_\_\_\_  
0
- 0 4.4 Percentage of originating attempts that require receiver off hook tone ? \_\_\_\_\_  
0
- 0 5. Transmission Test Trunk Circuits.
- 0 5.1 Quantity of outgoing interoffice trunks ? \_\_\_\_\_  
0
- 0 6. Automatic Identified Outward Dial Circuits.
- 0 6.1 Quantity of C25 type signalling channels from PBX for AIOD reception ? \_\_\_\_\_  
0
- 0 6.2 Redundancy of above links required ? \_\_\_\_\_  
0
- 0 6.3 Quantity of work sharing mode C25 links from PBX for AIOD reception ? \_\_\_\_\_  
0

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- 0 6.4 Redundancy of above links required ? \_\_\_\_\_
- 0 7. MF Receiver Circuits.
- 0 7.1 Quantity of CAMA position signalling circuits ? \_\_\_\_\_
- 0 7.2 Quantity of blue box fraud detection MF  
0 receiver circuits ? (1 to 3 per CAMA office) \_\_\_\_\_
- 0 7.3 Average MF receiver holding time in seconds. \_\_\_\_\_  
0 (If not known, 3 seconds is recommended)
- 0 7.4 MF incoming trunk quantity ? (Does not include \_\_\_\_\_  
0 DP or SS7 trunks. Does not include trunks on  
0 DTC equipped with UTR)
- 0 8. Digitone Receiver Circuits.
- 0 8.1 Digitone receiver holding time in seconds ? \_\_\_\_\_  
0 (if not known, 7 seconds is recommended)
- 0 8.2 Digitone line originating HDBH ccs/line ? \_\_\_\_\_
- 0 8.3 Digitone line average holding time in seconds ? \_\_\_\_\_
- 0 8.4 Number of digitone host and remote lines not \_\_\_\_\_  
0 served by an LGC equipped with UTR ?
- 0 8.5 Quantity of digitone receivers for the \_\_\_\_\_  
0 unauthorized fraud detection feature ?
- 0 9. Transmission Test Unit Circuits
- 0 9.1 Length of line diagnostic test.
- 0 9.1.1 Short ? (7 seconds) \_\_\_\_\_
- 0 9.1.2 Long ? (25 seconds) \_\_\_\_\_
- 0 10. Transmission Test Termination Circuits.
- 0 10.1 Quantity for open and short circuit tests ? \_\_\_\_\_  
0 (Two recommended per office)
- 0 11. Loop Around Test Circuits.

0

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- 0 11.1 Quantity for trunk transmission loss tests ? \_\_\_\_\_  
0 (Two recommended per office)
- 0 12. Digital Modems
- 0 12.1. Quantity of TOPS positions ? \_\_\_\_\_
- 0 12.2. Quantity of MDC attendant consoles ? \_\_\_\_\_
- 0 12.3. Quantity of TOPS printers (excluding SNAC) ? \_\_\_\_\_
- 0 13. TOPS Autoquote Digital Modems.
- 0 13.1 Quantity of TOPS dial-up autoquote circuits ? \_\_\_\_\_
- 0 14. Six Port Conference Circuits
- 0 14.1 Quantity of Service Analysis Positions ? (SAP) \_\_\_\_\_
- 0 14.2 Quantity of Trunk Test Positions ? (TTP) \_\_\_\_\_
- 0 14.3 Quantity of Attendant Consoles ? (BSAC) \_\_\_\_\_
- 0 14.4 Quantity of TOPS positions or TOPS voice links \_\_\_\_\_  
0 served by this office ?
- 0 14.5 Quantity of Service Analysis Evaluation System \_\_\_\_\_  
0 interfaces ?
- 0 14.6 ACTS recall/overtime ABSBH attempts ? \_\_\_\_\_
- 0 14.7 ACTS recall/overtime holding time in seconds ? \_\_\_\_\_  
0 (Amount of time to deposit coins for overtime.)
- 0 14.8 What is the total CCS for conference calls or \_\_\_\_\_  
0 is this quantity to be calculated ? If calc  
0 answer 15.8.1 through 15.8.3, if not enter total  
0 CCS and skip to 15.10.
- 0 14.8.1 Total number of POTS lines with call \_\_\_\_\_  
0 conference feature ?
- 0 14.8.2 POTS conference line ABSBH 2-way CCS per line \_\_\_\_\_
- 0 14.8.3 Probability of conference feature activation \_\_\_\_\_  
0 for calls ? (If unknown, 5% recommended)

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- 0 14.9 ABSBH CCS for call transfer, consult-hold \_\_\_\_\_  
0 and add-on for MDC lines ? (If unknown,  
0 recommend 1% or 2% of total MDC line CCS.
- 0 14.10 For 3 way call chaining, are circuit \_\_\_\_\_  
0 quantities to be specified or calculated ?
- 0 14.10.1 For specify, what is the quantity of \_\_\_\_\_  
0 3 way conference circuits required ?
- 0 14.10.2 For calculated:
- 0 14.10.2.1 Number of MDC lines with 3-way call \_\_\_\_\_  
0 feature ?
- 0 14.10.2.2 Percentage of 3 way call chaining feature \_\_\_\_\_  
0 penetration ?
- 0 14.10.2.3 Percentage of 3 way call chaining feature \_\_\_\_\_  
0 activation ?
- 0 14.10.2.4 Average number of conferees in 3 way call \_\_\_\_\_  
0 chaining group ?
- 0 14.11.3 Number of simultaneous 4 to 6 conferee \_\_\_\_\_  
0 conferences ?
- 0 14.12.4 Number of 6 port conference circuits for \_\_\_\_\_  
0 large conferences ?  
0 (For 7 to 10 conferee conferences provide  
0 2 6 port circuits per simultaneous conference.  
0 For 11 - 30 conferee conferences, subtract 10  
0 from the conference size and divide by 4 and  
0 round up to a whole number. Add 2 to this number  
0 to obtain the required number of 6 port circuits  
0 per simultaneous conferences of that size.)
- 0 14.12.5 Number of Collect calls handled by the \_\_\_\_\_  
0 AABS feature ?
- 0 14.12.6 Number of Third Party Billed calls handled \_\_\_\_\_  
0 by the AABS feature ?
- 0 14.12.7 Average holding time in seconds for Collect \_\_\_\_\_  
0 calls handled by the AABS feature ?

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0 14.12.8 Average holding time in seconds for Third \_\_\_\_\_  
0 Party Billed calls handled by the AABS  
0 feature.

0 15. Tone Generator Circuits

0 15.1 MDC Preset Conference required ? (NTX260AA) \_\_\_\_\_

0 15.2 Quantity of tone generator circuits for \_\_\_\_\_  
0 AUTOVON ?

0 16. Digitone Sender Circuits

0 16.1 Quantity of Tie Trunk outgoing ABSBH CCS ? \_\_\_\_\_

0 16.2 Average holding time of Tie Trunk outgoing \_\_\_\_\_  
0 call in seconds ? (If unknown, 180 seconds  
0 recommended).

0 16.3 Average holding time of digitone sender in \_\_\_\_\_  
0 seconds ? (If unknown, 3 seconds recommended.)

0 17. Alarm Circuits

0 17.1 Alarm transfer or alarm sending (Choose only one).

0 17.1.1 Alarm transfer to a remote office receiving \_\_\_\_\_  
0 circuit required ?

0 17.1.2 Alarm sending to a distant operator position \_\_\_\_\_  
0 required ?

0 17.2 Alarm grouping required ? \_\_\_\_\_

0 18. DTU BERT Circuits

0 18.1 Is digital test unit bit error ratio testing \_\_\_\_\_  
0 required ?

0 19. Tone Dectector Circuits

0 19.1 RONI or AUTOVON required ? \_\_\_\_\_

0 20. CAMA Circuits

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- 0 20.1 Quantity of CAMA position signaling circuits \_\_\_\_\_  
0 required ? (Equal to the number of RONI  
0 circuits)
- 0 20.2 Quantity Of CAMA suspension and call waiting \_\_\_\_\_  
0 circuits required ? (1 per office).
- 0 21. Analog Trunk Interface Circuits
- 0 21.1.1 Question deleted (Issue 02). \_\_\_\_\_
- 0 21.1.2 Quantity of analog recorded announcement \_\_\_\_\_  
0 interfaces required ?
- 0 21.1.3 Quantity of TOPS position interfaces ? \_\_\_\_\_
- 0 21.1.4 Quantity of TOPS printer interfaces ? \_\_\_\_\_
- 0 21.1.5 Question Deleted (Issue 02). \_\_\_\_\_
- 0 21.1.6 Quantity of VMX voice message interfaces ? \_\_\_\_\_
- 0 21.1.7 Analog echo suppression required on the \_\_\_\_\_  
0 above interfaces ?
- 0 21.1.8 Echo suppression w/o external pad sources \_\_\_\_\_  
0 required for above interfaces ?
- 0 21.2 Quantity of NCIS system interface circuits \_\_\_\_\_  
0 required ?
- 0 21.3 Quantity of 600 ohm 2 wire circuits required ? \_\_\_\_\_
- 0 21.4 Quantity of dial-up autoqoute interface \_\_\_\_\_  
0 circuits required ?
- 0 21.5 Quantity of automatic board to board test \_\_\_\_\_  
0 interface cicuits required ?
- 0 21.6 Quantity of tone and scrambler and/or ACD \_\_\_\_\_  
0 music on hold interface circuits required ?
- 0 22. Incoming/Outgoing Test Trunk Circuits
- 0 22.1 Quantity of No. 3 local test cabinet trunks \_\_\_\_\_  
0 required ?

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- 0  
0 22.2 Quantity of No. 14 local test cabinet trunks \_\_\_\_\_  
0 required ?
- 0 22.3 Quantity of operator verification trunks \_\_\_\_\_  
0 required ?
- 0 22.4 Quantity of coin line test interface trunks \_\_\_\_\_  
0 required ?
- 0 22.5 Quantity of mechanized loop test trunks \_\_\_\_\_  
0 required ?
- 0 22.6 Quantity of dialable tone locator circuits \_\_\_\_\_  
0 required ? (NTX277AA feature package)
- 0 22.7 Quantity of Pair Gain Test Controllers (PGTC) ? \_\_\_\_\_
- 0 22.8 Quantity of other test circuits required ? \_\_\_\_\_
- 0 23. DID/DOD Trunk Circuits
- 0 23.1 Quantity of 2 way DID/DOD PBX trunk circuits \_\_\_\_\_  
0 required ?
- 0 24. ROTL Trunk Circuits
- 0 24.1 ROTL test unit required ? \_\_\_\_\_
- 0 24.2 Quantity of additional 105 test trunks \_\_\_\_\_  
0 required ?
- 0 25. PBX Trunk Circuits
- 0 25.1 Quantity of 1 way PBX trunk circuits required ? \_\_\_\_\_
- 0 26. 101 Test Line Trunk Circuits
- 0 26.1 Quantity of 101 originating test line circuits \_\_\_\_\_  
0 required ?
- 0 26.2 Quantity of 101 terminating test line circuits \_\_\_\_\_  
0 required ?
- 0 27. Headset Monitor Interface

0

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0 27.1 Quantity of headset monitor interface trunk \_\_\_\_\_  
0 circuits required ?

0 28. Call Waiting Tone Generator

0 28.1 Teen Service Required ? \_\_\_\_\_

0 29. Mechanized Calling Card Service

0 29.1 Total ABSBH MCCC attempts ? \_\_\_\_\_

0 29.2 Percentage of non-operator handled MCCC calls ? \_\_\_\_\_

0 30. Coin Detection Circuits

0 30.1 Total ABSBH toll coin attempts ? \_\_\_\_\_

0 31. Rover Line Test Units (LTU's).

0 (Note: MTU's are preferred. See question 32)

0 31.1 Quantity of Rover LTU's required ? \_\_\_\_\_

0 (Note: MTU's are preferred. See question 32.1)

0 32. Rover Metallic Test Units (MTU's)

0 32.1 Quantity of Rover MTU's required ? \_\_\_\_\_

0 (Note: one MTU replaces two LTU's)

0 33. Enhanced Services Test Units (ESTU's)

0 33.1 Quantity of ESTU's required ? \_\_\_\_\_

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0 Trunk Module Equipment Calculations

0 A. Scan Circuits

0 A.1 Add 1.1 through 1.14 = aa (Total Scan Points)

0 aa/14 (round up) = NT0X10AA

0 B. Signal Distributor Circuits

0 B.1 Add 2.1 through 2.10 = aa (Total SD points)

0 aa/14 (round up) = NT2X57AA

0 C. Milliwat Test Line Circuits

0 C.1 Provide the 3.1 quantity of NT1X00AB

0 D. Receiver Off Hook Tone Circuits

0 D.1  $(4.1)/(4.2/100) = aa$  (attempts per line)

0  $4.3 \times aa = bb$  (total attempts)

0  $bb \times 4.4 = cc$  (ROH attempts)

0  $cc \times .6 = (ROHCCS)$  (.6 = default ROH holding time/100)

0 Refer to Table Y with ROHCCS, result will be  
0 dd (quantity of ROH circuits required).

0  $dd/2 = NT1X00AC$

0 E. Transmission Test Trunks

0 E.1  $(5.1 \times 20)/21600 =$  quantity of NTZZ06GA

0 F. Automatic Identified Outward Dial Circuits

0 F.1  $(6.1) + (6.3) = aa$  (total AIOD Circuits)

0 or if 6.2 or 6.4 = yes,

0  $(2 \times 6.1) + (2 \times 6.3) = aa$  (total AIOD circuits)

0  $aa/4$  (round up) = NT2X01AA

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## 0 G. MF Receiver Circuits

0 G.1 HDBH call attempts per trunk (DTC REAL:QUICK input) = aa

0  $aa \times (7.3/100) = bb$  (CCS per circuit)0  $bb \times (7.4/2) = CCS$ 

0 Refer to Table Z with CCS and 8.4 to obtain quantity  
0 of MF receiver circuits required = cc

0  $cc + 7.1 + 7.2 = dd$  (MF receiver circuits required)0  $dd/4 = NT2X48AA$ 

## 0 H. Digitone Receiver Circuits

0 H.1  $(29.2 \times 37 \text{ seconds}) = aa$ 0  $(1 - 29.2) \times 6 \text{ seconds} = bb$ 0  $aa + bb = cc$  (weighted average holding time MCCS)0  $29.1 \times (cc/100) = CCS$  (digitone receiver CCS MCCS)

0 Reference Table Z with CCS for dd (number of digitone  
0 receiver circuits for MCCS)

0  $(8.2)/(8.3/100) = ee$  (HD attempts per line)0  $(ee \times (8.1/100)) \times 8.4 = CCS$  (digitone receiver CCS lines)

0 Reference Table Z with CCS for ff (number of digitone  
0 receiver circuits for lines).

0  $dd + ff + 8.5 = gg$  (digitone receiver circuits required)0  $gg/4 = NT2X48AB$ 

## 0 J. Transmission Test Unit

0 J.1 (No. LCM lines + No. LM lines + No. SMR lines +  
0 No. SMS lines + No. SMU lines)  $\times (n) / 21600$   
0 (rounded up) = aa

0  $(n) = 9.1.1 \text{ or } 9.1.2.$

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0 (No. outgoing trunks x 4)/21600 (rounded up) = bb

0 aa + bb = NTZZ06FA

0 K. Transmission Test Termination

0 K.1 10.1 = NT2X71AA (minimum of two)

0 L. Loop Around Test

0 L.1 (11.1 / 2) = NT2X75AA (minimum of one)

0 M. Digital Modems

0 M.1 (12.1 + 12.2 + 12.3) / 4 (rounded up) = NTZZ06HA

0 N. TOPS Autoquote Digital Modem

0 N.1 (13.1) / 4 (rounded up) = NT3X02BA

0 P. Coin Detect

0 P.1 (30.1 x .38) = CCS

0 Reference Table Y with CCS = aa (coin detect circuits  
0 required)

0 aa/8 = NT3X08AA

0 Q. Six Port Conference

0 Q.1 (14.6) x (14.7/100) = CCS (ACTS recall/overtime CCS)

0 Reference Table Y with CCS = (three port conf circuits  
0 for ACTS recall/overtime)

0 Q.2.1 If 14.8 = total CCS, reference Table Y for required  
0 number of three port conference circuits.

0 Q.2.2 If 14.8 = calc, (14.8.1 x 14.8.2 x 14.8.3) + 14.9 =  
0 CCS

0 Reference Table Y with CCS for the number of three  
0 port conference circuits required.

0 Q.2.3 (Calculation deleted)

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0

0 Q.2.4 If 14.10 = specify, 14.10.1 = 3 port conference  
0 circuits required.

0 Q.2.5 If 14.10 = calc,  $((14.8.1 + 14.10.2.1) \times 14.10.2.2$   
0  $\times 14.10.2.3) / 14.10.2.4 = aa$

0  $(14.10.2.4 - 2) \times aa$  (rounded up) = (three port  
0 conference circuits for three way call chaining)

0 Q.2.6  $((14.12.5 \times 14.12.7 / 100) \times .7) +$   
0  $((14.12.6 \times 14.12.8 / 100) \times .7) = CCS$

0 Reference Table Y with CCS = three port conf ckt  
0 required for AABS feature.

0 Q.2.7 14.11.3 = quantity of six port conference circuits

0 Q.2.8 14.11.4 = quantity of six port conference circuits

0 Q.2.9  $(14.1 + 14.2 + 14.3 + 14.4 + 14.5 + Q.1 + Q.2.1 \text{ or}$   
0  $Q.2.2 + Q.2.4 \text{ or } Q.2.5 + Q.2.6) / 2) + Q.2.7 +$   
0  $Q.2.8 = NT3X67AA.$

0 R. Tone Generator

0 R.1 If 15.1 = yes, provide 8 circuits = aa

0  $aa + 15.2 = bb$  (tone generator circuits required)

0  $bb / 4$  (rounded up) = NT3X68AA

0 S. Digitone Senders

0 S.1  $(16.1) / (16.2 / 100) \times (16.3 / 100) = CCS$  (digitone  
0 sender CCS)

0 Reference Table Y with CCS = aa (digitone sender  
0 circuits required)

0  $aa / 4$  (rounded up) = NT3X68AB

0 T. Alarm

0 T.1 If 17.1.1 = yes, provide one NT3X83AA

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0 If 17.1.2 = yes, provide one NT3X84AA

0 If 17.1.3 = yes, provide one NT3X85AA

0 For an initial office, always provide two NT3X82AA

0 U. DTU BERT

0 U.1 If 18.1 = yes,  $(DTC + LTC) / 3.6 + (DCM / 14) = aa$

0 (128 - aa must be less than or equal to the quantity of  
0 NT6X99AA IBERT line cards in this office and any remote  
0 offices associated with this office.)

0  $aa/2 = NT4X23AA$

0 V. Tone Detector

0 V.1 If 19.1 = yes, provide 32 circuits = aa

0  $aa/16 = NT5X29AC$

0 W. CAMA

0 W.1 (20.1) = NT2X65AA and NT2X77AB

0 (20.2) = NT2X66AA

0 X. Analog Trunk Interface

0 X.1  $(21.1.2) + (21.1.3) + (21.1.4) + 21.1.6 = aa$

0  $aa/2 = NT2X72AA$

0 (If CCIS(MS6E) exists in the office, add 12 to aa.)

0 If 21.1.7 = yes, provide NT2X72AB instead of NT2X72AA

0 If 21.1.8 = yes, provide NT2X72AC instead of NT2X72AA

0 X.2 (21.2) = bb  $bb/2 = cc$

0 Provide NT2X81AA = cc and NT2X77AA = 2 x cc

0 X.3 (21.3) = dd  $dd/2 = ee$

0 Provide NT2X81AB = ee and NT2X77AB = 2 x ee

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0  
0 X.4 (21.4) = ff ff/2 = gg

0 Provide NT2X82AA = gg and NT2X77AA = 2 x gg

0 X.5 (21.5) = hh hh/2 = ii

0 Provide NT2X83AA = ii and NT2X77AA = 2 x ii

0 X.6 (21.6) = jj jj/2 = NT2X88AA

0 Y. Incoming/outgoing Test Trunks

0 Y.1 (22.1) + (22.2) + (22.3) + (22.4) + (22.5) + (22.6) +  
0 (22.7) + (22.8) + (31.1) + 2 x (32.1) + (HH.1) +  
0 2 x (II.1) = NT2X90AD and NT2X77AA

0 (Note: The terms (31.1), 2 x (32.1), (HH.1) and  
0 2 x (II.1) reflect the fact that each LTU requires  
0 one (1) NT2X90AD, and each MTU requires two (2)  
0 NT2X90AD's for the MONTALK function)

0 Z. DID/DOD Trunks

0 Z.1 (23.1) = NT2X95AA and NT2X77AA

0 AA. ROTL Trunks

0 AA.1 If 24.1 = yes, provide two circuits = aa

0 AA.2 (24.2) = bb (minimum of one)

0 AA.3 (aa + bb)/2 = NT3X91AA

0 BB. PBX Trunks

0 BB.1 (24.1) = aa aa/2 = NT5X25AA

0 CC. 101 Test Line

0 CC.1 (26.1) + (26.2) = NT5X30AA and NT2X77AA

0 DD. Head Set Monitor Interface (Local Office)

0 DD.1 (27.1) = NT5X30AA and NT2X77AA

0 EE. Call Waiting Tone Generator

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0 EE.1 For Non-MDC office provide 8 circuits

0 For MDC office provide 12 circuits

0 If 28.1 = yes, provide 4 circuits

0  $8 + 4 = 12/4 = 3$  NT3X68AC for non-MDC office

0  $12 + 4 = 16/4 = 4$  NT3X68AC for MDC office

0 FF. MAP Jack Ended Trunk Interface

0 FF.1 Quantity of MAP w/jacks + quantity of LTP w/jacks +  
0 TTP w/jacks = aa

0  $(aa \times 3)/2 = NT1X54AA$

0 GG. Metallic Test Access

0 GG.1  $aa = (\text{No. of LCM})/4 + (\text{No. of LCMI})/4 + (\text{No. RCS})/8 +$   
0  $(\text{No. SMU})/8 + (\text{No. SMR})/8$   
0 (rounded up to the nearest larger interger)

0  $bb = (Y.1 - HH.1 - 2 \times II.1 + (33.1) + 1) / 8$   
0 (rounded up to the nearest larger integer)

0 (Note: The term '1' represents the horizontal "0",  
0 which is shared by all the Dedicated MTU/LTU's.)

0  $aa \times bb = NT3X09BA$

0 (Note:

- 0 - 'aa' is the number of MTA cards, NT3X09BA, necessary  
0 to accomodate all the verticals in the switch. One  
0 NT3X09BA can handle eight (8) verticals. 'aa' is  
0 rounded up to the nearest largest integer.
- 0 - 'bb' is the number of MTA cards, NT3X09BA, necessary  
0 to accomodate all the horizontals in the switch. One  
0 NT3X09BA can handle eight (8) horizontals. 'bb' is  
0 rounded up to the nearest largest integer.
- 0 - 'RCS' stands for Remote Concentrator S/W Site. A  
0 Remote SLC 96 Software Site is a group of SLC 96  
0 Remote Terminals tested via the same vertical. One  
0 vertical may be used for testing up to ten (10)  
0 co-located SLC 96 Remote Terminals.
- 0 - 'SMU' stands for Subscriber Multiplexer - Urban. It

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0 represents the number of Remote DMS-1U Software Sites.  
0 A Remote DMS-1U Software Site is a group of DMS-1U  
0 terminals (maximum 2) tested via the same vertical.  
0 - 'SMR' stands for Subscriber Multiplexer - Rural. It  
0 represents the number of Remote DMS-1R Software  
0 Sites. A Remote DMS-1R Software Site is a group of  
0 Remote DMS-1R terminals (maximum 4) tested via the  
0 same vertical. )

0 HH. Dedicated Line Test Unit (LTU)

0 HH.1 ((No. of LCM/8) + (No. of LCMI/8) + (No. of RCS/16) +  
0 (No. of SMR/16) + (No. of SMU)/16)) (rounded up) + 1 = aa

0 II. Dedicated Metallic Test Unit (MTU)

0 II.1 = HH.1/2

0 (Note: One MTU replaces two LTU's. MTU's are preferred.)

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0 JJ. TME Shelves

0 JJ.1 MTM shelves

| 0 | NTI      | From | Cards | Slots | Slot  | Dis/ | Dis   |
|---|----------|------|-------|-------|-------|------|-------|
| 0 | PEC      | Sect | Req'd | /card | Total | Card | Total |
| 0 | NT0X10AA | B    | a     | 1     | aa    | 2.0  | ba    |
| 0 | NT1X00AB | D    | b     | 1     | ab    | 4.0  | bb    |
| 0 | NT1X00AC | E    | c     | 1     | ac    | 4.0  | bc    |
| 0 | NTZZ06GA | F    | d     | 2     | ad    | 19.0 | bd    |
| 0 | NT2X01AA | G    | e     | 2     | ae    | 19.0 | be    |
| 0 | NTZZ06EA | JJ   | f     | 2     | af    | 17.5 | bf    |
| 0 | NTZZ06FA | K    | g     | 2     | ag    | 24.0 | bg    |
| 0 | NT2X48AA | H    | h     | 2     | ah    | 12.0 | bh    |
| 0 | NT2X48AB | J    | j     | 2     | aj    | 12.0 | bj    |
| 0 | NT2X57AA | C    | k     | 1     | ak    | 4.5  | bk    |
| 0 | NT2X71AA | L    | l     | 1     | al    | 1.0  | bl    |
| 0 | NT2X75AA | M    | m     | 1     | am    | 4.0  | bm    |
| 0 | NTZZ06HA | N    | n     | 2     | an    | 13.0 | bn    |
| 0 | NT3X02BA | P    | p     | 1     | ap    |      | bp    |
| 0 | NT3X08AA | Q    | q     | 4     | aq    | 15.0 | bq    |
| 0 | NT3X09BA | HH   | r     | 1     | ar    | 11.5 | br    |
| 0 | NT3X67AA | R    | s     | 3     | as    | 7.5  | bs    |
| 0 | NT3X68AA | S    | t     | 2     | at    | 3.0  | bt    |
| 0 | NT3X68AB | T    | u     | 2     | au    | 3.0  | bu    |
| 0 | NT3X68AC | FF   | v     | 2     | av    | 3.0  | bv    |
| 0 | NT3X82AA | U    | w     | 2     | aw    | 9.0  | bw    |
| 0 | NT3X83AA | U    | y     | 1     | ax    | 13.0 | bx    |
| 0 | NT3X84AA | U    | z     | 1     | ay    | 2.0  | by    |
| 0 | NT3X85AA | U    | a1    | 1     | az    | 5.0  | bz    |
| 0 | NT4X23AA | V    | b1    | 1     | aa1   | 10.0 | ba1   |

0 To calculate MTM shelves:

0 Cards Req'd x Slots/card = Slot total

0 Example: a x 1 = aa

0 Total of aa through aa1 = MTMSLOTA

0 MTMSLOTA/12 (round up) = MTMSHELFA

0 For s (NT3X67AA) greater than or equal to MTMSHELFA:

0 MTMSHELFA x 2 = MTMSLOTZ

0 MTMSLOTA - MTMSLOTZ = MTMSLOTB

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0 MTMSLOTB/12 (round up) = MTMSHELFB  
0 MTMSHELF A - MTMSHELF B = MTMSHELFZ  
0 (MTMSLOTB + (MTMSHELFZ x 2)) x 1.1 (round up) =  
0 MTMTOT

0 For s (NT3X67AA) less than MTMSHELF A:  
0 (MTMSLOTA - (s x 2)) x 1.1 (round up) = MTMTOT

0 (1.1 factor is for 10% administrative spare)

0 MTMTOT/12 (round up) = NTZZ06BA

0 Quantity of NT5X29AC = Quantity of NTZZ06AM

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## 0 JJ.2 TM8 shelves

| 0 | NTI      | From | Cards | Slots | Slot  |
|---|----------|------|-------|-------|-------|
| 0 | PEC      | Sect | Req'd | /card | Total |
| 0 | NT1X54AA | GG   | a     | 1     | aa    |
| 0 | NT2X65AA | X    | b     | 1     | ab    |
| 0 | NT2X66AA | X    | c     | 1     | ac    |
| 0 | NT2X72AA | Y    | d     | 1     | ad    |
| 0 | NT2X72AB | Y    | e     | 1     | ae    |
| 0 | NT2X72AC | Y    | f     | 1     | af    |
| 0 | NT2X81AA | Y    | g     | 1     | ag    |
| 0 | NT2X81AB | Y    | h     | 1     | ah    |
| 0 | NT2X82AA | Y    | j     | 1     | aj    |
| 0 | NT2X83AA | Y    | k     | 1     | ak    |
| 0 | NT2X88AA | Y    | l     | 1     | al    |
| 0 | NT2X90AD | Z    | m     | 1     | am    |
| 0 | NT2X95AA | AA   | n     | 1     | an    |
| 0 | NT3X91AA | BB   | p     | 1     | ap    |
| 0 | NT5X25AA | CC   | q     | 1     | aq    |
| 0 | NT5X30AA | DD   | r     | 1     | ar    |

0 To calculate TM8 shelves:

0 Cards Req'd x Slots/card = Slot total

0 Example: a x 1 = aa

0 Total of aa through ar = TM8TOT

0 TM8TOT/15 = TM8 (NT2X52AG)

## 0 KK. AXU Shelf

0 KK.1 If COEO is an initial order, provide one 1 AXU shelf  
0 (NT3X89AA)

0 If COEO is an extension order, provide 0 AXU shelf

## 0 LL. TME Frames

0 LL.1 NTZZ06BA + TM8 + NTZZ06CA + NTZZ06AM = TMETOT

0 TMETOT/4 = TME (TME Frames) (NTZZ06AA), (NTZZ06YA),  
0 (NTZZ06ZA).0 Please note that if an AXU was provided in KK.1, it  
0 shall be mounted on TME 0, Shelf Position 65. This

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shelf space is not included in the TME frame  
calculation as this shelf can mount in the TME frame  
with four TM8 or MTM shelves.

LL.3 (TME x 5) - TMETOT - AXU = Filler Panels (P0575239)  
Table Y - Capacity Table

| Table Y CCS Per Port At GOS Of P .001 |      |       |      |       |      |       |      |
|---------------------------------------|------|-------|------|-------|------|-------|------|
| Ports                                 | CCS  | Ports | CCS  | Ports | CCS  | Ports | CCS  |
| 1                                     | .1   | 31    | 597  | 61    | 1428 | 91    | 2317 |
| 2                                     | 1.6  | 32    | 624  | 62    | 1457 | 92    | 2346 |
| 3                                     | 6.9  | 33    | 650  | 63    | 1486 | 93    | 2377 |
| 4                                     | 15.4 | 34    | 676  | 64    | 1516 | 94    | 2407 |
| 5                                     | 26.6 | 35    | 703  | 65    | 1544 | 95    | 2437 |
| 6                                     | 40.0 | 36    | 729  | 66    | 1574 | 96    | 2468 |
| 7                                     | 54.7 | 37    | 756  | 67    | 1603 | 97    | 2498 |
| 8                                     | 70.9 | 38    | 783  | 68    | 1632 | 98    | 2528 |
| 9                                     | 88.2 | 39    | 810  | 69    | 1661 | 99    | 2559 |
| 10                                    | 107  | 40    | 837  | 70    | 1691 | 100   | 2589 |
| 11                                    | 126  | 41    | 865  | 71    | 1720 | 101   | 2620 |
| 12                                    | 145  | 42    | 892  | 72    | 1750 | 102   | 2650 |
| 13                                    | 166  | 43    | 919  | 73    | 1779 | 103   | 2681 |
| 14                                    | 187  | 44    | 947  | 74    | 1809 | 104   | 2711 |
| 15                                    | 208  | 45    | 975  | 75    | 1838 | 105   | 2742 |
| 16                                    | 231  | 46    | 1003 | 76    | 1868 | 106   | 2772 |
| 17                                    | 253  | 47    | 1030 | 77    | 1898 | 107   | 2803 |

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PRACTICE 297-1001-450

|   |      |     |    |      |    |      |     |
|---|------|-----|----|------|----|------|-----|
| 0 |      |     |    |      |    |      |     |
| 0 | 18   | 276 | 48 | 1058 | 78 | 1927 | 108 |
| 0 | 2834 |     |    |      |    |      |     |

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**QUESTION**

| Table Y    CCS Per Port At GOS Of P .001 |     |    |      |    |      |     |      |
|------------------------------------------|-----|----|------|----|------|-----|------|
| 19                                       | 299 | 49 | 1086 | 79 | 1957 | 109 | 2864 |
| 20                                       | 323 | 50 | 1115 | 80 | 1986 | 110 | 2895 |
| 21                                       | 346 | 51 | 1143 | 81 | 2016 | 111 | 2926 |
| 22                                       | 370 | 52 | 1171 | 82 | 2046 | 112 | 2956 |
| 23                                       | 395 | 53 | 1200 | 83 | 2076 | 113 | 2987 |
| 24                                       | 419 | 54 | 1228 | 84 | 2106 | 114 | 3018 |
| 25                                       | 444 | 55 | 1256 | 85 | 2136 | 115 | 3049 |
| 26                                       | 469 | 56 | 1285 | 86 | 2166 | 116 | 3080 |
| 27                                       | 495 | 57 | 1313 | 87 | 2196 | 117 | 3110 |
| 28                                       | 520 | 58 | 1342 | 88 | 2226 | 118 | 3141 |
| 29                                       | 545 | 59 | 1371 | 89 | 2256 | 119 | 3172 |
| 30                                       | 571 | 60 | 1400 | 90 | 2286 | 120 | 3203 |

| No. | Mean Holding Time In Seconds |
|-----|------------------------------|
| 1   | 1.0                          |
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| Rec | 1    | 2    | 3    | 4    | 5    | 6    | 7    |
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| 2   | 17   | 7    | 4    | 3    | 3    | 3    | 2    |
| 3   | 47   | 24   | 17   | 14   | 12   | 11   | 10   |
| 4   | 79   | 48   | 36   | 30   | 26   | 24   | 23   |
| 5   | 113  | 77   | 59   | 50   | 45   | 41   | 39   |
| 6   | 147  | 107  | 85   | 73   | 66   | 61   | 58   |
| 7   | 182  | 138  | 113  | 99   | 89   | 83   | 79   |
| 8   | 216  | 171  | 143  | 126  | 115  | 107  | 102  |
| 9   | 243  | 204  | 173  | 154  | 141  | 132  | 126  |
| 10  | 270  | 237  | 204  | 183  | 169  | 158  | 151  |
| 11  | 297  | 271  | 236  | 213  | 197  | 186  | 177  |
| 12  | 324  | 306  | 269  | 244  | 226  | 214  | 204  |
| 13  | 351  | 340  | 302  | 275  | 256  | 242  | 232  |
| 14  | 378  | 375  | 335  | 306  | 286  | 271  | 260  |
| 15  | 405  | 405  | 368  | 339  | 317  | 301  | 289  |
| 16  | 432  | 432  | 402  | 371  | 348  | 331  | 318  |
| 17  | 459  | 459  | 436  | 404  | 380  | 362  | 348  |
| 18  | 486  | 486  | 470  | 436  | 412  | 393  | 378  |
| 19  | 513  | 513  | 504  | 470  | 444  | 424  | 409  |
| 20  | 540  | 540  | 538  | 503  | 476  | 456  | 439  |
| 21  | 567  | 567  | 567  | 536  | 509  | 487  | 470  |
| 22  | 594  | 594  | 594  | 570  | 542  | 519  | 502  |
| 23  | 621  | 621  | 621  | 604  | 575  | 551  | 533  |
| 24  | 648  | 648  | 648  | 638  | 608  | 584  | 565  |
| 25  | 675  | 675  | 675  | 672  | 641  | 616  | 597  |
| 26  | 702  | 702  | 702  | 702  | 674  | 649  | 629  |
| 27  | 729  | 729  | 729  | 729  | 708  | 682  | 661  |
| 28  | 756  | 756  | 756  | 756  | 742  | 715  | 694  |
| 29  | 783  | 783  | 783  | 783  | 775  | 748  | 726  |
| 30  | 810  | 810  | 810  | 810  | 809  | 781  | 759  |
| 31  | 837  | 837  | 837  | 837  | 837  | 815  | 792  |
| 32  | 864  | 864  | 864  | 864  | 864  | 848  | 825  |
| 33  | 891  | 891  | 891  | 891  | 891  | 882  | 858  |
| 34  | 918  | 918  | 918  | 918  | 918  | 916  | 891  |
| 35  | 945  | 945  | 945  | 945  | 945  | 945  | 924  |
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| 37  | 999  | 999  | 999  | 999  | 999  | 999  | 991  |
| 38  | 1026 | 1026 | 1026 | 1026 | 1026 | 1026 | 1024 |
| 39  | 1053 | 1053 | 1053 | 1053 | 1053 | 1053 | 1053 |

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| 0 | No.   | Mean Holding Time In Seconds |       |       |       |       |       |       |
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| 0 | of    |                              |       |       |       |       |       |       |
| 0 | Rec   | 1                            | 2     | 3     | 4     | 5     | 6     | 7     |
| 0 | ----- | -----                        | ----- | ----- | ----- | ----- | ----- | ----- |
| 0 | 40    | 1080                         | 1080  | 1080  | 1080  | 1080  | 1080  | 1080  |
| 0 | 41    | 1107                         | 1107  | 1107  | 1107  | 1107  | 1107  | 1107  |
| 0 | 42    | 1134                         | 1134  | 1134  | 1134  | 1134  | 1134  | 1134  |
| 0 | 43    | 1161                         | 1161  | 1161  | 1161  | 1161  | 1161  | 1161  |
| 0 | 44    | 1188                         | 1188  | 1188  | 1188  | 1188  | 1188  | 1188  |
| 0 | 45    | 1215                         | 1215  | 1215  | 1215  | 1215  | 1215  | 1215  |
| 0 | 46    | 1242                         | 1242  | 1242  | 1242  | 1242  | 1242  | 1242  |
| 0 | 47    | 1269                         | 1269  | 1269  | 1269  | 1269  | 1269  | 1269  |
| 0 | 48    | 1296                         | 1296  | 1296  | 1296  | 1296  | 1296  | 1296  |
| 0 | 49    | 1323                         | 1323  | 1323  | 1323  | 1323  | 1323  | 1323  |
| 0 | 50    | 1350                         | 1350  | 1350  | 1350  | 1350  | 1350  | 1350  |
| 0 | 51    | 1377                         | 1377  | 1377  | 1377  | 1377  | 1377  | 1377  |
| 0 | 52    | 1404                         | 1404  | 1404  | 1404  | 1404  | 1404  | 1404  |
| 0 | 53    | 1431                         | 1431  | 1431  | 1431  | 1431  | 1431  | 1431  |
| 0 | 54    | 1458                         | 1458  | 1458  | 1458  | 1458  | 1458  | 1458  |
| 0 | 55    | 1485                         | 1485  | 1485  | 1485  | 1485  | 1485  | 1485  |
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| 0 | 57    | 1539                         | 1539  | 1539  | 1539  | 1539  | 1539  | 1539  |
| 0 | 58    | 1566                         | 1566  | 1566  | 1566  | 1566  | 1566  | 1566  |
| 0 | 59    | 1593                         | 1593  | 1593  | 1593  | 1593  | 1593  | 1593  |
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| 0 | 61    | 1647                         | 1647  | 1647  | 1647  | 1647  | 1657  | 1647  |
| 0 | 62    | 1674                         | 1674  | 1674  | 1674  | 1674  | 1674  | 1674  |
| 0 | 63    | 1701                         | 1701  | 1701  | 1701  | 1701  | 1701  | 1701  |
| 0 | 64    | 1728                         | 1728  | 1728  | 1728  | 1728  | 1728  | 1728  |
| 0 | 65    | 1755                         | 1755  | 1755  | 1755  | 1755  | 1755  | 1755  |
| 0 | 66    | 1782                         | 1782  | 1782  | 1782  | 1782  | 1782  | 1782  |
| 0 | 67    | 1809                         | 1809  | 1809  | 1809  | 1809  | 1809  | 1809  |
| 0 | 68    | 1836                         | 1836  | 1836  | 1836  | 1836  | 1836  | 1836  |
| 0 | 69    | 1863                         | 1863  | 1863  | 1863  | 1863  | 1863  | 1863  |
| 0 | 70    | 1890                         | 1890  | 1890  | 1890  | 1890  | 1890  | 1890  |
| 0 | 71    | 1917                         | 1917  | 1917  | 1917  | 1917  | 1917  | 1917  |
| 0 | 72    | 1944                         | 1944  | 1944  | 1944  | 1944  | 1944  | 1944  |
| 0 | 73    | 1971                         | 1971  | 1971  | 1971  | 1917  | 1971  | 1971  |
| 0 | 74    | 1998                         | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  |
| 0 | 75    | 2025                         | 2025  | 2025  | 2025  | 2025  | 2025  | 2025  |
| 0 | 76    | 2052                         | 2052  | 2052  | 2052  | 2052  | 2052  | 2052  |
| 0 | 77    | 2079                         | 2079  | 2079  | 2079  | 2079  | 2079  | 2079  |
| 0 | 78    | 2106                         | 2106  | 2106  | 2106  | 2106  | 2106  | 2106  |
| 0 | 79    | 2133                         | 2133  | 2133  | 2133  | 2133  | 2133  | 2133  |
| 0 | 80    | 2160                         | 2160  | 2160  | 2160  | 2160  | 2160  | 2160  |

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| 0 | No.   | Mean Holding Time In Seconds |       |       |       |       |       |       |
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| 0 | 48    | 1296                         | 1296  | 1295  | 1278  | 1263  | 1250  | 1238  |
| 0 | 49    | 1323                         | 1323  | 1323  | 1311  | 1296  | 1282  | 1270  |
| 0 | 50    | 1350                         | 1350  | 1350  | 1344  | 1328  | 1315  | 1303  |
| 0 | 51    | 1377                         | 1377  | 1377  | 1377  | 1361  | 1347  | 1335  |
| 0 | 52    | 1404                         | 1404  | 1404  | 1404  | 1394  | 1380  | 1367  |
| 0 | 53    | 1431                         | 1431  | 1431  | 1431  | 1427  | 1413  | 1400  |
| 0 | 54    | 1458                         | 1458  | 1458  | 1458  | 1458  | 1445  | 1432  |
| 0 | 55    | 1485                         | 1485  | 1485  | 1485  | 1485  | 1478  | 1465  |
| 0 | 56    | 1512                         | 1512  | 1512  | 1512  | 1512  | 1511  | 1498  |
| 0 | 57    | 1539                         | 1539  | 1539  | 1539  | 1539  | 1539  | 1530  |
| 0 | 58    | 1566                         | 1566  | 1566  | 1566  | 1566  | 1566  | 1563  |
| 0 | 59    | 1593                         | 1593  | 1593  | 1593  | 1593  | 1593  | 1593  |
| 0 | 60    | 1620                         | 1620  | 1620  | 1620  | 1620  | 1620  | 1620  |
| 0 | 61    | 1647                         | 1647  | 1647  | 1647  | 1647  | 1647  | 1647  |
| 0 | 62    | 1674                         | 1674  | 1674  | 1674  | 1674  | 1674  | 1674  |
| 0 | 63    | 1701                         | 1701  | 1701  | 1701  | 1701  | 1701  | 1701  |
| 0 | 64    | 1728                         | 1728  | 1728  | 1728  | 1728  | 1728  | 1728  |
| 0 | 65    | 1755                         | 1755  | 1755  | 1755  | 1755  | 1755  | 1755  |
| 0 | 66    | 1782                         | 1782  | 1782  | 1782  | 1782  | 1782  | 1782  |
| 0 | 67    | 1809                         | 1809  | 1809  | 1809  | 1809  | 1809  | 1809  |
| 0 | 68    | 1836                         | 1836  | 1836  | 1836  | 1836  | 1836  | 1836  |
| 0 | 69    | 1863                         | 1863  | 1863  | 1863  | 1863  | 1863  | 1863  |
| 0 | 70    | 1890                         | 1890  | 1890  | 1890  | 1890  | 1890  | 1890  |
| 0 | 71    | 1917                         | 1917  | 1917  | 1917  | 1917  | 1917  | 1917  |
| 0 | 72    | 1944                         | 1944  | 1944  | 1944  | 1944  | 1944  | 1944  |
| 0 | 73    | 1971                         | 1971  | 1971  | 1971  | 1917  | 1971  | 1971  |
| 0 | 74    | 1998                         | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  |
| 0 | 75    | 2025                         | 2025  | 2025  | 2025  | 2025  | 2025  | 2025  |
| 0 | 76    | 2052                         | 2052  | 2052  | 2052  | 2052  | 2052  | 2052  |
| 0 | 77    | 2079                         | 2079  | 2079  | 2079  | 2079  | 2079  | 2079  |
| 0 | 78    | 2106                         | 2106  | 2106  | 2106  | 2106  | 2106  | 2106  |
| 0 | 79    | 2133                         | 2133  | 2133  | 2133  | 2133  | 2133  | 2133  |
| 0 | 80    | 2160                         | 2160  | 2160  | 2160  | 2160  | 2160  | 2160  |

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0 2.1.4 Office Layout Information

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0 Not Applicable

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0 2.1.5 Traffic Tables

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0 Not Applicable

0 2.2 Product/System Specification

0 Not Applicable

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0 2.2.1 Physical Characteristics

0  
0 Not Applicable

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0 2.2.2 EMI/Earthquake Information

0  
0 Not Applicable

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0 2.2.3 Sparing Information

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0 Not Applicable

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0 2.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not Applicable

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0 2.2.5 CURRENT DRAIN INFORMATION

0  
0 Not Applicable

0 2.3 Software Provisioning

0 Not Applicable

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0 2.3.1 Required Software Packages and Interdependencies

0  
0 Not Applicable

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0 2.3.2 Software Usage Restrictions

0  
0 Not Applicable

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0 2.3.3 Memory Provisioning

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0 Not Applicable

0 2.4 Real Time Impact

0 Not Applicable

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0 CHAPTER 17

0 HOST - DIGITAL RECORDED ANNOUNCEMENT

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Host - Digital Recorded Announcement  
Chapter 17

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## 0 1.0 Host - Digital Recorded Announcement

0 1.1 Equipment Provisioning0 1.1.1 Auxiliary Operator Services System (AOSS)0 (a) General Description

0 Currently existing #23 type desks and associated call distribut-  
0 ing equipment provide the directory assistance and intercept op-  
0 erator functions. This equipment will be replaced by the DMS  
0 Auxiliary Operator Services System (AOSS).

0 AOSS will fulfill for Auxiliary Operator Service corresponding  
0 needs to those satisfied by DMS TOPS for Toll Operator Services.

0 AOSS is designed to provide automatic call distribution, call  
0 processing, call detail recording and operator force adminis-  
0 tration functions for auxiliary operator services which do not  
0 require completion to a called party such as directory assistance  
0 and intercept.

0 The AOSS Position consists of modified TOPS furniture designed to  
0 accommodate the AOSS Display Module and a Visual display Unit  
0 (VDU) of an external Information Retrieval System.

0 The AOSS feature will be available with DMS-200 and DMS-100/200.

0 (b) References

0 NTP 297-2271-105 DMS-200 TOPS Auxiliary Operator  
0 Services System General Description

0 (c) Provisioning Considerations

0 ( i) As in the case of TOPS, the AOSS operator force can be  
0 subdivided into a number of Traffic Offices (up to 32)  
0 for administrative purposes. A DMS-200 or DMS-100/200  
0 can serve one or more locations. Each AOSS location is  
0 defined as a Traffic Office or Team.

0 ( ii) The Traffic Office can be colocated with or remoted from  
0 the DMS host office. Positions may be remoted up to 500

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0 km. The distance limitation is imposed by acceptable  
0 echo performance requirements.

0 ( iii) The AOSS system is comprised of operator positions, su-  
0 pervisory positions (assistance, in-charge), monitors and  
0 printers, and service circuits.

0 ( iv) If this is the initial installation of the AOSS feature,  
0 and if all the AOSS positions are remote, then the cus-  
0 tomer is responsible for the following:

0 a) Order a minimum quantity of AOSS positions  
0 of each type in the main equipment order.  
0 These positions will be relocated to and  
0 installed at the remote site before "K"  
0 date.

0 b) Order a minimum quantity of AOSS TTYs in  
0 the main equipment order if the TTYs are  
0 being supplied by NTL. These TTYs will be  
0 relocated to and installed at the remote  
0 site before "K" date.

0 c) If the AOSS TTYs are being supplied by the  
0 customer, a minimum quantity shall be made  
0 available to NTL installation personnel at  
0 the beginning of the installation  
0 interval. these TTYs will be relocated to  
0 and installed at the remote site before  
0 "K" date.

0 d) The customer shall designate which remote  
0 site(s) the positions and TTYs shall be  
0 shipped to.

0 e) Floor space adjacent to the switch shall  
0 be made available at the beginning of the  
0 installation interval for AOSS positions  
0 and AOSS TTYs supplied by items a) to c)  
0 shown above. The floor space should be  
0 lighted and have a power source for the  
0 AOSS positions and AOSS TTYs. Contact NTL  
0 Customer Engineering (Building Studies)  
0 for further information.

0 ( v) The following miscellaneous information is required for  
0 each Traffic Office.

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- 0 1. If the customer will be using other than an NTL  
0 headset, the customer shall supply to the NTL Cus-  
0 tomer Engineer a complete set of specifications for  
0 the headset.
- 0 2. The floor plan for the AOSS positions shall be sup-  
0 plied to NTL at CI date.
- 0 3. The drilling of the holes in the floor is a customer  
0 responsibility.
- 0 4. The cable rack drawing, ceiling insert drawing, etc.  
0 shall be supplied to NTL at CI date.
- 0 5. For further information, contact the NTL Building  
0 Studies group.
- 0 6. If the AOSS cables are to be terminated on something  
0 other than a distributing frame, a complete set of  
0 drawings defining the unit/frame will be required at  
0 CI date. For further information contact NTL Customer  
0 Engineering.
- 0 7. Unlike earlier vintage TOPS controllers, the new AOSS  
0 Controller Unit will not be equipped with an AC re-  
0 ceptacle. As the Controller does not provide for any  
0 external AC needs, any additional AC requirements  
0 must be accommodated by additional distribution of AC  
0 and provision of necessary receptacles.

0 ( vi) AOSS Position Order

0 The number of AOSS Operator Positions required will be  
0 determined by the customer. They can be ordered in the  
0 console or modular configuration with either AC or DC in-  
0 put. Modular positions will be located on customer sup-  
0 plied furniture.

0 One AOSS In-Charge Position is required per Traffic Of-  
0 fice. It can be ordered in the console or modular con-  
0 figuration with either AC or DC input. Modular positions  
0 will be located on customer supplied furniture. AOSS as-  
0 sistance calls may be handled by this position.

0 The customer may assign the assistance function to any  
0 AOSS Operator Position so that the position will become  
0 an AOSS Assistance Position.

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0 The customer may assign the in-charge function to any  
0 AOSS Operator Position so that the position will become  
0 an AOSS In-Charge Position.

0 ( vii) One CRT Stand (IBM) (A0291087) is required for each IBM  
0 Visual Display Unit (VDU) provided by the customer.

0 The Stand will minimize the force necessary to move the  
0 IBM VDU in any horizontal direction on the work station  
0 upper shelf.

0 (viii) Only one AOSS Force Manager Position is required at one  
0 location in a multi-office AOSS configuration. It pro-  
0 vides administrative functions for all Traffic Offices.  
0 The Force Manager's CRT provides the following data on a  
0 Traffic Office basis for all positions in the system and  
0 displays updated information every ten seconds:

0 - number of occupied positions  
0 - number of operator made-busy positions  
0 - number of positions in controlled traffic mode  
0 - number of positions with unsupervised call  
0 - number of positions out of service  
0 - current status of Calls Waiting (CW) queue  
0 - Calls Deflected (CD) threshold value.

0 Similar to TOPS, the Force Manager's modular position  
0 consists of a video monitor and a controller module  
0 equipped with either AC or DC input, for use with the  
0 customer's desk.

0 Order the same Force Manager's hardware as currently be-  
0 ing used for TOPS FM Positions.

0 In future, new PEC codes will be assigned for the new  
0 TOPS FM Positions (AC input and DC input versions). They  
0 will be used for the AOSS FM Positions as well.

0 ( ix) At least one AOSS Operator Position should be permanently  
0 installed in the DMS maintenance area for maintenance and  
0 reload purposes.

0 ( x) For each Traffic Office, the customer shall determine the  
0 AOSS position number series.

0 ( xi) The training feature of AOSS will be provided by simu-  
0 lation of call types through firmware on the module con-

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0 troller board. Voice response will be provided by the  
0 trainer on a separate jack. All AOSS Positions will be  
0 equipped with the training feature.

0 ( xii) AOSS TTY Order

0 Traffic Office Manager (TOM) TTY

0 One TOM TTY is required per Traffic Office. It provides  
0 traffic data pertaining to each Traffic Office.

0 Force Manager (FM) TTY

0 One FM TTY is only required at one location in a multi-  
0 office AOSS configuration. It provides traffic data such  
0 as initial position seizures, work volume, average speed  
0 of answer, calls waiting, average work time, average num-  
0 ber of occupied positions.

0 Mechanized Force Administration Data System  
0 (MFADS) Port

0 One MFADS port can be provided per office on an optional  
0 basis. MFADS is a minicomputer system which extracts  
0 force management operational measurements from a pollable  
0 port in every half hour. The system generates service  
0 and force summaries, as well as projections of operators  
0 required to AOSS force managers.

0 Switch Network Analysis Centre (SNAC) TTY

0 The SNAC TTY is optional and is used for recording trou-  
0 ble reports. It terminates on the I/O subsystem and does  
0 not require digital modems and incoming trunk termi-  
0 nations.

0 Specifications for AOSS Teletypewriters

0 The broad specifications and characteristics for the AOSS  
0 Teletypewriters are the same as for the TOPS TTYs shown  
0 in this NTP.

0 (xiii) Directory Assistance System (DAS)

0 The DAS will enable the Telco to automate selected  
0 portions of its Directory Assistance and Intercept ser-  
0 vices.

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0 The Telco will obtain the DAS equipment from the vendor.

0 ( xiv) Operator Positions

0 The current AOSS configuration includes both an AOSS con-  
0 sole and a DAS terminal, the associated terminal control-  
0 lers and an AOSS headset. This arrangement will remain  
0 for the Voice Response system.

0 The DAS terminal and associated equipment is provided by  
0 the Telco from the DAS vendor (i.e. IBM, CCI).

0 The AOSS console and associated equipment will be pro-  
0 vided by NTL in the usual manner.

0 In future, the TOPS MP is intended to replace both the  
0 AOSS console and DAS terminals.

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0 1.1.2 AOSS Voice Response (AOSSVR) (Canadian Applications Only)

0 (a) General Description

0 The AOSSVR system is an enhancement to the existing basic AOSS  
0 system and is an optional feature. This feature does not affect  
0 the AOSS call type 141 (Rate and Route).

0 This feature effectively encourages the use of only one keyboard  
0 by the AOSS Operator to handle subscriber requests and decreases  
0 average work time by the time taken to recite listing information  
0 and enter billing details.

0 The Voice Response feature will never degrade the performance of  
0 current AOSS since any failure of the VR subsystem or DMS/DAS  
0 datalink will effect a return to pre-Voice Response operations.

0 (b) References

0 | Section 3.2 Software  
0 Section 3.5 Peripheral Modules - Host  
0 Section 3.6 Input/Output

0 (c) Provisioning Considerations

0 ( i) The Telco may purchase an AOSSVR system with either  
0 internal or external ARUs for the automated voice. The  
0 Operator position which includes an AOSS console and a  
0 DAS terminal, though not currently optional, may at some  
0 point be replaced with the TOPS Multipurpose Position  
0 (TOPS MP) which will provide the functional equivalent of  
0 the present two terminal architecture.

0 Figure 33.14 and Figure 33.15 illustrate the system ar-  
0 chitecture with internal and external ARU respectively.

0 With the internal or external ARUs providing the auto-  
0 mated voice, there can be up to two languages, one pri-  
0 mary and the other a secondary language.

0 ( ii) Glossary of Abbreviations for Figure 33.14 and Figure  
0 33.15.

0 1. ARU Audio Response Unit  
0 2. DA Directory Assistance  
0 3. DAS Directory Assistance System



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0 4. DB Database  
0 5. DMODEM Digital Modem  
0 6. DRA Digital Recorded Announcement  
0 7. IF Interface  
0 8. INT Operator Interception  
0 9. MPC Multiple Protocol Controller  
0 10. OPR Operator  
0 11. SC Session Control  
0 12. SUB Subscriber  
0 13. TC Terminal Controller

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0 Host - Digital Recorded Announcement  
0 Chapter 17

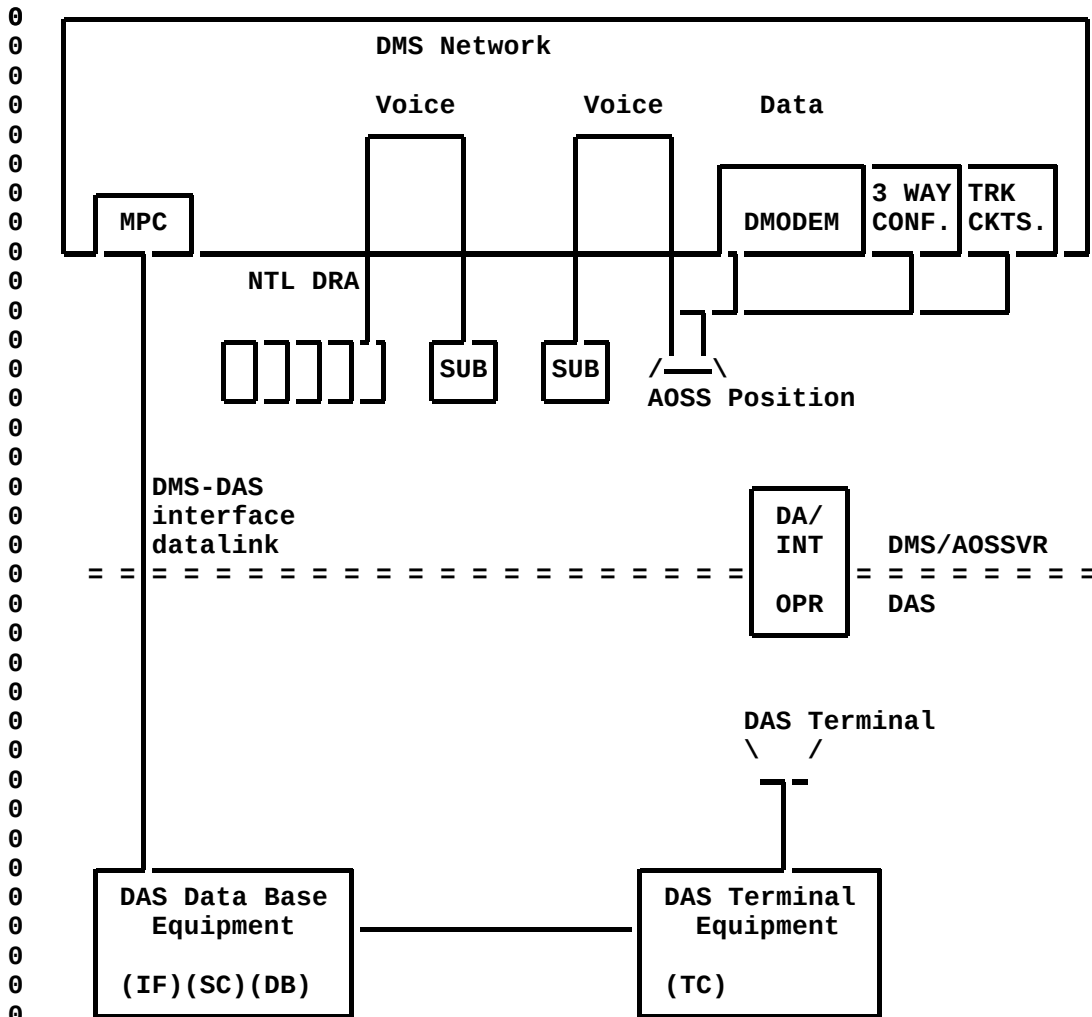


Figure 33.14

AOSSVR ARU-DAS CONFIGURATION USING DRA

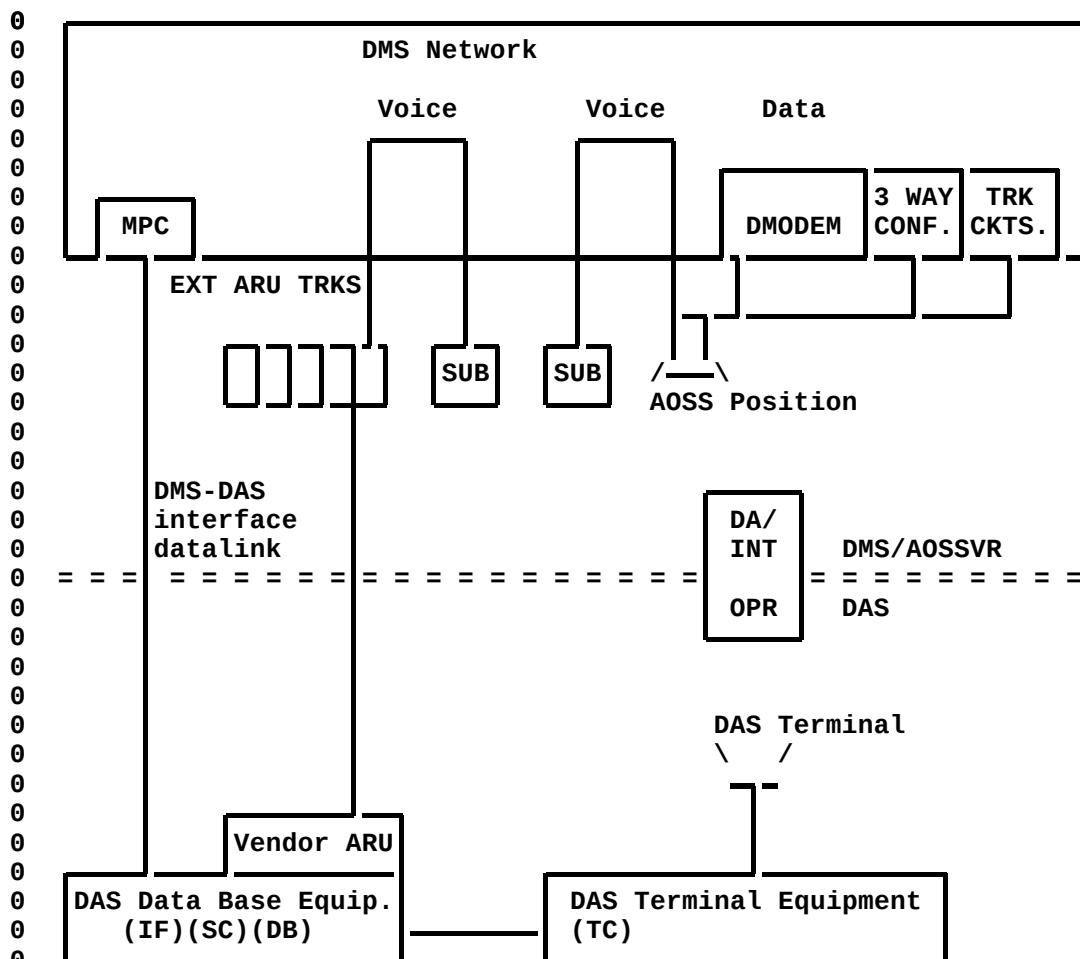


Figure 33.15

AOSSVR ARU-DAS CONFIGURATION USING VENDOR ARU

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0 ( iii) Directory Assistance System (DAS)

0 The DAS will enable the Telco to automate selected  
0 portions of its Directory Assistance and Intercept ser-  
0 vices.

0 The Telco will obtain the DAS equipment from the vendor.

0 ( iv) Digital Multiplex System (DMS) Switch

0 The NTL DMS will enable the Telco to automate the remain-  
0 der of the DA and Intercept services. The facility will  
0 provide Automated Call Distribution (ACD), trunk control,  
0 billing (AMA) and if desired can supply automated speech  
0 via the DRA. The DMS will interface with the DAS via a  
0 point to point datalink.

0 ( v) Operator Positions

0 The current AOSS configuration includes both an AOSS con-  
0 sole and a DAS terminal, the associated terminal control-  
0 lers and an AOSS headset. This arrangement will remain  
0 for the Voice Response system.

0 The DAS terminal and associated equipment is provided by  
0 the Telco from the DAS vendor (i.e. IBM, CCI).

0 The AOSS console and associated equipment will be pro-  
0 vided by NTL in the usual manner.

0 In future, the TOPS MP is intended to replace both the  
0 AOSS console and DAS terminals.

0 ( vi) AOSSVR-DAS Interface

0 The AOSSVR-DAS Interface will include a DAS Gateway  
0 Processor which will allow multiple AOSSVR offices to si-  
0 multaneously connect to DAS.

0 AOSSVR will access this Gateway via a Multiple Protocol  
0 Controller (MPC) card, NT1X89AA, which manages messaging  
0 over a BX.25 datalink.

0 For more information on this card, refer to Input/Output,  
0 Section 3.6 of this NTP.

0 ( vii) Audio Response Unit (ARU)

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0 AOSSVR may employ either internal or external Audio Re-  
0 sponse Units (ARU) which playback the Directory Assist-  
0 ance and Intercept database search results to  
0 subscribers.

0 The Telco may employ either of the following two ARU con-  
0 figurations:

0 1. DAS Vendor Supplied External ARU

0 2. DMS Internal AUR - Digital Recorded  
0 Announcement (DRA) Module

0 (viii) DAS Vendor Supplied External ARU

0 The external ARUs will require trunks, as illustrated in  
0 Figure 33.15, in order to carry speech from the DAS to  
0 the DMS calling trunk.

0 These trunks are digital trunks (i.e. DS-1 Interface  
0 Card, NT6X50AA). Number of trunks to be specified by  
0 Telco.

0 If digital trunks are used by Telcos who employ analog  
0 systems (IBM for instance), then the Telco will require  
0 channel banks to perform the digital to analog conver-  
0 sion.

0 For more information on digital trunks, refer to Periph-  
0 eral Modules - Line Equipment, Section 3.5 of this NTP.

0 ( ix) DMS Internal ARU - Digital Recorded Announcement (DRA)  
0 Module

0 The DRA will provide speech from the DMS to the calling  
0 subscriber, controlled entirely by the DMS switch. Figure  
0 33.14 illustrates the architecture for this configura-  
0 tion.

0 This device resides on a Maintenance Trunk Module (MTM) -  
0 DRA, NT2X58CB/AK/AG.

0 For more information on DRA, refer to Digital Recorded  
0 Announcement (DRA) System Provisioning in Peripheral Mod-  
0 ules - Host, Section 3.5 of this NTP.

0 ( x) Software Feature Packaging

0  
0 RELEASE 28.01  
0 93 12 030 If this feature is required, order the following software  
0 feature packages:

## 0 SOFTWARE

## 0 FEATURE

## 0 PACKAGE

## DESCRIPTION

## V.O.

## APPL

## GENERAL

## RELEASE

0 NTX720AA AOSSVR Call Handling BCS-24 BCS-25

0 NTX721AA Internal Announcement BCS-24 BCS-25  
0 Response Capability0 NTX723AA AOSSVR Voice Response BCS-24 BCS-25  
0 Handling of IBM  
0 Protocol0 The following software feature packages are required as a  
0 prerequisite:

## 0 SOFTWARE

## 0 FEATURE

## 0 PACKAGE

## DESCRIPTION

## V.O.

## APPL

## GENERAL

## RELEASE

0 NTX273AA Multi-Protocol Existing  
0 Controller BX.25

0 NTX892AA MPC Multilink Mgmt BCS-24 BCS-25

0 NTX131AA Auxiliary Operator Existing  
0 Services System  
0 (AOSS)0 | Refer to Section 3.2 - Software for the latest software  
0 packages

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0 2.0 Automatic Coin Toll Service (ACTS)

0 2.1 Hardware Provisioning

0

0 2.1.1 Hardware Usage Restrictions

0

0 None identified.

0 2.1.2 Hardware Dependencies

0

0| None identified: refer to section 2.4.

0 2.1.3 Provisioning Considerations

0

0 Automatic Coin Toll Service DRAM Circuit Pack

0

0 The ACTS announcement cp mounts in a standard DRA-MTM and re-  
0 quires a DRA controller. ACTS requires a dedicated DRA-MTM, i.e.  
0 mixing of MCCS DRA announcement or standard office announcement  
0 with the ACTS cp's is not permitted.

0

0 The ACTS DRAM does not broadcast messages. Instead, any one of  
0 several announcements may be directed to 29 time slots available  
0 in each DRAM. It is considered a service circuit in that a par-

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0 ticular time slot or announcement port is connected to an ACTS  
0 call only when required.

0 The average announcement is approximately 12 seconds in length.  
0 However, the ACTS DRAM will remain connected as long as the coin  
0 detection circuit. Therefore the holding time for DRA provision-  
0 ing should be 38 seconds.

0 One (1) ACTS DRA cp is required on the ACTS DRAM. The slot lo-  
0 cation for the DRA cp should follow the controller cp. Recom-  
0 mended card slot locations are: :ul. :li. for the controller  
0 card slot five (5) :li. for the ACTS DRA circuit pack card slot  
0 six (6). :eul.

0 Assume regular DRA sparing procedures. MTBF (Mean Time Between  
0 Failure) and MTTR (Mean Time To Repair) parameters are not  
0 available for accurate sparing calculations.

#### 0 Coin Detection Circuit (CDC)

0  
0 A coin detection circuit pack physically occupies one card slot  
0 in an MTM.

0 A CDC uses eight time slots and, therefore, four (4) consecutive  
0 card slots are required. A maximum of three (3) CDC circuit  
0 pack's can be mounted in any MTM. the slot assignment being card  
0 slots 05,09 and 13. If desired, the CDC card may be placed on an  
0 MTM with other cards, provided the next three (3) slots following  
0 each CDC pack are empty and that the provisioning rules for these  
0 other packs are followed.

0 Digitone or rotary coin stations may be used, however all  
0 stations MUST be able to provide dual frequency coin deposit  
0 signals to allow detection by the CDC circuit pack.

0 The CDC contains eight (8) coin detection circuits provisionable  
0 for ACTS on each circuit pack.

0 The CDC requires no distributing frame cabling.

0 A 3-port conference circuit will be required for all "recall" ac-  
0 tivity (i.e. overtime notification, intercoin prompt, etc.). The



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0 current provisioning of 3-port conference circuits (for TOPS) is  
0 one per position plus five percent. This quantity is sufficient  
0 to handle the ACTS traffic. Therefore, no additional 3-port con-  
0 ference circuits will need to be provisioned.

0 Each NT1X76AE is a two virtual card credit, i.e. 256 kbyte,  
0 double-density cp. When provisioning an ACTS DRA-MTM, the total  
0 allowable virtual card credit limit is eight. The EEPROM  
0 (NT1X79AA) is a 128 kbyte, one (1) virtual card credit, single-  
0 density cp.

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[illegible]

**TTL** **ABSBH**  
**CDC** **USAGE**

NOTE           The above calculations are required for both the ACTS  
feature running in the TOPS office and for the Improved Coin  
Service Revenue Collection Feature running in associated End  
Offices.

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0 | End Office CDC should be provisioned to accommodate the  
0 | expected inter- LATA originated coin call traffic.

0 ACTS DRA Provisioning

0  
0 :ol. :li. Number of coin lines -----  
0 :li. Calling rate -----  
0 :li. Number of calls ((1)\*(2)) -----  
0 :li. HT/100 (Default=38 sec.) -----  
0 :li. CCS of announcements ((3)\*(4)) -----  
0 :li. Number of announcements based on traffic -----  
0 (CCS Capacity Tables P.001) ----- :li. Number  
0 of ACTS DRA ((6)\_\_\_\_)/29 ----- :eol

0 2.1.4 Office Layout Information

0  
0 Not applicable.

0 2.1.5 Traffic Tables

0  
0 Refer to CCS Capacity Tables, P.001.

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0 2.2 Product/System Specification

0

0 2.2.1 Physical Characteristics

0

0 Not applicable.

## 0 Coin Detection Circuit NT3X08--

0

0 Input Voltage..... V at Hz

0 Power Consumption.....15 watts

0 Current Drain..... Amps

0 Thermal Dissipation..... BTU/hr

0 Fusing Requirements.....

## 0 MECHANICAL DIMENSIONS

0 Height Width Length

0 Weight Depth

0 2.2.2 EMI/Earthquake Information

0

0 Not applicable.

0

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0 2.2.3 Sparing Information

0  
0 Assume regular sparing procedures. MTBF (Mean Time Between Fail-  
0 | ure) and MTTR (Mean Time To Repair) for the ACTS DRAM (NT1X76AE)  
0 | and the CDC (NT3X08--) cp's. Parameters are not available for ac-  
0 | curate sparing calculations.

0 2.3 Software Provisioning

0

0 2.3.1 Required Software Packages and Interdependencies

0  
0 The software package for ACTS is NTX208AA or NTX208AB.

0 | The NTX208AB software package contains maintenance related en-  
0 | hancements which are not provided with the NTX208AA package

0 | The NTX208AB enhancement provides telcos the capability of dial-  
0 | ing a seven- digit test number from a coin phone to determine  
0 | whether the coin box is sending the proper signaling to the ACTS  
0 | system. The feature also offers the capability of identifying  
0 | defective coin detection circuits from the MAP without having to  
0 | busy out all the circuits on the affected CDC. Only the circuit  
0 | under test need be busied.

0 | The maintenance enhancement of the NTX208AB package requires the  
0 | provisioning of CDC NT3X08AB. The NT3X08AA CDC will operate  
0 | compatibly with NTX208AB package but this configuration will not  
0 | have the enhanced maintenance capability. To get the full benefit  
0 | from the enhanced maintenance capability of the NTX208AB package,  
0 | all ACTS CDCs must be NT3X08AB.

0 | The NTX208AA package operates compatibly with either NT3X08AA or  
0 | NT3X08AB CDCs. The improved coin toll fraud prevention capability  
0 | of the NT3X08AB CDC card is effective when configured with either  
0 | the NTX208AA software package or the NTX208AB package.

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## 0 | End Office CDCs

0  
0 The CDCs required for the Improved Coin Service Revenue Col-  
0 lection feature AF1400 in the end office are either NT3X08AA or  
0 NT3X08AB. The use of NT3X08AB provides the improved fraud pre-  
0 vention capability. The improved maintenance functionality of the  
0 NT3X08AB CDC is not implemented in the end office configuration.

0 For ACTS software status, refer to the SMS database.

0 MMCCS and CCIS are not software prerequisites for ACTS operation.

### 0 2.3.2 Software Usage Restrictions

0  
0 None identified.

### 0 2.3.3 Memory Provisioning

0  
0 The ACTS feature requires 3K words of program store.

### 0 2.4 Real Time Impact

0 The ACS feature has no real time impact.

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0 2.4.1 Digital Recorded Announcement (DRA) System Provisioning

0 a) General Description

0 Digital Recorded Announcement (DRA) system provides recorded  
0 announcement messages. It consists of a Speech Processor, a  
0 Microprocessor Controller and Speech Memory. The permanent  
0 Speech Memory is on NT1X76 PROM cards. Non volatile recordable  
0 Speech Memory is on the NT1X79 EEPROM card. Recordable Speech  
0 Memory is on NT1X77 RAM cards. The Speech Processor and Micro-  
0 processor Controller are both on the NT1X75 DRA Controller Board.  
0 One DRA Controller Board plus one or more (up to a maximum of  
0 eight (8)) PROM, EEPROM and (or) RAM Speech Memory cards are  
0 equipped on a special MTM shelf.

0 b) References

0 Chapter 2 Traffic Criteria and Capacities  
0 Chapter 3, Section 3.3 Operator Services  
0 NTP 297-1001-527 Digital Recorded Announcement Machine  
0 Maintenance Reference Manual

0 c) Provisioning Considerations:

0 ( i) The controller CP can address up to one megabyte (M-  
0 byte) is speech memory (eight cards) and can be config-  
0 ured (by means of switches) to function either as an 8,  
0 16, 24 or 30 circuit (speech channel) interface. The se-  
0 lected quantity represents the number of different an-  
0 nouncements (types) which can be simultaneously connected  
0 to subscribers. All announcements from the source DRA  
0 are confined to the same time switch or Network Sub Group  
0 (NSG) (the one to which the MTM housing the DRA is con-  
0 nected). Circuit assignment is flexible and a given an-  
0 nouncement type can be assigned to more than one circuit.

0 ( ii) One controller card is required per DRA system and can  
0 accommodate up to a maximum of eight DRA ROM and (or) RAM  
0 memory cards. The various types of controller cards are  
0 as follows:

|                                 |          |
|---------------------------------|----------|
| 0 Digital Recorded Announcement | NT1X75AA |
| 0 Controller                    |          |
| 0 Enhanced DRA Controller       | NT1X75BA |
| 0 A-Law DRA controller          | NT1X75DA |

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0 ( iii) The NT1X76 card can be either a 128K or 256K EPROM  
0 card. 128K represents about 32 seconds of speech plus  
0 silence, test tone, prompt tone and 32 Special Informa-  
0 tion Tones (SIT). The 32 seconds can be divided into  
0 segments or subphrases as small as 32ms to allow building  
0 of more than 32 seconds of announcements. This is accom-  
0 plished by recording only once standard announcement sub-  
0 phrases required in several announcements such as "We're  
0 sorry" or "The number you have dialed", that may be de-  
0 sired in many announcements.

0 ( iv) The various types of DRA PROM memory cards are as fol-  
0 lows:

0 Digital Recorded Announcement PROM NT1X76AA  
0 Memory  
0 (Standard English Announcements)

0 Digital Recorded Announcement PROM NT1X76BA  
0 Memory  
0 (Standard French Announcements)

0 Digital Recorded Announcement PROM NT1X76AB  
0 Memory  
0 (U.S. Bell Standard Announcements)

0 Digital Recorded Announcement PROM NT1X76AE  
0 Memory  
0 (ACTS Standard Announcements)

0 Digital Recorded Announcement PROM NT1X76CA  
0 Memory  
0 (Standard MCCS English Announcements)

0 Digital Recorded Announcement PROM NT1X76AF  
0 Memory  
0 (AOSSVR English Announcements-Part 1)

0 Digital Recorded Announcement PROM NT1X76AG  
0 Memory  
0 (AOSSVR English Announcements-Part 2)

0 Digital Recorded Announcement PROM NT1X76BF  
0 Memory  
0 (AOSSVR French Announcements -Part 1)

0 Digital Recorded Announcement PROM NT1X76BG



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0 Memory  
0 (AOSSVR French Announcements -Part 2)

0 The pre-recorded standard announcements for each card  
0 type can be found in NTP 297-1001-527.

0 If bilingual announcement are required, then both  
0 NT1X76AA and NT1X76BA cards must be associated with the  
0 same DRA controller card.

0 ( v) NT1X77AA DRA Recordable Memory

0 Each RAM card can be used to store messages recorded on-  
0 line. It can hold up to 31 seconds of recording (based  
0 on 4 bits/sample and 8K samples/second). RAM speech mem-  
0 ory is provisioned based on a total recording time in  
0 seconds per DRA system. An announcement can run over two  
0 NT1X77AA cards.

0 ( vi) NT1X79AA DRA Electrically Erasable PROM (EEPROM) Card

0 Electrically Erasable Programmable Real Only Memory  
0 (EEPROM) is used as memory, allowing the customer to re-  
0 cord or rerecord messages. This card can hold up to 31  
0 seconds of recording. EEPROM speech memory is provi-  
0 sioned based on total recording time in seconds per DRA  
0 system. An announcement can run over two NT1X79AA cards  
0 associated with the same controller card. However, it  
0 must not be split over two controllers.

0 ( vii) For AOSS Voice Response, the DRA modules will consist  
0 of a controller card and four (4) double density PROM  
0 speech cards. (AOSSVR is for Canadian applications  
0 only.)

0 Provide one (1) DRA Controller Card, NT1X75BA.

0 If English announcements are required, provide one card  
0 each of NT1X76AF and NT1X76AG.

0 If French announcements are required, provide one card  
0 each of NT1X76BF and NT1X76BG.

0 If both English and French announcements are required,  
0 provide one card each of NT1X76AF, NT1X76AG, NT1X76BF and  
0 NT1X76BG.

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0 To determine the maximum number of AOSSVR announcement  
0 cards that may be engineered onto one MTM shelf, use the  
0 following chart. For each of the speech memory cards  
0 supplied for one shelf, add the virtual card credit (128K  
0 - eight bit). The total must not exceed eight (8). For  
0 example, one card each of NT1X76AF, NT1X76AG, NT1X76BF  
0 and NT1X76BG total eight, so no more cards may be added.

0 AOSSVR Speech Memory Card

| 0 | CARD | PEC      | VCARD CREDIT |
|---|------|----------|--------------|
| 0 | ROM  | NT1X76AF | 2            |
| 0 | ROM  | NT1X76AG | 2            |
| 0 | ROM  | NT1X76BF | 2            |
| 0 | ROM  | NT1X76BG | 2            |

0 A DRA Module used for the AOSS Voice Response feature  
0 cannot be used for other applications. Features such as  
0 Mechanized Calling Card Service (MCCS) and Automatic Coin  
0 Toll Service (ACTS) must use different DRA devices.

0 For AOSS Voice Response, the Telco cannot make up his own  
0 customized voice announcements.

0 For more information on AOSSVR, refer to Section 3.3, Op-  
0 erator Services.

0 (viii) One DRA machine is required per Mechanized Credit Card  
0 Service (MCCS) announcement machine. One Enhanced DRA  
0 Controller Card and one MCCS Standard Announcement CP  
0 Card is required per MCCS announcement machine. The DRA  
0 EEPROM card is an optional circuit pack, required only if  
0 the customer wishes to offer voice responses not included  
0 on the MCCS Standard Announcement circuit pack.

0 To determine the maximum number of MCCS announcement  
0 cards that may be engineered onto one MTM shelf, use the  
0 following chart. For each of the speech memory cards  
0 supplied for one shelf, add the virtual card credit (128K  
0 - eight bit). The total must not exceed eight. For ex-  
0 ample, one NT1X76CA plus five NT1X79AA cards total seven,  
0 so one more card may be added if its vcard credit is only  
0 one.

0 MCCS Speech Memory Card

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0 CARD PEC VCARD CREDIT  
0 ROM NT1X76CA 2  
0 EEPROM NT1X79AA 1

0 Each MCCS announcement machine has 30 service circuit  
0 ports but one of the 30 is dedicated to maintenance use.  
0 The number of MCCS announcement machines required for  
0 traffic is equal to the number of MCCS announcement ser-  
0 vice circuits required divided by 29 and rounded up to  
0 the next whole number. An additional one MCCS announce-  
0 ment machine is added in order to provide service pro-  
0 tection in the event of failure of one of the MCCS  
0 announcement machines.

0 For more information on the provisioning of the DRA for  
0 the MCCS, refer to Section 3.3 , Operator Services.

0 ( ix) The Automatic Coin Toll Service (ACTS) DRAM will pro-  
0 vide pre-programmed announcements for the initial contact  
0 of time and charges for the call, to quote and collect  
0 overtime charges and to give customer notification of  
0 elapsed time. Each ACTS DRAM requires one Enhanced DRA  
0 Controller Card and one DRA PROM Memory ACTS Standard An-  
0 nouncement Card. To determine the maximum number of ACTS  
0 announcement cards that may be engineered onto one ACTS  
0 DRA MTM, use the following chart. The total virtual card  
0 credit for the DRA must not exceed eight.

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0 ACTS Speech Memory Card

0 CARD PEC VCARD CREDIT

0 ROM NT1X76AE 2

0 EEPROM NT1X79AA 1

0 For more information on the provisioning of the DRA for  
0 the ACTS, refer to Section 3.3, Operator Services.

- 0 ( x) The Custom Local Area Signalling Services (called  
0 CLASS in the US) or the Call Management Services (called  
0 CMS in Canada) DRA (hereafter referred to as CLASS DRA)  
0 will provide announcements available for CLASS features  
0 to indicate successful or denied operation.

0 For BCS-27, the NT1X75BA DRAM Controller must be provi-  
0 sioned for all CLASS applications.

0 There are two (2) groups of announcements, Phase 1 CLASS  
0 DRA announcements and Phase 2 CLASS DRA announcements.  
0 If the CLASS/CMS feature is required, at least one group  
0 of announcements (i.e. Phase 1 or Phase 2) must be pro-  
0 vided. The Customer can either have Phase 1 announce-  
0 ments or Phase 2 announcements or both.

0 For more information on the provisioning of the DRA for  
0 the CLASS/CMS feature, refer to the Peripheral Modules  
0 Features in this section.

- 0 ( xi) An announcement type will appear at a network port  
0 over a single time slot connection from an MTM. Network  
0 broadcasting will be used to distribute each announcement  
0 type to the various lines and trunks requesting this ser-  
0 vice.

- 0 ( xii) Grade of Service Objective

0 If not specified by the customer, assume the following  
0 G.O.S. per announcement type:

0 Less than 1% (ABSBH) or 5% (HDBH) of attempts should see  
0 all circuits busy. This assumes that failures overflow  
0 to tone circuits. In a toll office, this applies on a  
0 10HDBH basis.

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0 (xiii) The maximum number of simultaneous connections that  
0 can be made to announcements should not exceed 16 plus 8,  
0 16, 24 or 30 for the old network and 32 plus 8, 16, 24 or  
0 30 for the new network for the non deloading option.

0 ( xiv) Each announcement type will be considered as a sepa-  
0 rate trunk group.

0 ( xv) Traffic Capacity Per DRA

0 (1) Without The Network Deloading Option

0 Network deloading is not required if the traffic load  
0 on the DRA does not exceed the traffic limits shown  
0 in Tables T and U, Total DRA Traffic (CCS) For Net-  
0 work (NT0X48) and Total DRA Traffic (CCS) For Network  
0 (NT5X13) respectively, in Chapter 2, for the number  
0 of ports deloaded per NSG equal to 0 for the old and  
0 new network respectively.

0 (2) With The Network Deloading Option

0 Traffic capacities for the DRA with a different num-  
0 ber of ports deloaded per NSG are shown in Tables T  
0 and U for the old and new network respectively.

0 For the non deloading option, if more than one DRA  
0 system is required per office, each should be as-  
0 signed to a different network module.

0 ( xvi) The number of DRA systems to be provisioned will be  
0 established as a function of:

0 (1) Number of Announcements

0 Note that the maximum number of announcements per DRA  
0 system is 30.

0 (2) Total Number of Recording Seconds

0 Note that the recording time available per DRA system  
0 given that all the memory cards are RAM cards is 248  
0 seconds (8 RAM cards x 31 seconds = 248 seconds).

0 (3) Traffic Capacity

0 (a) Traffic load per announcement

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- 0 (b) Maximum traffic load per NSG  
0 (c) Grade of service (G.O.S.) objectives

0 (4) Reliability

0 We recommend that our standard offering should be a  
0 single DRA system. However, each DRA system may be  
0 duplicated for reliability/maintenance purposes if  
0 requested by the customer.

0 (xvii) In summary, the number of DRA required per office is  
0 the maximum of one of the three formulas below:

0 1) Total No. of Announcements Required/Office

0 30

0 = No. of DRAs  
0 (round up to next highest integer)

0 2) Total No. of Recording Seconds

0 248 Seconds

0 = No. of DRAs  
0 (round up to next highest integer)

0 3) Total Usage (CCS) For All Announcements

0 Traffic Capacity (CCS) Per DRA

0 = No. of DRAs  
0 (round up to next highest integer)

0 (xviii) The CCC DRA machine will provide digitally recorded  
0 announcements for use during handling of automated credit  
0 card calls.

0 Each CCC announcement machine has thirty service circuit  
0 ports but one of the thirty is dedicated to maintenance  
0 use. The number of CCC announcement machines required  
0 for traffic is equal to the number of CCC announcement  
0 service circuits required divided by twenty-nine and  
0 rounded up to the next whole number. An additional one  
0 CCC announcement machine is added in order to provide  
0 service protection in the event of failure of one of the  
0 CCC announcement machines.

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0 Provide one Enhanced Digital Recorded Announcement Con-  
0 troller CP NT1X75BA per CCC announcement machine.

0 One CCC Standard English Announcement CP, NT1X76AH or one  
0 CCC Standard French Announcement CP, NT1X76BH is required  
0 per CCC announcement machine. If both English and French  
0 announcements are required, then provide NT1X76AH and  
0 NT1X76BH. These circuit packs contain all the voice mes-  
0 sages to support the CCC feature set. The memory used is  
0 double density, Erasable Programmable Read Only Memory  
0 (EPROM).

0 The Custom Announcement CP NT1X79AA is an optional cir-  
0 cuit pack, required only if the customer wishes to office  
0 voice responses not included on the CCC Standard An-  
0 nouncement circuit pack. The number of seconds of re-  
0 cording time required divided by thirty-one seconds is  
0 equal to the number of Custom Announcement CP required  
0 per CCC group.

0 To determine the maximum number of CCC announcement cards  
0 that may be engineered onto one MTM shelf, use the fol-  
0 lowing chart. The total virtual call credit must not ex-  
0 ceed eight.

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## 0 CCC SPEECH MEMORY CARD

0 CARD PEC VCARD CREDIT

0 ROM NT1X76AH 2  
0 ROM NT1X76BH 2  
0 EEPROM NT1X79AA 1

0 For more information on the provisioning of the DRA for  
0 CCC, refer to Section 450/33, Operator Services.

0 ( xix) The DRA required per office for CCC feature is as follows:

0 To determine the total CCC announcement service circuit  
0 ports required for each office, use Table V Trunk Capac-  
0 ity Tables (Poisson Theory) of Chapter 2 using the traf-  
0 fic usage in CCS offered to the CCC announcement machine.  
0 The CCS traffic usage can be determined as follows:

$$\begin{array}{l} \text{0 CCC Traffic Usage} = \text{ABSBHA} \times \text{WAHT} \\ \text{0} \\ \text{0} \quad \quad \quad \underline{\hspace{2cm}} \\ \text{0} \quad \quad \quad 100 \end{array}$$

0 where

0 ABSBHA is the total Average Busy Season Busy Hour Attempt  
0 for all 0+, 01+, ANI traffic with an indication of CCC  
0 capable i.e. trunk group = CCC capable + originating sta-  
0 tion is DTMF type. (This will be the sum of all incoming  
0 trunk groups as well as local originating traffic in the  
0 case of DMS-100/200 TOPS.)

0 WAHT is the Weighted Average Holding Time of the CCC an-  
0 nouncement machine of all 0+ and 01+ calls marked as CCC  
0 capable. This is determined by multiplying nineteen sec-  
0 onds (the CCC announcement machine holding time for CCC  
0 calls) the probability that the 0+ or 01+ call marked as  
0 CCC capable is actually a subscriber dialed CCC call.

0 The number of CCC groups is equal to the number of CCC  
0 announcement service circuit ports divided by twenty-  
0 nine. The number of CCC DRAM required is as follows:

$$\begin{array}{l} \text{0 No. of CCC DRAM} = \text{No. of CCC groups} \times \text{No. of} \\ \text{0} \quad \quad \quad \text{DRAM required per group} \end{array}$$



0 The number of DRAM required per group is determined by  
0 the number of Custom Announcement CP required per group.

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0 2.4.2 Enhanced DRAM (EDRAM)

0 a) General Description

0 The Enhanced Digital Recorded Announcement Machine (EDRAM) is  
0 a single slot circuit pack DMS peripheral module used for provid-  
0 ing voice messages or instructions to the subscriber, thus reduc-  
0 ing the need for an operator's assistance. Announcements are  
0 stored in digital format in memory using PCM coding so as to al-  
0 low fast and random access of announcements, both in playback or  
0 recording stages.

0 The EDRAM card will replace the existing Digital Recorded An-  
0 nouncement (DRA) Module for providing voice messages and recorded  
0 announcements in all DMS-100 Family switches.

0 The EDRAM provides the equivalent functions and capabilities of  
0 the existing Digital Recorded Announcement (DRA) Module; i.e.  
0 exactly the same duration of announcement time as for the DRA  
0 (4.3 minutes) and 30 announcement channels for announcement  
0 playback/recording.

0 The EDRAM is a stand alone peripheral module (PM), having its own  
0 DS-30 link interface with the network (i.e. having a network port  
0 appearance on the network). It can be plugged into one (1) of  
0 the twelve (12) provisionable trunk card slots on the MTM/DRA  
0 shelf. The DS-30 cable for EDRAM is plugged directly into the  
0 backplane pins at the back of the shelf corresponding to the slot  
0 of the EDRAM.

0 Although the EDRAM can mount onto existing DRA shelves, no new  
0 DRA shelves should be ordered. For new and existing offices,  
0 provision only MTM shelves to mount the EDRAM.

0 The current DRA Module consists of the DRA shelf and circuit  
0 packs. The DRA shelf is a modified version of the Maintenance  
0 Trunk Module (MTM). It must be equipped with the appropriate MTM  
0 controller circuit packs and power converter circuit packs to  
0 provide the basic MTM functions.

0 The announcement functions are provided by the provisionable DRA  
0 controller and announcement cards. Each DRA Module consists of a  
0 DRA controller card (NT1X75\_\_) and up to eight (8) single density  
0 or four double density provisionable announcement memory cards.  
0 Each single density memory card provides 30 seconds of announce-

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0 ment capacity; each double density memory card provides 60 sec-  
0 onds of announcement capacity.

0 - NT1X75BA - DRA controller card

0 - NT1X76XX - contains standard factory programmed an-  
0 nouncements in non-alterable memories (EPROM). The an-  
0 nouncements are identified by the "XX" PEC code suffix  
0 and these announcements cannot be altered.

0 - NT1X77AA - provides storage for on-site customer re-  
0 corded announcements in volatile memory (RAM).

0 - NT1X79AA - provides storage for on-site customer re-  
0 corded announcements in non-volatile memory (EEPROM).

0 Each fully equipped DRA Module provides 30 announcement chan-  
0 nels and 4 minutes of announcement time.

0 The single card slot EDRAM Module is equivalent to a fully  
0 equipped DRA Module.

0 The EDRAM will provide a super-set of features that include or  
0 is equivalent to all existing features of the DRA shelf. The  
0 features can be categorized into the following areas:

- 0 -Loader features
- 0 -MTM features
- 0 -DRA features

0 The loader will download the EDRAM application firmware load, and  
0 the specified announcement load from the DMS tape/disk to the  
0 EDRAM memory.

0 The loader will provide management of announcement files. Up to  
0 a maximum of any eight (8) announcement files can be loaded to a  
0 specified EDRAM. Each announcement file corresponds to a version  
0 of NT1X76 card. Hence, announcements no longer need to be iden-  
0 tified by the NT1X76 DRA EPROM PEC code. The factory recorded  
0 announcements on the NT1X76 DRA EPROM cards are replaced with an-  
0 nouncement files on DMS tape that can be downloaded to the EDRAM.  
0 This provides the flexibility of changing announcements at any  
0 time without retrofitting the DRA EPROM cards which contain fac-  
0 tory programmed announcements.

0 The EDRAM will emulate the Maintenance Trunk Module (MTM) fea-  
0 tures required for DRA applications, which includes:

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- 0 -Loading and executing PM EXECs
- 0 -Setting up speech connections needed for call processing
- 0 -Performing PM sanity functions such as sending Who-Am-I, I-Am-Here messages to Central Control (CC)
- 0 -Network integrity and parity generation/checking
- 0 -Perform CC instructions through CC-PP primitives execution
- 0 and handle command protocol violation checking
- 0 -PM load checksum tests.

0 The EDRAM will emulate all existing required DRA features,  
0 which includes:

- 0 -On site recording of announcements
- 0 -Playing announcements
- 0 -Configuration query
- 0 -Trunk level diagnostics.

0 The EDRAM is a second generation DRA circuit pack. It intro-  
0 duces the concept of a single circuit pack Peripheral Module (PM)  
0 which has the dual appearance as a PM as well as a trunk. Al-  
0 though it is located on an MTM/DRA shelf, it is directly con-  
0 nected to the network through a DS-30 link. Hence, it will have  
0 two (2) Maintenance & Administration Position (MAP) appearances  
0 on the same hardware. It will appear as a PM, just like the  
0 MTM/DRA, since it is directly connected to the network, and it  
0 will also appear as a trunk, just like other provisionable trunk  
0 cards on the MTM/DRA, since it mounts on the MTM/DRA.

0 The EDRAM has its own pair of DS-30 links for connecting to both  
0 planes of the Network Module (NM), and communicates with the Cen-  
0 tral Control/Central Message Controller (CC/CMC) directly via the  
0 message channel of this DS-30 link.

0 It is to be plugged into any one of the twelve (12) provisionable  
0 trunk slots of the MTM/DRA shelf and uses this shelf for the pur-  
0 poses of housing, logic power, and cable mounting. In order to  
0 keep within the maximum power dissipation of 110 watts per  
0 MTM/DRA shelf, there can be up to a maximum of eleven (11) EDRAM  
0 cards.

0 The DS-30 cable for the EDRAM can be plugged directly into the  
0 pins at the back of the MTM/DRA backplane at the slot correspond-  
0 ing to the position of the EDRAM. The other end of the DS-30 ca-  
0 ble is terminated at the Peripheral Speech Link (PSL) Panel  
0 mounted on the Speech Link Connecting (SLC) Frame or at the En-  
0 hanced Network (ENET) depending on office requirements.

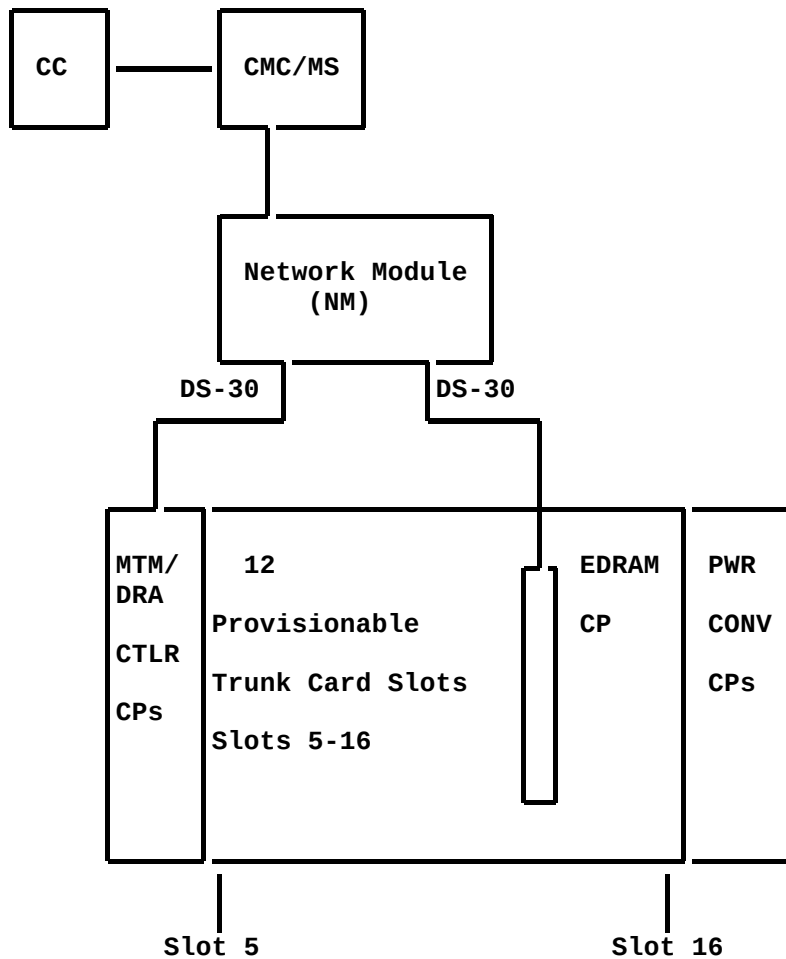


Figure 1. EDRAM System Configuration

b) References

None

c) Provisioning Considerations:

- ( i) The EDRAM will be provisioned using the same provisioning rules as for the existing DRA Module as given in the Engineering Manual and NTP 297-1001-450 entitled DMS-100 Family Provisioning.

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- 0 ( ii) The EDRAM Module provides 30 announcement channels and  
0 4.3 minutes of announcement time for announcement  
0 playback/recording.
- 0 ( iii) For each DMS office, provision the number of EDRAM as  
0 required to accommodate the standard announcements.
- 0 ( iv) Depending on the optional recorded announcement fea-  
0 tures ordered by the Customer for his office, provision  
0 additional EDRAM Modules as required. The optional fea-  
0 tures are: Auxiliary Operator Service System Voice Re-  
0 sponse (AOSS VR), Custom Charge Calling (CCC), Automatic  
0 Coin Toll Service (ACTS), Mechanized Calling Card Service  
0 (MCCS), and Automatic Intercept Service (AIS). Since each  
0 of the preceding features requires all 30 announcement  
0 channels of the EDRAM, each feature requires an exclusive  
0 EDRAM Module that cannot be used for other announcements.  
0 For further information, refer to Section 1.3 Cross-  
0 Reference Publications.
- 0 ( v) Other optional features that need additional announce-  
0 ments are Call Forward Remote Activation (CFRA) in  
0 BCS-28, Custom Local Area Signalling Services (CLASS)  
0 features Phase I in BCS-28, and CLASS features Phase II  
0 in BCS-30. For further information, refer to ECM-473 on  
0 subject Residential Enhanced Services and ECM-332 on sub-  
0 ject CLASS - U.S./CMS - Canada.
- 0 ( vi) As a Customer requested option, each EDRAM may be du-  
0 plicated for reliability. It is mostly needed for toll  
0 offices where it is important to get the message sent to  
0 the subscriber.
- 0 (vii) The EDRAM card is to be inserted into one (1) of the  
0 twelve (12) provisionable trunk card slots of the MTM/DRA  
0 shelf. In order to keep within the maximum power dissipa-  
0 tion of 110 watts per MTM/DRA shelf, there can be up to  
0 a maximum of eleven (11) EDRAM cards.
- 0 ( viii) Although the EDRAM can mount onto existing DRA  
0 shelves, no new DRA shelves should be ordered. For new  
0 and existing offices, provision only MTM shelves to mount  
0 the EDRAM.
- 0 ( ix) The EDRAM has its own pair of DS-30 links for connect-  
0 ing to both planes of the Network Module (NM), and commu-  
0 nicates with the Central Control/Central Message

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0 Controller (CC/CMC) directly via the message channel of  
0 this DS-30 link.

0 ( x) The DS-30 cable for the EDRAM can be plugged directly  
0 into the pins at the back of the MTM/DRA backplane at the  
0 slot corresponding to the position of the EDRAM. The  
0 other end of the DS-30 cable is terminated at the Periph-  
0 eral Speech Link (PSL) Panel mounted on the Speech Link  
0 Connecting (SLC) Frame or at the Enhanced Network (ENET)  
0 depending on office requirements.

0 ( xi) MECHANICAL DIMENSIONS

0 Height 12.50 in. (317.5 mm)  
0 Width 1.125 in. (29 mm)  
0 Depth 10.00 in. (254 mm)  
  
0 Power 10.0 Watts (from +5V/-5V logic  
0 power)

0 The circuit pack can mount onto one (1) of the twelve  
0 (12) provisionable trunk slots in MTM/DRA shelves. In  
0 order to keep within the maximum power dissipation of 110  
0 watts per MTM/DRA shelf, there can be up to a maximum of  
0 eleven (11) EDRAM cards.

0 ( xii) The addition of this peripheral module should have  
0 minimal impact on memory provisioning. Refer to the  
0 normal memory algorithms.

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0 2.4.3 Digital Tone Transceiver

0 a) General Description

0 The Digital Tone Transceiver Circuit Pack (NT3X08AA) functions  
0 as an essential component of the Automatic Coin Toll Service  
0 (ACTS). Its General purpose is to count coin deposits from coin  
0 operated telephones (coin stations) and report the amount col-  
0 lected to the DMS-100 Central Control (CC). Refer to Section 3,  
0 Operations Equipment for more information on ACTS.

0 b) References

0 Chapter 3, Section 3.3 Operator Services

0 c) Provisioning Considerations:

0 ( i) The coin detection circuit pack (CDC - NT3X08AA) will  
0 physically occupy one card slot on a MTM.

0 ( ii) The CDC will use eight time slots and therefore four  
0 (4) consecutive card slots are required. A maximum of  
0 three (3) CDC circuit packs can be housed in any MTM. If  
0 it is desired, the CDC card can be placed on a MTM with  
0 other cards provided the next three slots following the  
0 CDC are empty and provisioning rules for these other  
0 packs are followed.

0 ( iii) Digitone or rotary coin stations may be used, however,  
0 all stations MUST be able to provide dual frequency coin  
0 deposit signals to allow detection by the CDC circuit  
0 pack.

0 ( iv) The CDC contains eight (8) circuits provisionable for  
0 ACTS on each circuit pack.

0 ( v) Mu-law/A-law capability.

0 ( vi) The CDC requires no distributing frame cabling.

0 ( vii) For more information on the CDC card, refer to ACTS in  
0 Section 3.3, Operator Services.

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0 3.0 Peripheral Modules Features

0 3.1 Introduction

0 This section describes the line-oriented software features that  
0 require special hardware provisioning to make the feature work.

0 3.2 Features

0 The line-oriented software features included in the Peripheral  
0 Modules Features that require special hardware provisioning con-  
0 siderations are listed below:

0 Custom Local Area Signalling Services (CLASS) or Call Man-  
0 agement Services (CMS)

0 Residential Enhancement Services

0 Enhanced Coin Services

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### 0 3.3 Equipment Provisioning

#### 0 3.3.1 CLASS/CMS Feature

##### 0 (a) General Description

0 Custom Local Area Signalling Services or CLASS Features are a set  
0 of line-oriented features which the telephone company can deploy  
0 in their residential or Centrex customer environment to generate  
0 additional revenue. These features operate within a single  
0 switch or transparently between users on different end-office  
0 switches by means of CCS7-based signalling in a multi-node switch  
0 configuration. In the U.S., this feature is called CLASS and in  
0 Canada, the feature is called CMS. In this document, the feature  
0 will be referred to as CLASS.

0 CLASS Features are separated into Phase I and Phase II features.  
0 Phase I features include

- 0 - Automatic Callback (ACB) - allows a calling party to automat-  
0 ically call again the number most recently dialed, whether  
0 that call was answered, unanswered, or busy. If the station  
0 is busy, the user may queue against that station and be re-  
0 called when it becomes idle. The Automatic Callback feature  
0 is very similar to the Ring Again (RAG) feature, but will be  
0 deployed in the Public Network.
- 0 - Automatic Recall (AR) - enables the end user to return his  
0 latest incoming call automatically, regardless of whether the  
0 incoming call was answered, and regardless of whether the end  
0 user knows the identity of the calling party. If the station  
0 is busy, the user may queue against that station and be re-  
0 called when it becomes idle. With two (2) level activation,  
0 the directory number of the last call is voiced back prior to  
0 completing the call.
- 0 - Calling Number Delivery or Calling Number Display (CND) - en-  
0 ables receipt and display of the calling party's directory  
0 number and Date/Time during the ringing cycle. This allows  
0 the end user with a display set to make an informed decision  
0 about answering the call.
- 0 - Calling Number Delivery Blocking (CNDB) - permits the origi-  
0 nating customer, by designating his calling identity as "pri-

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0 vate", to prevent his directory number from being transmitted  
0 for Calling Number Delivery. The calling party may change  
0 his DN Suppression default - Suppress DN or not Suppress DN -  
0 to the opposite status.

- 0 - Customer Originated Trace (COT) - enables the called party to  
0 request an automatic trace of the last call received. The  
0 trace record identifies the calling party and other call-  
0 related information. The results of the trace are not pro-  
0 vided directly to the end user, but are made available only  
0 to an authorized agency, such as the telephone company or law  
0 enforcement agency.

0 Note that CLASS features are available only to lines with a line  
0 class code of RES (Residential Enhanced Services). Note that  
0 this does not include ISDN RES lines.

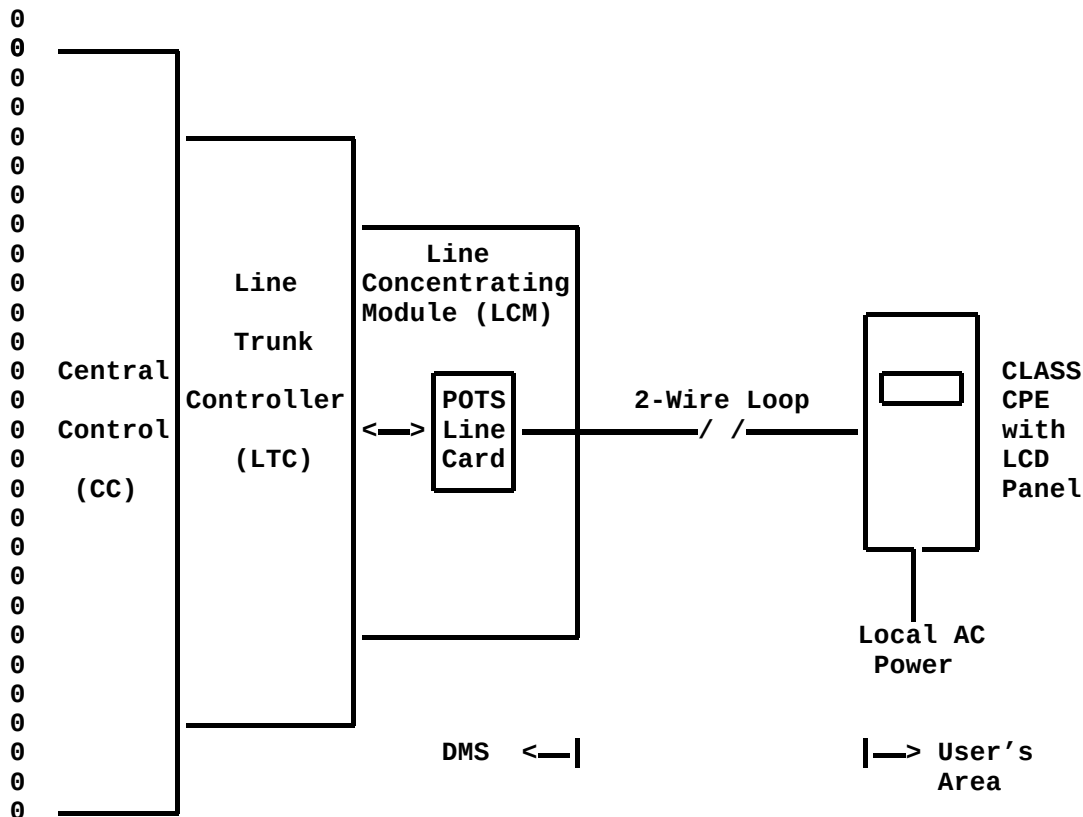
#### 0 Automatic Recall Date and Time Feature (ARDT)

0 This feature provides the date and time voiceback capability for  
0 the Automatic Recall (AR) two-level activation sequence.

#### 0 CLASS Configuration

0 Figure 35.2 illustrates a typical configuration with a CLASS ter-  
0 minal on the DMS. This terminal is equipped with an enhanced  
0 Man-Machine Interface (MMI), such as a Liquid-Crystal Display  
0 (LCD) panel. The terminal could also consist of a standard tele-  
0 phone with a CLASS add-on unit. An integrated telephone set,  
0 such as NTL's MAESTRO, can also be used. The telephone section  
0 of the Customer Premises Equipment (CPE) is loop powered, whereas  
0 the CPE section providing CLASS features is powered by local AC.

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0 Figure 35.2 Typical Configuration with a CLASS CPE

0 The transmission of the calling party number to the Customer Premises  
0 Equipment (CPE) is accomplished via asynchronous FSK simplex-mode  
0 transmission at 1200 bits/sec over the 2-wire loop, in accordance with  
0 the Bell 202A standard. A burst of data is transmitted to the CPE  
0 during the silent interval between the first and second ring of the  
0 telephone set, before the incoming call is answered. The data link  
0 terminates at a 202A modem in the CPE, which outputs the calling party  
0 number to the LCD panel.

0 (b) Reference

0 Chapter 3, Section 3.4 Meridian Business Services

0 Section 3.15 Common Channel Signaling Systems

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0 (c) Provisioning Considerations

0 ( i) CCS7 Signalling is required when CLASS features are ac-  
0 cessed between nodes. Within the same node, CCS7 Signal-  
0 ling is NOT required. Refer to Section 3.15 for more  
0 information on CCS7 Signalling.

0 ( ii) An optional feature exists called Automatic Recall Date  
0 and Time (ARDT). This feature requires announcements  
0 provided on a pair of CPs; NT1X76JA and NT1X76JB. The  
0 NT1X76AJ and the NT1X76AK cards are required when the  
0 NT1X76JA and NT1X76JB cards are ordered. The NT1X76AJ,  
0 NT1X76AK, NT1X76JA, and NT1X76JB should be assigned to  
0 the same DRA module. In a Class Phase 1 English office,  
0 the NT1X76JA/JB can be assigned to a DRA where the  
0 NT1X76AJ/AK cards are existing and there is room. Other-  
0 wise, in other offices or where the DRAs with NT1X76AJ/AK  
0 cards are filled, an additional set of NT1X76AJ/AK cards  
0 must be ordered.

0 ( iii) LCM Processor Cards, NT6X51AB, are required to support  
0 CND in LCMS. LCM Common CP, NT6X04AB, contains NT6X51AB  
0 and hence can support CND. Only LCMS which contain lines  
0 utilizing the CND feature must be upgraded to use the  
0 NT6X51AB.

0 ( iv) In addition to the LCM Processor Card NT6X51AB, the CLASS  
0 Modem Resource (CMR) card NT6X78AA has been developed to  
0 support the introduction of CND.

0 The CMR card will support software to provide SP  
0 processor - CMR messaging and thus provide CMR sanity  
0 supervision, software downloading,  
0 maintenance/diagnostics, operational measurements and  
0 swact activity.

0 When the CND feature is required, provide two (2) CMR  
0 cards per LGC/LTC/RCC/SMS/SMU module (i.e. one (1) card  
0 per shelf). It is not necessary to equip all the  
0 LGC/LTC/RCC/SMS/SMU in the office with the CMR card. Only  
0 LGC/LTC/RCC/SMS/SMUs that will provide CND to the sub-  
0 scribers that home on these peripherals will require the  
0 CMR card. Any number of LGC/LTC/RCC/SMS/SMUs of a given  
0 DMS may be equipped with CMR cards.

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- 0 ( v) For Canadian Applications when the NT6X78AA cards are  
0 provisioned into an LGC, LTC, or SMS module,

0 EITHER:

- 0 1. Retrofit the NT6X69AA/NT6X79AA card combination (if  
0 existing) to an NT6X69AB card via the application of  
0 the NT6X12ZY PC Kit.

0 This upgrade kit allows card slot 18 to be provi-  
0 sioned with the CLASS Modem Resource (CMR) card  
0 NT6X78AA which is used for the CND feature. The  
0 power-reduced NT6X78AB replaces NT6X78AA and does not  
0 require this upgrade.

0 OR

- 0 2. Limit the number of NT6X50AA DS-1 cards to four per  
0 shelf (i.e. eight per module).

0 This is required to limit the shelf's overall +5 volt  
0 power requirements to below 55 amps.

- 0 ( vi) There are optional announcements available for CLASS fea-  
0 tures to indicate successful or denied operation.

0 For BCS-27, the NT1X75BA DRAM Controller must be provi-  
0 sioned for all CLASS applications.

0 There are two groups of announcements, Phase 1 CLASS DRA  
0 Announcements and Phase 2 CLASS DRA Announcements. If the  
0 CLASS/CMS feature is required, at least one group of an-  
0 nouncements (i.e. Phase 1 or Phase 2) must be provided.  
0 The Customer can either have Phase 1 announcements or  
0 Phase 2 announcements or both.

- 0 ( vii) Phase 1 CLASS DRA Announcements

0 For the optional Phase 1 CLASS DRA Announcements, the  
0 Customer can either make up his own announcements or he  
0 can order the pre-recorded ones from NT.

0 For provisioning the Digital Recorded Announcement Re-  
0 cordable Memory cards (NT1X77AA/79AA), divide the total  
0 length of the announcements (in seconds) by 31. This de-  
0 termines the number of circuits required for these an-  
0 nouncements. These are the announcements that the  
0 Customer can make up himself.

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0 If the Customer chooses to create his own announcements,  
0 and if he wants the Automatic Recall (AR) feature with  
0 the Voice Back Option within NTXA00AA activated, then the  
0 CLASS Phase 1 English Announcements (2) of (2) CP card,  
0 NT1X76AK, and/or the CLASS Phase 1 French Announcements  
0 (2) of (2) CP card, NT1X76BK, must be provided. Other-  
0 wise, if the Voice Back Option is not to be activated,  
0 then NT1X76AK and/or NT1X76BK are optional.

0 If the Customer wants our pre-recorded announcements, the  
0 following DRA cards are available:

| 0 | PEC      | DESCRIPTION                         |
|---|----------|-------------------------------------|
| 0 | NT1X76AJ | CLASS Phase 1 English Announcements |
| 0 |          | (1) of (2) CP                       |
| 0 | NT1X76AK | CLASS Phase 1 English Announcements |
| 0 |          | (2) of (2) CP                       |
| 0 | NT1X76BJ | CLASS Phase 1 French Announcements  |
| 0 |          | (1) of (2) CP                       |
| 0 | NT1X76BK | CLASS Phase 1 French Announcements  |
| 0 |          | (2) of (2) CP                       |

0 The above cards are the approved Telecom Canada Phase 1  
0 CLASS DRA Announcements.

0 If bilingual announcements are required (e.g. French fol-  
0 lowed by English on the same announcement), then the  
0 Phase 1 CLASS DRA Announcement cards must be provisioned  
0 on the same DRA shelf (i.e. NT1X76AJ/AK/BJ/BK).

0 The Phase 1 CLASS DRA Announcement cards are only avail-  
0 able in sets (e.g. NT1X76AJ/AK or NT1X76BJ/BK) and cannot  
0 be provisioned separately. However, the NT1X76AK and  
0 NT1X76BK cards can be ordered separately for the Auto-  
0 matic Recall feature (noted above). The NT1X76AK card  
0 can be ordered separately for the Call Forward Remote Ac-  
0 tivation (CFRA) feature. (See Meridian Business Ser-  
0 vices, Section 3.4, for more information on Residential  
0 Enhanced Services.)

0 If the optional announcements are not selected, confirma-  
0 tion tone can be used for successful feature operation  
0 and fast busy (120 ipm) can be used for denial of feature  
0 operation. This is only applicable to Calling Number De-  
0 livery Blocking (CNDB) and Customer Originated Trace  
0 (COT).

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0 (viii) Phase 2 CLASS DRA Announcements

0 For Phase 2 CLASS DRA Announcements, the Digital Recorded  
0 Announcement Recordable Memory cards (NT1X77AA/79AA) can-  
0 not be used.

0 For provisioning, two groups of Phase 2 CLASS DRA An-  
0 nouncements are available:

0 1) Phase 2 CLASS DRA Announcements (List 1-12)

0 2) Phase 2 CLASS DRA Announcements (List 13-31)

0 The following are the Phase 2 CLASS DRA Announcement  
0 (List 1-12) cards:

| 0 | PEC       | DESCRIPTION                         |
|---|-----------|-------------------------------------|
| 0 | NT1X76AP  | CLASS Phase 2 English Announcements |
| 0 |           | (1) of (8) CP                       |
| 0 | NT1X76AQ  | CLASS Phase 2 English Announcements |
| 0 |           | (2) of (8) CP                       |
| 0 | NT1X76AR  | CLASS Phase 2 English Announcements |
| 0 |           | (3) of (8) CP                       |
| 0 | NT1X76AS  | CLASS Phase 2 English Announcements |
| 0 |           | (4) of (8) CP                       |
| 0 | NT1X76AT  | CLASS Phase 2 English Announcements |
| 0 |           | (5) of (8) CP                       |
| 0 | NT1X76AU  | CLASS Phase 2 English Announcements |
| 0 |           | (6) of (8) CP                       |
| 0 | NT1X76AV  | CLASS Phase 2 English Announcements |
| 0 |           | (7) of (8) CP                       |
| 0 | NT1X76__* | English "Personality" card          |
| 0 | NT1X76BP  | CLASS Phase 2 French Announcements  |
| 0 |           | (1) of (8) CP                       |
| 0 | NT1X76BQ  | CLASS Phase 2 French Announcements  |
| 0 |           | (2) of (8) CP                       |
| 0 | NT1X76BR  | CLASS Phase 2 French Announcements  |
| 0 |           | (3) of (8) CP                       |
| 0 | NT1X76BS  | CLASS Phase 2 French Announcements  |
| 0 |           | (4) of (8) CP                       |
| 0 | NT1X76BT  | CLASS Phase 2 French Announcements  |
| 0 |           | (5) of (8) CP                       |
| 0 | NT1X76BU  | CLASS Phase 2 French Announcements  |
| 0 |           | (6) of (8) CP                       |
| 0 | NT1X76BV  | CLASS Phase 2 French Announcements  |
| 0 |           | (7) of (8) CP                       |



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0 NT1X76\_\_\* French "Personality" card

0 The following are the Phase 2 CLASS DRA Announcement  
0 (List 13-31) cards:

| 0 | PEC      | DESCRIPTION                         |
|---|----------|-------------------------------------|
| 0 | NT1X76GA | CLASS Phase 2 English Announcements |
| 0 |          | (1) of (4) CP                       |
| 0 | NT1X76GB | CLASS Phase 2 English Announcements |
| 0 |          | (2) of (4) CP                       |
| 0 | NT1X76GC | CLASS Phase 2 English Announcements |
| 0 |          | (3) of (4) CP                       |
| 0 | NT1X76__ | English "Personality" card          |

0 If Customers want Phase 2 CLASS DRA Announcements, the  
0 group of List 13-31 cards are optional.

0 If either group or both groups of Phase 2 CLASS DRA An-  
0 nouncements are required, provide a "Personality" card  
0 for each group. Note that if both groups are required,  
0 two "Personality" cards of the same type (i.e. one for  
0 each group) must be provided.

0 The following are the Phase 2 CLASS DRA "Personality"  
0 cards:

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0 Host - Digital Recorded Announcement  
0 Chapter 17

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| 0 | PEC      | CPC                                 |
|---|----------|-------------------------------------|
| 0 | NT1X76AW | CLASS Phase 2 English Announcements |
| 0 |          | (8) of (8) CP                       |
| 0 | NT1X76BW | CLASS Phase 2 French Announcements  |
| 0 |          | (8) of (8) CP                       |
| 0 | NT1X76GE | CLASS Phase 2 U.S. Custom Feature   |
| 0 |          | Names Announcements                 |
| 0 |          | - Type I CP For Bell South          |
| 0 | NT1X76GF | CLASS Phase 2 U.S. Custom Feature   |
| 0 |          | Names Announcements                 |
| 0 |          | - Type II CP For Bell Atlantic      |
| 0 | NT1X76GG | CLASS Phase 2 U.S. Custom Feature   |
| 0 |          | Names Announcements                 |
| 0 |          | - Type III CP For United Tel        |
| 0 | NT1X76GH | CLASS Phase 2 U.S. Custom Feature   |
| 0 |          | Names Announcements                 |
| 0 |          | - Type IV CP For GTE                |
| 0 | NT1X76GJ | CLASS Phase 2 U.S. Custom Feature   |
| 0 |          | Names Announcements                 |
| 0 |          | - Type V CP For Pacific Bell        |
| 0 | NT1X76GK | CLASS Phase 2 U.S. Custom Feature   |
| 0 |          | Names Announcements                 |
| 0 |          | - Type VI CP For Ameritech          |
| 0 | NT1X76GL | CLASS Phase 2 U.S. Custom Feature   |
| 0 |          | Names Announcements                 |
| 0 |          | - Type VII CP For Southwest Bell    |

0 \* The "Personality" card, NT1X76AW, contains only Bell  
0 Canada names and Bell South BCS-29 V0 information. The  
0 "Personality" card, NT1X76BW, contains only Bell Canada  
0 names. It must be determined up front which "Personal-  
0 ity" cards are required by which Customer. When engi-  
0 neering a DMS job (initial or extension) which will  
0 require Phase 2 CLASS DRA Announcements, the onus will be  
0 on the Customer to determine which "Personality" card is  
0 required.

0 The Phase 2 CLASS DRA Announcement cards are only avail-  
0 able in sets (e.g. NT1X76AP/AQ/AR/AS/AT/AU/AV/AW or  
0 NT1X76BP/BQ/BR/BS/BT/BU/BV/BW or NT1X76GA/GB/GC) and can-  
0 not be provisioned separately. Note that the only excep-  
0 tion to this is the "Personality" card (e.g. NT1X76AW)  
0 which will be provisionable with other Customer specific  
0 packs (as highlighted above).

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- 0 ( ix) Automatic Recall Date and Time (ARDT) CLASS DRA Announce-  
0 ments

0 The customized announcements require a DRAM with a  
0 NT1X75BA controller card. A set of AR Date and Time  
0 Phrase List PROM Cards NT1X76JA and NT1X76JB are required  
0 for ARDT (English) announcements. Each CP contain two  
0 (2) virtual card credits because they are double density  
0 cards.

0 The following are the AR Date and Time Phrase List PROM  
0 cards:

| 0 | PEC      | CPC      |                             |
|---|----------|----------|-----------------------------|
| 0 | NT1X76JA | B0231819 | Automatic Recall Date/Time  |
| 0 |          |          | Announcements (1) of (2) CP |
| 0 | NT1X76JB | B0231820 | Automatic Recall Date/Time  |
| 0 |          |          | Announcements (2) of (2) CP |

0 The NT1X76AJ and the NT1X76AK cards are required and  
0 should be assigned to the same DRA module as the NT1X76JA  
0 and NT1X76JB cards. In a Class Phase 1 English office,  
0 the NT1X76JA/JB can be assigned to a DRA where the  
0 NT1X76AJ/AK cards are existing and there is room. Other-  
0 wise, in other offices or where the DRAs with NT1X76AJ/AK  
0 cards are filled, an additional set of NT1X76AJ/AK cards  
0 must be ordered.

- 0 ( x) The DRA cards (either recordable or pre-recorded) can  
0 mount on DRA modules (i.e. NT2X58AM, NT2X58CB, NT2X58AK,  
0 NT2X58AG).

0 The DRA module can accommodate one (1) NT1X75BA DRAM Con-  
0 troller card and up to a maximum of eight (8) virtual  
0 card credits (i.e. the addressing range of the NT1X75BA).

0 The DRA Recordable Memory cards (NT1X77AA and NT1X79AA)  
0 each contain one (1) virtual card credit because they are  
0 single density cards.

0 The existing DRA pre-recorded announcement card NT1X76AA  
0 contains one (1) virtual card credit. Currently, this is  
0 the only NT1X76\_\_ card which contains one (1) virtual  
0 card credit. All other NT1X76\_\_ cards contain two (2)  
0 virtual card credits because they are double density  
0 cards.

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0 All Phase 1 and Phase 2 CLASS DRA pre-recorded announce-  
0 ment cards (i.e. NT1X76AJ/AK/BJ/BK, NT1X76AP-AW,  
0 NT1X76BP-BW, NT1X76GA-GC, NT1X76GE-GL) each contain two  
0 (2) virtual card credits because they are double density  
0 cards. Hence, a DRA module can accommodate a maximum of  
0 eight (8) single density cards or a maximum of four (4)  
0 double density cards.

0 The two (2) Phase 1 CLASS DRA Announcement cards (Eng-  
0 lish) can be mounted on half of a DRA module. The two  
0 (2) Phase 1 CLASS DRA Announcement cards (French) can be  
0 mounted on half of a DRA module. If both English and  
0 French are required, then the four (4) Phase 1 CLASS DRA  
0 Announcement cards (English and French) can be mounted on  
0 one (1) DRA module.

0 The eight (8) Phase 2 CLASS DRA Announcement (List 1-12)  
0 cards (English) can be mounted on two (2) DRA modules.  
0 The eight (8) Phase 2 CLASS DRA Announcement (List 1-12)  
0 cards (French) can be mounted on two (2) DRA modules.

0 A quantity of five (5) DRA modules may be provisioned on  
0 a TME frame, NT0X46AB, if and only if double density DRA  
0 cards are provisioned on these modules. Any double den-  
0 sity DRA cards (i.e. all NT1X76\_\_ cards with the excep-  
0 tion of NT1X76AA which is a single density card), up to a  
0 maximum of four (4) per module, may be provisioned. Oth-  
0 erwise, only four (4) DRA modules may be provisioned on a  
0 TME frame.

0 Hence, a DMS office requiring both Phase 1 and Phase 2  
0 (List 1-12) pre-recorded CLASS DRA Announcements in Eng-  
0 lish and French can have all twenty (20) double density  
0 DRA cards mounted on five (5) DRA modules and these five  
0 (5) modules could be mounted onto one (1) TME frame.

0 Redundancy of announcements is available as an option in  
0 the U.S. only. If redundancy is provided, ensure that  
0 the announcement MTMs are on different power feeds.

0 The assignment rules for mounting Phase 1 and Phase 2  
0 CLASS DRA Announcement cards onto DRA modules are the  
0 same as the rules pertaining to the existing NT1X76\_\_ DRA  
0 Announcement cards. Cards NT1X76AP/AQ/AR/AS must be  
0 mounted together onto the same DRA module. Cards  
0 NT1X76AT/AU/AV/AW must be mounted together onto the same  
0 DRA module. Similarly, cards NT1X76BP/BQ/BR/BS must be

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0 mounted together onto the same DRA module and cards  
0 NT1X76BT/BU/BV/BW must be mounted together onto the same  
0 DRA module. Cards NT1X76GA/GB/GC/+"Personality" Card  
0 must be mounted together onto the same DRA module. The  
0 previous cards within each DRA module can be in any or-  
0 der. (See DRA System Provisioning in this section for  
0 further information on the DRA.)

0 ( xi) Log messages are produced when a subscriber activates the  
0 Customer Originated Trace (COT) feature. If the  
0 customer/telco wants these log messages to be routed to a  
0 dedicated TTY, then a separate I/O port (i.e. one port  
0 off of a NT1X67BC card) is required. Otherwise, these  
0 log messages will be routed along with other log messages  
0 to the customer specified TTY.

0 ( xii) Canadian customers will be able to obtain CLASS Terminals  
0 from NTCL or from outside suppliers. To obtain CLASS  
0 terminals (i.e. an integrated telephone set, such as  
0 MAESTRO) from NTCL, Canadian customers will contact  
0 London Terminal Division.

0 U.S. customers will obtain CLASS terminals from outside  
0 suppliers.

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0 3.3.2 Enhanced Coin Services

0 (a) General Description

0 This feature provides per call records of the revenue collected  
0 on coin originated toll calls. The LAMA records required for  
0 this purpose, include information concerning the revenue col-  
0 lected on the call. This is reported as the number of five cent  
0 deposits collected on each call. Records also store the number  
0 of Operator Attached Intervals (OAI) during which the local  
0 switching system was unable to monitor and record collected de-  
0 posits because of circuit blockage or insufficient memory capac-  
0 ity. If tone detection errors are detected within a particular  
0 coin call, this information is also indicated within the LAMA re-  
0 cord. Call code 136 has been assigned by Bellcore for these pur-  
0 poses.

0 Trunk groups that carry the ACTS compatible calls are identified  
0 through Table AMATKOPT. All coin calls going out over the trunks  
0 datafilled in this table with the REVALL option will have LAMA  
0 records generated if coins are collected during the call.

0 A separate pool of CDCs (Coin Detection Circuit) is required to  
0 determine the number of 5¢ deposits collected on each call. A CDC  
0 is connected in a one way speech path during each OAI. Upon com-  
0 pletion of the OAI, the CDCs report on the deposits detected. At  
0 termination of the call, a LAMA billing record is produced indi-  
0 cating the total amount collected.

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A pictorial representation looks like this:

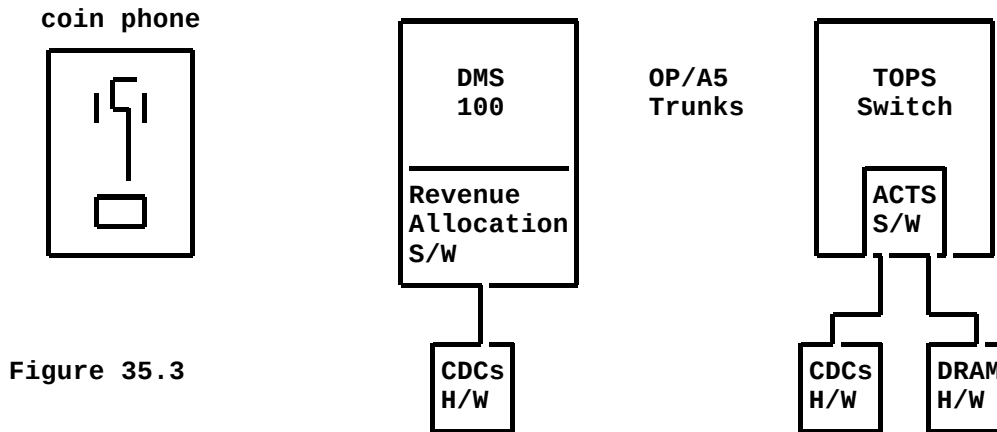


Figure 35.3

(b) Reference

Chapter 2 Traffic Criteria and Capacities

(c) Provisioning Considerations

- ( i) This feature requires Coin Detection Circuits (CDC), NT3X08AA. Provision the NT3X08AA circuits based on the following:

$$\text{CCS} = \frac{\text{Total ABSBH toll}}{\text{coin attempts}} \times \frac{\text{average receiver}}{\text{holding time}}$$

Required Look up CCS in the CCS Per Hour  
trunk = Trunk Capacity Table - (Poisson Table)  
circuits

$$\frac{\# \text{ of NT3X08AA}}{\text{circuits}} = \frac{\text{Required trunk circuits}}{8 \text{ trunk circuits per card}}$$

NOTE: The standard default value for the receiver holding time is 38 seconds.

NOTE: Assignment rules for the NT3X08AA are unaffected.

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0 4.0 Building Block Engineering - DRAM

0 4.1 Hardware Provisioning

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0 4.1.1 Hardware Usage Restrictions

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0 Refer to ECM-601 DMS Building Block - TME Engineering

0 4.1.2 Hardware Dependencies

0

0 Refer to ECM-601 DMS Building Block - TME Engineering

0 4.1.3 Provisioning Considerations

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0 | Maximum Announcement Members per DRAM/EDRAM

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0 | Generally, a DRAM/EDRAM can access up to 30 speech channels. Be-  
0 | cause each channel is dedicated to a specific announcement mem-  
0 | ber, this limits the number of announcement members in a  
0 | DRAM/EDRAM to 30 maximum per DRAM/EDRAM.

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## 0 Maximum Connections

0  
0 The number of simultaneous connections that can be made to an an-  
0 nouncement channel, is specified by table datafill. The maximum  
0 number of connections may be set to any number the range 1 to  
0 255. Each announcement has its own maximum number of connections  
0 specification parameter. The maximum connections setting for  
0 each broadcast announcement must be set to the minimum needed to  
0 provide the required grade of service, i.e. the minimum number  
0 of connections required to provide the required GOS (Grade Of  
0 Service) for the expected broadcast announcement traffic in the  
0 ABSBH (Average Busy Season Busy Hour).

## 0 Office Parameter Limitations

0  
0 The maximum number of simultaneous connections totalled for all  
0 announcements shall not exceed 80% of the number of CPWAKUPS de-  
0 fined in the Engineered Office Parameter (OFCENG) table. The re-  
0 commended setting for the number of CPWAKUPS is 1000 and the  
0 default setting is 80. Refer to NTP 297-1001-455, Office Parame-  
0 ters Reference Manual, Engineered Office Parameter Table OFCENG  
0 (Forms 237A, etc.) for details.

## 0 Broadcast Announcements

0  
0 Unless an announcement is unique to a subscriber a single an-  
0 nouncement member may be broadcast, by the Switch Network, to  
0 more than one subscriber for the purpose of economising in  
0 DRAM/EDRAM provisioning.

0 For each member of an announcement, table parameters define the  
0 maximum number of broadcast connections, in the range 1 to 255,  
0 which can be made. Announcement broadcasts, are made by placing  
0 copies of the announcement in the Switch Network memory in lo-

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0 cations assigned to inward timeslots used for connecting the an-  
0 nouncement to subscribers. The timeslots are dynamically  
0 allocated accross all 64 ports of a Switch Network Sub Group.  
0 This means that any channel on any port has access to any  
0 timeslot. As many as 255 timeslots could be required for a single  
0 broadcast announcement. This means that a single DRAM channel  
0 could consume the timeslot memory capacity equivalent of approxi-  
0 mately 8 Switch Network ports. Refer to the section "Maximum  
0 Broadcast Connections" above.

0 To meet the required grade of service, for all features using  
0 broadcast DRAM announcements, provision must be made for suffi-  
0 cient switch network timeslot memory to be available for the es-  
0 timated number of broadcast connections required, in addition to  
0 the timeslots required for non-broadcast connections. Non-  
0 broadcast connections include connections to Switch Network ports  
0 serving peripherals other than DRAM/EDRAMSs. The technique of  
0 network port deloading is used avoid contention for timeslots and  
0 to ensure compliance with the required grade of service. Deload-  
0 ing is achieved by leaving one or more Switch Network Module  
0 ports unused.

0 To ensure effective provisioning of ports the specification of  
0 the maximum number of connections for a particular announcement  
0 is based on estimates of the corresponding feature's switch usage  
0 penetration and expected feature activation.

0 The demand for a particular announcement to be played to more  
0 than one subscriber simultaneously may be met either by having  
0 multiple members of the announcement each for connection to one  
0 subscriber at a time or by broadcasting one member to multiple  
0 subscribers. The choice of either of these alternatives depends  
0 upon sizing and traffic considerations for each DRAM/EDRAM appli-  
0 cation.

0 Some features use announcements which are assembled at the time  
0 of the call according to individual call conditions, for example,  
0 announcements containing annunciations of the number dialled by  
0 the caller. Such announcements cannot be broadcast and are pro-  
0 hibited from being broadcast by software table data.

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## 0 Announcements Using Shared Speech Fragments

0  
0 Additional economies in speech memory usage can be gained by  
0 specifying a speech fragment for use in more than one announce-  
0 ment.

## 0 Announcements Using Variable Speech Fragments

0  
0 Some DRAM application features use variable speech fragments. For  
0 example, in announcements which enunciate (voiceback) the number  
0 dialled by the caller, as in "The number you have reached NNN NNN  
0 is.....". In this example, the variable fragments represent the  
0 enunciated directory number. The speech fragment used for the  
0 variable parts of an announcement is one of a set of enunciations  
0 covering the full range of possible variable selections. For ex-  
0 ample, the set may contain representations of number enunciations  
0 from 0 to 9 with intonation variations of each number.

0 The memory space required for such variable phrases is the sum of  
0 times taken to enunciate all possible phrase alternatives.

## 0| DRAM/EDRAM to Network Sub Group (NSG) Interface Limitation

0  
0| For traffic considerations, the number of DRAM/ECMs which may be  
0| connected to a single Network Sub Group is limited to one (1).

### 0| 4.1.4 Office Layout Information

0  
0| Refer to ECM-601 DMS Building Block - TME Engineering

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0 | 4.1.5 Traffic Tables

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| 0 | 0       | 0    | 0    | 0    | 0    |
|---|---------|------|------|------|------|
| 0 | SERVERS | .001 | .005 | .01  | .05  |
| 0 | 31      | 597  | 667  | 703  | 809  |
| 0 | 32      | 624  | 695  | 732  | 840  |
| 0 | 33      | 650  | 723  | 760  | 871  |
| 0 | 34      | 676  | 751  | 789  | 902  |
| 0 | 35      | 703  | 779  | 818  | 933  |
| 0 | 36      | 729  | 807  | 847  | 964  |
| 0 | 37      | 756  | 836  | 878  | 995  |
| 0 | 38      | 783  | 864  | 905  | 1026 |
| 0 | 39      | 810  | 892  | 935  | 1057 |
| 0 | 40      | 837  | 921  | 964  | 1088 |
| 0 | 41      | 865  | 950  | 993  | 1120 |
| 0 | 42      | 892  | 979  | 1023 | 1151 |
| 0 | 43      | 919  | 1000 | 1052 | 1183 |
| 0 | 44      | 947  | 1036 | 1082 | 1214 |
| 0 | 45      | 975  | 1066 | 1112 | 1246 |
| 0 | 46      | 1003 | 1095 | 1142 | 1277 |
| 0 | 47      | 1030 | 1124 | 1171 | 1309 |
| 0 | 48      | 1058 | 1153 | 1201 | 1340 |
| 0 | 49      | 1086 | 1183 | 1231 | 1372 |
| 0 | 50      | 1115 | 1212 | 1261 | 1403 |
| 0 | 51      | 1143 | 1241 | 1291 | 1435 |
| 0 | 52      | 1171 | 1271 | 1322 | 1467 |
| 0 | 53      | 1200 | 1301 | 1352 | 1499 |
| 0 | 54      | 1228 | 1330 | 1382 | 1531 |
| 0 | 55      | 1256 | 1360 | 1412 | 1563 |
| 0 | 56      | 1285 | 1390 | 1443 | 1595 |
| 0 | 57      | 1313 | 1419 | 1473 | 1627 |
| 0 | 58      | 1342 | 1449 | 1504 | 1659 |
| 0 | 59      | 1371 | 1479 | 1534 | 1691 |
| 0 | 60      | 1400 | 1509 | 1565 | 1723 |

0 The column header numbers indicates the probability (p.) of  
0 calls encountering all Servers (Trunks) in the group busy.

0 | Figure 8 Trunk CCS Capacity Tables (Poisson Theory) Cont..

0

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0 The column header numbers indicates the probability (p.) of  
0 calls encountering all Servers (Trunks) in the group busy.

0| Figure 8, Trunk CCS Capacity Tables (Poisson Theory) Cont..



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| 0 | SERVERS | .001 | .005 | .01  | .05  |
|---|---------|------|------|------|------|
| 0 |         |      |      |      |      |
| 0 |         |      |      |      |      |
| 0 |         |      |      |      |      |
| 0 | 121     | 3234 | 3402 | 3488 | 3725 |
| 0 | 122     | 3265 | 3434 | 3520 | 3758 |
| 0 | 123     | 3296 | 3466 | 3552 | 3792 |
| 0 | 124     | 3327 | 3498 | 3584 | 3825 |
| 0 | 125     | 3358 | 3530 | 3616 | 3859 |
| 0 | 126     | 3389 | 3562 | 3648 | 3892 |
| 0 | 127     | 3420 | 3594 | 3681 | 3925 |
| 0 | 128     | 3451 | 3626 | 3713 | 3959 |
| 0 | 129     | 3482 | 3657 | 3746 | 3992 |
| 0 | 130     | 3513 | 3689 | 3778 | 4026 |
| 0 | 131     | 3544 | 3721 | 3810 | 4059 |
| 0 | 132     | 3576 | 3753 | 3843 | 4092 |
| 0 | 133     | 3607 | 3785 | 3875 | 4126 |
| 0 | 134     | 3638 | 3817 | 3907 | 4159 |
| 0 | 135     | 3669 | 3849 | 3939 | 4192 |
| 0 | 136     | 3700 | 3881 | 3972 | 4226 |
| 0 | 137     | 3732 | 3913 | 4004 | 4259 |
| 0 | 138     | 3763 | 3945 | 4037 | 4293 |
| 0 | 139     | 3794 | 3977 | 4070 | 4327 |
| 0 | 140     | 3825 | 4009 | 4102 | 4360 |
| 0 | 141     | 3857 | 4042 | 4134 | 4394 |
| 0 | 142     | 3888 | 4074 | 4167 | 4427 |
| 0 | 143     | 3920 | 4106 | 4199 | 4461 |
| 0 | 144     | 3951 | 4138 | 4231 | 4494 |
| 0 | 145     | 3982 | 4170 | 4264 | 4528 |
| 0 | 146     | 4014 | 4202 | 4297 | 4561 |
| 0 | 147     | 4045 | 4235 | 4329 | 4595 |
| 0 | 148     | 4076 | 4267 | 4362 | 4628 |
| 0 | 149     | 4108 | 4299 | 4395 | 4662 |
| 0 | 150     | 4139 | 4331 | 4427 | 4695 |

0 The column header numbers indicates the probability (p.) of  
0 calls encountering all Servers (Trunks) in the group busy.

0 Figure 8, Trunk CCS Capacity Tables (Poisson Theory) Cont..

0

0 The column header numbers indicates the probability (p.) of  
0 calls encountering all Servers (Trunks) in the group busy.

## 0 | Figure 8, Trunk CCS Capacity Tables (Poisson Theory) Cont..



```
:figcap Total DRA Traffic (CCS) for NT0X48 Network
:efig
```



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0| 4.2.3 Sparing Information

0  
0 Refer to ECM-601 Building Block - TME Engineering.

0| 4.3 Software Provisioning

0 Refer to the SMS database.

0 4.3.1 Required Software Packages and Interdependencies

0  
0 Refer to the SMS database.

0 4.3.2 Software Usage Restrictions

0  
0 Refer to API or ECM covering the application considered.

0 4.3.3 Memory Provisioning

0  
0 Use MEMCALC for memory provisioning requirements for the applica-  
0 tion considered.

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0 4.4 Real Time Impact

0 Refer to the API or ECM covering the application considered.

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0 5.0 Enhanced DRAM (EDRAM)

0 1.1.1 The Enhanced Digital Recorded Announcement Machine (EDRAM) is  
0 a single slot circuit pack DMS peripheral module used for provid-  
0 ing voice messages or instructions to the subscriber, thus reduc-  
0 ing the need for an operator's assistance. Announcements are  
0 stored in digital format in memory using PCM coding so as to al-  
0 low fast and random access of announcements, both in playback or  
0 recording stages.

0 The EDRAM card will replace the existing Digital Recorded An-  
0 nouncement (DRA) Module for providing voice messages and recorded  
0 announcements in all DMS-100 Family switches.

0 The EDRAM provides the equivalent functions and capabilities of  
0 the existing Digital Recorded Announcement (DRA) Module; i.e.  
0 exactly the same duration of announcement time as for the DRA  
0 (4.3 minutes) and 30 announcement channels for announcement  
0 playback/recording.

0 The EDRAM is a stand alone peripheral module (PM), having its own  
0 DS-30 link interface with the network (i.e. each EDRAM requires  
0 one (1) DS-30 network port appearance on the network). It can be  
0 plugged into one (1) of the twelve (12) provisionable trunk card  
0 slots on the MTM/DRA shelf. The DS-30 cable for EDRAM is plugged  
0 directly into the backplane pins at the back of the shelf corre-  
0 sponding to the slot of the EDRAM.

0 Although the EDRAM can mount onto existing DRA shelves, no new  
0 DRA shelves should be ordered. For new and existing offices,  
0 provision only MTM shelves to mount the EDRAM.

0 1.1.2 The current DRA Module consists of the DRA shelf and circuit  
0 packs. The DRA shelf is a modified version of the Maintenance  
0 Trunk Module (MTM). It must be equipped with the appropriate MTM  
0 controller circuit packs and power converter circuit packs to  
0 provide the basic MTM functions.

0 The announcement functions are provided by the provisionable DRA  
0 controller and announcement cards. Each DRA Module consists of a  
0 DRA controller card (NT1X75\_\_) and up to eight (8) single density  
0 or four double density provisionable announcement memory cards.  
0 Each single density memory card provides 30 seconds of announce-  
0 ment capacity; each double density memory card provides 60 sec-  
0 onds of announcement capacity.

0 - NT1X75BA - DRA controller card



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0 - NT1X76XX - contains standard factory programmed announce-  
0 ments in non-alterable memories (EPROM). The announcements  
0 are identified by the "XX" PEC code suffix and these an-  
0 nouncements cannot be altered.

0 - NT1X77AA - provides storage for on-site customer recorded  
0 announcements in volatile memory (RAM).

0 - NT1X79AA - provides storage for on-site customer recorded  
0 announcements in non-volatile memory (EEPROM).

0 Each fully equipped DRA Module provides 30 announcement channels  
0 and 4 minutes of announcement time.

0 The single card slot EDRAM Module is equivalent to a fully  
0 equipped DRA Module.

0 1.1.3 The EDRAM will provide a super-set of features that include or  
0 is equivalent to all existing features of the DRA shelf. The  
0 features can be categorized into the following areas:

- 0 -Loader features
- 0 -MTM features
- 0 -DRA features

0 The loader will download the EDRAM application firmware load, and  
0 the specified announcement load from the DMS tape/disk to the  
0 EDRAM memory.

0 The loader will provide management of announcement files. Up to  
0 a maximum of any eight (8) single density announcement files or  
0 four (4) double density announcement files can be loaded to a  
0 specified EDRAM. Each announcement file corresponds to a version  
0 of NT1X76 card. Hence, announcements no longer need to be iden-  
0 tified by the NT1X76 DRA EPROM PEC code. The factory recorded  
0 announcements on the NT1X76 DRA EPROM cards are replaced with an-  
0 nouncement files on DMS tape that can be downloaded to the EDRAM.  
0 This provides the flexibility of changing announcements at any  
0 time without retrofitting the DRA EPROM cards which contain fac-  
0 tory programmed announcements.

0 The EDRAM will emulate the Maintenance Trunk Module (MTM) fea-  
0 tures required for DRA applications, which includes:

- 0 -Loading and executing PM EXECs
- 0 -Setting up speech connections needed for call processing

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- 0 -Performing PM sanity functions such as sending Who-Am-I, I-Am-Here messages to Central Control (CC)
- 0 -Network integrity and parity generation/checking
- 0 -Perform CC instructions through CC-PP primitives execution and handle command protocol violation checking
- 0 -PM load checksum tests.

0 The EDRAM will emulate all existing required DRA features, which includes:  
0

- 0 -On site recording of announcements
- 0 -Playing announcements
- 0 -Configuration query
- 0 -Trunk level diagnostics.

0 | NOTE: One EDRAM CP will provide the same functionality and capacity as one DRA shelf with NT1X76 PROM memory and NT1X77 RAM memory, but not the functionality of NT1X79 non volatile memory since the EDRAM memory is volatile. The functionality of NT1X79 non volatile memory will be provided by EDRAM in BCS-36 with the Feature No. AQ0984 - EDRAM Announcement Up-loading. Until BCS-36, a manual action is required to restore Customer recorded announcements lost due to MTM power converter failure. As an option, on Customer request, non volatile memory NT1X79 can be specified. When the NT1X79 is specified, the DRA shelf is still required and used for NT1X79 only. The first DRA shelf should be fully equipped with NT1X79 CPs before using the next DRA shelf.

0 1.1.4 The EDRAM is a second generation DRA circuit pack. It introduces the concept of a single circuit pack Peripheral Module (PM) which has the dual appearance as a PM as well as a trunk. Although it is located on an MTM/DRA shelf, it is directly connected to the network through a DS-30 link. Hence, it will have two (2) Maintenance & Administration Position (MAP) appearances on the same hardware. It will appear as a PM, just like the MTM/DRA, since it is directly connected to the network, and it will also appear as a trunk, just like other provisionable trunk cards on the MTM/DRA, since it mounts on the MTM/DRA.

0 The EDRAM has its own pair of DS-30 links for connecting to both planes of the Network Module (NM), and communicates with the Central Control/Central Message Controller (CC/CMC) directly via the message channel of this DS-30 link.

0 It is to be plugged into any one of the twelve (12) provisionable trunk slots of the MTM/DRA shelf and uses this shelf for the purposes of housing, logic power, and cable mounting. When all  
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0 twelve (12) slots are equipped with EDRAM cards, the maximum  
0 power dissipation limit of 110 watts per MTM/DRA shelf is not ex-  
0 ceeded.

0 The DS-30 cable for the EDRAM can be plugged directly into the  
0 pins at the back of the MTM/DRA backplane at the slot correspond-  
0 ing to the position of the EDRAM. The other end of the DS-30 ca-  
0 ble is terminated at the Peripheral Speech Link (PSL) Panel  
0 mounted on the Speech Link Connecting (SLC) Frame or at the En-  
0 hanced Network (ENET) depending on office requirements.

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0 5.1 HARDWARE PROVISIONING

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0 5.1.1 HARDWARE USAGE RESTRICTIONS

0

0 See section 3. PRODUCT/SYSTEM SPECIFICATION.

0 5.1.2 HARDWARE DEPENDENCIES

0

0 None

0 5.1.3 PROVISIONING CONSIDERATIONS

0

0 2.4.1 The EDRAM will be provisioned using the same provisioning  
0 rules as for the existing DRA Module as given in the Engineering  
0 Manual and NTP 297-1001-450 entitled DMS-100 Family Provisioning.

0 The EDRAM Module provides 30 announcement channels and 4.3 min-  
0 utes of announcement time for announcement playback/recording.

0 For each DMS office, provision the number of EDRAM as required to  
0 accommodate the standard announcements.

0 Depending on the optional recorded announcement features ordered  
0 by the Customer for his office, provision additional EDRAM Mod-  
0 ules as required. The optional features are: Auxiliary Operator  
0 Service System Voice Response (AOSS VR), Custom Charge Calling  
0 (CCC), Automatic Coin Toll Service (ACTS), Mechanized Calling  
0 Card Service (MCCS), and Automatic Intercept Service (AIS). Since  
0 each of the preceding features requires all 30 announcement chan-  
0 nels of the EDRAM, each feature requires an exclusive EDRAM Mod-

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0       ule that cannot be used for other announcements. For further  
0 information, refer to Section 1.3 Cross-Reference Publications.

0       Other optional features that need additional announcements are  
0 Call Forward Remote Activation (CFRA) in BCS-28, Custom Local  
0 Area Signalling Services (CLASS) features Phase I in BCS-28, and  
0 CLASS features Phase II in BCS-30. For further information, re-  
0 fer to ECM-473 on subject Residential Enhanced Services and  
0 ECM-332 on subject CLASS - U.S./CMS - Canada.

0 2.4.2 As a Customer requested option, each EDRAM may be duplicated  
0 for reliability. It is mostly needed for toll offices where it  
0 is important to get the message sent to the subscriber.

0 2.4.3 The EDRAM card is to be inserted into one (1) of the twelve  
0 (12) provisionable trunk card slots of the MTM/DRA shelf. When  
0 all twelve (12) slots are equipped with EDRAM cards, the maximum  
0 power dissipation limit of 110 watts per MTM/DRA shelf is not ex-  
0 ceeded. It derives +5V power from the shelf power converter  
0 (NT2X70), but otherwise, it is independent of the MTM/DRA shelf.

0       Although the EDRAM can mount onto existing DRA shelves, no new  
0 DRA shelves should be ordered. For new and existing offices,  
0 provision only MTM shelves to mount the EDRAM.

0 |       Each EDRAM requires one (1) DS-30 network port appearance on the  
0 network. Each DS-30 network port (link) has 32 channels; 30  
0 voice channels, channel 0 as the message channel, and channel 16  
0 is not used.

0       The EDRAM has its own pair of DS-30 links for connecting to both  
0 planes of the Network Module (NM), and communicates with the Cen-  
0 tral Control/Central Message Controller (CC/CMC) directly via the  
0 message channel of this DS-30 link.

0       The DS-30 cable for the EDRAM can be plugged directly into the  
0 pins at the back of the MTM/DRA backplane at the slot correspond-  
0 ing to the position of the EDRAM. The other end of the DS-30 ca-  
0 ble is terminated at the Peripheral Speech Link (PSL) Panel  
0 mounted on the Speech Link Connecting (SLC) Frame or at the En-  
0 hanced Network (ENET) depending on office requirements.

#### 0 | 2.4.4 VOICE FILE INSTALLATION

0 |       Each EDRAM can be loaded with different voice files controlled by  
0 the voice file names datafilled in the EDRAMINV table. The voice  
0 files can be loaded directly into the EDRAM from the tapes in

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0 most situations. Loading EDRAM from tape will increase the load-  
0 ing time because additional time is needed to scan the tape to  
0 locate the specified file, and this scanning time may be as long  
0 as 20 minutes for each file. As the worst case loading and in-  
0 itialization time of the EDRAM (4 double density voice file) is  
0 only 16 minutes, the total tape scanning time may significantly  
0 exceed the actual file loading time.

0 The tape scanning time for an office may be reduced by creating a  
0 voice tape and by copying the voice files to the tape in the same  
0 sequence as the files to be loaded into the EDRAM.

0 For the purpose of reducing EDRAM loading time and to eliminate  
0 the manual activity needed for mounting the tapes, it is recom-  
0 mended to copy all the needed voice files to the disk and to load  
0 EDRAM from the disk.

0 SITUATIONS REQUIRING VOICE FILE LOADING FROM DISK

0 There are situations where the voice files must be loaded via the  
0 DMS IOC Disk or SLM disk, rather than from the voice tapes di-  
0 rectly. The procedure to copy files from SLM tape to SLM disk is  
0 described in NTP 5001-503 and 5001-523. These are the following  
0 situations:

0 \* SuperNode office that does not have a tape drive and the  
0 voice files are delivered on a SLM tape. Like the other pe-  
0 ripheral loads, voice files cannot be loaded from SLM tape to  
0 the EDRAM directly.

0 In this case, the office has to allocate SLM disk space large  
0 enough to hold the needed voice files. Refer to section on  
0 DISK SPACE REQUIREMENTS to find out the size of each file.

0 \* Voice files to be loaded to the same EDRAM are split onto two  
0 (2) different tapes, and the office has only one tape drive.  
0 The likely situation would be bilingual offices (French &  
0 English) that would require AOSS, ACCS Standard and CLASS  
0 phase 1, where voice files from the English tape and the  
0 French tape are to be loaded to the same EDRAM.

0 The office may use one of the following approaches:

- 0 1. Copy all the needed voice files to disk and load from disk.
- 0 2. Copy the needed voice files on one tape to the disk, and load  
0 the EDRAM from both tape and disk.

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0 | 3. Make their own voice tape by copying the needed voice files  
0 | to the same tape in the proper sequence, and by loading from  
0 | this tape.

0 | DISK SPACE REQUIREMENTS

0 | The voice files can be copied from SLM tape to the SLM disk. The  
0 | disk space required can be calculated by adding up the size of  
0 | all the required voice files. The following table summarizes the  
0 | disk space requirement versus the feature and language.

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| FEATURE           | ENGLISH                                                                                      | SIZE | FRENCH                                                                                       | SIZE |
|-------------------|----------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------|------|
| STANDARD          | ESTD0AA                                                                                      | 0.7M | FSTD0BA                                                                                      | 0.8M |
| AOSSVR            | EAOSS0AF<br>EAOSS0AG                                                                         | 2.5M | FAOSS0BF<br>FAOSS0BG                                                                         | 2.5M |
| ACCS              | EAOSS0AH                                                                                     | 1.2M | FACCS0BH                                                                                     | 1.2M |
| AABS              | EAABS0HC                                                                                     | 1.1M | FAABS0HD                                                                                     | 1.2M |
| ACTS              | EACTS0AE                                                                                     | 1.2M |                                                                                              |      |
| MCCS              | EMCCS0CA                                                                                     | 0.9M |                                                                                              |      |
| CFRA              | ECFRA0AM                                                                                     | 1.0M |                                                                                              |      |
| ARDT              | EARDT0JA<br>EARDT0JB                                                                         | 2.5M |                                                                                              |      |
| CLASS<br>PHASE I  | ECLS10AJ<br>ECLS10AK                                                                         | 2.1M | FCLS10BJ<br>FCLS10BK                                                                         | 1.8M |
| CLASS<br>PHASE II | ECLS20AP<br>ECLS20AQ<br>ECLS20AR<br>ECLS20AS<br>ECLS20AT<br>ECLS20AU<br>ECLS20AV<br>ECLS20AW | 8.9M | FCLS20BP<br>FCLS20BQ<br>FCLS20BR<br>FCLS20BS<br>FCLS20BT<br>FCLS20BU<br>FCLS20BV<br>FCLS20BW | 7.6M |

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0 5.2 PRODUCT/SYSTEM SPECIFICATION

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0 5.2.1 PHYSICAL CHARACTERISTICS

0

## 0 Enhanced DRAM CP NT1X80AA

0

## 0 MECHANICAL DIMENSIONS

0 Height 12.50 in. (317.5 mm)

0 Width 1.125 in. (29 mm)

0 Depth 10.00 in. (254 mm)

0 | Power 9.0 Watts (from +5V logic power)

0 The circuit pack can mount onto one (1) of the twelve (12)  
0 provisionable trunk slots in MTM/DRA shelves. It derives +5V  
0 power from the shelf power converter (NT2X70), but otherwise, it  
0 is independent of the MTM/DRA shelf.  
0

0 | NOTE: One EDRAM CP will provide the same functionality and ca-  
0 pacity as one DRA shelf with NT1X76 PROM memory and NT1X77 RAM  
0 memory, but not the functionality of NT1X79 non volatile memory  
0 since the EDRAM memory is volatile. The functionality of NT1X79  
0 non volatile memory will be provided by EDRAM in BCS-36 with the  
0 Feature No. AQ0984 - EDRAM Announcement Up-loading. Until BCS-36,  
0 a manual action is required to restore Customer recorded  
0 announcements lost due to MTM power converter failure. As an op-  
0 tion, on Customer request, non volatile memory NT1X79 can be  
0 specified. When the NT1X79 is specified, the DRA shelf is still  
0 required and used for NT1X79 only. The first DRA shelf should be  
0 fully equipped with NT1X79 CPs before using the next DRA shelf.

0

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0 5.2.2 EMI/EARTHQUAKE INFORMATION

0

## 0 EMI/FCC

0  
0 The EDRAM card will comply with EMI requirements as defined by  
0 FCC Rules and Regulations Class A Part 15 Subpart J, when  
0 equipped in a Streamline cabinet.

0 | The introduction of EDRAM will not increase measured EMI emis-  
0 sions on a system level, compared with an equivalent system using  
0 DRAs.

## 0 ESD

0  
0 The EDRAM card will withstand up to 15KV ESD discharge on the  
0 face panel without causing permanent damage to or corruption of  
0 the application/announcement load.

## 0 UL/CSA

0  
0 The EDRAM card will conform to DMS-100 regulatory and safety re-  
0 quirements as specified by CSA or UL. Grounding will comply with  
0 the Isolated System Grounding Rules.

0

0

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0 5.2.3 SPARING INFORMATION

0  
0 The Mean Time Between Failure (MTBF) of NT1X80AA is 53 years at  
0 40 degrees Celsius.

0 5.3 SOFTWARE PROVISIONING

0

0 5.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0 |

0 The EDRAM application firmware is downloaded from the DMS  
0 tape/disk to the program store segment of the EDRAM on board mem-  
0 ory. The announcement data is sectionalized into eight (8) data  
0 files, each file corresponding to one (1) version of an NT1X76  
0 board. These are also downloaded from DMS tape to the Data Store  
0 segment of the EDRAM on board memory. The EDRAM Firmware Load  
0 and a super-set of all the announcement Load files will reside on  
0 the DMS PM Load tape. These Loads will be released and updated  
0 with the regular BCS release schedule.

0 | The following list is the available provisionable EDRAM Voice  
0 | Files:

0 | NTG301AA EDRAM Voice Files: English Standard  
0 | Prerequisites:  
0 | NTXN16AA Enhanced DRAM

0 | NTG302AA EDRAM Voice Files: English CLASS/CMS  
0 | Prerequisites:  
0 | NTXN16AA Enhanced DRAM

0 | NTG303AA EDRAM Voice Files: French  
0 | Prerequisites:  
0 | NTXN16AA Enhanced DRAM

0 | NTG304AA EDRAM Voice Files: Spanish  
0 | Prerequisites:

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0 | NTXN16AA Enhanced DRAM

0 | NTG305AA EDRAM Voice Files: Superset for SLM 2 Tape

0 | Prerequisites:

0 | NTXN16AA Enhanced DRAM,

0 | NTX942AA DMS - SuperNode System Load Module (SLM) (UPG. by

0 | NTX942AB) or NTX942AB DMS - SuperNode System Load Module (SLM)

0 | (UPG. from NTX942AA)

0 | For BCS-34/35 timeframe, the EDRAM Voice Files are available in  
0 | Canada and Puerto Rico only.

#### 0 5.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

#### 0 5.3.3 MEMORY PROVISIONING

0  
0 The addition of this peripheral module should have minimal impact  
0 on memory provisioning. Refer to the normal memory algorithms.

#### 0 5.4 REAL TIME IMPACT

0 The loading of this peripheral module will not impact any of the  
0 CPU usage since this new PM will take the same time to load as  
0 the present XPMs.

0 All of the maintenance actions will take the same amount of time  
0 as the ones for the XPMs.

0 Refer to the normal real time algorithms.

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0 CHAPTER 18

0 HOST - MAP FURNITURE

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Host - MAP Furniture  
Chapter 18

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0 1.0 Building Block Engineering of MAP

0 The Maintenance Administration Position (MAP) is for the DMS-100 Fam-  
0 ily of switching equipment. Described in the MAP is furniture, jacks,  
0 logic phone, connector blocks, Keyboard Send and Receive (KSR)  
0 Printer, and Video Display Unit (VDU). Optional equipment provisioned  
0 in support of the MAP includes Key Systems and Alarm Panels.

0 1.1 HARDWARE PROVISIONING

0

0 1.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 Not applicable

0 1.1.2 HARDWARE DEPENDENCIES

0  
0 Not applicable

0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable.

0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

0  
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## 0 CIRCUITS PER CARD

0  
0 Not Applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0 1.1.3 PROVISIONING CONSIDERATIONS

0  
0 Maintenance Administration Position (MAP)

0 The Maintenance Administration Position building block concept  
0 deals with a higher level of Product Engineering Code (PEC) or-  
0 dering and simplifies the engineering ordering process. The MAP  
0 provides the man to machine interface for the DMS-100F switching  
0 systems. Each MAP includes the center, shelf, and counter  
0 sections. Optionally a VDU, KSR, Key System, and Lamarche  
0 Inverter can be selected.

0 TPC Administration and Maintenance Interface (TAMI)

0 The TAMI position equipment may be customer supplied. The recom-  
0 mended VDU is a VT100 compatible terminal. The VT100 compatible  
0 terminals available from NT are the DEC VT-420, DEC VT-340, and  
0 the HP 700/44.

0 The printer for the TAMI position may also be required. The  
0 printers which are available from NT (and compatible with the  
0 VT-340 and the VT-420) are the DEC LA75S and the DEC LA424.

0 | DATAPHON (Data Phones / Telephone Sets)

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0 Data Phones are used in various Data Phone applications such as  
0 in ETAS. With the introduction of modems with auto-dialers, the  
0 requirement for data phones for use with modems has decreased,  
0 but are still in wide use.

0 NTZZ14BA (MAP Furniture with Jacks)

0 The NTZZ14BA includes the MAP furniture center section with the  
0 test trunk jack assembly, counter section, and shelf section.  
0 Optionally available to NTZZ14BA is the Camel colored MAP Chair.

0 VT-420 (Video Display Unit)

0 The VT-420 is a fully functional VDU which comes equipped with a  
0 detached keyboard. This VDU is available in amber, green, or  
0 white. Optionally available to the VT-420 is the Current Loop  
0 Adapter, Terminal Stand, and Data Cord when the VDU is used as a  
0 portable MAP VDU.

0 HP C1007 (HP 700/44) Amber/Green/White (Video Display Unit)

0 The existing NTZZ14JA VDU is MD effective immediately and re-  
0 placed by the three new HP units. The HP 700/44 VDU is available  
0 in amber, green, and white, and is equipped with keyboard. This  
0 VDU is able to perform as the primary MAP VDU, the portable MAP  
0 VDU, and/or as the Remote Terminal (RTIF) for SuperNode applica-  
0 tions. Options to HP C1007 include a terminal stand with casters  
0 and a data cord for the portable MAP VDU option.

0 VT340 (Video Display Unit)

0 The VT340 Video Display Unit is a color video display unit  
0 equipped with keyboard. This VDU is provisionable for the pri-  
0 mary MAP VDU or the portable MAP VDU functions. Options to VT340  
0 include a terminal stand with casters and a data cord for the  
0 portable MAP VDU option.

0 NTZZ14EB LA75+ (MAP Printer (Read-Only))

0 The DEC LA75+ is a complete printer configured for EIA operation.  
0 Options available are a Printer Stand / Paper Catcher, Ribbon  
0 Cartridge, an RS-232 Connection Adapter, a 20MA current loop  
0 adapter, and slave cables.

0 The NTZZ14EB (DEC LA75+) has the following options always pro-  
0 vided: LA75S printer, Printer Stand / Paper Catcher, RS232 Con-  
0 nection adapter, Dec Ribbon Cartridge, and the 20MA current loop

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0 adapter. The only option that is provisionable are the slave ca-  
0 bles.

0 NTZZ14EC LA424 (MAP Printer (Read-Only))

0 The DEC LA424 is a complete printer configured for EIA operation.  
0 Options available are a Printer Stand / Paper Catcher, Ribbon  
0 Cartridge, an RS-232 Connection Adapter, a 20MA current loop  
0 adapter, and slave cables.

0 The NTZZ14EC (DEC LA424) has the following options always pro-  
0 vided: LA424 Printer, Printer Stand / Paper Catcher, RS232 Con-  
0 nection adapter, Dec Ribbon Cartridge, and the 20MA current loop  
0 adapter. The only option that is provisionable are the slave ca-  
0 bles.

0 NTZX18AB (Norstar Digital Key Service Module)

0 The NTZX18AB includes the Ash colored Norstar digital Key Service  
0 Module configured to access up to 20 central office lines. In-  
0 cluded is the technical reference set, power supplies, ring gen-  
0 erators and associated required equipment to make a fully  
0 functional key system. The M7234 ash telset and headset are pro-  
0 vided plus one Unity I telset for use as an emergency telephone  
0 (ET). Also, additional Norstar telsets may be provisioned via  
0 conventional methods. The NorStar unit can be provided for ini-  
0 tial jobs as well as extensions.

0 NTZZ14GA (TCS1800 key system)

0 The NTZZ14GA includes the 1A2 Key System requirements. Included  
0 in the building block model is 10 line cards and shelf, 20hz  
0 ringing generators, customer manual, key light transformer, and  
0 fuses. The KSM cross-connection will be direct to the MDF and  
0 not via a BIX module. The NTZZ14GA should be provided only for  
0 extensions to existing jobs which already have this equipment on  
0 site, provide based on the availability of this equipment.

0 NTZZ14HA (LaMarche 500 Watt Inverter)

0 The NTZZ14HA provides one 500 Watt LaMarche Inverter for pro-  
0 tected AC power. Included in the building block model is the  
0 inverter and the direct powering label. This unit will terminate  
0 up to four units with a total maximum power requirement of 500  
0 Watts. The isolation kits must be provisioned separately for of-  
0 fices, and/or modem frames.

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0 NOTE: Alarms will be selected as required based on site specific  
0 needs based on conventional product engineering code ordering.

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0 1.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable

0 1.1.5 TRAFFIC TABLES

0  
0 Not applicable

0 1.2 PRODUCT/SYSTEM SPECIFICATION

0

0 1.2.1 PHYSICAL CHARACTERISTICS

0

0 DEC VT-420 Series VDU

0  
0 Physical characteristics for the DEC VT-420 VDU follow:  
0  
0  
0

0 Dimensions:  
0 Monitor ..... 12.30"H x 12.40" W x 13.00"D  
0 31.2cm H x 31.5cm W x 33cm D  
0  
0 Keyboard ..... 1.75"H x 18.80"W x 7.00"D  
0 4.5cm H x 47.8cm W x 19.1cm D  
0  
0 Weight:



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0 Monitor ..... 18.7 lb (8.5kg)  
0 Keyboard ..... 3.0 lb (1.4kg)

0 NOTE: The units must be powered in accordance with ISG specifi-  
0 cations (Refer to ECM-289).

0 HP 700/44 VDU

0  
0 Physical characteristics for the HP 700/44 VDU follow:  
0  
0  
0

0 Dimensions:

0 Monitor ..... 12.99"H x 12.99" W x 12.99"D  
0 33cm H x 33cm W x 33cm D

0 Keyboard ..... 1.37"H x 18.43"W x 7.79"D  
0 4cm H x 47cm W x 20cm D

0 Weight:

0 Monitor ..... 19.8 lb (8.8kg)  
0 Keyboard ..... 4.2 lb (1.85kg)

0 NOTE: The units must be powered in accordance with ISG specifi-  
0 cations (Refer to ECM-289).

0 DEC VT340 Color VDU

0  
0 Physical characteristics for the DEC VT-340 Color VDU follow:  
0  
0  
0

0 Dimensions:

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0 Monitor ..... 15.00"H x 15.50" W x 17.00"D  
0 38.5cm H x 39.7cm W x 43.6cm D

0 Keyboard ..... 2.00"H x 21.00"W x 6.75"D  
0 5.1cm H x 53.3cm W x 17.1cm D

0 Weight:  
0 Monitor ..... 34.5 lb (15.7kg)  
0 Keyboard ..... 4.5 lb (2.0kg)

0 NOTE: The units must be powered in accordance with ISG specifi-  
0 cations (Refer to ECM-289).

0 DEC LA75S RD PRINTER

0  
0 Physical characteristics for the DEC LA75+ RD PRINTER follow:  
0  
0  
0

0 Dimensions:  
0 Printer ..... 4.80"H x 25.70" W x 11.40"D  
0 12.0cm H x 40.0cm W x 29.0cm D

0 Weight:  
0 Printer ..... 16.0 lb (7.5kg)

0 NOTE: The units must be powered in accordance with ISG specifi-  
0 cations (Refer to ECM-289).

0

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0 DEC LA424 R0 PRINTER

0  
0 Physical characteristics for the DEC LA424 RD PRINTER follow:  
0  
0  
0

0 Dimensions:  
0 Printer ..... 6.70"H x 24.20" W x 12.20"D  
0 17.0cm H x 61.5cm W x 31.0cm D

0 Weight:  
0 Printer ..... 31.5 lb (14.3kg)

0 NOTE: The units must be powered in accordance with ISG specifi-  
0 cations (Refer to ECM-289).

0 1.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Reference ECM-125

0 1.2.3 SPARING INFORMATION

0  
0 Per Telco specifications

0 1.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Power requirements for the DEC VT-420 VDU follow:

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0 | Input Voltage ..... 110V to 220V at 57-63 Hz  
0 | Power Consumption ..... 67 watts

0 | Power requirements for the HP 700/44 VDU follow:

0 | Input Voltage ..... 110V to 240V at 50-60 Hz  
0 | Power Consumption ..... 35 watts

0 | Power requirements for the DEC VT-340 Color VDU follow:

0 | Input Voltage ..... 120V at 47-63 Hz or

0 | Input Voltage ..... 220V/240V at 47-63 Hz  
0 | Power Consumption ..... 140 watts

0 | Power requirements for the DEC LA75+ RD PRINTER follow:

0 | Input Voltage ..... 110V to 120V at 48-65 Hz  
0 | Power Consumption ..... 50 watts

0 | Power requirements for the DEC LA424 RD PRINTER follow:

0 | Input Voltage ..... 110V to 120V at 50-60 Hz  
0 | Power Consumption ..... 170 watts

#### 0 | 1.2.5 CURRENT DRAIN INFORMATION

0  
0 | Not applicable.

#### 0 | 1.3 SOFTWARE PROVISIONING

0

##### 0 | 1.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 | Not applicable

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0 1.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not applicable

0 1.3.3 MEMORY PROVISIONING

0

0 Reference Memcalc

0 1.4 REAL TIME IMPACT

0 Reference Real Quick or PRTCalc

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0 CHAPTER 19

0 HOST - MISCELLANEOUS EQUIPMENT

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Host - Miscellaneous Equipment  
Chapter 19

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## 0 1.0 Host - Miscellaneous Equipment

0 1.1 Equipment Provisioning0 1.1.1 Miscellaneous TOPS Equipment0 (a) General Description

0 The following miscellaneous TOPS equipment is provisionable in a  
0 TOPS office:

- 0 - Three Port Conference Circuits
- 0 - Digital Modems
- 0 - Attenuator Pads
- 0 - Interface Circuits
- 0 - Headsets and Chairs

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host  
0 Section 3.9 DMS Supernode and Network Subsystems

0 (c) Provisioning Considerations

## 0 ( i) Three Port Conference Circuits (NT1X31AA or NT3X67AA)

0 One Three Port Conference circuit is required for each  
0 TOPS position including In-charge and Assistance. In ad-  
0 dition to this, the conference circuits have to be provi-  
0 sioned for the following functions:

- 0 - service analysis
- 0 - monitor function
- 0 - connections to in-charge/assistance  
0 position for assistance function

0 Since AOSS positions are required to forward calls to  
0 other locations only in the event of emergency calls,  
0 calls to a distant assistance centre, calls for language  
0 assistance or calls to the AOSS Assistance Position and  
0 In-Charge Position, provide a quantity of 3-Port Confer-  
0 ence circuits equal to 10% of the total number of AOSS  
0 positions. There should be a minimum of two (2) per  
0 traffic office.

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0 Generally it is the responsibility of the telephone com-  
0 pany to provision the conference circuits for their re-  
0 quirements; i.e. monitor, service analysis etc.

0 If the Telco does not provision the additional conference  
0 circuits required for the above functions, the Northern  
0 Telecom Job Engineer will provide 5% additional confer-  
0 ence circuits for the above mentioned functions.

0 For further information, see Peripheral Modules - Host,  
0 Section 3.5 of this NTP.

0 ( ii) TOPS Digital Modem (NT3X02AA, NT3X03AA)

0 One TOPS control Processor Circuit, NT3X02AA and one TOPS  
0 Digital Signal Processor Circuit, NT3X03AA are required  
0 for each TOPS/AOSS position and TOPS/AOSS TTY.

0 (NOTE: THIS IS NOT REQUIRED FOR THE SNAC TTY)

0 (a) TOPS offices should have a maximum of four pairs  
0 (NT3X02AA, NT3X03AA) of Digital Modem cards per MTM,  
0 providing a maximum of 16 modem circuits per MTM.

0 (b) Combined IBN/TOPS offices should have a maximum of  
0 two pairs (NT3X02AA, NT3X03AA) of digital modem cards  
0 per MTM, providing a maximum of eight circuits per  
0 MTM.

0 (c) In each case modem cards should be spread evenly  
0 across all MTMs to ensure reliability.

0 MBS offices and combined MBS/TOPS offices should have  
0 a maximum of two pairs (NT3X02AA, NT3X03AA) of dig-  
0 ital modem cards per MTM, providing a maximum of 8  
0 modem circuits per MTM.

0 A common pool of spares provisioned at 5% of require-  
0 ments is recommended for hot standby purposes.

0 In each case it is preferred to spread the modem card  
0 pairs evenly across all MTMs to ensure reliability.

0 ( iii) Synchronizable offices equipped with TOPS consoles must  
0 have the NT3X14BC Synchronizable Master Clock Counter  
0 equipped on the CCC frame. If the office is equipped  
0 with an earlier vintage NT3X14 circuit pack, it must be

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0 retrofit with a NT3X14BC when the TOPS extension is ap-  
0 plied.

0 For further information, refer to Central Control Complex  
0 of DMS SuperNode and Network Subsystems, Section 3.9 of  
0 this NTP.

0 ( iv) Attenuator Pads are not required for the TOPS MP. Five  
0 attenuator pads are required for each TOPS/AOSS control-  
0 ler unit including any spare controller unit provided.  
0 The four attenuator pad values in the voice transmit and  
0 receive paths of the controller are headset dependent.  
0 For the Venture headset, the attenuator pads total 7 dB  
0 for both receive and transmit; i.e. one pair (coarse and  
0 fine) for the voice transmit connector and one pair for  
0 the voice receive connector. For all other headsets re-  
0 fer to NTP 298-1271-102 Trunking Transmission Guidelines  
0 for the pad value.

0 ( v) TOPS/AOSS Position Interface Circuits

0 Two trunk circuits, digital (i.e. NT6X50AA for DTC or  
0 LTC; NT6X27AA for ITOPS or NT2X35AB for DCM) or analog  
0 (NT2X72AA) are required for each TOPS/AOSS position (with  
0 the exception of the Force Management position which re-  
0 quires only one trunk circuit). The Telco shall decide  
0 whether to order digital or analog trunks.

0 ( vi) TOPS/AOSS TTY Interface Circuits

0 One trunk circuit, digital (i.e. NT6X50AA for DTC or LTC;  
0 NT6X27AA for ITOPS or NT2X35AB for DCM) or analog  
0 (NT2X72AA) is required for each TOPS TTY (with the excep-  
0 tion of the SNAC TTY which requires one I/O port appear-  
0 ance instead). The Telco shall decide whether to order  
0 digital or analog trunks. Each trunk is connected to one  
0 digital modem. The Telco must ensure that the corre-  
0 sponding modem exists at the TTY end.

0 The Switching Network Analysis Centre (SNAC) TTY requires  
0 an I/O port interface.

0 ( vii) The following headsets are available for U.S. applica-  
0 tions as required by the customer:

0 A0319420 Omnidir headset eartip type  
0 A0319015 Omnidir headset earbud type



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0 A0319421 Omnidir noise cancelling eartip type  
0 A0319016 Omnidir nose cancelling earbud type

0 The four (4) headsets listed above for U.S. application  
0 are being reclassified and their status should be checked  
0 before ordering. The replacement headset is the  
0 Plantronics Starmate E-Plus Model MH053-1 (TEA01040).

0 The following headsets are available for Canadian appli-  
0 cations as required by the customer:

0 A0242363 Standard Headset QSR2F1  
0 A0242365 Headset e/w 10 ft cord QSR2G1  
0 A0242367 Supervisory Headset e/w 10 ft cord  
0 QSR2H1

0 (viii) The following chairs are available as required by the  
0 customer:

0 OS301/4435 Dark Orange Chair w/o Arms  
0 A0286466 Dark Orange Chair with Arms  
0 OS301/4462 Dark Emerald Chair w/o Arms  
0 OS302/4462 Dark Emerald Chair with Arms  
0 OS301/4436 Crimson Chair w/o Arms  
0 C0057911 Crimson Chair with Arms  
0 OS301/4441 Blue Chair w/o Arms  
0 OS302/4441 Blue Chair with Arms  
0 OS301/4447 Camel Chair w/o Arms  
0 A0288174 Camel Chair with Arms  
0 C0058480 Brown Chair w/o Arms  
0 C0057448 Brown Chair with Arms

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0 1.1.2 Meridian Business Services Miscellaneous

0 (a) General Description

0 Detailed below are several miscellaneous provisioning consider-  
0 ations for MBS offices.

0 (b) References

0 Chapter 3, Section 3.9 DMS Supernode and Network Subsystem

0 (c) Provisioning Considerations

0 ( i) All DMS-100 and SL-100 Canadian systems with Meridian  
0 Business Services software are to order a CS03-1315 DOC  
0 Certification Sticker which shows that offices have met  
0 Government of Canada Department of Communications CS03  
0 standards for PBX applications.

0 The CPC code for the sticker is: P0663265.

0 Only one sticker per system is to be ordered. It will go  
0 on the FSP panel of the CCC and will not obscure any ex-  
0 isting labels, logos or indicators.

0 ( ii) Offices equipped with Meridian Business Services should  
0 have a maximum of two pairs (NT3X02AA, NT3X03AA) of dig-  
0 ital modem cards per MTM, providing a maximum of eight  
0 modem circuits per MTM.

0 ( iii) Synchronizable offices equipped with MBS consoles must  
0 have the NT3X14BC Synchronizable Master Clock Counter  
0 equipped on the CCC frame. If the office is equipped  
0 with an earlier vintage NT3X14 circuit pack, it must be  
0 retrofit with a NT3X14BC when the MBS extension is ap-  
0 plied.

0 For further information, refer to Central Control Complex  
0 of DMS SuperNode and Network Subsystems, Section 3.9 of  
0 this NTP.

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0 1.1.3 Wideband Test Access

0 a) General Description

0 The Wideband Test Access (WTA) Panel will replace the use of the  
0 Main Distributing Frame (MDF) for metallic cross-connecting of  
0 test circuits (such as the Line Test Unit/Multiline Test Unit  
0 (LTU/MTU)), Metallic Test Access (MTA), and line equipment in DMS  
0 offices.

0 The WTA Panel is a cross-connect panel which will provide the me-  
0 tallic cross-connect capability for the testing of DMS wideband  
0 subscriber services such as ISDN and Datapath as well as existing  
0 voice frequency DMS-100 subscriber services. It is mandatory for  
0 the testing of ISDN and is recommended for the testing of  
0 Datapath service. The existing MDF cabling method will not be  
0 able to support the testing of these services mainly because of  
0 the transmission impairment caused by the excessive switching of-  
0 fice cabling.

0 This method of cross-connecting office wiring for the test cir-  
0 cuits, MTA, and test access cables will drastically reduce the  
0 amount of office cabling resulting from the existing MDF method.

0 This panel will mount on the Miscellaneous Equipment (MIS) Frame  
0 NT0X02AB. With the panel mounted on an MIS frame within the DMS  
0 equipment frame lineups, all the cabling to the MDF will be elim-  
0 inated and this will result in much shorter office wiring for the  
0 testing of subscriber services.

0 b) References

0 c) Provisioning Considerations:

0 ( i) The Wideband Test Access (WTA) Panel will replace the use  
0 of the Main Distributing Frame (MDF) for metallic cross-  
0 connecting of test circuits (such as the Line Test  
0 Unit/Multiline Test Unit (LTU/MTU)), Metallic Test Access  
0 (MTA), and line equipment in DMS offices.

0 The WTA Panel is a cross-connect panel which will provide  
0 the metallic cross-connect capability for the testing of  
0 DMS wideband subscriber services such as ISDN and  
0 Datapath as well as existing voice frequency DMS-100 sub-  
0 scriber services. It is mandatory for the testing of  
0 ISDN and is recommended for the testing of Datapath ser-

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0 vice. The existing MDF cabling method will not be able  
0 to support the testing of these services mainly because  
0 of the transmission impairment caused by the excessive  
0 switching office cabling.

0 This method of cross-connecting office wiring for the  
0 test circuits, MTA, and test access cables will dras-  
0 tically reduce the amount of office cabling resulting  
0 from the existing MDF method.

0 ( ii) There are two (2) versions of the WTA Panel:

0 NT7X76AA WTA Panel

0 NT7X76BA WTA Panel (Dedicated LTU/MTU)

0 NT7X76AA will allow the cross-connection of up to 30  
0 NT3X09BA MTA circuits in a matrix of three (3) horizontal  
0 NT3X09BA rows by ten (10) vertical NT3X09BA columns. This  
0 is equivalent to the cross-connection of 24 horizontal  
0 test appearances to 80 vertical appearances. The NT3X09BA  
0 card has 8 horizontals and 8 verticals.

0 NT7X76AA will allow the cross-connection of up to 30  
0 NT3X09AA MTA circuits in a matrix of three (3) horizontal  
0 NT3X09AA rows by ten (10) vertical NT3X09AA columns. This  
0 is equivalent to the cross-connection of 24 horizontal  
0 test appearances to 40 vertical appearances. The NT3X09AA  
0 card has 8 horizontals and 4 verticals.

0 NT7X76BA is similar to NT7X76AA with one exception. The  
0 first horizontal test appearance of the 24 horizontal  
0 test appearances of the NT7X76BA panel is grouped into  
0 five (5) subgroups, each with two (2) horizontal 0's and  
0 16 verticals (if NT3X09BA cards are used for cross-  
0 connection purposes) or 8 verticals (if NT3X09AA cards  
0 are used for cross-connection purposes). Each horizontal  
0 subgroup can have a dedicated LTU/MTU. Hence, up to five  
0 (5) dedicated LTU/MTUs can be connected to NT7X76BA. If  
0 NT3X09BA cards are used, each dedicated LTU/MTU will have  
0 access to 16 verticals or 8 Line Concentrating Modules  
0 (LCMs) within each horizontal subgroup 0. If NT3X09AA  
0 cards are used, each dedicated LTU/MTU will have access  
0 to 8 verticals or 4 LCMs within each horizontal subgroup  
0 0.

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- 0 (iii) The NT7X76AA WTA Panel will not be used for the dedicated  
0 LTU/MTU function.

0 The NT7X76BA WTA Panel (Dedicated LTU/MTU)  
0 will be used for the dedicated LTU/MTU function.

0 The NT7X76AA will also be used if the office requires  
0 more than one (1) (horizontal) row of WTA Panels or more  
0 than 24 horizontal test appearances.

- 0 (iv) The number of WTA Panels can be expanded horizontally (in  
0 rows) and/or vertically (in columns) in a matrix.

0 For offices without dedicated LTU/MTUs, only NT7X76AA  
0 would be required for expansion both horizontally and  
0 vertically.

0 For offices with dedicated LTU/MTUs, the first row of WTA  
0 Panels would be of the NT7X76BA type. If connection to  
0 more dedicated LTU/MTUs was required, NT7X76BA Panels  
0 would be used for the second row of WTA Panels. Other-  
0 wise, the NT7X76AA Panel should be used. Our current  
0 standard is to have dedicated LTU/MTUs on the first row  
0 of the matrix of WTA Panels (i.e. NT7X76BA) and not to  
0 have dedicated LTU/MTUs on the second and all subsequent  
0 rows of the matrix of WTA Panels (i.e. NT7X76AA).

- 0 ( v) The WTA Panel will replace the Intermediate Distribution  
0 Frame (IDF) for the testing of the universal SLC 96 sub-  
0 scriber loop carrier system which uses an AT&T test tool  
0 called Pair Gain Test Controller (PGTC).

0 The existing engineering rules for the use of the IDF  
0 should be applied to the use of the WTA Panel. For more  
0 information, see ECM-276 on subject 8X8 Metallic Test Ac-  
0 cess Circuit Pack, NT3X09BA.

- 0 ( vi) The WTA panel will mount on the Miscellaneous Equipment  
0 (MIS) Frame NT0X02AB. With the panel mounted on an MIS  
0 frame within the DMS equipment frame lineups, all the ca-  
0 bling to the MDF will be eliminated and this will result  
0 in much shorter office wiring for the testing of sub-  
0 scriber services.

0 For initial and extension offices requiring new MIS  
0 Frames, the WTA Panels should be mounted on standard  
0 shelf positions 65,51,32,18, and 04 first on the front

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0 and then on the back of the MIS Frame. Hence, up to a  
0 maximum of ten (10) WTA Panels can be equipped on one (1)  
0 MIS Frame.

0 For ease of engineering cables, the WTA Panels will be  
0 assigned from the top position down on the MIS Frame.

0 Although a Frame Supervisory Panel (FSP) is not required  
0 for the WTA Panel, an FSP can be mounted in shelf posi-  
0 tion 45 if other devices (which can mount on the MIS  
0 Frame) require an FSP. Hence, if the MIS Frame is not  
0 fully provisioned with WTA Panels, other valid hardware  
0 units can be mounted.

0 For installation on existing MIS Frames in existing of-  
0 fices, the WTA Panels can be mounted on any available  
0 shelf position of the MIS Frame, preferably the top shelf  
0 positions.

- 0 ( vii) To minimize the office wiring required for line testing,  
0 the Maintenance Trunk Modules (MTM) that are provisioned  
0 with NT3X09AA/BA cards and LTU/MTUs should be reduced to  
0 a minimum and placed in the adjacent TME/DCE Frames next  
0 to the MIS Frames containing WTA Panels.

0 The Line Concentrating Equipment Frames (LCE) and ISDN  
0 Line Concentrating Equipment Frames (LCEI) should be  
0 clustered around the MIS Frames containing WTA Panels in  
0 order to minimize the cabling to these panels.

0 Hence, the signal loss caused by office wiring should be  
0 reduced to the minimum that is possible. The signal loss  
0 should be less than one (1) db in most offices.

0 (viii) Discrimination Numbering

0 WTA Panels NT7X76AA/BA will be numbered from 000 on up  
0 (e.g. WTA 000, WTA 001, etc.).

- 0 ( ix) For offices larger than 75,000 lines and requiring more  
0 than three (3) WTA Panels, the straight forward WTA ma-  
0 trix configuration cannot be used due to the software  
0 limitation of a maximum of 32 multiples which can be  
0 datafilled for each horizontal subgroup.

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0 The way to solve this problem is to split the total num-  
0 ber of multiples into either groups of 32 (using Method  
0 1) or groups of 31 (using Method 2).

0 WTA Panel Configuration for Offices with Line Size >  
0 75,000

0 Method 1

0 Using Method 1, the multiples can be divided evenly into  
0 two (2) groups of up to 32 multiples within each group.  
0 Each WTA Panel allows the cross-connection of up to ten  
0 (10) multiples except for the fourth panel which will  
0 only have two (2) multiples. Hence, WTA Panels  
0 "B", "C", "D", and "E" will provide cross-connections for  
0 32 multiples.

0 Access to the line circuits is provided via the extended  
0 verticals of WTA Panel "A" as illustrated. Therefore, the  
0 test circuits connected to WTA Panel "A" will have access  
0 to more than 75,000 lines by using the extended vertical  
0 and horizontal connections.

0 WTA Panel Configuration for Offices with Line Size >  
0 75,000

0 Method 2

0 Using Method 2, WTA Panel "A" is connected to WTA Panel  
0 "B" in such a way as to provide for the cross-connections  
0 for the first group of 31 multiples via WTA Panels  
0 "A", "B", "C", and "D" as in a normal matrix configuration.

0 For the second group of 32 multiples via WTA Panels  
0 "F", "G", "H", and "I", the extended verticals are used.

0 Differences Between Methods 1 and 2

0 Method 1 will require one (1) more WTA Panel which is  
0 panel "E" and three (3) more NT3X09BA cards, six (6) in-  
0 stead of three (3), connected to panel "A".

0 Using Method 1, line testing involving the first and sec-  
0 ond groups of 32 multiples will be subjected to the mul-  
0 tiple cabling within the group or a maximum of 32  
0 multiple cables. Using Method 2, line testing involving  
0 the second group of 32 multiples will also involve the

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0 first group of 31 multiples or will be subjected to a  
0 maximum of 63 multiple cables.

0 Generally, Method 1 would be preferred over Method 2 due  
0 to the effect on line testing. However, Method 2 may be  
0 worth considering if an LCE expansion is done properly to  
0 reduce the effect of multiple cabling on line testing.

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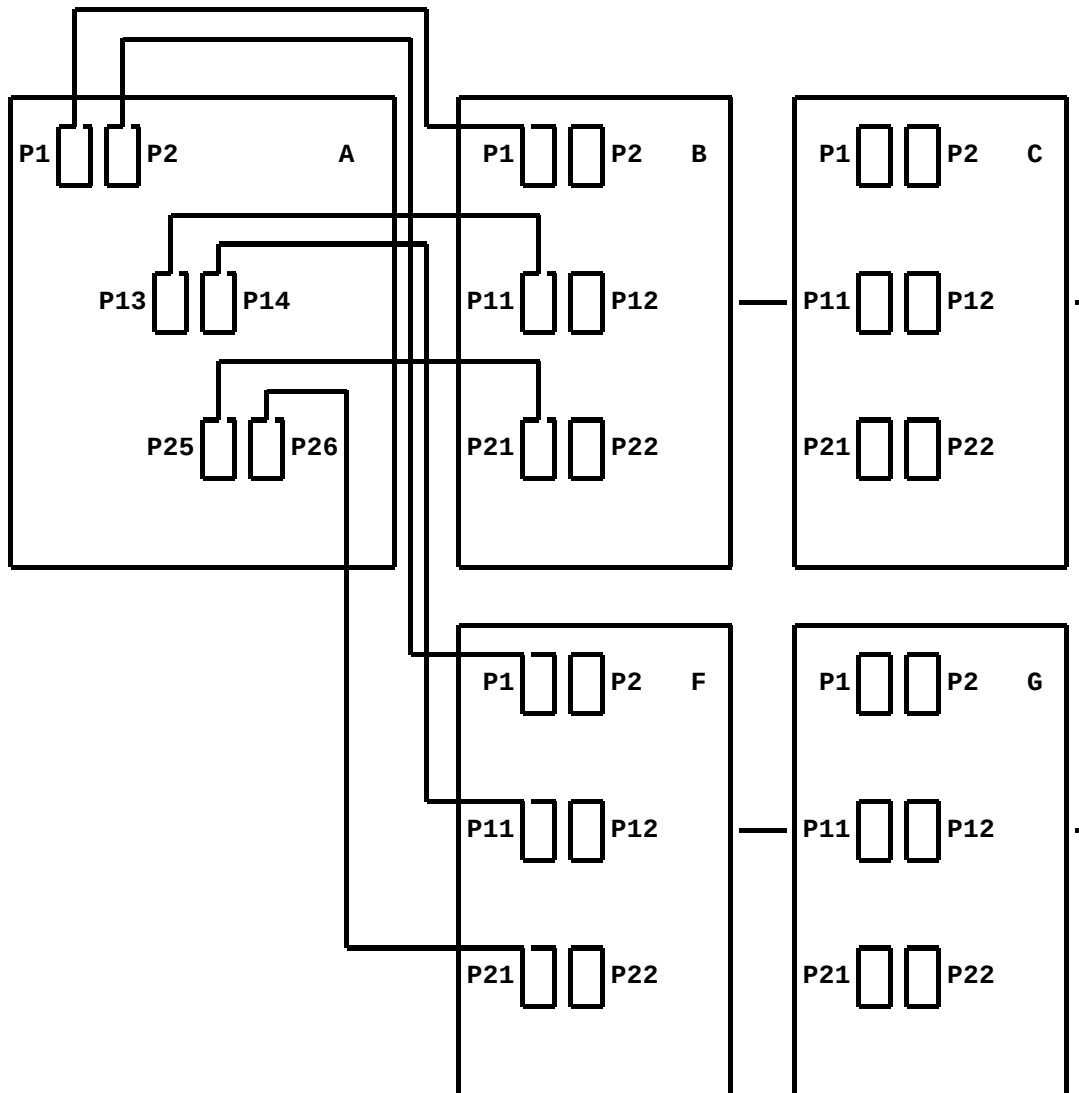
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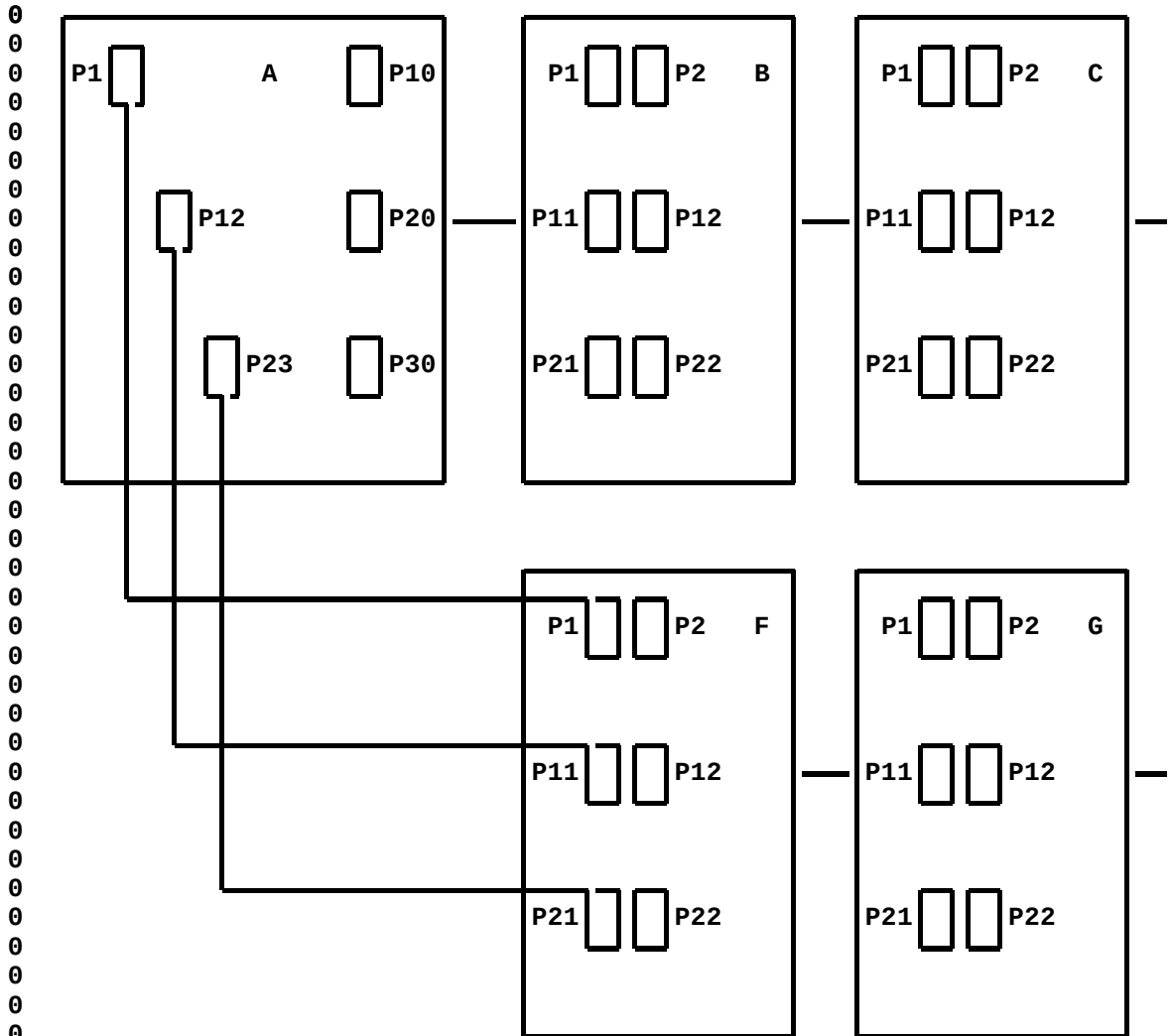
### Method 1





0 WTA Panel Configuration for Offices with Line Size >  
0 75,000

0 Method 2



0 WTA Panel D (to the right of WTA Panel C) and WTA Panels  
0 H and I (to the right of WTA Panel G) are not shown.

0

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0 1.1.4 Miscellaneous Scan Detector Card

0 a) General Description

0 Scanner circuits enable the DMS Central Control to sense the  
0 state or change of state of external equipment.

0 b) References

0 NTP 297-1001-451 DMS-100 Family Common Customer Data  
0 Schema  
0 NTP 297-2101-451 DMS-100 Local Customer Data Schema  
0 NTP 297-2181-451 DMS-100 International Customer Data  
0 Schema  
0 NTP 297-2301-451 DMS-300 Gateway Customer Data  
0 Schema  
0 Section 3.7 Office Maintenance

0 c) Provisioning Considerations:

0 ( i) Three switch selectable detector modes:

- 0 - loop detector  
0 - ground detector  
0 - battery detector

0 ( ii) Each DMS miscellaneous scan card provides fourteen scan  
0 points configured as two scan circuits known as "Scan  
0 Groups" with seven points per group. In certain applica-  
0 tions software limitations restricts a group to a spe-  
0 cific function and unused points in that group cannot be  
0 assigned to other functions.

0 ( iii) DMS supports a maximum of 1024 scan points (146 scan  
0 groups). This includes seven scan points (one scan  
0 group) associated with each standard alarm card provi-  
0 sioned:

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0 NT3X82AA  
0 NT3X82AB  
0 NT3X83AA  
0 NT3X84AA  
0 NT3X85AA

0 For more information on the Standard Alarm cards, refer  
0 to Section 3.7, Office Maintenance.

0 ( iv) Miscellaneous Scan Card is NT0X10AA. One slot per card.  
0 Mounts on MTM, OAU, RSM.

0 ( v) For alarms which require scan points, see NTP  
0 297-1001-451 DMS-100 Family Common Customer Data Schema,  
0 Section 034 Alarm Scan Group Table.

0 ( vi) For line features which require scan points, see the Scan  
0 Group Table, Section 127 in the following NTPs:

0 NTP 297-2101-451  
0 NTP 297-2141-451  
0 NTP 297-2151-451  
0 NTP 297-2181-451

0 The quantity of scan points required for line features is  
0 divided by seven (7) to determine the number of scan cir-  
0 cuits or groups required.

0 ( vii) For network management functions which require scan  
0 points, see the Network Management Scan Table, Section  
0 039 in the following NTPs:

0 NTP 297-1001-451  
0 NTP 297-2141-451  
0 NTP 297-2151-451  
0 NTP 297-2181-451  
0 NTP 297-2301-451

0 The quantity of scan points required for network manage-  
0 ment functions is divided by seven (7) to determine the  
0 number of scan circuits or groups required.

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0 (viii) Each A.P.C. ROTL unit, model 1066-ROTL/52A, comes  
0 equipped with two ROTL test ports.

0 One scan group (four points plus three dedicated spares)  
0 must be provided for each A.P.C. ROTL test port. Provide  
0 one additional scan point per ROTL unit if an alarm  
0 interface is required.

0 ( ix) For more information on the provisioning of Scan  
0 Points, refer to Section 3.7, Office Maintenance.

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0 2.0 Frame Trim

0 2.1 Introduction

0 Trim is applied to the exterior of DMS frames to protect the  
0 equipment within, and also for esthetic reasons.

0 2.2 Features

0 Exterior frame trim includes grilles, panels and doors. Blank  
0 filler faceplates fill empty slots to prevent unintentional ac-  
0 cess to circuitry on adjacent circuit packs.

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0 2.3 Equipment Provisioning

0 2.3.1 Frame Trim

0 (a) General Description

0 Basic trim items enclose the frames and provide an esthetic ap-  
0 pearance to the DMS system.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) Trim hardware consists of frame grilles, kick panels,  
0 vertical trim panels and frame doors.

0 ( ii) Door and frame trim is recommended to enhance the appear-  
0 ance of the Central Control Complex and Memory Extension  
0 frames, and to provide protection for equipment in high  
0 activity areas. Trim hardware can also be ordered for the  
0 other frames where applicable.

0 ( iii) Door and trim panels are always provided on the Power  
0 Distribution frames.

0 ( iv) Filler faceplates are provisioned to fill in unused cir-  
0 cuit pack slots.

0 ( v) Rear panels may be provided on LCE frames for esthetic  
0 purposes. They are available for U.S. applications only,  
0 are shipped loose and field installed.

0 ( vi) A Frame Supervisory Panel (FSP) Cover, part number  
0 P0673914, can be provided to protect IOE and MIS frame  
0 FSP's from foreign material. The FSP cover is placed on  
0 top of the FSP and is ventilated to allow air flow  
0 through it.

0 The FSP Cover should be provisioned for all IOE and MIS  
0 frame FSP's in all new offices. It may also be provi-  
0 sioned for existing IOE/MIS FSP's at Telco request.

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### 0 3.0 Earthquake Protection

#### 0 3.1 Introduction

0 This feature is an integral part of the frame structure which  
0 minimizes damage to the DMS from earthquake vibration. The fea-  
0 ture is proven by substantial test results providing that the  
0 structure (building) where this equipment is installed meets cer-  
0 tain requirements or is upgraded to meet these requirements. The  
0 basic design is a self support system if adequate anchoring  
0 strength can be achieved from the structure.

#### 0 3.2 Features

0 The earthquake protection methodology depends on two character-  
0 istics: the mechanical construction of the building housing the  
0 DMS equipment, and the location and layout of the equipment  
0 within the building.

##### 0 3.2.1 Building Construction

0 There are several key features of a structure designed to resist  
0 earthquake damage. The floor slab thickness, weight loading on  
0 the floor, and the presence of embedded steel bar, conduit or a  
0 raised floor are important points. Recommended ceiling height  
0 and method of anchoring the DMS frames to the floor are also con-  
0 siderations.

##### 0 3.2.2 Equipment Layout

0 The size and configuration of lineups are restricted by earth-  
0 quake protection considerations. Cable and cable racking methods  
0 are modified. The position of the equipment in the building (ie.  
0 which floor it is on) further impacts the provisioning, since up-  
0 per floors are subject to more motion than lower floors during an  
0 earthquake.

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0 3.3 Equipment Provisioning

0 3.3.1 Building Requirements

0 (a) General Description

0 Buildings or structures should meet the local building code to  
0 resist the specified seismic load.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) The portion of the building where the equipment  
0 (DMS-100F) is to be installed should meet the local  
0 building code for housing equipment.

0 ( ii) A minimum of 3000 psi concrete compression strength is  
0 required.

0 ( iii) A steel bar reinforced floor is required, and expansion  
0 anchors are recommended.

0 For ATC Seismic Zone 4, top portion of the structure and  
0 Zone 5 to Zone 7 mid to top portion of the structure, a  
0 minimum slab thickness of 5.5 inches is necessary to pro-  
0 vide the holddown strength.

0 For all other ATC Seismic Zones, a minimum slab thickness  
0 of 4.5 inches is required.

0 For metal deck structures with concrete slab on corru-  
0 gated structural steel, the range of concrete slab thick-  
0 ness is between 3-5 inches. To achieve the embedment  
0 depth of expansion anchors, the following method is re-  
0 commended:

0 - Housekeeping pad can be utilized to provide the  
0 required slab thickness for anchors. The overall  
0 size of this pad is determined by the length of  
0 lineup including exterior panels plus a border of

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0 3 inches. The thickness is dependent on the base  
0 floor thickness.

- 0 - Dowel at 12 inch spacing with a 12 x 12 grid of  
0 #4 steel bar, with the existing floor cleaned and  
0 roughened prior to casting the concrete is recom-  
0 mended. The dowels should be embedded to 2/3 of  
0 the thickness of the base slab.

- 0 ( iv) Floor loading limit for Non-Central Office installation  
0 is 100 lb/sq. ft. Limit for Central Office installation  
0 is 125 lb/sq. ft.

0 Both floor loading rates are calculated based on a floor  
0 space of 36 inches front aisle and 24 inches rear aisle.  
0 Depending on the overall static loading of the equipment  
0 and the floor space available, the above requirements  
0 could be changed accordingly.

- 0 ( v) Installation of DMS-100F on raised floor in high seismic  
0 zone is not recommended.

0 A separate structural frame to match the height of the  
0 raised floor anchored to the concrete slab should be used  
0 to mount the equipment (DMS-100F). The width of this  
0 structural frame should be larger than the DMS frames.  
0 The minimum width shall be the width of the DMS Base plus  
0 twice the height of the raised floor.

- 0 ( vi) Minimum ceiling height clearance is 10 feet and recom-  
0 mended clearance is 11 feet.

- 0 ( vii) The new NT0X25AV Common Earthquake EMIUniversal F Frame-  
0 work replaces the NT0X25AH EMI Earthquake Framework As-  
0 sembly and NT0X25AA Common Framework Assembly for  
0 Canadian applications.

- 0 (viii) NT0X25AH EMI Earthquake Framework Assembly and NT0X25AJ  
0 Earthquake Protection Mechanical Frame are required ac-  
0 cording to the provisioning table below:

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0 For all equipment except LCE frames:  
0

| Bellcore<br>Zone | ATC<br>Zone | Portion of Building Equipment is Installed |             |             |
|------------------|-------------|--------------------------------------------|-------------|-------------|
|                  |             | Ground Level                               | Mid-Section | Top Section |
| 4                | 6, 7        | E                                          | M           | M           |
| 3                | 4, 5        | E                                          | E           | M           |
| 2                | 3           | S                                          | E           | E           |
| 0, 1             | 1, 2        | S                                          | S           | S           |

0 E - NT0X25AH EMI Earthquake Framework Assembly is  
0 required. Minimum lineup is three frames,  
0 and maximum lineup is eight frames.

0 M - NT0X25AJ Earthquake Protection Mechanical  
0 Frame is required with NT0X25AH Framework As-  
0 sembly for equipment. Maximum lineup is  
0 seven frames: six NT0X25AH (three on each  
0 side of NT0X25AJ) and one NT0X25AJ.

0 S - NT0X25AA Common Framework Assembly is re-  
0 quired. No lineup restrictions.

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| Bellcore Zone | ATC Zone | Ground Section            | Mid-Section                                  | Top Section                                  |
|---------------|----------|---------------------------|----------------------------------------------|----------------------------------------------|
| 4             | 6,7      | M12 (6) per NT0X25AH      | M16 (6) per NT0X25AJ<br>M12 (6) per NT0X25AH | M16 (8) per NT0X25AJ<br>M12 (6) per NT0X25AH |
| 3             | 4,5      | M12 (6) per NT0X25AH      | M12 (6) per NT0X25AH                         | M16 (6) per NT0X25AJ<br>M12 (6) per NT0X25AH |
| 2             | 3        | 3/8" HKD (4) per NT0X25AA | M12 (4) per NT0X25AH                         | M12 (6) per NT0X25AH                         |
| 0,1           | 1,2      | 3/8" HKD (4) per NT0X25AA | 3/8" HKD (4) per NT0X25AA                    | 3/8" HKD (4) per NT0X25AA                    |

The anchor kit is composed of:

- 1) stud
- 2) cylindrical sleeve
- 3) plastic sleeve
- 4) expansion sleeve
- 5) plug
- 6) washer
- 7) plastic bushing
- 8) load indicating washer
- 9) plain washer

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In the event that the floor where the equipment is to be installed has an additional layer of non-structural material, such as tiles, etc., on top of the structural slab, the specified anchor embedment has to be increased by the amount of this extra thickness of non-structural material. Longer anchor sleeve and stud have to be ordered as special items for such installation and the hole depth has to be specified for the installation group, if the additional layer is more than 10mm (.39 inches). It is the responsibility of the customer to inform NT Building Studies the thickness of this non-structural layer.

The specification of the anchors for use in installation without non-structural layer of more than 10mm (.39 inches) are:

| Anchor Size | Sleeve Length<br>MM(in.)<br>(A) | Stud Length<br>MM(in.)<br>(B) | Recom'd Hole Depth<br>MM(in.)<br>(C) | *<br>Min. Hole Depth | Sleeve Length above floor after setting the anchor (D)<br>MM (in.) | Torque   |
|-------------|---------------------------------|-------------------------------|--------------------------------------|----------------------|--------------------------------------------------------------------|----------|
| M16         | 44(1.7)                         | 178(7.0)                      | 120(4.7)                             | 89(3.5)              | 10(.39)                                                            | 90 ft-lb |
| M12         | 38(1.5)                         | 150(5.9)                      | 95(3.7)                              | 64(2.5)              | 10(.39)                                                            | 58 ft-lb |
| 3/8" HDK    | -                               | -                             | 40(1.56)                             | -                    | -                                                                  | 16 ft-lb |

Table 38.1

\* Only allowed for 10 percent of the holes.

(Setting torque to be 80% of the torque required)



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0 Build-up of leveling shims (isolators) should not  
0 be more than 25 mm (1.00 inch) thick. The floor  
0 flatness within the lineup should not exceed 25 mm  
0 (1.00 inch).

0 The NT Building Study department is to specify the  
0 following for anchor parts ordering and installa-  
0 tion instruction:

- 0 - sleeve length (A)
- 0 - stud length (B)
- 0 - hole depth (C)
- 0 - location, size and quantity of anchors to be in-  
0 stalled
- 0 - sleeve length above floor after setting the an-  
0 chor (D)

0 For Earthquake Protection Mechanical Frame  
0 (NT0X25AJ), a quantity of 6 or 8 washers (P0661219)  
0 is required depending on the number of anchors pro-  
0 visioned. For framework assembly, (NT0X25AH), 4  
0 corner washers (P0660647) and 2 mid-washers  
0 (P0660646) are required.

0 All corner anchors are critical; they must be in-  
0 stalled. In case of the Earthquake Protection Me-  
0 chanical Frame (NT0X25AJ), all six anchors are  
0 critical.

0 Only twenty percent of the non-critical anchors per  
0 lineup is allowed to be left out for ATC Zones  
0 4,5,6 and 7 top floor application, while forty per-  
0 cent of the non-critical anchors per lineup is al-  
0 lowed to be left out for the remaining ATC zones  
0 and floor section.

0 The holes next to the corner holes on the base  
0 should be utilized if a reinforcement steel bar is  
0 encountered when drilling holes for the corner an-  
0 chors. The unused drilled holes, as a result of  
0 hitting reinforcement steel bars, should be patched  
0 up by using either epoxy or non-shrink type of  
0 grout material.

0 The rectangular washer should be sitting close to  
0 the inside edges of the base. There are two types  
0 of rectangular washers, one for the corner holes,

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0 one for the middle holes. They have to be ordered  
0 on a per job basis.

0 A minimum of 2-1/2 threads above the nut after  
0 torquing is required.

- 0 ( xi) When the concrete slab is not thick enough to allow in-  
0 stallation of expansion anchors, and housekeeping pad is  
0 not a viable solution, through bolts should be utilized.  
0 This method requires access to the ceiling of the next  
0 floor below. An approval for access to the ceiling of  
0 the next floor below should be obtained from the cus-  
0 tomer.

0 A combination of washers, nuts, threaded rods and  
0 bushings is required.

| 0 | Item # | Part #   | Description            | Qty/Frame |
|---|--------|----------|------------------------|-----------|
| 0 | 1      | P0660644 | Threaded rod (M12)     | 4         |
| 0 | 2      | P0660641 | Nut                    | 8         |
| 0 | 3      | P0660638 | Washer                 | 12        |
| 0 | 4      | P0649172 | Bushing                | 4         |
| 0 | 5      | P0660647 | Rectangular Washer     | 8         |
| 0 | 6      | P0660635 | Load Indicating Washer | 4         |

0 The length of the threaded rod has to be specified  
0 by the NT Building Studies engineer for the job.

0 Only four corner bolts are required per frame. The  
0 minimum torque is 30 ft-lbs. A minimum of 2-1/2  
0 threads above the nut after torquing is required.

- 0 ( xii) Provide one isolation kit (NT0X21AK) per frame.

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0 3.3.2 Floor Plan Layout

0 (a) General Description

0 DMS equipment layout considerations are modified when earthquake  
0 protection is required.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) The maximum lineup length should not exceed 8 frames. The  
0 minimum lineup is 3 frames. Whenever an Earthquake Pro-  
0 tection Mechanical Frame (NT0X25AJ) is required, the  
0 lineup length is restricted to a maximum of 7 frames in-  
0 cluding the Earthquake Protection Mechanical Frame  
0 (NT0X25AJ). For lineups of more than 3 equipment frames  
0 and when an Earthquake Protection Mechanical Frame  
0 (NT0X25AJ) is required, the fourth equipment frame and  
0 the subsequent frames should be on the other side of the  
0 Earthquake Protection Mechanical Frame (NT0X25AJ).

0 ( ii) Gaps of 8" minimum are required between lineups in the  
0 longitudinal (side-to-side) direction. This gap should  
0 be the space between the end guards, or the shortest dis-  
0 tance between components on the end panels.

0 ( iii) DMS-100F should be at least one foot from any walls, col-  
0 umns or parts of the building such as pipes and ducts.

0 ( iv) Any foreign equipment which is not earthquake braced  
0 should be the foreign equipment height plus one foot min-  
0 imum away from DMS-100F.

0 ( v) Cables entering or leaving an equipment row must be given  
0 a minimum of 6 inches of slack to allow for relative  
0 motions between equipment rows, and a minimum of 12  
0 inches of slack to allow for relative motions between a  
0 row and foreign cable securement (e.g. pickup cable racks  
0 which are secured to the ceiling). The slack must be  
0 situated at the entry and exit points wherever there will  
0 be a change of relative motion. It is not necessary to  
0 add 12" every time a DF cable crosses a row if it does  
0 not enter that row and is, hence, independent from it.

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0 ( vi) Provisionable frames should be loaded from the bottom up  
0 to keep the centre of gravity low.

0 ( vii) The frames are junctioned by six bolts; three along the  
0 top and three along the bottom. In the case of an EMI  
0 office, an EMI gasket is required at each junction. The  
0 torque required is 180 in-lbs (15 ft-lbs).

0 (viii) Shipping plates (8) are required to tie the adjacent up-  
0 rights together. Four shipping plates on the front and  
0 four at the rear of each adjacent frame. They should be  
0 evenly distributed along the upright. Six screws are re-  
0 quired for each plate.

0 ( ix) The quantity of Junctioning Kits depends on the lineup.  
0 It is the number of frames per lineup less one.

0 Code Description

0 NT0X21AX Junctioning Kit

0 ( x) If flexible MCM cable is used, strain relief on both ends  
0 (exit and entry) is required.

0 ( xi) Methods recommended in ED1241-73 for cable rack should be  
0 applied.

0 ( xii) Floor level is defined as follows:

0 Top Floor = Top 45% of the total floors.  
0 Section

0 Mid-Height = The floors below the top  
0 Section section, comprised of 25% of  
0 the total number of floors.

0 Ground Floor = Remaining stories.  
0 (Lower Height  
0 Section)

0 Note: Basement is considered as a floor.

0 For a two storey building, the second floor is top floor  
0 and the first floor is ground floor.

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0 (xiii) Flexible conduit (R0044581, 3/4 inch) with a 4 inch slack  
0 should be specified for housing AC wiring. Flexible metal  
0 conduit connector (C0011730, T[B] #255) should be used  
0 for terminating flexible conduit at the square "D" ducts  
0 and gang boxes.

0 (xiv) A Frame Door must be provided for the PDC frame. Doors  
0 for the remaining frames, the end guard and trim panel  
0 assemblies are optional. Applicable PECs are:

0 NT0X21AB Frame Door  
0 NT0X73AA End Guard Assembly  
0 NT0X72AA Trim Panel Assembly

0 (xv) The following equipment should be provided as indicated:

0 NT0X21AH Frame Leveling  
0 - provide 1 per frame  
0 NT0X21AJ Frame Junctoring  
0 - provide 1 per frame join  
0 NT0X21AK Frame Isolation  
0 - provide 1 per frame  
0 NT0X21AL Frame Door Installation  
0 - provide 1 per door  
0 NT0X21AM End Guard Installation  
0 - provide 1 per NT0X73AA  
0 NT0X21AP Trim Panel Installation  
0 - provide 1 per NT0X72AA

0 (xvi) In the case of PDC to power plant cables which are  
0 normally 750 MCM, do not add slack since the cable is too  
0 large and stiff to be affected by the relative motions.  
0 When the PDC is housed in an earthquake frame (NT0X25AH),  
0 these cables must enter from the top of the frame since  
0 the base of the NT0X25AH is solid. It is strongly recom-  
0 mended that no holes be cut in the bottom of the frame as  
0 this would adversely affect the seismic performance of  
0 the frame.

0 For raised floor applications in non-earthquake regions,  
0 it is permissible for the PDC cables to enter from the  
0 bottom, but due to the large bend radius required for  
0 these cables, it is recommended that they enter from the  
0 top.

0 (xvii) The following provisioning table lists the proposed meth-  
0 ods for bracing packaged systems and indicates the seis-

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0 mic zones and buildings in which they may be used. The  
0 following sections outline the specific ordering informa-  
0 tion for two of the bracing methods - side post bracing  
0 and overhead bracing.

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0 Provisioning Table

0 A = Side post bracing  
0 B = Overhead bracing  
0 C = Bracing to structural column,  
0 maximum lineup of three frames  
0 D = Bracing to structural wall,  
0 maximum lineup of three frames  
0 E = Mechanical frame  
0 F(N) = No bracing required with M16 anchors  
0 G(N) = No bracing required with M10 anchors  
0 N = Quantity of anchors per frame  
0 H = No bracing required with M12 (1/2")  
0 through bolt for slab on metal deck,  
0 four per frame

| 0 ATC     | Ground                       | Mid                       | Top                       |
|-----------|------------------------------|---------------------------|---------------------------|
| 0 Zone    | Floor                        | Height                    | Floor                     |
| 0 5, 6, 7 | F (6),<br>0 A, B, C, D, E, H | A, B, C, D, E             | A, B, C, D, E             |
| 0 3, 4    | F (4), G (6)<br>0 H          | F (6)<br>A, B, C, D, E, H | F (6)<br>A, B, C, D, E, H |
| 0 1/2     | G (4)<br>0 H                 | G (4)<br>H                | G (4)<br>H                |

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0 Definition of Floor Level

0 Top Floor = Number of stories x 45% (rounded off to  
0 the nearest one floor down).

0 Mid-Height = Number of stories x 25% (rounded off to  
0 the nearest one floor down).

0 Ground Floor = Remaining stories.

0 Note: Basement is considered as a floor.

0 For a two storey building, the second floor is top  
0 floor and the first floor is ground floor.

0 (xviii) For all the above earthquake protection methods other  
0 than the mechanical frame method, any four anchor lo-  
0 cations are permitted.

0 ( xix) For structures with thin concrete slab on metal deck,  
0 through bolts (M12 or 1/2") have to be used in place of  
0 the anchors called out. Four bolts per frame are re-  
0 quired regardless of the number of anchors specified.

0 ( xx) Side post bracing, consisting of one post which is an-  
0 chored to the floor and the ceiling, is required at each  
0 end of a lineup. Two channels are required along the top  
0 of the frames. The individual frames are anchored to the  
0 floor or bolted to the raised floor. Following are the  
0 applicable PECs:

0 - NT0X21BF 8 Inch Side Post Assembly

0 Includes 2 complete side post assemblies. Pro-  
0 vide one per lineup up to 8 frames. For ceiling  
0 height of 11'-0" or less.

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0 - NT0X21BG 4 Inch Side Post Assembly

0 Includes 2 complete side post assemblies. Pro-  
0 vide one per lineup up to 4 frames. May be used  
0 rather than NT0X21BF for short lineup. For ceil-  
0 ing height of 11'-0" or less.

0 - NT0X21BH 8 Inch Side Post Extension  
0 Assembly

0 Provide in addition to NT0X21BF for use with  
0 ceiling height of 11'-0" to 16'-0".

0 - NT0X21BA E/Q Bracing Channel Assembly  
0 (2 frames)

0 Includes a pair of channels to tie together 2  
0 frames.

0 - NT0X21BB E/Q Bracing Channel Assembly  
0 (3 frames)

0 Includes a pair of channels to tie together 3  
0 frames.

0 - NT0X21BC E/Q Bracing Channel Assembly  
0 (4 frames)

0 Includes a pair of channels to tie together 4  
0 frames.

0 - NT0X21BD Channel Splicing Assembly

0 For frame lineups exceeding 4 frames, provide  
0 some combination of NT0X21BA, NT0X21BB and  
0 NT0X21BC joined together with channel splicing  
0 assembly NT0X21BD.

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0 - NT0X21AU Frame Anchor (M10)

0 Provide 4 per frame. Any 4 anchoring locations  
0 are permitted.

0 - P0669646 Washer

0 Provide 1 per anchor.

0 - NT0X21AX Junction Kit

0 Provide 1 per frame junction.

0 ( xxi) Overhead Bracing may be used for a ceiling height of less  
0 than 5 feet from the top of the frames. It is recom-  
0 mended for short lineups with no anticipated future ex-  
0 pansion. Angle steel is used to brace the frame to the  
0 ceiling in the longitudinal and transverse directions.

0 The quantity of braces required is as follows:

| 0 | Number of | Number of           | Number of         |
|---|-----------|---------------------|-------------------|
| 0 | Frames    | Longitudinal Braces | Transverse Braces |
| 0 | 1         | 2                   | 2                 |
| 0 | 2         | 2                   | 2                 |
| 0 | 3         | 2                   | 2                 |
| 0 | 4         | 4                   | 3                 |
| 0 | 5         | 4                   | 4                 |
| 0 | 6         | 4                   | 4                 |
| 0 | 7         | 4                   | 4                 |
| 0 | 8         | 6                   | 4                 |

0 Frame channels, anchors and junctoring are provided in  
0 the same way as with side post bracing.

0 - NT0X21BE E/Q Overhead Brace Assembly

0 Includes one angle brace plus associated hard-  
0 ware. Provide one per transverse or longitudi-  
0 nal bracing point.

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0 4.0 Frame Lighting

0 4.1 Introduction

0 Lighting units can be attached to the DMS frames to illuminate  
0 equipment aisles, as an alternative or supplement to building  
0 lighting.

0 4.2 Features

0 Lighting is provided by fluorescent lamp fixtures.

0 4.3 Equipment Provisioning

0 4.3.1 Frame Lighting

0 (a) General Description

0 Standard lighting in the DMS area will be provided by frame-  
0 mounted modular units. One unit will be fastened on each side of  
0 each frame (at the top) and will contain two (2) 15 Watt lamps.  
0 Low intensity lighting, which involves the operation of only the  
0 first units at the end of each line-up, will also serve the emer-  
0 gency lighting requirements.

0 Northern Telecom is evolving to a new preferred method for pro-  
0 viding AC power within the DMS switch. The Commercial AC Free  
0 option utilizes the Center Aisle Lighting concept by placing the  
0 lights off the DMS framework and onto the Integrated Ground  
0 Plane. These lights are isolated from the DMS framework and ref-  
0 erenced to the Integrated Collector Bus (ICB). These lights will  
0 be powered by commercial AC and controlled by low voltage relays  
0 with the switches located in the new end guards introduced in  
0 this document.

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0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) One unit is fastened on the side of the frame at the top  
0 on all the frame lineups throughout the system.

0 ( ii) Feeds will be from both commercial and protected AC  
0 throughout the office. All units feature isolated  
0 ground. Product Change Kits are available to apply AC  
0 ground isolation in the field upon customer request.

0 ( iii) Product change kits to add positive-locking connectors to  
0 light fixture assemblies may be applied at the request of  
0 NT Marketing.

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0 5.0 End Guards

0 5.1 Introduction

0 5.2 Features

0 None.

0 5.3 Equipment Provisioning

0 5.3.1 End Guards

0 (a) General Description

0 End guards are vertical metal panels which cap the end of a frame  
0 lineup for aesthetic purposes, and which provide a place to mount  
0 utility power receptacles.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) AC outlets can be ordered. One dual AC utility outlet is  
0 to be located at the aisle end guards at both ends of a  
0 line-up fed from commercial AC. The exact number can  
0 only be determined after completion and approval of the  
0 floor plan.

0 ( ii) Product Change Kits are available to apply AC ground iso-  
0 lation in the field, as per customer request.

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0 FRAME END GUARD ASSEMBLIES

## 0 EXISTING

## REPLACED BY

## 0 PEC

## DESCRIPTION

## PEC

## DESCRIPTION

0 NT0X73AA

0 FRAME END GUARD  
0 ASSEMBLY (91.2  
0 inches)

0 NT0X73DA

0 FRAME END GUARD  
0 ASSEMBLY (91.2  
0 inches) ISOLATED  
0 GROUND

0 NT0X73AB

0 FRAME END GUARD  
0 ASSEMBLY (81.0  
0 inches)

0 NT0X73DB

0 FRAME END GUARD  
0 ASSEMBLY (81.0  
0 inches) ISOLATED  
0 GROUND

0 NT0X73AD

0 FRAME END GUARD  
0 ASSEMBLY (88.2  
0 inches) DMS-250

0 NT0X73DD

0 FRAME END GUARD  
0 ASSEMBLY (88.2  
0 inches) DMS-250 ISO-  
0 LATED GROUND0 (The above PECs are standard  
0 product and may be ordered  
0 if required)0 ( iii) Provide the new NT0X07UX and NT0X07UY AC Free Endguard  
0 Assemblies when the AC Free option is to be applied to a  
0 DMS office.

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## 0 6.0 Frame Appliance Outlets

0 6.1 Introduction

0 Utility AC power outlets can be provided on the DMS frame lineups  
0 to provide convenient access for powering portable equipment.

0 6.2 Features

0 Different frame doors and lighting are required when these are  
0 provided in conjunction with frame appliance outlets.

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0 6.3 Equipment Provisioning

0 6.3.1 Frame Appliance Outlets

0 (a) General Description

0 Frame appliance outlets provide AC power; they are located at the  
0 base of DMS frames.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) Order one Frame Appliance Outlet (NT0X07AA) for each bay  
0 that requires a duplex AC receptacle mounted on the bot-  
0 tom front and rear of the bay.

0 ( ii) Order one 3 Inch Grille (NT0X08AJ) per bay requiring AC  
0 outlets.

0 ( iii) A Two Foot Left Hand Powered One Tube Light Fixture As-  
0 sembly (NT0X49AD) and a Two Foot Right Hand Powered One  
0 Tube Light Fixture Assembly (NT0X49AE) must be used when  
0 providing AC at the base of the frame. The normal four  
0 foot light fixtures do not provide the necessary power  
0 distribution function.

0 ( iv) If required, one Rear Frame Door for Bay with AC Outlets  
0 (NT0X71AD) is provided per bay.

0 ( v) If required, one Front Frame Door for Bay with AC Outlets  
0 (NT0X71AE) is provided per bay. Front doors are normally  
0 provided on miscellaneous equipment (MIS) frames only.

0 ( vi) In an office with earthquake protection, the Rear Frame  
0 Door for Bay with AC Outlets (NT0X21AE) may be provided  
0 if required.

0 ( vii) The appliance outlet option can only be implemented into  
0 an initial office, or added into an extension office in  
0 which this option already exists. It is not feasible to



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0 add this option into an extension office which does not  
0 already have it.

0 (viii) This option can be applied on every bay, every second  
0 bay, every third bay, etc. (if required, normally pro-  
0 vided on every third bay).

0 ( ix) This option cannot be applied on the Power Distribution  
0 Centre Frame (PDC) or the Maintenance Spare Storage (MSS)  
0 Frame.

0 ( x) Product Change Kits are available to apply the AC ground  
0 isolation feature to appliance outlets in the field, upon  
0 customer request.

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0 7.0 Electrostatic Discharge (ESD) Protection

0 7.1 Introduction

0 Static electricity charges accumulate on the shoes and clothing  
0 of maintenance personnel. These can discharge to ground whenever  
0 electrical equipment is touched or handled. Equipment malfunction  
0 and even damage can result from these electrostatic discharges  
0 (ESD). Thus, maintenance personnel are equipped with devices to  
0 reduce the build-up of static charges by safely dissipating them  
0 to ground.

0 7.2 Features

0 Electrically conductive floor mats and wrist straps are used to  
0 protect DMS equipment from ESD.

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0 7.3 Equipment Provisioning

0 7.3.1 ESD Mats

0 (a) General Description

0 ESD Mats conduct electric charges which have accumulated on main-  
0 tenance personnel away from the DMS equipment.

0 (b) References

0 NTP 297-1001-010 Electrostatic Discharge  
0 Protection

0 (c) Provisioning Considerations

0 ( i) Two mats will be supplied for each DMS-100 Family instal-  
0 lation site. Installers are to place one mat permanently  
0 in front of the Central Control Complex since this area  
0 receives the highest traffic activity. The second mat is  
0 to be moved around with the work as installation  
0 progresses.

0 ( ii) One mat will be supplied for each RLM site. This mat is  
0 meant to be moved around as required.

0 ( iii) All mats are to be grounded by plugging their ground  
0 cords into receptacles marked "Battery Return" on the DMS  
0 frames.

0 ( iv) On "K" date, these mats will be turned over to the tele-  
0 phone company.

0 ( v) Patlon ESD products will replace ESD protective equipment  
0 currently ordered from Charleswater Inc.

0 Charleswater and Patlon ESD products may be used concur-  
0 rently in a office, however, the ground leads and snaps  
0 are not interchangeable. Therefore when extending an of-  
0 fice equipped with Charleswater Mats provide Mats and  
0 Ground Leads from Patlon as required.

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0 7.3.2 ESD Wrist Straps0 (a) General Description

0 The ESD Wrist Strap conducts static electricity charges away from  
0 the body to a ground point. It reduces the possibility of  
0 fingertip discharges which may damage sensitive equipment.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) It is recommended that ESD wrist straps be used for added  
0 protection along with ESD mats.

0 ( ii) Wrist straps are to be grounded by plugging their ground  
0 cords into the "banana plug" receptacle on the FSP.

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0 8.0 Electromagnetic Interference (EMI)

0 8.1 Introduction

0 The Federal Communications Commission (FCC) in the United States  
0 has adopted regulations intended to control the interference  
0 caused by digital electronic equipment to radio communications.  
0 The regulations deal with:

- 0 1. Radiation Limits - the maximum allowable field strength of  
0 energy radiated from an affected product and its associated  
0 equipment and cabling.
- 0 2. Conducted Emission Limits - the maximum allowable voltage  
0 fed back to utility power lines.
- 0 3. Labelling requirements for the products affected.
- 0 4. Instruction manual requirements for the products affected.

0 Requirements for EMI compliance differ depending upon the in-  
0 tended location of use.

0 After October 1, 1983 any DMS-100 Family switch manufactured for  
0 the U.S.A. market and operated by other than a telephone company  
0 (i.e. PBX, SL-100 configuration) must be tested and found  
0 compliant with FCC regulations (i.e. must have the EMI option).

0 Apart from the mandatory compliance noted above, the EMI option  
0 is generally available to all our customers.

0 8.2 Features

0 Metal shielding hardware is included with the DMS frames to en-  
0 close them and make them compliant with EMI regulatory require-  
0 ments.

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0 8.3 Equipment Provisioning

0 8.3.1 EMI Equipment Option

0 (a) General Description

0 The EMI option consists of metal panels, hardware and filtered  
0 connectors which reduce EMI emissions from DMS equipment.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) A bay with the EMI option does not need frame door or  
0 frame trim panels. Filler face plates and appropriate  
0 filler panels are still required.

0 ( ii) Each frame lineup requires one bay to be equipped with  
0 'straight' hardware. This 'straight' hardware will be  
0 equipped on the first bay of a frame lineup. All subse-  
0 quent bays of a frame lineup will be equipped with 'regu-  
0 lar' hardware.

0 ( iii) If there is a break within a lineup (ie. a column or the  
0 start of a new lineup), the 'straight' hardware must  
0 again be equipped on the first bay.

0 ( iv) If the first frame in a lineup is a Power Distribution  
0 Centre (PDC) frame, then the next bay must have  
0 'straight' hardware. All subsequent bays of a continuous  
0 frame lineup will be equipped with 'regular' hardware.

0 ( v) If an extension is applied to an existing DMS office  
0 which currently does not have the EMI option but will now  
0 have it, only the additional hardware will have the EMI  
0 option. This EMI compliant hardware will have to be pow-  
0 ered by an EMI compliant PDC frame. The EMI compliant  
0 PDC frame must not power non-compliant frames.

0 ( vi) The EMI compliant frames must be grouped separately from  
0 the non-compliant frames in order to preserve the integ-

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0 rity of the EMI shield. Hence an EMI compliant frame  
0 cannot be inserted into a gap in a non-compliant lineup.

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## 0 9.0 Documentation

0 9.1 Introduction

0 Packages of documentation are provided to the DMS Office to de-  
0 tail system functions, features, structure and configuration.

0 9.2 Features

0 Two packages of documents are normally provided with a job. The  
0 Standard Customer Package contains technical information about  
0 the DMS hardware and software, including general provisioning and  
0 assignment rules used in engineering the office. The Job Related  
0 Customer Package contains specific information on the individual  
0 hardware and software items provided for a given office.

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0 9.3 Equipment Provisioning

0 9.3.1 Documentation

0 (a) General Description

0 Documentation is supplied automatically on a per job basis.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) The Standard Customer Package is sent to the site. A copy  
0 is also sent to the telephone company head office only if  
0 it is the first job for that Telco. Updates for this  
0 package are sent to the Telco head office on an automatic  
0 basis without charge if a switch or extension has been  
0 ordered within the past year. It contains the following:

- 0 - General Specification (GS) - contains a de-  
0 scription of hardware functions and features
- 0 - Module Structure List (MS) - a list, including  
0 engineering rules, of the hardware products  
0 which can be configured to make up the system
- 0 - Northern Telecom Practice (NTP) - Descriptive  
0 information about DMS products at the system and  
0 sub-system levels, including hardware and soft-  
0 ware. Also included are detailed Performance  
0 Oriented Practices (POP) for testing and main-  
0 taining the system. Included in the practices  
0 will be information equivalent to Input/Output  
0 Manuals, Data Dictionary and Translation Guide.
- 0 - System Index (SI) - a list of key equipment  
0 structures and provisionin information at the  
0 system level only, and a list of all marketable  
0 products comprising this system.
- 0 - Equipment View (EV) - A simple drawing showing  
0 front and rear views of the equipment.

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0 - Intraconnect Schematics (IS) - Block diagrams of  
0 subsystem, frame configuration and the  
0 connectivity between them.

0 - Cabling Assignments (CA) - Tables that list ca-  
0 bles between subsystems, their assignments and  
0 rules for provisioning.

0 ( ii) The Job Related Customer Package is sent to the site plus  
0 the telephone company head office. It contains the fol-  
0 lowing:

0 - Document Index (DI) - An index of documents and  
0 their issues which are included in this package

0 - Office Release Record (ORR) - A record of re-  
0 lease for all products which are supplied in  
0 this office. It lists frames, shelves, panels,  
0 circuit packs and software modules.

0 - Office Software Summary (OSS) - A short de-  
0 scription on each Protel software subsystem in a  
0 particular office.

0 - Job Specifications - The detailed specification  
0 for the office, against which it was manufac-  
0 tured.

0 - Office Records, Floorplan(s), DF Assignments,  
0 etc. - Common Systems Drawings (as required)  
0 which depict equipment which is not part of the  
0 DMS machine but is part of the overall system.

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0 10.0 Line Card Storage Chassis

0 10.1 Introduction

0 The Line Card Storage Chassis for the New Peripheral Line Cards  
0 stores line cards and Bus Interface Cards.

0 10.2 Features

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0 10.3 Equipment Provisioning

0 10.3.1 Line Card Storage Chassis

0 (a) General Description

0 The unit provides a chassis for storage of spare line cards and  
0 Bus Interface cards (used on new peripheral line drawers).

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) The line card storage capacity in one extreme is 30  
0 single slot line cards and the other extreme is 10 double  
0 slot line and 10 single slot line cards.

0 ( ii) For the capacities in between use 10 single line cards  
0 and each double slot line card can be replaced by two (2)  
0 single slot line cards.

0 ( iii) In addition to the line cards, the storage chassis will  
0 also store one (1) Bus I/F Card.

0 ( iv) Four (4) Line Card Storage Chassis and 3 single slot  
0 cards may be placed on one (1) shelf in the MSS frame.  
0 Six (6) Line Card Storage Chassis may be placed on one  
0 (1) shelf in the Miscellaneous Storage Cabinet (MSC)  
0 (U.S. only).

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0 11.0 Miscellaneous Equipment

0 11.1 Introduction

0 This section describes some miscellaneous DMS equipment, common  
0 systems and other hardware required in the host office. The mis-  
0 cellaneous equipment is not related to maintenance. It can be  
0 mounted on an NT frame or can stand alone. Maintenance equipment  
0 is covered in Section 3.7.

0 The Miscellaneous Equipment Frame (MIS) is a general purpose  
0 equipment frame which is intended to accomodate miscellaneous  
0 DMS, common systems and other hardware required in the host of-  
0 fice. Remote Service Equipment (RSE)/Remote Miscellaneous Equip-  
0 ment (RME) frames are intended for use in remote offices.

0 11.2 Features

0 Multi-fuse Frame Supervisory Panel (FSP) and grounding hardware  
0 is orderable to provide full flexibility in the use of the MIS  
0 frame.

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0 11.3 Equipment Provisioning

0 11.3.1 Dial-Up Autoquote Modem Equipment

0 (a) General Description

0 Stand-alone modems are used for the Dial-Up Autoquote (DUAQ) fea-  
0 ture. Provisioning considerations for equipment on the MIS frame  
0 which is associated with these modems follows.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) A total of three (3) UDS 108 modems can be placed on an  
0 NT3X25AA Common Equipment Shelf (CES).

0 ( ii) The UDS 108 modem requires AC power for operation. The  
0 NT0X87AA DC/AC Inverter supplies this AC power and is ca-  
0 bled to an AC input on the CES. Four (4) AC receptacles  
0 are available as power sources on the CES; three (3) for  
0 the modems and one (1) as a power multiple to another  
0 CES. Up to six (6) CES can be multiplied and powered from  
0 one (1) DC/AC Inverter when UDS 108 modems are used. Pro-  
0 vide one (1) DC/AC inverter for every six (6) CES re-  
0 quired.

0 ( iii) The NT3X25BA Terminal Strip Assembly must be mounted in  
0 the MIS frame where the modems are located. It is re-  
0 quired to provide a cross-connect facility between the  
0 Signal Processor CPs and the 108 modems. Provide one (1)  
0 Terminal Strip Assembly for each ten (10) DUAQ circuits.

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0 11.3.2 Analog Recorded Announcement Equipment

0 (a) General Description

0 An optional Recorded Announcement machine, supplied by Audichron,  
0 is used on the DMS-100 family. It is housed in the Recorded An-  
0 nouncement Module (RM) mounted on the Miscellaneous Equipment  
0 Frame. Recorded Messages are accessed via RM-mounted play back  
0 amplifiers and 4-wire E&M trunks housed in the Trunk Modules. The  
0 speech channels incoming to a Network from each of these trunks  
0 can be connected in broadcast mode to all outgoing speech chan-  
0 nels within the same Network Sub Group (NSG).

0 (b) References

0 None

0 (c) Provisioning Considerations

- 0 ( i) For new initial offices, the Digital Recorded Announce-  
0 ment Machine should be ordered. However, the analog  
0 Audichron machine remains as an optional offering.
- 0 ( ii) One announcement trunk (NT2X88AA or NT2X72AA) is required  
0 per announcement track utilized.
- 0 ( iii) Each recording track (the RM is available in 6 or 12  
0 track configurations) requires one play-back amplifier to  
0 reproduce its recording.
- 0 ( iv) A single message, depending on its duration, can extend  
0 over several RM tracks up to a maximum of eight.
- 0 ( v) All tracks associated with a single message must termi-  
0 nate via RM play-back amplifiers and E&M trunks, on the  
0 same Trunk Module.
- 0 ( vi) All tracks associated with a single message should be re-  
0 corded on the same RM to ensure track change synchroniza-  
0 tion.
- 0 ( vii) One RM of the appropriate type should be provided for ev-  
0 ery 6 or 12 tracks subject to Consideration ( vi).
- 0 (viii) One RM play-back amplifier card houses one play-back am-  
0 plifier.

0 ( ix) One announcement trunk is required per announcement track  
0 utilized. A single message, depending on its duration,  
0 can therefore extend over several trunk circuits.

0 ( x) Trunk cards may be duplicated for reliability where nec-  
0 essary.

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0 11.3.3 Automatic Number Announcer Circuit (ANAC)

0 (a) General Description

0 The function of an automatic number announcement system is to  
0 identify subscriber stations to craftspeople by announcing the  
0 station's telephone number in a clear, spoken voice. Other uses  
0 for automatic number announcements include, but are not limited  
0 to, verification of cross connections, locating lines on a dis-  
0 tributing frame, identification of lines in the event of a cable  
0 cut or throw, and purification of office line records prior to  
0 equipment cutover.

0 Automatic number announcement functions are supported by the  
0 Calling Number Announcement (CNA) feature utilizing channels on  
0 Northern Telecom's proven digital Recorded Announcement Machine  
0 (DRAM) under the control of system software. The CNA channels  
0 may be provided as dial-in, individual craftsperson test channels  
0 or as loudspeaker-driving channels where the number is broadcast  
0 over a loudspeaker mounted on the Distributing Frame.

0 (b) References

0 ED 5690-50 (Peripheral Systems Application of ANAC  
0 Equipment to Multi-Office and SXS System)

0 (c) Provisioning Considerations

0 ( i) The Telco shall determine the proper group combinations  
0 required for the switching office.

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0 11.3.4 Cook Division Digital Announcer (CDA)

0 (a) General Description

0 The Cook Division Line Access Digital Announcer is designed for  
0 repetitive message playback applications for use in a Remote Of-  
0 fice environment in a DMS100F application. Its purpose is to  
0 provide announcements instead of a re-order tone for Non-Resident  
0 Codes and Prefixes (i.e. 0-, 0+, and 1+) when the Remote Office  
0 is operating in the Emergency Stand Alone (ESA) mode. The unit  
0 is not designed for applications where a user response is ex-  
0 pected or required. It is a listen only device.

0 These units may be provided for the RLCM, RSC, RLM offices.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) The DA may be provided as a desk top or rack mount unit.  
0 However, only the rack mount units have been approved for  
0 use by Northern Telecom Digital Switching. This unit may  
0 be used as an adjunct announcer to the DMS100F internal  
0 MTM mounted Digital Recorded Announcer Machine (DRAM), in  
0 a Remote Office environment.

0 ( ii) The CDA is compatible with the DMS100F Type "A" & "B"  
0 line cards when the CDA Ring Trip Access option or Remote  
0 Record/Ring Trip Access option is equipped on the CDA.

0 ( iii) Voice messages are recorded on the CDA via a type "G"  
0 handset which interfaces the CDA via a modular jack on  
0 the front panel. The analog voice messages are stored  
0 digitally in solid state (DRAM) memory. When the appro-  
0 priate signals are received from the interface circuits,  
0 the message is converted to analog for output to the line  
0 requesting the message.

0 ( iv) There are two approved versions of the Cook Division Dig-  
0 ital Announcer (CDA) which are: (1) NT7M00 - Single

- 0 (1) NT7M00 - Single Channel/Port  
0 (2) NT7M25 - Four Channel/Port Version. As

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0 Where:

0 The Single Channel unit provides one message output  
0 to connected lines.

0 The Four (4) Channel unit provides from one to four  
0 message output depending on the configuration to con-  
0 nected lines.

0 The maximum number of lines which may be connected to the  
0 single channel CDA depends on the resistance of the  
0 lines. For example: A maximum of 150, 600-ohm lines may  
0 be connected to a single CDA using several line expansion  
0 chassis. This holds true for both the Single and Four  
0 Channel CDA.

0 The Cook DA is available in several configurations with  
0 standard features to include: number of channels (1 or  
0 4), message lengths up to 2.13 minutes (128sec), LED dis-  
0 play for operational status, security access, and diag-  
0 nostics. Other available options include features such  
0 as: battery backup, ring trip access, remote record, and  
0 A.C. adapter.

0 ( v) The following hardware and accessories have been approved  
0 by Digital Switching for the Cook Division Digital  
0 Announcer:

| 0 | <u>PEC</u> | <u>DESCRIPTION</u>              |
|---|------------|---------------------------------|
| 0 | NT7M00CC   | 1-Chan 19" 32S RTA STB          |
| 0 | NT7M00DC   | 1-Chan 26" 32S RTA BRN          |
| 0 | NT7M00DB   | 1-Chan 26" 32S RR/RTA BRN       |
| 0 | NT7M25CV   | 4-Chan 19" 64S RTA STB          |
| 0 | NT7M25DG   | 4-Chan 26" 64S RR/RTA BRN       |
| 0 | NT7M25DN   | 4-Chan 26" 128S RR/RTA BRN      |
| 0 | NT7M25FM   | 4-Chan 26" Fixed MSG Length     |
| 0 | NT7M25EA   | 4-Chan 26" 64S RR/RTA BRN       |
| 0 | NT7M25EB   | 4-Chan 26" 64S RTA BRN          |
| 0 | NT7M03BA   | Rechargeable Battery Pack       |
| 0 | NT7M04CA   | 32sec Memory Upgrade Kit        |
| 0 | NT7M07BA   | Remote Record/Ring Trip Kt      |
| 0 | NT7M08BA   | 1-Line Ring Trip Acc Ckt        |
| 0 | NT7M26CA   | 3CAE Kit W/O 4L RTA Silver Tone |
| 0 | NT7M26DA   | 3CAE Kit W/4L RTA Silver Tone   |
| 0 | NT7M26GA   | 3CAE Kit W/O 4L RTA NT Brown    |
| 0 | NT7M26HA   | 3CAE Kit W/4L RTA NT Brown      |

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0 NT7M29BA 4-Line Ring Trip Acc Ckt  
0 NT7M29CB LEC w/1 4L RTA STB  
0 NT7M29CC LEC w/2 4L RTA STB  
0 NT7M29CF LEC w/1 4L RTA BRN  
0 NT7M29CG LEC w/2 4L RTA BRN  
0 213404 Prerecorded MSGs Cassette Tape  
0 213360 Handset & Cord w/teladapt conn  
0 213284 Handset Cassette Adapter cord  
0 NT7M41AA Basic 4-Chan F/W for 4Msgs  
0 NT7M41CA 4Port Demand Phased FW 1MSG

0 Where:

0 1-Chan = Single Channel/Port  
0 4-Chan = 4-Channel/Port  
0 32S = 32sec (Single Chan only)  
0 64S = 64 Seconds Msg Time  
0 128S = 128 Seconds Msg Time  
0 RTA = Ring Trip Access Ckt  
0 RR/RTA = Remote Record & RTA Ckt  
0 STB = Color Silvertone & Black  
0 BRN = Color NT Brown  
0 3CEA = Three Channel Audio Expansion Chassis  
0 LEC = Line Expansion Chassis

0 The physical dimensions of the DA and it's associated Ex-  
0 pansion Chassis are:

0 Height: 1.75 inches (for the NT7M00-Series CDA)  
0 Height: 3.50 inches (for the NT7M25-Series CDA)  
0 Width: 17.5 inches  
0 Depth: 12.0 Inches

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0 ( vi) CDA System Configuration

0 The single or four channel CDA is mounted in the MIS  
0 frame. The single channel Cook Digital Announcer (CDA)  
0 is composed of a Control Processor Unit (CPU) only. The  
0 following hardware is provisionable on this unit:

- 0 - 1-Line Ring Trip Access Circuit (NT7M08BA)
- 0 - 4-Line Ring Trip Access Circuit (NT7M29BA)
- 0 - Rechargeable Battery Pack (NT7M03BA)
- 0 - Remote Record/Ring Trip Access Circuit (NT7M07BA)
- 0 - Hand Set (212260)
- 0 - 32-Sec Memory Upgrade Kit (NT7M04CA)
- 0 - Three Channel Audio Expansion (3CAE) Chassis Several  
0 Versions
- 0 - Line Expansion Chassis (LEC) Several Versions
- 0 -

0 The four channel CDA is composed of a CPU and a 3 channel  
0 Audio Expansion Chassis (3CAE). This unit may be expanded  
0 by increasing the number of users having simultaneous ac-  
0 cess. The provisionable hardware for the single channel  
0 unit is also provisionable of the multi-channel unit.

0 ( vii) Expanding The Single Channel CDA's Capabilities

0 On extension offices, the single channel CDA may be ex-  
0 panded in two ways:

- 0 1. Expanding the number of lines having simultaneous ac-  
0 cess to the CDA.
- 0 2. Expanding the number of Audio outputs from one (1) to  
0 four (4).

0 Provide the Audio Expansion Chassis to increase the num-  
0 ber of audio inputs from one to four on the single chan-  
0 nel CDA. When expanding the Audio capabilities of the  
0 CDA, consider the following:

- 0 - Provide additional memory, a minimum of 64-seconds is  
0 required for a 4-Channel unit.
- 0 - Provide a 3-Channel Audio Expansion Chassis (3CAE) of  
0 the same color as the Single Channel CDA (SC-CDA) be-  
0 ing expanded
- 0 - Select an 3CAE with or without the 4-Line Ring Trip  
0 Access Circuit (4L-RTA) as required.

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0 - Provide the firmware as required for the type of  
0 4-Channel (4C) operation required.

0 The number of users having simultaneous access to the  
0 single channel CDA may be expanded by adding the Line ex-  
0 pansion chassis.

0 (viii) Expanding the Four Channel CDA's Capabilities

0 The number of subscriber lines that can access the CDA  
0 simultaneously can be expanded using the NT7M29 Series  
0 (Line Expansion Kit) in multiples of 4 to 8 lines.

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0 11.3.5 Miscellaneous Equipment

0 (a) General Description

0 Any equipment which needs to be frame-mounted but which does not  
0 mount on other specific DMS frames can be provisioned in the Mis-  
0 cellaneous Equipment Frame.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) The Telco should indicate if space is required on the MIS  
0 frame for miscellaneous equipment.

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0 11.3.6 MIS Frame Isolated System Grounding (ISG)

0 (a) General Description

0 A new grounding topology is being applied to DMS family systems.  
0 The basic principles of the new grounding system are as follows:

- 0 1. The logic return is to be isolated from the framework  
0 ground overhead busbar.
- 0 2. Individual frame line ups must be electrically isolated  
0 by the use of isolation hardware.

0 (b) References

0 Installation Manual 940 section 01

0 (c) Provisioning Considerations:

0 ( i) U.S. applications will provision modem equipment on a  
0 Miscellaneous Equipment Frame (MIS), dedicated for modem  
0 equipment, and enhanced for ISG.

0 ( ii) A Ground Material Assembly, NT0X9504, which contains a  
0 logic return busbar must be provisioned for each MIS  
0 Frame that is dedicated for modem equipment.

0 ( iii) DC Modem Shelves must be isolated from the equipment  
0 frame and the shelf chassis must be connected to the  
0 logic return busbar. One (1) NT0X0050 Modem Shelf  
0 Grounding Hardware Kit must be provided per DC modem  
0 shelf provisioned to isolate the shelf from the frame and  
0 to connect the chassis to the logic return busbar.

0 ( iv) DC Modem Shelves must be isolated from the equipment  
0 frame and the shelf chassis must be connected to the  
0 logic return busbar. One (1) NT0X0050 Modem Shelf  
0 Grounding Hardware Kit must be provided per DC modem  
0 shelf provisioned to isolate the shelf from the frame and  
0 to connect the chassis to the logic return busbar.

0 AC Modem Shelves must be powered from an inverter that is  
0 mounted on the same frame. The inverter must be isolated  
0 from the framework and its chassis must be connected to  
0 the logic return busbar. Provision one (1) NT0X0009 Cable  
0 assembly for an inverter located in a MIS frame.



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- 0 ( v) The Digital Alarm Scanner (DAS) unit must be mounted on a  
0 Dedicated MIS/Modem Frame enhanced for ISG. The DAS unit  
0 must be isolated from the equipment frame and the unit  
0 chassis must be connected to the logic return busbar us-  
0 ing a NT0X9502 cable assembly.
- 0 ( vi) Common Equipment Shelves must be isolated from the equip-  
0 ment frame and the shelf chassis must be connected to the  
0 logic return busbar.
- 0 ( v) Initial Remote offices (RLCM,RLM,RSC) can provide modem  
0 equipment and associated inverters in any RME/RSE frame  
0 only if a logic ground bar (i.e., NT0X0201 or NT0X9548)  
0 is provisioned with the frame. Note that modems, VDU,  
0 printers or other devices connected to modems (through  
0 the EIA connection) must be powered from isolated  
0 DMS-100F supplied inverters.
- 0 ( vi) Isolated System Grounding will initially be applied to  
0 all new host and remote DMS-100F offices.
- 0 ( vii) For all other extensions to offices that use old ground-  
0 ing methods, Isolated System Grounding will not be ap-  
0 plied. The office will be extended using current  
0 grounding methods.
- 0 (viii) Each equipment row must have a Logic Return Busbar (LRB)  
0 provisioned for connection of logic return. If a MIS  
0 frame dedicated to modem equipment (U.S. offices) exists  
0 in a lineup, provision a LRB for that lineup.
- 0 ( ix) For U.S. offices, the MIS frame dedicated for modem  
0 equipment must be switchboard cabled to the same LRB as  
0 the IOE/MTC/CCC frames containing the IOC Modules.
- 0 ( x) All LRB will terminate to the Logic Return Equalizer as-  
0 sembly (LRE).
- 0 ( xi) Each LRE provides termination capabilities for 14 eqpt  
0 rows. A busbar extension plate assembly (NT0X0017) may  
0 be provisioned for each additional 14 equipment rows re-  
0 quired.
- 0 ( xii) MIS frames not being used for modem equipment have no  
0 logic return and thus no connection to the LRB. No pro-  
0 visioning action is required to terminate the logic re-  
0 turn to these frames.

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0 (xiii) Provision one (1) NT0X0013 Isolation Hardware in place of  
0 each mounting screw for each piece of miscellaneous  
0 equipment with a non-NT\_X\_\_ Product Engineering Code  
0 (PEC) that is mounted in Miscellaneous Frame (NT0X02AB).

0 ( xiv) The following equipment (which mounts on a Miscellaneous  
0 Frame) have isolation hardware always provided as part of  
0 their stocklist. Any piece of equipment with a NT\_X\_\_ PEC  
0 which mounts on a MIS frame that is not on this list must  
0 have NT0X0013 Isolation Hardware provisioned to accommo-  
0 date ISG. This list will be updated as design documenta-  
0 tion is produced and available.

0                   PEC                   DESCRIPTION

0                   # NT5X69AA - Inactive System Timing Circuit  
0                   NT5X58AA - 1A2 Key Telephone System  
0                   NT5X55AA - 1A2 Key Telephone System Module  
0                   NT5X09AA - Data Set (Modem) Shelf  
0                   NT5X08AA - AC Modem Assy Modified Shelf  
0                   \* NT0X87AA - Inverter Unit  
0                   @ A0367433 - LaMarche 500W Inverter Unit  
0                   NT3X25AA - Common Equipment Shelf

0                   \* For NT0X87AA Inverter Units (on non dedicated MIS  
0 frames for modems) the following hardware must be  
0 ordered:

0                   Qty       CPC           Description  
0                   4 - P0284154 - Metallic Regular Washer  
0                   4 - P0183220 - External Tooth Lock Washer  
0                   4 - P097F813 - Mounting Screws

0                   This hardware replaces the Isolation Hardware  
0 NT0X0013, which is to be discarded.

0                   # The inactive system timing circuit must be pow-  
0 ered from an inverter mounted on the same MIS  
0 frame. The inverter shall be grounded to MIS  
0 framework per normal grounding procedures (i.e.  
0 no NT0X0013 required).

0                   @ For U.S. applications only, provision the  
0 LaMarche inverter on new jobs in lieu of the  
0 NT0X87AA inverter. This LaMarche inverter is de-  
0 signed to be used as an integrated component of  
0 the DMS-100F MIS to provide protected AC to com-  
0 ponents internal and external to the MIS frame.

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0 Canadian applications will continue to provision  
0 the NT0X87AA inverter.

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0 11.3.7 Case/Datatel/Rixon Data Communications Equipment

0 (a) General Description

0 This section contains engineering ordering information for all  
0 approved Case/Datatel/Rixon Data Communications equipment. Case  
0 Rixon is the primary supplier of data communications equipment,  
0 along with UDS. The selection of a data communications equipment  
0 supplier shall be based on customer preference only.

0 (b) References

0 None

0 (c) Provisioning Considerations:

0 ( i) When selecting modems for a particular application, the  
0 modem factors must be taken into account in order to en-  
0 sure application compatibility. The following must be  
0 considered.

0 - the SPEED at which various modems can send and re-  
0 ceive data

0 - the digital interface between the modem and a termi-  
0 nal or host computer

0 - the line protocols available (half duplex, full-  
0 duplex, or multidrop)

0 - the Transmission Protocol (e.g. V.22, BELL-103, V.29,  
0 etc)

0 - the data transmission mode (synchronous or asynchro-  
0 nous)

0 - the various types of telephone lines

0 - the US and international standards for establishing  
0 communications.

0 ( ii) CASE/DATATEL modems are available in a Rack Mount or  
0 Stand Alone configuration. In most cases, each model  
0 number will have two part numbers one for the Rack Mount  
0 unit and one for the Stand Alone unit. Note: The de-

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0 description of these products as it will include the model  
0 number and a hyphen "C" or S/A to indicate the modem is a  
0 Rack Mount or Stand Alone configuration, respectively.

0 Rack Mount Modem Configuration

0 Provisioning a rack mounted modem solution with  
0 CASE/DATATEL products requires the RM4200 AC or DC ver-  
0 sion modem shelf and the application specific modems. The  
0 RM4200 shelf is capable of housing up to 16 modems and  
0 DAS units provisionable on the shelf, in any combination  
0 totaling 16 units. If the AC RM4200 DSM is provided,  
0 then protected AC is required.

0 Stand Alone Modem Configuration

0 Modems provisioned in a stand alone configuration may be  
0 housed internal or external to the DMS Line-Up. Stand  
0 Alone modem products may sit on the MAP desktop, or in a  
0 MIS frame on a Common Equipment Shelf (NT3X25AA), or some  
0 other convenient miscellaneous location subject to the  
0 applicable ISG restrictions.

0 The features of a stand alone modem product and its rack  
0 mount version are identical - with the exception of hous-  
0 ing and power requirements.

0 It is recommended that stand alone modems be used only  
0 when the quantity of modems and/or mounting conditions  
0 does not warrant the use of a shelf. Rack mount modem  
0 installations are generally more economical and provide a  
0 tidier installation.

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0 ( iii) The following units are approved for use with the DMS100  
0 Family:

0 APPROVED CASE/DATATEL/RIXON MODEM SHELVES

| 0 DESCRIPTION                 | 0 PEC          | 0 NOTES |
|-------------------------------|----------------|---------|
| 0 RM4200 DSM 115VAC Version   | 0 905-5222-001 | 0 1     |
| 0 RM4200 DSM -48VDC Version   | 0 905-5222-003 | 0 1     |
| 0 RM70 MODEM CARD CAGE 120VAC | 0 905-5098-001 | 0 2     |
| 0 RM90 MODEM SHELF 125VAC     | 0 905-5139-001 | 0 3     |

0 APPROVED CASE/DATATEL/RIXON RACK MOUNT MODEM EQUIPMENT

| 0 DESCRIPTION                 | 0 PEC          | 0 NOTES |
|-------------------------------|----------------|---------|
| 0 RM4200 4201-C Modem         | 0 905-5220-002 | 0 4     |
| 0 RM4200 4202-C Modem         | 0 905-5185-003 | 0 5     |
| 0 RM4200 4208-C Modem         | 0 905-5227-002 | 0 6     |
| 0 RM4200 4212-C Modem         | 0 905-5223-002 | 0 7     |
| 0 RM4229-C Auxiliary Data Set | 0 905-5224-002 | 0 8     |
| 0 212EXEC WITH AUTODIALER DSC | 0 905-6836-20  | 0 9     |
| 0 R212A INTELLIGENT MODEM DSC | 0 905-6836-02  | 0 10    |
| 0 R96 DSC 9600BD PL OR/AN     | 0 905-5131-004 | 0 11    |

0 APPROVED CASE/DATATEL/RIXON STAND ALONE MODEM EQUIPMENT

| 0 DESCRIPTION                   | 0 PEC          | 0 NOTES |
|---------------------------------|----------------|---------|
| 0 RM4200 4201-S/A Modem         | 0 905-5220-001 | 0 4     |
| 0 RM4200 4202-S/A Modem         | 0 905-5185-001 | 0 5     |
| 0 RM4200 4208-S/A Modem         | 0 905-5227-001 | 0 6     |
| 0 RM4200 4212-S/A Modem         | 0 905-5223-001 | 0 7     |
| 0 RM4229-S/A Auxiliary Data Set | 0 905-5224-001 | 0 8     |
| 0 212EXEC WITH AUTODIALER       | 0 905-5137-003 | 0 9     |
| 0 R212A INTELLIGENT MODEM       | 0 905-5137-001 | 0 10    |
| 0 R96 DS 9600 BD PL OR/AN       | 0 905-5131-003 | 0 11    |

0 NOTES:

- 0 1. The CASE/DATATEL RM4200 Rack Mountable Card Cage  
0 (905-5222-003 -48VDC & 905-5222-001 115VAC) is a 16-Slot  
0 card cage that mounts in a 19", 23", or 26" rack or cabi-  
0 net and houses up to 16 cards total in any combination of  
0 the cards listed in TABLE 38.2. The -48VDC Power Supply

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0 accepts dual battery feeds, is redundant, and automat-  
0 ically switches in the event of a failure without loss of  
0 signal.

0 All card modems require (1) one card slot. Public Switch  
0 Telephone Network (PSTN), Private Line (PL), or Digital  
0 Data Service Network (DDS) modem applications may be  
0 intermixed on a single shelf.

0 When using a Stand-Alone or Rack Mounted modem in the  
0 4Wire Dedicated Mode, a 4229 DAS Unit is required. The  
0 DAS Unit performs line conditioning and loopback.

0 It is recommended that rack mounted modems be utilized at  
0 every DMS site to save space and provide a tidier instal-  
0 lations.

0 The RM4200 DSM connects the Modem Cards to the telephone  
0 lines, Data Terminal Equipment (DTE).

0 Note: Direct connection of the RM4200 DSM to Tele-  
0 phone Sets is not a DMS100 approved option. However,  
0 this option can be used with Stand Alone modems.

0 The RM4200 assignable cards and their applications are  
0 shown in Table 38.2 below. The different modem card  
0 types, speeds, and operating modes may be intermixed in a  
0 single RM4200 shelf. However, when the 4229 DAS units  
0 and Private Line (PL) modems are intermixed on a single  
0 shelf, the shelf mounting capacity is reduced by the num-  
0 ber of 4229 units used.

RELEASE 28.01  
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RM4200 ASSIGNABLE CARDS/CARD APPLICATIONS

| CARD TYPE  | OPERATING MODE |    | DUPLEX        | SPEED (bps) | TOTAL QTY |
|------------|----------------|----|---------------|-------------|-----------|
|            | DDD            | PL |               |             |           |
| 4201 Modem | X              | X  | Full/<br>Half | 1200/2400   | 16        |
| 4202 Modem |                | X  | Full/<br>Half | 0-1800      | 16        |
| 4208 Modem | X              | X  | Full/<br>Half | 4800        | 16        |
| 4212 Modem | X              |    | Full          | 0-300/1200  | 16        |
| 4229 DAS   |                | X  | -             | -           | 16        |

**-48VDC RM4200 DSM Specifications (905-5222-003)**

Input Voltage.....-48VDC

Power Consumption.....134.4 watts Fully loaded

Current Drain.....2.8 Amps

Fusing Requirements...Two (2) 5 Amp Fuses

Capacity.....1 to 16 Modems/DAS Units total, in  
any combination.Connections.....DTE interface: Sixteen 25-pin EIA  
female connectorsTelephone Line I/F....Four DDD 50-pin male connectors and  
two PL 50-pin female connectorsTelephone Interface...Four 50-pin female connectors, used  
for the 4229 DAS unit interface  
connection.**MECHANICAL DIMENSIONS**



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0 Height 7"(178mm) Width 19"(483mm) Depth 15.4"(392mm)  
0 Weight 33.8lb(15.4Kg) fully Loaded

0 115VAC RM4200 Specifications (905-5222-001)

0 Input Voltage.....115V,RMS at 60Hz  
0 Power Consumption.....207VA Fully loaded  
0 Current Drain.....1.8 Amps, RMS  
0 Fusing Requirements...N/A

0 Capacity.....1 to 16 Modems/DAS Units total, in  
0 any combination.

0 Connections.....DTE interface: Sixteen 25-pin EIA  
0 female connectors

0 Telephone Line I/F....Four DDD 50-pin male connectors and  
0 two PL 50-pin female connectors

0 Telephone Interface...Four 50-pin female connectors, used  
0 for the 4229 DAS unit interface  
0 connections.

0 MECHANICAL DIMENSIONS

0 Height 7"(178mm) Width 19"(483mm) Depth 15.4"(392mm)  
0 Weight 33.8lb(15.4Kg) fully Loaded

0 2. The RM70 (905-5098-001) is a 16 slot modem housing, used  
0 to mount up to eight (8) Dial-Up modems (Executive 212  
0 Modem Card or R212A Intelligent modem). Mounting adapters  
0 must be provided for 26" mounting.

0 3. The RM90 (905-5139-001) Modem Shelf is a 18 card slot  
0 unit, use by NTI to mount up to nine (9) R96 high speed  
0 modems. Protected AC and mounting adapters must be pro-  
0 vided with this shelf.

0 4. The CASE/DATATEL 4201 12/2400bps Modem (905-5220-001  
0 Stand-Alone & 905-5220-002 Rack Mount) operates full or  
0 half duplex over 3002-Type Private Lines (PL) or half-  
0 duplex only over two-wire PLs and four-wire two-wire  
0 Dial-Up Lines. It provides Synchronous Serial Binary  
0 data transmission and reception at 1200 or 2400 Bits Per  
0 Second (BPS). The modem card mounts on a RM4200 Data Set  
0 Module Shelf -- the stand alone unit mounts on a NT3X25AA  
0 or other miscellaneous locations.

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0  
0 Data Rate ..... 1200/2400 bps Synchronous (If op-  
0 erated at 1200bps adapter cable  
0 905-6795-01 is required)

0 Operation..... Full duplex on 4W Private Leased  
0 Lines (PLL)

0 Operating Mode..... Automatic Answer Only

0 When using the Stand Alone version  
0 of this modem in Private Line (PL)  
0 applications special cables are  
0 required.

0 Modulation:  
0 2400bps..... Differentially Coherent four-level  
0 Phase-Shift Keyed (PSK)

0 1200..... PSK (When operated with the  
0 adapter cable)

0 DTE Interface..... EIA RS-232D/V.24

0 Telephone Line I/F.. DB25 Male Connector on S/A unit  
0 stamped TEL/LINE

0 Transmit Level:  
0 Private Line..... 0 to -15 dBm in -1dB steps (switch  
0 selectable)

0 DDD..... 0 to -12 dBm Programmable, -9 dBm  
0 Permissive, -4 dBm Fixed Loss Loop

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## 0 Mechanical:

0 Stand-Alone..... Width 6.8" (56mm), Height 2.2"  
0 (173mm), Depth 11.5" (293mm)  
0

0 Card..... One Card Slot in RM4200 Shelf

## 0 Power Requirements:

0 Stand Alone..... 93 to 132 Vrms at 57 to 63Hz, 10  
0 Watts

0 Rack Mount..... 19.6 Vrms at 57 to 63Hz, 10 Watts

- 0 5. The CASE/DATATEL 4202 0-1800bps Modem (905-5185-003 Rack  
0 Mount & 905-5185-001 Stand-Alone) is a medium speed Pri-  
0 vate Line (PL) modem that provides Asynchronous Serial  
0 Binary data Transmission at rates up to 1400bps on  
0 3002-Type Unconditioned Lines and 1800bps on  
0 C2-Conditioned lines. The modem card mounts on a RM4200  
0 Data Set Module Shelf -- the stand alone unit mounts on a  
0 NT3X25AA or other miscellaneous locations.

## 0 Data Rate:

0 C2 Conditioned Line 0 to 1800bps

0 Unconditioned Line. 0 to 1400bps

## 0 Operation:

0 4-Wire..... Full Duplex PLL

0 When using the Stand Alone version  
0 of this modem in Private Line (PL)  
0 applications special cables are  
0 required.

0 Operating Mode..... Automatic Answer Only

0 Modulation..... Frequency Shift Keyed (FSK)

0 DTE Interface..... EIA RS-232D/V.24

0 Telephone Line I/F.. DB25 Male Connector on S/A unit  
0 stamped TEL/LINE

## 0 Transmit Level:

0 Private Line..... 0 to -15 dBm in -1dB steps (switch  
0 selectable)

## 0 Mechanical:

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0 Stand-Alone..... Width 6.8" (56mm), Height 2.2"  
0 (173mm), Depth 11.5" (293mm)

0 Card..... One Card Slot in RM4200 Shelf

0 Power Requirements:

0 Stand Alone..... 93 to 132 Vrms at 57 to 63Hz, 7.3  
0 VA

0 Rack Mount..... 19.6 Vrms at 57 to 63Hz, 7.3 VA

0 6. The CASE/DATATEL 4208 4800bps Modem (905-5227-001 Stand-  
0 Alone & 905-5227-002 Rack Mount) is a 4800 bps  
0 synsynchronous phase shift keyed modem. It operates full-  
0 duplex over four-wire leased lines in "A-mode" and half-  
0 duplex over the DDD network in "B-Mode". The 4208 has an  
0 adaptive automatic equalizer to correct amplitude and  
0 phase distortion. In the B-Mode, a switch selectable  
0 inactivity timer disconnects the modem from the tele-  
0 phone line if it receives neither a valid carrier nor a  
0 Request To Send signal from the terminal. The card ver-  
0 sion mounts in a RM4200 Data Set Shelf -- the stand alone  
0 unit mounts on a NT3X25AA or other miscellaneous lo-  
0 cations.

0 Data Rate..... 4800bps Synchronous

0 Operation:

0 4-Wire..... Full duplex (A-Mode)

0 When using S/A version of this  
0 modem in Private Line (PL) appli-  
0 cations special cables are re-  
0 quired.

0 Operating Mode..... Automatic Answer Only.

0 Modulation::Frequency Shift Keyed (FSK)

0 DTE Interface..... EIA RS-232D/CCITT V.24

0 Telephone Line I/F.. DB25 Male Connector on S/A unit  
0 stamped TEL/LINE

0 Mechanical:

0 Stand-Alone..... Width 6.75" (171mm), Height 2.0"  
0 (51mm), Depth 11.2" (284mm)

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0 Card..... One Card Slot in RM4200 Shelf

0 Power Requirements:

0 Stand Alone..... 93 to 132 Vrms at 57 to 63Hz, 9.0  
0 VA

0 Rack Mount..... 19.6 Vrms at 57 to 63Hz, 9.0 VA

0 7. CASE/DATATEL 4212 0-300/1200bps Modem (905-5223-001  
0 Stand-Alone & 905-5223-002 Rack Mount) is a dual speed  
0 full duplex modem used over two wire DDD and private line  
0 networks. The 4212 provides serial binary transmission  
0 and reception. The modem card mounts on a RM4200 Data  
0 Set Module Shelf -- the stand alone unit mounts on a  
0 NT3X25AA or other miscellaneous locations.

0 Data Rate:

0 Low Speed..... 0 to 300bps Asynchronous, FSK  
0 (Frequency Shift Keyed Modulation)

0 High Speed..... 0 to 1200bps Synchronous - FSK  
0 Modulation, or  
0 0 to 1200bps Character Asynchro-  
0 nous, PSK (Phased Shift Keyed Mod-  
0 ulation - 8, 9, 10, or 11 bit  
0 selectable).

0 Operation:

0 2-Wire..... Half duplex

0 When using this modem in Private  
0 Line (PL) applications special ca-  
0 bles are required.

0 Operating Mode..... Automatic Originate/Answer re-  
0 quires the 801 Automatic Calling  
0 Unit (ACU). However, the 801ACU  
0 is not an approved product at this  
0 time.

0 Modulation.....Frequency Shift Keyed (FSK)

0 DTE Interface..... EIA RS-232D/V.24

0 Telephone Line I/F.. DB25 Male Connector on S/A unit  
0 stamped TEL/LINE

0 Transmit Level:

0 Private Line..... Not Applicable

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0  
0 DDD..... 0 to -12 dBm Programmable, -9 dBm  
0 Permissive, -4 dBm Fixed Loss Loop

0 Mechanical:

0 Stand-Alone..... Width 6.8" (56mm), Height 2.2"  
0 (173mm), Depth 11.5" (293mm)

0 Card..... One Card Slot in RM4200 Shelf

0 Power Requirements:

0 Stand Alone..... 93 to 132 Vrms at 57 to 63Hz, 6.7  
0 VA

0 Rack Mount..... 19.6 Vrms at 57 to 63Hz, 6.7 VA

0 8. The CASE/DATATEL 4229 Unit (905-5224-002 Rack Mount &  
0 905-5224-001 Stand-alone) is a voice frequency desk-top  
0 or plug-in module used as standard termination for four  
0 wire private line data channels. The 4229 unit is in-  
0 stalled between a Central Office (CO) and the station  
0 equipment. The functions of this unit are as follows:

- 0 - Adjustable attenuation in the transmit path.
- 0 - Adjustable gain or attenuation in the receive path.
- 0 - Amplitude equalization of the data channel (type  
0 359A/K).
- 0 - Tone activated loopback (2713 Hz) towards the central  
0 office.
- 0 - DC simplex loopback towards the central office.
- 0 - Manual loopback towards the central office

0 The modem card mounts on a RM4200 Data Set Module Shelf  
0 -- the stand alone unit mounts on a NT3X25AA or other  
0 miscellaneous locations.

0 Line Requirements... 4-Wire 3002 Leased or Private  
0 Telephone Lines

0 Line Impedance..... 600 Ohms

0 Operational Mode.... Full Duplex, Point-To-Point

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- 0 Input Data Format... Sync or Async; used with all  
0 RM4200 Series 4W FDX, PLL modems
- 0 DTE Interface..... EIA RS-232C, CCITT V.24, V.33 and  
0 ISO 2110
- 0 Telephone Line I/F.. DB25 Male Connector on S/A unit  
0 stamped TEL/LINE
- 0 Mechanical:  
0 Stand-Alone..... Width 8.5" (216mm), Height 3.5"  
0 (90mm), Depth 14.5" (367mm)
- 0 Card..... One Card Slot in RM4200 Shelf
- 0 Power Requirements:  
0 Stand Alone..... 93 to 132 Vrms at 57 to 63Hz, 6.4  
0 VA  
0 Rack Mount..... 19.6 Vr,s at 57 to 63Hz, 6.4 VA
- 0 9. The Executive 212A Modem (905-6836-20 Card & 905-5137-003  
0 Desk) functions as a dual speed full duplex modem for use  
0 on the Dial-Up Network. It operates asynchronously  
0 0-300bps and synchronously or character asynchronously at  
0 1200 bps. The modem card mounts on RM70 Data Set Shelf  
0 -- the stand alone unit mounts on a NT3X25AA or some  
0 other miscellaneous locations.
- 0 10. The R212A Intelligent Modem (905-6836-02 Card &  
0 905-5137-001 Desk) functions as a analog full duplex  
0 asynchronous 0-300bps modem or 1200bps synchronous modem.  
0 The modem operates with Data Terminal Equipment (DTE)  
0 that have an EIA RS-232-C interface. This modem is com-  
0 patible with RIXON and BELL 212A, 103, and 113 modem mod-  
0 els. The R212A features the HAYES Smartmodem limited  
0 format, DTE control of all options and commands, and in-  
0 tegral automatic dialer. The modem card mounts on the  
0 RM70 Data Set Shelf -- the stand alone unit mounts on a  
0 NT3X25AA, or some other miscellaneous location.
- 0 11. The R96 (905-5131-003 Desk & 905-5131-004 Card) modems  
0 are 9600 bps modems with fallback speeds of 7200 and  
0 4800bps, and V.29 compatible. The modem card mounts on  
0 the RM90 Data Set Shelf -- the stand alone unit mounts on  
0 the NT3X25AA or some other miscellaneous location.

0

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0 11.3.8 UDS Data Communications Equipment

0 (a) General Description

0 This section contains engineering ordering information for all  
0 approved Universal Data Systems (UDS) Data Communications equip-  
0 ment. UDS is the primary supplier of data communications equip-  
0 ment along with Case Rixon. The characteristics and operating  
0 parameters of the products (i.e. modem and modem shelves) are de-  
0 fined. This section is to be used in conjunction with other ap-  
0 plicable sections to select the appropriate product for the  
0 application in question.

0 The UDS modem products are applicable to the DMS 100/  
0 200/300/TOPS/IBN/RSC/RLCM/RLM switching products. These modems  
0 have been approved for the US market only.

0 (b) References

0 None

0 (c) Provisioning Considerations:

0 ( i) When selecting modems for a particular application, the  
0 engineer must take into account the modem factors to en-  
0 sure application compatibility. The following must be  
0 considered.

- 0 - the SPEED at which various modems can send and re-  
0 ceive data
- 0 - the digital interface between the modem and a termi-  
0 nal or host computer
- 0 - the line protocols available (half duplex, full-  
0 duplex, or multidrop)
- 0 - the data transmission mode (synchronous or asynchro-  
0 nous)
- 0 - the various types of telephone lines
- 0 - the US and international standards for establishing  
0 communications.

0 UDS modems are available in a Rack Mount or Stand Alone  
0 configuration. In most cases, each model number will  
0 have two part numbers (one for the Rack Mount (RM) and  
0 one of the stand alone). Note the description of these



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0 products as it will include RM as an indication of the  
0 modems configuration.

0 ( ii) UDS Rack Mount Modem Configuration

0 Provisioning a rack mounted modem solution with UDS pro-  
0 ducts requires the RM16M modem shelf and the application  
0 specific modems. The RM16M shelf is capable of housing  
0 up to 16 2-wire modems or 8 4-wire private lease line  
0 modems with 8 Auxilliary Data Sets.

0 UDS Stand Mount Modem Configuration

0 Modems provisioned in a stand alone configuration may  
0 housed internal or external to the DMS Line-Up. Stand  
0 Alone modem products may sit on the MAP desktop, or in a  
0 MIS frame on a Common Equipment Shelf (NT3X25AA), or some  
0 other convenient miscellaneous location.

0 The features of a stand alone modem product and its rack  
0 mount version are identical - with the exception of hous-  
0 ing and power requirements.

0 It is recommended that stand alone modems be used only  
0 when the quantity of modems and/or mounting conditions  
0 does not warrant the use of a shelf. Rack mount modems  
0 installations are generally more economical and provide a  
0 tidier installation.

0 Stand alone modem installations require the telco to pro-  
0 vide a RJ-11 or RJ-45 Telephone Jack to be installed near  
0 the modem.

0 ( iii) When modem inputs are connected to the IOC or CMC, then  
0 the location and connectivity of the modem/modem shelf  
0 conform to ISG restrictions.

0 ( iv) The following units are approved for use with the DMS100  
0 Family:

0

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0 RELEASE 28.01  
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| 0 | DESCRIPTION                     | PEC       | NOTES |
|---|---------------------------------|-----------|-------|
| 0 |                                 |           |       |
| 0 | 23" DC REDUNDANT MODEM SH RM16M | 62005220  | 1     |
| 0 | SPARE PWR SUPPLY FOR MDM SH     | 65001860  | 18    |
| 0 | 300bps 2/4W MODEM R_MT 108      | 61035121  | 2     |
| 0 | 300-1200 BD AA R_MT 212A        | 62125086  | 3     |
| 0 | 3-1200BD AA-AD R_MT 212A/D      | 62125084  | 4     |
| 0 | 1200bps AA-ADM R_MT 202S/D      | 62025211  | 5     |
| 0 | 1200bps AA R_MT 202S/T          | 62025231  | 6     |
| 0 | 1200bps AA R_MT 202S/T-R        | 62025234  | 7     |
| 0 | 2400bps AA R_MT 201B/C          | 62015166  | 8     |
| 0 | 3/12/2400BD AA-AD R_MT 224A     | 62245011  | 9     |
| 0 | 3/12/2400BD AA-AD R_MT 224A/D   | 62245010  | 10    |
| 0 | 2400bps AA-AD MODEL 224AT/D     | 62245032  | 11    |
| 0 | 4800bps AA R_MT 208A/B          | 62085083  | 13    |
| 0 | D9.6 9600BD Digital Modem       | 64965007  | 14    |
| 0 | RM-720 Dual Dial Back Unit      | 61025082  | 16    |
| 0 | A829-L4 DATA AUX SET CARD       | 6104-5001 | 17    |
| 0 | 56KBPS Data/Chanel SVC Un       | 64565007  | 15    |

0 STAND ALONE MODEM EQUIPMENT

| 0 | DESCRIPTION                    | PEC      | NOTES |
|---|--------------------------------|----------|-------|
| 0 |                                |          |       |
| 0 | 300bps S/A MODEM MODEL 108     | 61035119 | 2     |
| 0 | 300-1200bps AA MODEL 212A      | 62125069 | 3     |
| 0 | 300-1200bps AA-AD 212A/D       | 62125068 | 4     |
| 0 | 1200bps AA-AD MODEL 202S/D     | 62025199 | 5     |
| 0 | 1200bps AA MODEL 202S/T        | 62025201 | 6     |
| 0 | 1200bps AA MODEL 202S/T-R      | 62025232 | 7     |
| 0 | 2400bps AA MODEL 201B/C        | 62015141 | 8     |
| 0 | 300/1200/2400bps AA 224A       | 62245004 | 9     |
| 0 | 3/12/2400BD AA-AD R_MT 224AT/D | 62245030 | 11    |
| 0 | 2400bps AA-AD MODEL EC224A/D   | 62245027 | 12    |
| 0 | 4800bps AA MODEL 208A/B        | 62085064 | 13    |
| 0 | D9.6 9600BD Digital Modem SA   | 64965004 | 14    |
| 0 | DUAL DIAL BACKUP UNIT (DDBU)   | 61025047 | 16    |
| 0 | 56KBPS Data/Chanel SVC Un      | 64565005 | 15    |

0 1. UDS RM16M Modem Shelf

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0 Part Number: 62005220

0 The UDS RM-16M shelf is a 23-inch rack mountable housing,  
0 which physically occupies 7 inches of vertical space,  
0 however, an additional 2-inches (1-inch above and below  
0 the shelf) of vertical space is required for cooling. The  
0 shelf will house up to sixteen card modems. Frame Mount-  
0 ing adapters (26") are always provided by the manufac-  
0 turer with the RM-16M 23" shelf.

0 All card modems require (1) one card slot. Public Switch  
0 Telephone Network (PSTN), Private Line (PL), or Digital  
0 Data Service Network (DDS) modem applications may be  
0 intermixed on a single shelf.

0 ddbu using a modem in the 4 Wire Dedicated Mode it re-  
0 quires a 2 wire to 4 Wire conversion circuit. Presently,  
0 this may be provided via one of the following methods:

0 UDS Recommended Method:

- 0 1. Provide the UDS 829-Card (6204-5001) one per Dedi-  
0 cated Modem. Each 829-Card reduces the shelf modem  
0 mounting capacity by one card slot. This is the pre-  
0 ferred configuration for Dedicated Modems when uti-  
0 lizing UDS products.

0 Rixon Alternate Method:

- 0 2. Using Rixon the CR829-L4 Auxiliary Data Set (ADS) and  
0 the RM46A1 (23" Auxiliary Data Set Shelf).

0 It is recommended that rack mounted modems be utilized at  
0 every DMS site, to save space and provide a tidier in-  
0 stallations.

0 The UDS Modem Shelf Power Supplies require DC battery  
0 (-48 <sup>1</sup> -4V) with a maximum input current of 3.0 amps when  
0 shelf is fully loaded.

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## 0 2. UDS 108 300BPS Modem

0 Part numbers - Rack Mount: 61035121  
0 Stand alone: 61035119

0 Data Rate.....0-300 bps asynchronous

0 Operation.....Full/Half duplex on 2/4W Private Line

0 Operating Mode.....Originate/Answer

0 Modulation.....Phase Coherent Frequency Shift Keyed  
0 (FSK)

0 Digital Interface...EIA RS-232

0 Analog Connection...6 pin modular jack

0 Mechanical:

0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6",  
0 Wt 2lbs 8ozs

0 Card.....One Card Slot in RM16M Shelf

0 Power Requirements..115 VAC +/- 10%, 47 to 63Hz, 12 Watts

## 0 3. UDS 212A 0-300/1200BPS Modem

0 Part numbers - Rack Mount: 62125086  
0 Stand alone: 62125069

0 Data Rate.....Low Speed: 0-300bps asynchronous  
0 High Speed: 1200bps synchronous  
0 1200bps asynchronous

0 Operation.....PSTN lines 2W full duplex Automatic  
0 Answer

0 Modulation.....Low Speed: Frequency Shift Keying  
0 (FSK)  
0 High Speed: Phased Shift Keying  
0 (PSK)

0 Digital Interface...EIA RS232 and CCITT V.24

0 Telephone Line

0 Interface.....Direct connect via Programmable data  
0 jacks (RJ45S) or Permissive "Voice"

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0 jacks (RJ11C) in accordance with FCC  
0 Regulation Part 68. Eight (8) Ft. Ca-  
0 ble always provided

0 Mechanical:

0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6",  
0 Wt 2lbs 10ozs  
0 Card.....One Card Slot in RM16M Shelf  
0

0 Power Requirements..115 VAC +/- 10%, 50 to 60Hz, 4 Watts

0 4. UDS 212A/D 0-300/1200BPS Modem

0 Part numbers - Rack Mount: 62125084  
0 Stand alone: 62125068

0 Data Rate.....Low Speed: 0-300bps asynchronous  
0 High Speed: 1200bps synchronous  
0 1200bps asynchronous

0 Operation.....PSTN lines 2W full duplex Automatic  
0 Answer/Dial

0 Modulation.....Low Speed: Frequency Shift Keying  
0 (FSK)  
0 High Speed: Phased Shift Keying  
0 (PSK)

0 Digital Interface...EIA RS232 and CCITT V.24

0 Telephone Line

0 Interface.....Direct connect via Programmable data  
0 jacks (RJ45S) or Permissive "Voice"  
0 jacks (RJ11C) in accordance with FCC  
0 Regulation Part 68. Eight (8) Ft. Ca-  
0 ble always provided

0 Mechanical:

0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6",  
0 Wt 2lbs 10ozs  
0 Card.....One Card Slot in RM16M Shelf  
0

0 Power Requirements..115 VAC +/- 10%, 50 to 60Hz, 4 Watts

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## 0 5. UDS 202S/D 0-1200BPS Modem

0 Part numbers - Rack Mount: 62025211  
0 Stand alone: 62025199

0 Data Rate.....0-1200 bps asynchronous,  
0 600-1200 bps synchronous  
0 Operation.....PSTN lines 2W half duplex, Automatic  
0 Dial and Automatic Answer  
0 Modulation.....Phase Coherent Frequency Shift Keyed  
0 (FSK)  
0 Digital Interface...EIA RS232  
0 Telephone Line.....Direct connect in accordance with FCC  
0 Interface.....Regulation Part 68. Six (6) Foot ca-  
0 ble always provided  
0 Mechanical:  
0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6",  
0 Wt 2lbs 8ozs  
0 Card.....One Card Slot in RM16M Shelf  
0 Power Requirements..115 VAC +/- 10%, 50 to 60Hz, 10 Watts

## 0 6. UDS 202S/T 0-1200BPS Modem

0 Part numbers - Rack Mount: 62025231  
0 Stand alone: 62025201

0 Data Rate.....0-1200 bps asynchronous  
  
0 Operation.....Private Line 4W full duplex, private  
0 or PSTN lines 2W half duplex Auto-  
0 matic Answer  
  
0 Modulation.....Phase Coherent Frequency Shift Keyed  
0 (FSK)  
  
0 Digital Interface...EIA RS232 and CCITT V.24  
  
0 Telephone Line.....Direct connect in accordance with FCC  
0 Interface.....Regulation Part 68. Eight (8) Foot  
0 cable always provided  
  
0 Mechanical:  
0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6",  
0 Wt 2lbs 8ozs  
0 Card.....One Card Slot in RM16M Shelf  
  
0 Power Requirements..115 VAC +/- 10%, 50 to 60Hz, 10 Watts

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## 0 7. UDS 202S/T-R 0-1200BPS Modem

0 Part numbers - Rack Mount: 62025234  
0 Stand alone: 62025232

0 Data Rate.....0-1200 bps asynchronous

0 Operation.....Private Line 4W full duplex, private  
0 or PSTN lines 2W half duplex Auto-  
0 matic Answer, Secondary Channel  
0 Configurable as follows:

0 5-baud Reverse Channel  
0 0 to 75-baud Secondary Channel  
0 0 to 150-baud Secondary Channel

0 Modulation.....Phase Coherent Frequency Shift Keyed  
0 (FSK)

0 Digital Interface...EIA RS232 and CCITT V.24

0 Telephone Line.....Direct connect in accordance with FCC  
0 Interface.....Regulation Part 68. Eight (8) Foot  
0 cable always provided

## 0 Mechanical:

0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6",  
0 Wt 2lbs 8ozs

0 Card.....One Card Slot in RM16M Shelf

0 Power Requirements..115 VAC +/- 10%, 50 to 60Hz, 10 Watts

## 0 8. UDS 201B/C 2400BPS Modem

0 Part numbers - Rack Mount: 62015166  
0 Stand alone: 62015141

0 Data Rate.....2400 bps synchronous

0 Operation.....PL 4W full duplex, PL or dial-up 2W  
0 half duplex

0 Modulation.....Differential Coherent Phased Fre-  
0 quency Shift Keyed (PSK)

0 Digital Interface...EIA RS-232

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0  
0 Analog Interface....6 pin modular jack cable always pro-  
0 vided

0 Mechanical:

0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6",  
0 Wt 2lbs 8ozs

0 Card.....One Card Slot in RM16M Shelf

0 Power Requirements..115 VAC +/- 10%, 47 to 63Hz, 12 Watts

0 9. UDS 224A 0-300/1200/2400BPS Modem

0 Part numbers - Rack Mount: 62245011  
0 Stand alone: 62245004

0 Data Rate.....Low Speed: 0-300bps Async  
0 Med/High Speed: 12/2400bps Sync  
0 12/2400bps Async

0 Operation.....PSTN or Private Lines 2W full duplex  
0 Automatic Answer

0 Modulation.....Low Speed: Frequency Shift Keying  
0 (FSK)

0 Medium Speed: Phased Shift Keying  
0 (PSK) on a debit basis

0 High Speed: Quadrature Amplitude  
0 Modulation (QAM) on a quadbit basis

0 Digital Interface...EIA RS232 and CCITT V.24

0 Telephone Line

0 Interface.....Direct connect via Programmable data  
0 jacks (RJ45S) or Permissive "Voice"  
0 jacks (RJ11C) in accordance with FCC  
0 Regulation Part 68. Eight (8) Foot  
0 Cable always provided

0 Mechanical:

0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6" Wt  
0 2lbs 10ozs

0 Card.....One Card Slot in RM16M Shelf

0 Power Requirements..115 VAC <sup>1</sup>10%, 50 to 60Hz, 4 Watts



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## 0 10. UDS 224A/D 0-300/1200/2400BPS Modem

0 Part numbers - Rack Mount: 62245010  
0 Stand alone: Not approved

0 Data Rate.....Low Speed: 0-300bps Async  
0 Med/High Speed: 12/2400bps Sync  
0 12/2400bps Async

0 Operation.....PSTN or Private Lines 2W full duplex  
0 Automatic Answer/Dial Capability

0 Modulation.....Low Speed: Frequency Shift Keying  
0 (FSK)

0 Medium Speed: Phased Shift Keying  
0 (PSK) on a debit basis

0 High Speed: Quadrature Amplitude  
0 Modulation (QAM) on a quadbit basis

0 Digital Interface...EIA RS232 and CCITT V.24

## 0 Telephone Line

0 Interface.....Direct connect via Programmable data  
0 jacks (RJ45S) or Permissive "Voice"  
0 jacks (RJ11C) in accordance with FCC  
0 Regulation Part 68. Eight (8) Foot  
0 Cable always provided

## 0 Mechanical:

0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6" Wt  
0 2lbs 10ozs  
0 Card.....One Card Slot in RM16M Shelf

0 Power Requirements..115 VAC <sup>1</sup>10%, 50 to 60Hz, 4 Watts

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## 0 11. UDS 224AT/D 0-300/1200/2400BPS Modem

0 Part numbers - Rack Mount: 62245032  
0 Stand alone: 62245030

0 NOTE: Modems having the capability of being controled by  
0 the Hayes Command Set is often refered to as "Intelligent  
0 Modems".

0 Data Rate.....Low Speed: 0-300bps Async  
0 Med/High Speed: 12/2400bps Sync  
0 12/2400bps Async

0 Operation.....PSTN or Private Lines 2W full duplex  
0 Automatic Answer/Dial Capability  
0 Hayes Command Set Capability

0 Modulation.....Low Speed: Frequency Shift Keying  
0 (FSK)

0 Medium Speed: Phased Shift Keying  
0 (PSK) on a debit basis

0 High Speed: Quadrature Amplitude  
0 Modulation (QAM) on a quadbit basis

0 Digital Interface...EIA RS232 and CCITT V.24

## 0 Telephone Line

0 Interface.....Direct connect via Programmable data  
0 jacks (RJ45S) or Permissive "Voice"  
0 jacks (RJ11C) in accordance with FCC  
0 Regulation Part 68. Eight (8) Foot  
0 Cable always provided

## 0 Mechanical:

0 Stand-Alone....Width 7", Height 2.25", Depth 9.6" Wt  
0 2lbs 10ozs  
0 Card.....One Card Slot in RM16M Shelf

0 Power Requirements..115 VAC <sup>1</sup>10%, 50 to 60Hz, 4 Watts

0

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## 0 12. UDS EC224A/D Modem

0 Part numbers - Rack Mount: Not Approved  
0 Stand alone: 62245027

0 NOTE: Modems having the capability of being controled by  
0 the Hayes Command Set is often refered to as "Intelligent  
0 Modems".

0 Data Rate.....Low Speed: 0-300bps Async  
0 Med/High Speed: 12/2400bps Sync  
0 12/2400bps Async

0 Operation.....PSTN or Private Lines 2W full duplex  
0 Automatic Answer/Dial Capability,  
0 Hayes Command Set Capability, Error  
0 control (MNP Level 1)

0 Modulation.....Low Speed: Frequency Shift Keying  
0 (FSK)

0 Medium Speed: Phased Shift Keying  
0 (PSK) on a debit basis

0 High Speed: Quadrature Amplitude  
0 Modulation (QAM) on a quadbit basis

0 Digital Interface...EIA RS232 and CCITT V.24

## 0 Telephone Line

0 Interface.....Direct connect via Programmable data  
0 jacks (RJ45S) or Permissive "Voice"  
0 jacks (RJ11C) in accordance with FCC  
0 Regulation Part 68. Eight (8) Foot  
0 Cable always provided

## 0 Mechanical:

0 Stand-Alone....Width 7", Height 2.25", Depth 9.6" Wt  
0 2lbs 10ozs

0 Card.....One Card Slot in RM16M Shelf

0 Power Requirements..115 VAC <sup>1</sup>10%, 50 to 60Hz, 4 Watts

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## 0 13. UDS 208A/B 4800BPS Modem

0 Part numbers - Rack Mount: 62085083  
0 Stand alone: 62085064

0 Data Rate.....4800 bps synchronous

0 Operation.....PSTN or PLL 2W half duplex or PLL 4W  
0 FULL duplex, Automatic Answer

0 Modulation.....8-Phase Differential Coherent Phase  
0 Shift Keyed (DPSK)

0 Digital Interface...EIA RS232 and CCITT V.24

0 Telephone Line

0 Interface.....Direct connect in accordance with FCC  
0 Regulation Part 68. Eight (8) Ft. Ca-  
0 ble always provided

0 Mechanical:

0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6",  
0 Wt 2lbs 8ozs

0 Card.....One Card Slot in RM16M Shelf

0 Power Requirements..115 VAC  $\pm 10\%$ , 50 to 60Hz, 10 Watts

## 0 14. UDS D9.6K 2.4K/4.8K/9.6K BPS Modem

0 Part numbers - Rack Mount: 64965007  
0 Stand alone: 64965004

0 Data Rate.....9.6K, 4.8K, or 2.4K bps

0 Operating Modes.....DDS full-duplex multipoint, DDS full  
0 duplex Point-to-Point, 4W full du-  
0 plex, 4W half-duplex or simplex Se-  
0 rial binary, Sync, Async

0 Operating Range.....Wire Gauge Data Rate Distance

| ----- | -----    | -----     |
|-------|----------|-----------|
| 19    | 9.6K bps | 15 miles  |
| 19    | 4.8K bps | 19 miles  |
| 19    | 2.4K bps | 25 miles  |
| 26    | 9.6K bps | 5.5 miles |
| 26    | 4.8K bps | 7 miles   |
| 26    | 2.4K bps | 10 miles  |

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0  
0 Unloaded Metallic Circuits; 19 to 26  
0 gauge

0 DTE Interface.....EIA RS232

0 Mechanical:

0 Stand-Alone.....Width 7", Height 2.257", Depth 9.6",  
0 Wt 2.5lbs

0 Card.....One Card Slot in RM16M Shelf

0 Power Requirements..115 VAC 60Hz, 4 Watts

0 15. UDS 56KBPS Modem

0 Part numbers - Rack Mount: 64565007  
0 Stand alone: 64565005

0 Data Rate.....56K BPS Serial Binary Synchronous  
0 Format

0 Operation.....DDS Full Duplex Multipoint  
0 DDS Full Duplex Point-To-Point  
0 4-Wire Full Duplex  
0 4-Wire Half Duplex

0 Range: WIRE GAUGE DISTANCE  
0 19 10 miles  
0 26 03 miles

0 DTE Interface.....CCITT V.35 Via UDS Provided Adapter  
0 Cable

0 Mechanical:

0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6",  
0 Wt 2lbs 4ozs

0 Card.....One Card Slot in RM16M Shelf

0 Power Requirements..115 VAC <sup>±</sup>10%, 50 to 60Hz, 5 Watts

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0 16. UDS 720 Dialback Unit (DDBU)

0 Part numbers - Rack Mount: 61025082  
0 Stand alone: 61025047

0 a) A DDBU is a device that allows a 4-Wire Private  
0 Leased Line (PLL) modem to operate over 4-Wire Pri-  
0 vate Lease Lines in normal mode, and to operate over  
0 two PSTN (2-Wire) lines in backup mode, where one  
0 PSTN Line is used to transmit data and the other is  
0 used to receive data.

0 b) Backup mode may be established manually using a  
0 standard telephone, automatically on command from the  
0 front panel switch, or automatically on command sent  
0 through a serial ASCII port on the rear of the unit.  
0 Rack mounted units are not approved for use at this  
0 time.

0 Data Rate.....150, 300, 1200, 4800, or 9600 asyn-  
0 chronous

0 Operation.....PSTN lines or Private Line 4W full  
0 duplex Automatic, Manual, or Terminal  
0 Dialing Automatic Answer

0 Digital Interface...EIA RS232 and CCITT V.24

0 Telephone Line  
0 Interface.....Direct connect in accordance with FCC  
0 Regulation Part 68. Eight (8) Foot  
0 Cable always provided

0 Mechanical:  
0 Stand-Alone.....Width 7", Height 2.25", Depth 9.6",  
0 Wt 4lbs 10ozs  
0 Card.....One Card Slot on RM16M Shelf

0 Power Requirements..115 VAC  $\pm 10\%$ , 50 to 60Hz, 10 Watts

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0 17. UDS 829 Auxiliary Data Set (ADS)

0 Part numbers - Rack Mount: 6104-5001  
0 Stand alone: Not Approved

0 The UDS 6104-5001 (A829-L4) Data Line Termination Card  
0 (DLTC) is different from the Rixon C829CR-L4 DLTC, in  
0 that it mounts on the same data set shelf as its associ-  
0 ated modem. Yet, both provide the same functions, such  
0 as:

0 \* four wire (4W) interface between a data set (modem)  
0 and a transmission facility

0 \* Equalization, Gain Adjustment, and Multiple Loop Back  
0 Modes - set via Dip Switches.

0 \* Receive Gain - fine adjusted from the front panel us-  
0 ing a screwdriver.

0 The UDS RM16M data set shelf can accomodate up to sixteen  
0 (16) A829L4 cards. All power is provided by the RM16M  
0 transformer with interface jacks and pins available on  
0 the rear panel of the shelf. The front panel has audio  
0 test jacks to aid in equalization and level setup, a  
0 loopback mode LED, power LED, and a gain control for re-  
0 ceive level decibel range.

0 When assigning the cards to RM16M card slots, keep in  
0 mind that the RM16M has two separate power supplies. One  
0 powers slots 1-8 and ones powers slots 9-16. Therefore,  
0 assign the A829L4 cards or UDS modems in a manner which  
0 equalizes the load on each power supply.

0 TECHNICAL SPECIFICATIONS FOR THE UDS A829L4 AUX. DATA SET

0 Receiver Gain.....20dB loss to 20dB gain, switch se-  
0 lectable in 10 db increments. 0 to  
0 10 dB gain adjust for intermediate  
0 values.

0 Receive Frequency  
0 Response.....100 Hz to 10KHz (+1 dB) 200 Hz to 5  
0 KHz (+0.5 dB)

0 I/O Line Frequency..150, 600, or 1200 KHz, switch se-  
0 lectable

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0 Modem I/O Impedance.600 OHMS

0 Equalization (Ref 1004 Hz):

0 Low Frequency...(0 to 3.1 dB)

0 High Frequency...(0 to 12.7 dB)

0 Transmit Attenuation 0 to 15 dB in 1 dB steps

0 Max Line Input Level 0dBm

0 Max Line Output Level 0dBm

0 Max Modem Input Level 0dBm

0 Max Modem Output Level 0dBm

0 Tone Loopback

0 Bandwidth.....2713 Hz <sup>1</sup>7 Hz

0 Tone Loopback Operate

0 Level.....-30dBm Minimum

0 Tone Loopback Guard

0 Action.....No tone activated loopback if the en-  
0 ergy is present outside 2713 Hz <sup>1</sup>37  
0 Hz band is at a level greater than  
0 -30dBm

0 Tone Loopback On/Off Time:

0 Activate.....Greater than 2 seconds

0 Deactivate.....Greater than 900ms

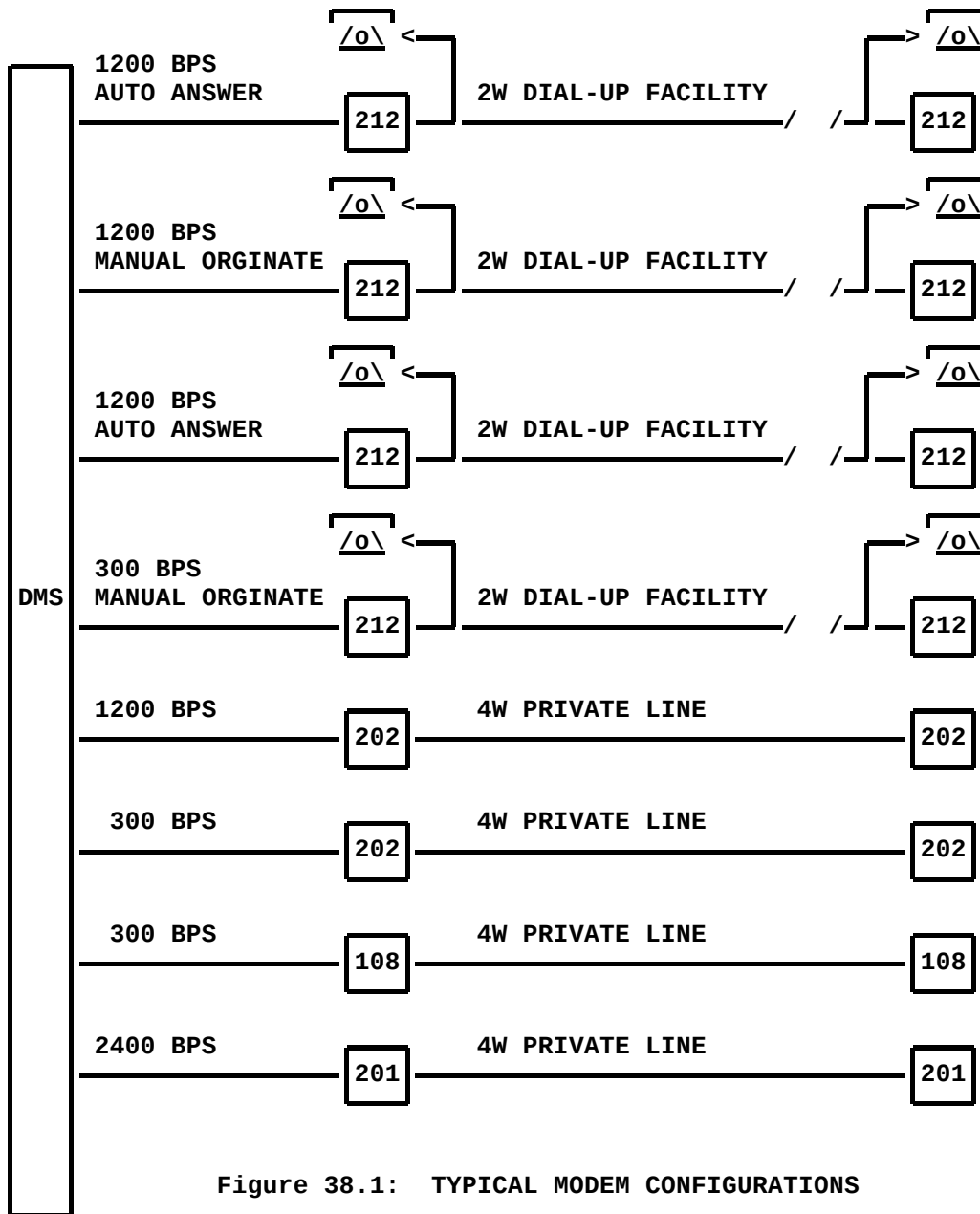
0 Abort Timer.....20 Minutes, switch selectable.

0 18. Standard sparing algorithms shall apply for modems. Pro-  
0 vide the UDS 65001860 (Power Supply) as spare equipment  
0 for the modem shelf per Telco request.

0 ( v) Modem Layout Diagram

0 Detailed below are the conceptual layout typical to both  
0 Dial-Up and Dedicated modems.





Detailed below in Figures 38.2 & 38.3 respectively are typical conceptual layouts of a Dual Dial Backup Unit (DDBU) in a Dedicated and Dial-Up mode.

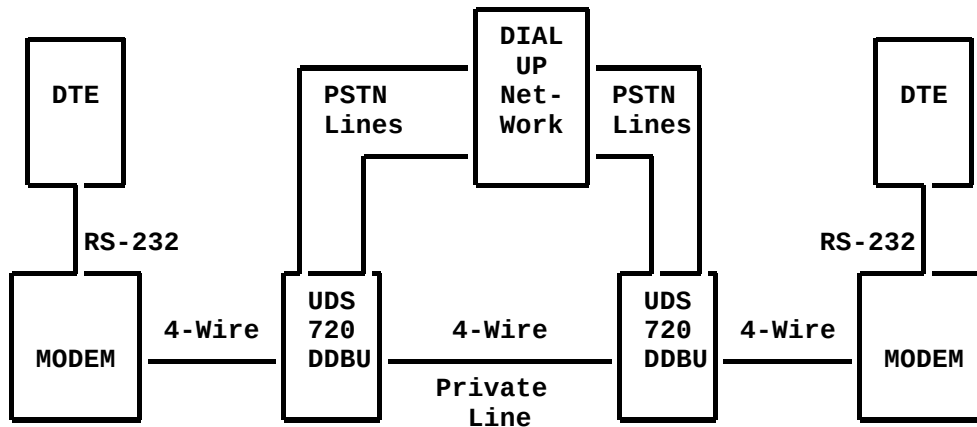
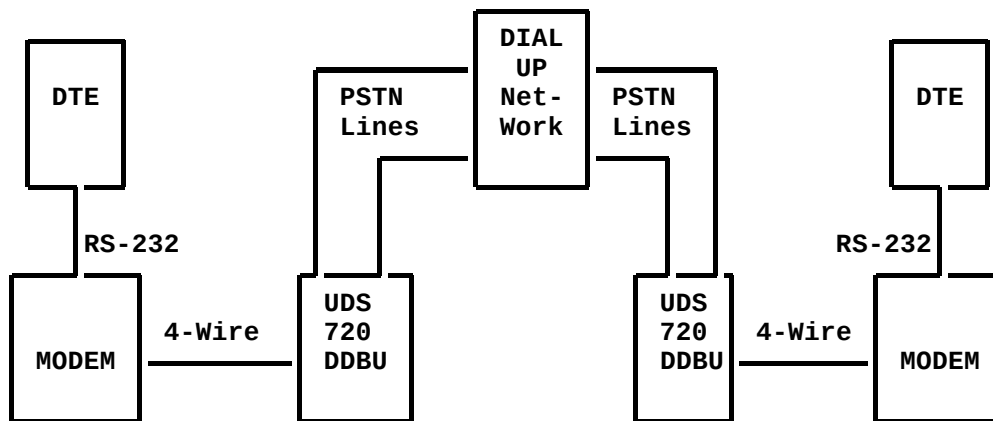


**Figure 38.2: DDBU Dial Backup Configuration (dedicated)**



### Figure 38.3: DDBU Dial-Up Configuration

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0 11.3.9 DEC VT-320 Series VDU0 (a) General Description

0 The Multinational versions of Digital Equipment Corp. (DEC)  
0 VT-320 Series Video Display Units have been qualified for use in  
0 all DMS 100/200/250/300 RS-232C applications.

0 The VT320 Series Video Display Units are always provided with the  
0 following features:

- 0 - VT-220 Compatibility
- 0 - Bidirectional Printer Port (unapproved application)
- 0 - 15 Programmable Function Keys
- 0 - Modem Support
- 0 - Non-glare Screen
- 0 - DEC423 port

0 (b) References

0 None

0 (c) Provisioning Considerations:

0 ( i) Provide the DEC VT320 Series VDUs as required by the  
0 Telco for use as MAP Terminal, portable MAP Terminal, or  
0 RTIF Terminal in a local or remote environment. If pro-  
0 visioning in a local environment where 20mA Current Loop  
0 Operation is required, then provide one 232CL2 B & B  
0 Electronics of Ottawa, IL RS-232 Current Loop Adapter  
0 per VDU required.

0 The DEC VT320 Series VDUs can be ordered using the fol-  
0 lowing codes:

0 VT320-JA DEC VT320 Series VDU Amber  
0 VT320-GA DEC VT320 Series VDU White  
0 VT320-HA DEC VT320 Series VDU Green  
0 VT2XX-AA VT200 Series Terminal Stand

0 ( ii) The DMS100 hardware required to support this unit is de-  
0 pendent upon the application as follows:

0 MAP Terminal - NT1X67 Cards are required on the IOC or  
0 CMC

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0 RTIF Terminal - NT9X26 RTIF I/F PCB

0 Power Source - NT0X87 Inverter Unit (Canadian applica-  
0 tions only) or the LaMarche Inverter  
0 (U.S. applications only).

0 ( iii) DMS100F applications using the VT-320 slave printer port  
0 must be tested prior to employment. This VT-320 capabil-  
0 ity has not been approved for use with the DMS100F.

0 Additionally, these units are conditionally approved for  
0 DMS-100F 20mA application. The units are approved for  
0 20mA applications when used in conjunction with the  
0 232CL2R Current Loop Adapter (CLA).

0 ( iv) The DEC VDU must be powered in accordance with ISG spec-  
0 ifications.

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0 93 12 030 11.3.10 Intecolor Colortrend 220 VDU0 (a) General Description

0 The COLORTREND CT220R Color VDU has been qualified for use in the  
0 DMS100F environment. It joins the DEC VT220 VDU as the only two  
0 approved video display units approved for use with the DMS100  
0 family.

0 The COLORTREND CT220R VDU is manufactured by INTECOLOR CORPO-  
0 RATION in NORCROSS, GA. It has a 14 inch screen which can be  
0 programmed to display in eight (8) foreground colors and eight  
0 (8) background colors. The CT220R is fully compatible with the  
0 DEC VT100 AND VT220 terminals.

0 The CT220R has been approved for the US market only.

0 (b) References

0 None

0 (c) Provisioning Considerations:

0 ( i) For each VDU required order :

| 0 | QTY   | PEC    | DESCRIPTION                |
|---|-------|--------|----------------------------|
| 0 | _____ | _____  | _____                      |
| 0 | 1     | CT220R | COLORTREND CT220R VDU      |
| 0 | 1     | 105121 | COLORTREND CT220R KEYBOARD |

0 The above PECs includes the operator's manual.

0 A programmer's manual for the CT220R can be ordered if  
0 required. To order specify the following:

| 0 | PEC    | DESCRIPTION               |
|---|--------|---------------------------|
| 0 | _____  | _____                     |
| 0 | 999458 | CT220R Programmers Manual |

0 ( ii) Intecolor does not manufacture a terminal stand for the  
0 CT220R. When a terminal stand is required specify the  
0 following:

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| 0 | PEC              | DESCRIPTION                                                                                                                                                |
|---|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | VT2XX-AA         | VT-220 Terminal Stand w/Casters                                                                                                                            |
| 0 | ( iii)           | Specifications                                                                                                                                             |
| 0 | CONTROL CODES... | VT220 7 AND 8 Bit Modes, VT100<br>(ANSIX3.64), VT52 compatible, Color Com-<br>mands conform to ISO 6429                                                    |
| 0 | HOST PORT.....   | Serial Asynchronous Data Communications,<br>EIA Standard RS-232 CCITT-V.24, at Baud<br>rates up to 19.2K, modem control lines<br>can be enabled from setup |
| 0 | PRINTER PORT.... | 9 Pin D Shell same as VT220, supports<br>same monochrome printers as VT220, color<br>printer support also provided                                         |
| 0 | POWER            |                                                                                                                                                            |
| 0 | LINE VOLTAGE.... | 104-125 VAC or 207-250 VAC                                                                                                                                 |
| 0 | LINE FREQUENCY.. | 50-60 HZ                                                                                                                                                   |
| 0 | INPUT POWER..... | 105 WATTS (MAXIMUM)                                                                                                                                        |
| 0 | DIMENSIONS       |                                                                                                                                                            |
| 0 | MONITOR.....     | HEIGHT: 15",WIDTH:15 1/4",DEPTH: 17"                                                                                                                       |
| 0 | KEYBOARD.....    | HEIGHT: 1 1/2",WIDTH:21",DEPTH: 8"                                                                                                                         |
| 0 | WEIGHT.....      | 38 LBS                                                                                                                                                     |

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0 12.0 Tellabs 292 Conference/Alerting System

0 12.1 Introduction

0 The Tellabs 292R Conference/Alerting System is a multistation  
0 ringdown telephone conference circuit. It is designed primarily  
0 for use in local emergency reporting and alerting applications,  
0 and in business conferencing applications. The 292R system pro-  
0 vides simultaneous access for up to 60 local stations, either  
0 from a dedicated telephone (i.e, a "master station") or from any  
0 local telephone line via a listed directory number. Conferees are  
0 provided with emergency conference capability at their home or  
0 business telephones with no disruption of normal telephone ser-  
0 vice except during an emergency call. All stations assigned to  
0 the conference network are signaled via a distinctive ringing  
0 format on conference calls. The 292R systems may be used with  
0 any Class 5 or PBX switching system. Services provided by these  
0 systems are typically used by volunteer fire departments,  
0 paramedic teams, airport emergency crews, banks, stores, and fac-  
0 tories with multiple locations, and the like.

0 The 292R system affords a choice of three methods of originating  
0 a conference: Automatic Origination, Manual Origination, or a  
0 combination of the two. The method chosen will depend on telco  
0 requirements.

0 Automatic Conference Origination: A call from any lo-  
0 cal line to a listed emergency-reporting-directory number  
0 causes all stations assigned to the conference network to  
0 ring distinctively. Anyone in the Conference Network may  
0 answer the call and hold up the conference for the pur-  
0 pose of relaying information. The conference can be  
0 maintained until the last conferee goes on-hook, or can  
0 be forced idle after a predetermined timeout interval  
0 (adjustable between 1.5 to 5 minutes).

0 Manual Conference Origination: In this arrangement, the  
0 master station is manned 24 hours per day and emergency  
0 reporting calls are received via a dedicated phone. The  
0 person on duty at the master station goes off-hook on an-  
0 other dedicated phone (for the conference network) caus-  
0 ing all other station with the conference network to ring  
0 distinctively. The duty person provides all conferees  
0 with details and direction regarding the emergency. The  
0 conference network is active as long as the master sta-  
0 tion remains off-hook.

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0 Both Automatic and Manual Origination: This option is em-  
0 ployed when the master station can be manned only part of  
0 the time. While the master station is manned manual con-  
0 ferencing is enabled. While the master station is un-  
0 manned, a call to the listed emergency reporting  
0 directory number is transferred to the 291/292 System and  
0 automatic conferencing is enabled. This is done via a  
0 (TELCO PROVIDED) switch at the master station that trans-  
0 fers the fire reporting number from the master station to  
0 the Automatic Conferencing Module.

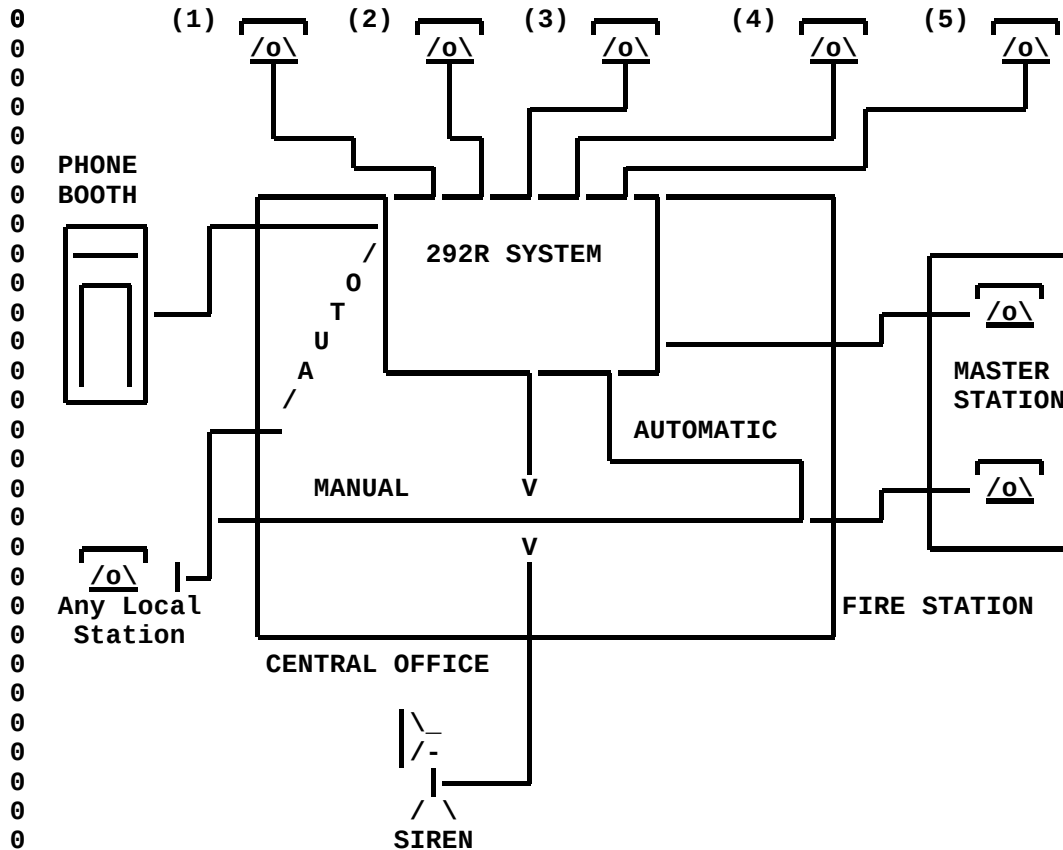
0 In addition to the operational capabilities previously mentioned  
0 (distinctive ringing on conference calls, automatic and/or manual  
0 conference origination, and compatibility with any conventional  
0 Class 5 or FCC-registered PBX switching system), the 291/292 Sys-  
0 tem provides the following functions related to its installation  
0 and operation:

- 0 \* sleeve-lead, loop-start (Type II E&M signaling inter-  
0 face), or ground-start control of conference access
- 0 \* accommodation of up to three ringing frequencies for har-  
0 monic ringing
- 0 \* ringing timeout to terminate ringing at stations where  
0 conference calls are not answered
- 0 \* timed siren control, either continuous or interrupted, un-  
0 der control of any number of stations
- 0 \* remote-access capability, whereby emergency personnel  
0 away from home or office can call in via an unlisted  
0 number and be connected to a conference in progress
- 0 \* an integral tone oscillator that eliminates the need to  
0 connect to Central Office (i.e., host or remote) tone  
0 sources
- 0 \* individual fusing for all modules in the system
- 0 \* optional supervisory lamp panel available
- 0 \* optional selective signaling for up to 11 groups of  
0 stations; in Central Office applications DTMF (Dual Tone  
0 Multifrequency) telephone sets are required

0



0 VOLUNTEER FIREMEN



0 FIGURE 38.4: TYPICAL 292R FIRE-REPORTING (FIRE BAR) APPLICATION

0 12.2 Features

0 None

0

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0 12.3 Equipment Provisioning0 12.3.1 Tellabs 292 Equipment0 (a) General Description

0 This section contains engineering ordering information for the  
0 Tellabs model 292R Conference/Alerting System. The 292R may ac-  
0 cess up to a maximum of 60 lines.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) The following equipment codes are currently available:

| 0 | PEC     | DESCRIPTION                    |
|---|---------|--------------------------------|
| 0 |         |                                |
| 0 | 292BR-1 | 23" 10-Line Conf/Alerting Sys  |
| 0 | 292DR   | 19/23" 10-Line Expansion Shelf |
| 0 | 9293    | 2W ARD Conf Orig Line Ckt      |
| 0 | 9296    | 2W ARD Conf Trk Access Ckt     |
| 0 | 9294    | 2W Conf Amplifier module       |
| 0 | 9121    | Tellabs 292 Tone Supply        |
| 0 | 9132    | Tellabs 292 Ringing Timer      |
| 0 | 9003A   | Telab 292 Ringing Interrupt    |
| 0 | 9133    | Tellabs 292 Long Timer         |
| 0 | 6072    | 1-Digit DTMF Dial Decoder      |
| 0 | 9021    | Tellabs 291/292 Fuse Module    |
| 0 | 9291    | Tellabs 2W ARD Line Ckt        |

0 ( ii) Basic Requirements For All Conferencing Arrangements  
0 (i.e., Automatic Conferencing, Manual Conferencing, or  
0 both):

0 The 292BR-1 System consists of one (1) 292BR mounting as-  
0 sembly, one (1) 80-5033 (Common Equipment Shelf), one (1)  
0 80-5034 (10-Line Station Shelf), and up to five  
0 provisionable 292DRs (10-Line Expansion Shelf).

0 The following modules are provisioned on the Common  
0 Equipment Shelf (80-5033) in all applications:

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- 0 - One 9294 2-Wire Conference Amplifier Module
- 0 - One 9121 Tone Supply Module.
- 0 - One 9132 Ringing Timer Module.
- 0 - One 9003A Ringing Interrupter Control Module.
- 0 - Two 9021 Fuse Modules

0 ( iii) Specific Requirements For Automatic Conferencing: One  
0 9296 2-wire Automatic Ringdown (ARD) Trunk Access Module  
0 is required. It is strongly recommended that two 9296's  
0 arranged as a hunt group be provided.

0 In Automatic Conferencing arrangements where two  
0 9296's are used (as recommended), it is also strongly  
0 recommended that one conference telephone location  
0 (typically, the fire station) be supplied with a two  
0 position switch (the telco is responsible for engi-  
0 neering, furnishing, and installing the two position  
0 switch). This switch is used to activate/deactivate  
0 one or the other 9296's and busy out the associated  
0 line circuit in the central office.

0 The benefit of the above arrangement is that one 9296  
0 is always available to initiate a conference. For ex-  
0 ample:

0 If a conference is held up by a caller  
0 failing to go on-hook (e.g, when abandoning  
0 a burning building), the duty fireman need  
0 only set the switch to the other position  
0 which drops the call and readies the system  
0 for another call via the other 9296.

0 Secondly, with only one 9296 active at a time, two  
0 simultaneous fire-reporting calls would result in one  
0 being processed and the other receiving busy tone.

0 Consequence of not providing the above arrangement:

- 0 1. If a conference were held up as described above  
0 the system would be locked-up indefinitely, no  
0 other emergency-reporting calls could be proc-  
0 essed.
- 0 2. If both 9296's are active at the same time, two  
0 simultaneous fire-reporting calls would result in  
0 both calls being connected to the conference,

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0 possibly creating confusion between the callers  
0 and the firemen.

0 Provide one SD point for each line connected to a  
0 9296.

0 ( iv) Specific Requirements For Manual Conferencing: One 9293  
0 2-Wire Automatic Ringdown (ARD) Conference Originate Line  
0 Circuit Module and two dialless telephones at each key  
0 location. One phone is used to answer fire-reporting  
0 calls and the other is used to originate the conference  
0 when the duty fireman goes off-hook.

0 ( v) Specific Requirements For Combined Automatic And Manual  
0 Conferencing:

0 1. One 9296 2W ARD Trunk Access Module  
0 NOTE: Provide one SD point for each line connected to  
0 a 9296.

0 2. One 9293 2W ARD Conference Originate Line Circuit  
0 Module

0 3. Two dialless telephones configured as defined in (  
0 iv).

0 ( vi) System Options Common To All Conferencing:

0 \* Remote Access: Provided only when a community siren  
0 is used. At least one 9296 must be provided for slot  
0 3 of the common shelf. However, a maximum of three  
0 (3) 9296's may be provided for the common shelf slots  
0 3 thru 5 to facilitate Remote-Access Call-In for  
0 three users simultaneously.

0 NOTE: Provide one SD point for each line connected to  
0 a 9296.

0 \* Siren Control: The 9133 Long Interval Timer is re-  
0 quired to start the siren and control its duration.  
0 The master station and selected fireman may be pro-  
0 vided with a pushbutton to initiate the siren and  
0 control its duration via the 9133 module. This push-  
0 button must be engineered, furnished, and installed  
0 by the Telco.

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0 \* DTMF Siren Activation: Provide the 6072 Single Digit  
0 Dual Tone Multifrequency (DTMF) Module and the 9133  
0 Long Interval Timer to allow each conference station  
0 with a DTMF telephone to start a siren and control  
0 its duration.

0 12.3.2 Discrimination Numbering

0 The OPM cabinet is identified using OPE XX discrimination number  
0 where X equals the integers 0-9. The OPE number may be unique  
0 per office or unique per site. The unique per office number must  
0 not conflict with existing RLM, LME, LCE, or RLCM numbers.

0 The internal swinging equipment racks are identified by OPE XX  
0 bay Y where X equals integers 0-9 and bay Y equals bays 0-1.

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0 12.3.3 DMS-100 Standard DF Terminal Blocks

0 (a) General Description

0 This document defines the Distributing Frame Terminal Blocks  
0 (DFTB) provisionable from the RTP approved sources (i.e. Northern  
0 Telecom Outside Plant Division (OPD) and Telzon ) and relates  
0 those products to specific applications.

0 A Connectorized Terminal Block (CTB) 8X32 can only be used for  
0 Line and Trunk Module 8-Wire (TM8) applications. Non-  
0 connectorized Terminal Block 8x32 can be used for Line, Trunk  
0 Module 8-Wire (TM8) and Miscellaneous applications.

0 Distribution frame terminal blocks are intended for use as a ter-  
0 minating device on Central Office or PBX distributing frames. A  
0 Terminal Block (TB) has two terminating sides, the Equipment Side  
0 (Termination of DMS-100 equipment) and the Cross Connect Side  
0 (Termination of incoming lines, trunks and miscellaneous cir-  
0 cuits).

0 Terminations on the Equipment Side can be made by using terminal  
0 pins (NON-CONNECTORIZED) or interlocking connectors  
0 (CONNECTORIZED). Connectorized Terminal Blocks (CTB) can be used  
0 with Northern Telecom's DMS-100 connectorized cables for quick  
0 installation. Customers have realized a full 75 to 95% reduction  
0 in installation labor costs. It should be noted CTB'S are used  
0 for lines and trunks (TM8) applications only.

0 Terminations on the Cross Connect Side are made by using only  
0 terminal pins.

0 TERMINAL PIN TYPE

0 There are (3) terminal pin types : Single Post Wire-Wrap (SPWW),  
0 Bifurcated Wire-Wrap (BWW) and Insulation Displacement Bifurcated  
0 (IDV) also called Quick Connect (Q-CONN).

0 SINGLE POST WIRE-WRAP terminal pin is rectangular in shape and  
0 extends from the face of the terminal field for connection of 22  
0 to 26 AWG wire.

0 Single Post Wire-Wrap  
0 \_\_\_\_\_

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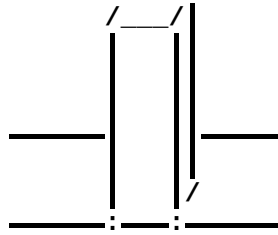


Figure 314.3 Front View of Terminal

BIFURCATED WIRE-WRAP terminal pin is "U" in shape and extends from the face of the terminal field for convenient connection of 22 to 26 AWG wire.

Bifurcated Wire-Wrap

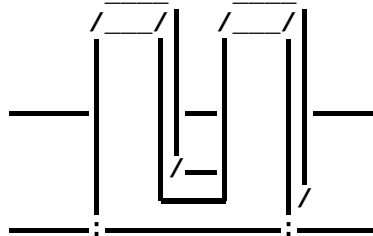
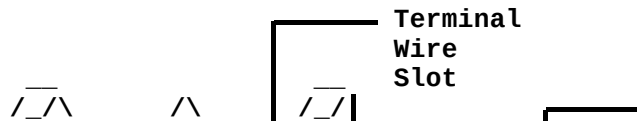


Figure 314.4 Front View of Terminal

INSULATION DISPLACEMENT BIFURCATED (IDV) OR QUICK CONNECT (Q-CONN) terminal pin is "W" in shape. Although this terminal is ordered less than 6" of the time it automatically strips, terminates, and cuts to length the wire applied to it. When a wire is inserted into the termination slot, the insulation is displaced and the exposed conductor is wedged into an electrical connection with the terminal. Simultaneously, the strain relief connection is made and the cutter bar shears the wire to the correct length. IDV or Q-CONN terminals can be used with 22 or 24 AWG wire.

QUICK CONNECT



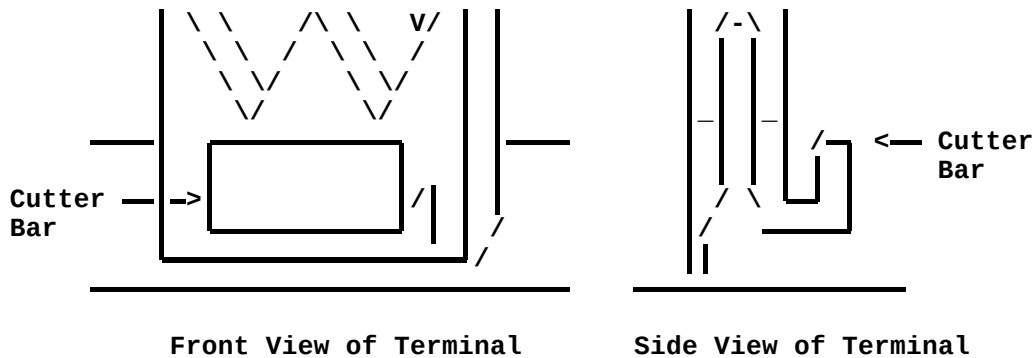
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Figure 314.5

#### CONNECTOR TYPE

Up to four interlocking 32 pair TRW or AMP male (plug) ribbon connectors are telephone industry standard offerings on both OPD and TELZON 8X32 CTB'S. The male (plug) connectors are designed to engage spring clips on female (receptable) connectors (standard on Northern Telecom's connectorized line cables). These connectors may be disconnected by using a pointed object and depressing the metal spring of the connector and pulling them apart on at least one end. This latching arrangement eliminates the need for additional locking hardware and safeguards against accidental uncoupling.

Each connector is wired for 32 circuits. When used with Line equipment, one connector represents one Line Sub Group (LSG) or one half of a Line Drawer. A standard CTB with four (4) connectors will then terminate four (4) LSG'S or two (2) Line Drawers.

For Trunk Module 8-Wire (TM8) equipment, one connector represents 4 of 16 wires required for each card slot on a TM8 shelf. A standard CTB with four connectors will then terminate all 16 wires required for each card slot for a total of 240 wires for 15 slots per shelf.

#### (b) References

Vendor Equipment Qualification List (VEQL)

#### (c) Provisioning Considerations



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0 ( i) If a particular item is not on the VEQL, then a product  
0 introduction request must be submitted to Design  
0 Engineering/Marketing Product Management as outlined in  
0 CEP 207 CPC Code Procedure. If accepted it must be intro-  
0 duced into the DMS-100 Order Capture Process via the OEM  
0 Process so that specific Support/Engineering/Marketing  
0 details are addressed and documented.

0 ( ii) QUANTITY OF TERMINAL BLOCKS

0 The quantity of Terminal Blocks (TB) for an office (D) is  
0 determined by the sum of blocks required for Trunk Cards  
0 (A), Lines (B) and Miscellaneous (C):  $(A + B + C) = (D)$ .

0 ( iii) QUANTITY OF TERMINAL BLOCKS FOR TRUNK CARDS

0 An estimate of required terminal blocks for Trunk Cards  
0 mounted in Maintenance Trunk Module (MTM) Shelves can be  
0 made by using the TRUNK CARD PIN ROW REQUIREMENT CALCU-  
0 LATION TABLE (see next page).

0 --- Enter the Quantity of Trunk Cards mounted in MTM  
0 shelves which require MDF terminations in column (A).

0 --- Select the Block Type Ordered in column (B)  
0 (6X,8X,or 10X..etc). The numbers in the columns rep-  
0 resent the Pin Rows required for each card type per  
0 the Contract Drafting Department 3424.

0 --- Determine the Total Number of Pin Rows Required  
0 for each card type in column (C) by multiplying the  
0 Quantity of Trunk Cards in column (A) by the number  
0 of Pin Rows required in column (B):  $(A \times B) = C$ .

0 --- Determine the Total Number of Pin Rows Required  
0 for all Trunk Cards (D) by adding the Total Number of  
0 Pin Rows Required for each card type together in col-  
0 umn (C).

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TRUNK CARD PIN ROW REQUIREMENT CALCULATION TABLE

| TRUNK<br>CARD | (A)                  |                    | (B)                                                                    |    |     | (C)                                                     |
|---------------|----------------------|--------------------|------------------------------------------------------------------------|----|-----|---------------------------------------------------------|
|               | NUMBER<br>OF<br>PINS | QTY<br>OF<br>CARDS | NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>CARD BASED ON<br>BLOCK TYPE |    |     | (A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|               |                      |                    | 6X                                                                     | 8X | 10X |                                                         |
| NT0X10AA      | 28                   |                    | 5                                                                      | 4  | 4   |                                                         |
| NT1X54AA      | 8                    |                    | 2                                                                      | 1  | 1   |                                                         |
| NT2X01AA      | 20                   |                    | 4                                                                      | 4  | 4   |                                                         |
| NT2X10AB      | 4                    |                    | 1                                                                      | 1  | 1   |                                                         |
| NT2X10BA      | 4                    |                    | 1                                                                      | 1  | 1   |                                                         |
| NT2X57AA      | 28                   |                    | 5                                                                      | 4  | 4   |                                                         |
| NT2X57AB      | 28                   |                    | 5                                                                      | 4  | 4   |                                                         |
| NT2X66AA      | 6                    |                    | 1                                                                      | 1  | 1   |                                                         |
| NT2X67AA      | 8                    |                    | 1                                                                      | 1  | 1   |                                                         |
| NT2X72AA      | 12                   |                    | 2                                                                      | 2  | 2   |                                                         |
| NT2X72AB      | 14                   |                    | 3                                                                      | 2  | 2   |                                                         |
| NT2X81AA      | 12                   |                    | 2                                                                      | 2  | 2   |                                                         |
| NT2X81AB      | 12                   |                    | 2                                                                      | 2  | 2   |                                                         |
| NT2X82AA      | 4                    |                    | 1                                                                      | 1  | 1   |                                                         |
| NT2X83AA      | 4                    |                    | 1                                                                      | 1  | 1   |                                                         |
| NT2X88AA      | 16                   |                    | 4                                                                      | 2  | 2   |                                                         |
| NT2X90AD      | 9                    |                    | 2                                                                      | 2  | 2   |                                                         |
| NT2X92AA      | 4                    |                    | 1                                                                      | 1  | 1   |                                                         |
| NT2X98AA      | 8                    |                    | 2                                                                      | 1  | 1   |                                                         |
| NT2X98AB      | 4                    |                    | 1                                                                      | 1  | 1   |                                                         |
| NT3X05AA      | 4                    |                    | 1                                                                      | 1  | 1   |                                                         |
| NT3X09AA      | 24                   |                    | 5                                                                      | 4  | 4   | SEE NOTE 1                                              |
| NT3X09BA      | 32                   |                    | 5                                                                      | 4  | 4   | SEE NOTE 1                                              |
| NT5X03AA      | 14                   |                    | 3                                                                      | 2  | 2   |                                                         |
| NT5X04AA      | 10                   |                    | 2                                                                      | 2  | 2   |                                                         |
| NT5X06AA      | 10                   |                    | 2                                                                      | 2  | 2   |                                                         |
| NT5X30AA      | 2                    |                    | 1                                                                      | 1  | 1   |                                                         |

Total Number of Pin Rows Req. for all cards (D) \_\_\_\_\_

NOTE 1 Provide at least 1 Dedicated Block for NT3X09AA/BA cards.  
The result should be rounded up to the next whole number.

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--- Determine the Number of Pin Rows on the Type of Block Ordered (E) ( See Example ).

Example:

| Terminal Block | Number of Pin Rows on Block |
|----------------|-----------------------------|
| 8 X 32         | 32                          |
| 10 X 30        | 30                          |

--- Terminal Blocks for Trunk Cards (F) can be determined by using the formula below:

Total Number of Pin Rows Required  
for All Trunk Cards (D) Terminal Blocks  
===== for MTM Trunk  
Cards (F)  
Number of Pin Rows on the Type of  
Block Ordered (E)

The result of the formula should be rounded up to the next whole number.

( iv ) QUANTITY OF TERMINAL BLOCKS FOR LINES

An estimate of required terminal blocks for Lines (LSG'S) can be made by using the LINE SUB GROUP PER BLOCK CALCULATION TABLE.

LINE SUB GROUP PER BLOCK CALCULATION TABLE

|                                     | (A)<br>TERMINAL BLOCK TYPE |      |      |       |
|-------------------------------------|----------------------------|------|------|-------|
|                                     | 8X24                       | 8X30 | 8X32 | 10X30 |
| QUANTITY OF LSG'S<br>PER BLOCK TYPE | 3                          | 3    | 4    | 4     |

--- Select the Block Type Ordered in column (A). The numbers in the columns represent the quantity of LSG'S which can be terminated on one block per the Contract Drafting Department 3424.

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MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE

| MISCELLANEOUS<br>ITEM | NUMBER<br>OF<br>PINS | (A)<br>QTY<br>OF<br>ITEMS | (B) NUM OF PIN ROWS<br>REQ FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOT NUM OF PIN<br>ROWS REQ |
|-----------------------|----------------------|---------------------------|--------------------------------------------------------------------|----|-----|---------------------------------------------------|
|                       |                      |                           | 6X                                                                 | 8X | 10X |                                                   |
| TM8 SH. NT2X52AG      | 240                  | 1                         | -                                                                  | 30 | 30  | SEE NOTE 1                                        |
| TM4 SH. NT2X52AG      | 120                  | 2                         | -                                                                  | 30 | 30  | SEE NOTE 1                                        |
| TM2 SH. NT2X52AG      | 64                   | 4                         | -                                                                  | 30 | 30  | SEE NOTE 1                                        |
| DATA SHELF            |                      |                           |                                                                    |    |     |                                                   |
| NT4X25BH              | 96                   |                           |                                                                    | 12 | 12  |                                                   |
| BSAC NT4X09BA         | 32                   |                           | 6                                                                  | 5  | 5   |                                                   |
| HIGH TONE GEN.        |                      |                           |                                                                    |    |     |                                                   |
| NT5X52AA              | 4                    |                           | 1                                                                  | 1  | 1   |                                                   |
| LCE FR. SUPV          |                      |                           |                                                                    |    |     |                                                   |
| PANEL NT6X35AA        | 8                    |                           | 2                                                                  | 2  | 2   |                                                   |
| BD TO BD TEST         |                      |                           |                                                                    |    |     |                                                   |
| UNIT NT5X73AA/AB      | 33                   |                           | -                                                                  | 12 | 10  |                                                   |
| UNIV. CAMA CKT.       |                      |                           |                                                                    |    |     |                                                   |
| NT5X74AA              | 8                    |                           | 2                                                                  | 1  | 1   |                                                   |
| AUX CAMA CKT.         |                      |                           |                                                                    |    |     |                                                   |
| NT5X75AA/AB           | 12                   |                           | 2                                                                  | 2  | 2   |                                                   |
| BOARD TO BOARD        |                      |                           |                                                                    |    |     |                                                   |
| TEST NT5X79AA         | 9                    |                           | 2                                                                  | 2  | 2   |                                                   |
| ABBT APPLIQUE SP1     |                      |                           |                                                                    |    |     |                                                   |
| NT5X88AA              | 5                    |                           | 1                                                                  | 1  | 1   |                                                   |
| ALARM EXTENSION       |                      |                           |                                                                    |    |     |                                                   |
| PANEL NT5X92AB        | 54                   |                           | 9                                                                  | 7  | 7   |                                                   |
| COIN STATION LINE     |                      |                           |                                                                    |    |     |                                                   |
| APPLIQUE NT5X93AA     | 9                    |                           | 2                                                                  | 2  | 2   |                                                   |
| DTH ROTL NT7F18AA     | 104                  |                           | -                                                                  | 15 | 15  |                                                   |
| COOK DRA              |                      |                           |                                                                    |    |     |                                                   |
| 1-CH. NT7M00          | 7                    |                           | 2                                                                  | 2  | 2   |                                                   |
| 4-CH. NT7M25          | 15                   |                           | 5                                                                  | 5  | 5   |                                                   |
| DPP NT8X48AD          | 6                    |                           | 1                                                                  | 1  | 1   |                                                   |
| BMC REDUNDANT         |                      |                           |                                                                    |    |     |                                                   |
| UNIT NT8M04           | 6                    |                           | 1                                                                  | 1  | 1   |                                                   |
| BMC DEUCE NT8M04      | 15                   |                           | 3                                                                  | 2  | 2   |                                                   |
| LIU DS0A NT9X78AA     | 8                    |                           | 2                                                                  | 1  | 1   |                                                   |
| LIU V.35 NT9X77AA     | 16                   |                           | 3                                                                  | 2  | 2   |                                                   |

Tot. Num of Pin Rows Req for Items

PAGE TOTALS

(D)

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## MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM | NUMBER<br>OF<br>PINS | QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|-----------------------|----------------------|--------------------|-------------------------------------------------------------------------------|----|-----|---------------------------------------------------------|
|                       |                      |                    | 6X                                                                            | 8X | 10X |                                                         |
|                       |                      |                    |                                                                               |    |     |                                                         |
| 1ST PAGE TOTALS       |                      |                    |                                                                               |    |     |                                                         |
| AT&T DAS UNIT         | 52                   |                    | 10                                                                            | 7  | 7   |                                                         |
| MINI-RESPONDER        |                      |                    |                                                                               |    |     |                                                         |
| 1056A                 | 7                    |                    | 2                                                                             | 1  | 1   |                                                         |
| 4-WIRE MINI-          |                      |                    |                                                                               |    |     |                                                         |
| RESPONDER 1056B       | 9                    |                    | 2                                                                             | 2  | 2   |                                                         |
| UDS RM16M SHELF       |                      |                    |                                                                               |    |     |                                                         |
| 62005220 E/W ALL      |                      |                    |                                                                               |    |     |                                                         |
| MODEM CARDS           | 52                   |                    | -                                                                             | 9  | 9   | SEE NOTE 2                                              |
| 829 DAS CARDS         | 100                  |                    | -                                                                             | 17 | 17  | SEE NOTE 2                                              |
| CASE/DATATEL 4200     |                      |                    |                                                                               |    |     |                                                         |
| MODEM SHELF           |                      |                    |                                                                               |    |     |                                                         |
| 905-5222-003          | 245                  | 1                  | -                                                                             | 32 | 32  | SEE NOTE 2                                              |
| STANDALONE MODEM      | 4                    |                    | 1                                                                             | 1  | 1   |                                                         |
| 3703-03 LOCAL         |                      |                    |                                                                               |    |     |                                                         |
| TEST CABINET E/W      |                      |                    |                                                                               |    |     |                                                         |
| 4-TRK NT0J04BN/BU     | 21                   |                    | 4                                                                             | 3  | 3   |                                                         |
| 16-TRK NT0J04BP       | 84                   |                    | 16                                                                            | 8  | 8   |                                                         |
| DRTU I/F NT0J04BS     | 8                    |                    | 2                                                                             | 1  | 1   |                                                         |
| MLT NT3J00BA          | 160                  |                    | -                                                                             | 20 | 20  |                                                         |
| TOPS MP NTNX57AC      | 256                  | 1                  |                                                                               | 32 | 32  | SEE NOTE 3                                              |
| TOPS MP NTNX60AA      | 256                  | 1                  |                                                                               | 32 | 32  | SEE NOTE 3                                              |
| LIU ALARM             |                      |                    |                                                                               |    |     |                                                         |
| NT4G46BK              | 36                   |                    | 6                                                                             | 5  | 5   |                                                         |
| LIU 4110 NT4G46CA     | 6                    |                    | 1                                                                             | 1  | 1   |                                                         |
| TOPS MPX NTNX5103     | 200                  | 1                  | -                                                                             | 30 | 30  | SEE NOTE 3                                              |
| NT3X25BA BLOCK        | 240                  | 1                  | -                                                                             | 32 | 32  | SEE NOTE 3                                              |
| NORSTAR KEY SYS.      |                      |                    |                                                                               |    |     |                                                         |
| NTZX18AB              | 232                  | 1                  | -                                                                             | 32 | 32  | SEE NOTE 3                                              |

Total Number of Pin Rows Required for all Items (D)

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0 --- Note 1:Provide at least (1) Dedicated Block for
0 Trunk Modules. The result should be rounded up to the
0 next whole number.
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0 --- Note 3: Provide (1) Dedicated Block for each  
0 unit.

0 --- Terminal Blocks for Miscellaneous Items (F) can  
0 be determined by using the formula below:

**0** The result of the formula should be rounded up to the  
**0** next whole number.

0 Approved sources for connectorized terminal blocks offer  
0 four (4) standard telephone pin configurations. Each pin  
0 configuration has a specific application for Trunks (TM8)  
0 and or Line circuits only.

0           Figures A-F show each configuration's unique pin layout,  
0           circuit and connector number growth patterns. Figures A-D  
0           can be used for line circuit applications and Figures E-F  
0           are only to be used for Trunk (TM8) applications.

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0 For line application the circuits for each connector are  
0 numbered (00)-(31) representing 32 line circuits. Circuit  
0 number growth patterns can be Top to Bottom (See Figure  
0 314.6) or Bottom to Top (See Figure 314.7), with all pat-  
0 terns growing Left to Right (See Figures 314.6-314.9)

0 Connectors and Line Sub Groups (LSG) can be grouped hor-  
0 izontally in rows (See Figures 314.8 and 314.9), with a  
0 growth pattern Bottom to Top (See Figure 314.8) or Top to  
0 Bottom (See Figure 314.9). Also, they can be grouped  
0 vertically in columns, with a growth pattern Left to  
0 Right (See Figures 314.6 and 314.7)

0 The Tip and Ring configuration for each CTB is unique to  
0 the internal wiring and can not be changed. Configura-  
0 tions can be Tip over Ring (See Figures 314.6 and 314.9)  
0 or Tip below Ring (See Figures 314.7 and 314.8).

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## 0 Figure 314.6 - Line Application

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "A" for Lines. Note: Line Sub Group (LSG) growth  
0 is from Left to Right and Top to Bottom circuit number  
0 growth, with a Tip over Ring pin pattern.

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**QUESTION**

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**Figure 314.7 - Line Application**

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Provision OPD or Telzon CTBs with a block layout as per Figure "B" for Lines. Note: Line Sub Group (LSG) growth is from Left to Right and Bottom to Top circuit number growth, with a Tip below Ring pin pattern.

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## Line Application (LSG)

| Block Pin Row numbers for 8X32 CTB |   |                          |         |                          |         |                          |   |         |         |   |         |
|------------------------------------|---|--------------------------|---------|--------------------------|---------|--------------------------|---|---------|---------|---|---------|
| 1                                  | - | 8                        | 9       | -                        | 16      | 17                       | - | 24      | 25      | - | 32      |
| R                                  |   | R                        | R       |                          | R       | R                        |   | R       | R       |   | R       |
| T<br>03                            |   | T<br>31                  | T<br>03 |                          | T<br>31 | T<br>03                  |   | T<br>31 | T<br>03 |   | T<br>31 |
| R                                  |   |                          | R       |                          |         | R                        |   |         | R       |   |         |
| T<br>02                            |   |                          | T<br>02 |                          |         | T<br>02                  |   |         | T<br>02 |   |         |
| R                                  |   |                          | R       |                          |         | R                        |   |         | R       |   |         |
| T<br>01                            |   |                          | T<br>01 |                          |         | T<br>01                  |   |         | T<br>01 |   |         |
| R                                  |   |                          | R       |                          |         | R                        |   |         | R       |   |         |
| T<br>00                            |   |                          | T<br>00 |                          |         | T<br>00                  |   |         | T<br>00 |   |         |
| CONNECTOR<br>A<br>LSG AA           |   | CONNECTOR<br>B<br>LSG BB |         | CONNECTOR<br>C<br>LSG CC |         | CONNECTOR<br>D<br>LSG DD |   |         |         |   |         |

## 0 FIGURE 314.8 - Line Application

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure 314.8 for Lines. Note: Line Sub Group (LSG)  
0 growth is from Bottom to Top and Left to Right circuit  
0 number growth, with a Tip below Ring pin pattern.

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|                           |         | Block Pin Row numbers for 8X32 CTB |   |   |   |         |    |   |   |   |   |         |    |
|---------------------------|---------|------------------------------------|---|---|---|---------|----|---|---|---|---|---------|----|
|                           |         | 1                                  | - | - | - | -       | 16 | - | - | - | - | -       | 32 |
| CONNECTOR D<br><br>LSG DD | R       |                                    |   |   |   | R       |    |   |   |   |   | R       |    |
|                           | T<br>00 |                                    |   |   |   | T<br>15 |    |   |   |   |   | T<br>31 |    |
| CONNECTOR C<br><br>LSG CC | R       |                                    |   |   |   | R       |    |   |   |   |   | R       |    |
|                           | T<br>00 |                                    |   |   |   | T<br>15 |    |   |   |   |   | T<br>31 |    |
| CONNECTOR B<br><br>LSG BB | R       |                                    |   |   |   | R       |    |   |   |   |   | R       |    |
|                           | T<br>00 |                                    |   |   |   | T<br>15 |    |   |   |   |   | T<br>31 |    |
| CONNECTOR A<br><br>LSG AA | R       |                                    |   |   |   | R       |    |   |   |   |   | R       |    |
|                           | T<br>00 |                                    |   |   |   | T<br>15 |    |   |   |   |   | T<br>31 |    |

## 0 Figure 314.9 - Line Application

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure 314.9 for Lines. Note: Line Sub Group (LSG)  
0 growth is from Top to Bottom and Left to Right circuit  
0 number growth, with a Tip over Ring pin pattern.

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0 ( viii) TRUNK (TM8) APPLICATIONS

0 For Trunk application the circuits for each connector are  
0 number (00)-(29) representing 30 circuits. Circuit number  
0 growth pattern will always to Left to Right.

0 Connectors for Trunks are grouped horizontally in rows,  
0 with a growth pattern Top to Bottom (See Figure 314.11)  
0 or Bottom to Top (See Figure 314.10)

0 The Tip and Ring Configuration for Trunks can be Tip over  
0 Ring (See Figure 314.11) or Tip below Ring (See Figure  
0 314.10).

0 Figure 314.10 - Trunk (TM8) Application

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure 314.10 for TM8'S. Note: Connector growth is from  
0 Bottom to Top and Left to Right circuit number growth,  
0 with a Tip below Ring pin pattern.

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| Block Pin Row numbers for 8X32 CTB |          |   |   |   |   |   |   |   |   |          |    |    |
|------------------------------------|----------|---|---|---|---|---|---|---|---|----------|----|----|
|                                    | 1        | - | - | - | - | - | - | - | - | 30       | 31 | 32 |
| CONNECTOR D                        | -/<br>MB |   |   |   |   |   |   |   |   | -/<br>MB |    |    |
|                                    | -/<br>MA |   |   |   |   |   |   |   |   | -/<br>MA |    |    |
| CONNECTOR C                        | M/<br>EB |   |   |   |   |   |   |   |   | M/<br>EB |    |    |
|                                    | E/<br>EA |   |   |   |   |   |   |   |   | E/<br>EA |    |    |
| CONNECTOR B                        | R1       |   |   |   |   |   |   |   |   | R1       |    |    |
|                                    | T1       |   |   |   |   |   |   |   |   | T1       |    |    |
| CONNECTOR A                        | R        |   |   |   |   |   |   |   |   | R        |    |    |
|                                    | T<br>00  |   |   |   |   |   |   |   |   | T<br>29  |    |    |

## 0 FIGURE 314.11 - Trunk (TM8) Application

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure 314.11 for TM8'S. Note: Connector growth is from  
0 Top to Bottom and Left to Right circuit number growth,  
0 with a Tip over Ring pin pattern.

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Trunk TM8 Application

|             |          | Block Pin Row numbers for 8X32 CTB |   |   |   |   |   |   |   |   |          |    |    |
|-------------|----------|------------------------------------|---|---|---|---|---|---|---|---|----------|----|----|
|             |          | 1                                  | - | - | - | - | - | - | - | - | 30       | 31 | 32 |
| CONNECTOR A | T<br>00  |                                    |   |   |   |   |   |   |   |   | T<br>29  |    |    |
|             | R        |                                    |   |   |   |   |   |   |   |   | R        |    |    |
| CONNECTOR B | T1       |                                    |   |   |   |   |   |   |   |   | T1       |    |    |
|             | R1       |                                    |   |   |   |   |   |   |   |   | R1       |    |    |
| CONNECTOR C | E/<br>EA |                                    |   |   |   |   |   |   |   |   | E/<br>EA |    |    |
|             | M/<br>EB |                                    |   |   |   |   |   |   |   |   | M/<br>EB |    |    |
| CONNECTOR D | -/<br>MA |                                    |   |   |   |   |   |   |   |   | -/<br>MA |    |    |
|             | -/<br>MB |                                    |   |   |   |   |   |   |   |   | -/<br>MB |    |    |

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0 ( ix) PIN CONFIGURATION FOR NON-CONNECTORIZED TERMINAL BLOCKS

0 Approved sources for Non-Connectorized Terminal Blocks  
0 (Non-CTB'S) offer many standard terminal pair configura-  
0 tions. A Non-CTB has no pin configuration restrictions  
0 like the CTB.

0 These blocks are generally used for terminating miscella-  
0 neous circuits; however, the connectorized 8X32 layout  
0 (Figures A thru F) for Lines and Trunks may be provi-  
0 sioned in conjunction with this block.

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## 0 13.0 Building Block Engineering - MIS

0 This document simplifies the provisioning of miscellaneous equipment  
0 on the MIS frame via the development of DMS Building Blocks.

0 Building Blocks included herein are designed with the assumption that  
0 it is an initial MIS installation.

0 The following options and features are NOT covered by this document:

- 0 - Remote Miscellaneous/Service Equipment (RME/RSE) function
- 0 - DMS-250 Terminal Block Assembly (NT3X25BB)
- 0 - Auxiliary Fuse Panel for TOPS

0 13.1 HARDWARE PROVISIONING

0

0 13.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 13.1.2 HARDWARE DEPENDENCIES

0

0 Not applicable.

## 0 P AND C SIDE PORT REQUIREMENTS

0

0 Not applicable.

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0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

0 CIRCUITS PER CARD

0  
0 Not Applicable

0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

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0 13.1.3 PROVISIONING CONSIDERATIONS

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## 0 CUSTOMER QUESTIONS

0

- 0 1. Quantity of Inverters required?  
0 a) 500 watt LaMarche type? \_\_\_\_\_
- 0 2. Quantity of Metallic Test Access Units required? \_\_\_\_\_
- 0 3. Quantity of Miscellaneous Shelves required? \_\_\_\_\_
- 0 4. Is local cross-connect facility required on Miscellaneous  
0 equipment bay (Y/N)? \_\_\_\_\_
- 0 5. Are there greater than quantity two (2) NT0X66AA Alarm  
0 Panels, and/or greater than quantity four (4) NT0X64AA  
0 Exit Alarm Panels, in the office (Y/N)? \_\_\_\_\_
- 0 6. Is selective audible alarm cutoff control required (Y/N)? \_\_\_\_\_
- 0 7. Is Remote Office Test Line required (Y/N)? \_\_\_\_\_  
0 a) Quantity of optional 105 Test Lines required (0-6)? \_\_\_\_\_
- 0 8. Is NT5X72AA Central Alarm Display Panel provided in the  
0 Alarm Centre (Y/N)? \_\_\_\_\_
- 0 9. Is Tellabs Model 292BR-01 Conference/Alerting System  
0 required? \_\_\_\_\_  
0 a) With manual conference origination (Y/N)? \_\_\_\_\_  
0 b) With automatic conference origination (Y/N)? \_\_\_\_\_  
0 c) With both automatic and manual conference origination  
0 (Y/N)? \_\_\_\_\_  
0 d) Quantity of Remote-Answer lines required (0-3)? \_\_\_\_\_

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- 0 e) Is activation of a community siren required (Y/N)? \_\_\_\_\_
- 0 f) Quantity of emergency conference lines required on  
0 station shelf (1-10)? \_\_\_\_\_
- 0 g) Quantity of emergency conference lines required on  
0 expansion shelves (1-50)? \_\_\_\_\_
- 0 h) Are the emergency lines required to be partitioned  
0 into zones (Y/N)? \_\_\_\_\_
- 0 10. (Refer to MAP ECM for 1A2 Key System questions)
- 0 11. a) Quantity of applique circuits required (2 circuits per  
0 card for Mechanized Loop Testing (MLT) on SMU, SMS  
0 and/or SMR? \_\_\_\_\_
- 0 b) Quantity of Signature Off-hook Routing cards required  
0 for Digital Remote Test Unit (DRTU) applications? \_\_\_\_\_
- 0 12. (NSSD Model NT0J6\_BA Local Test Cabinet to be custom  
0 engineered. Refer to Engineering Manual Inserts.)
- 0 13. Is Inactive System Timing Circuit required (Y/N)? \_\_\_\_\_
- 0 14. Is TOPS Operator Verification requiring Tone and  
0 Scrambler Unit required (Y/N) ? \_\_\_\_\_
- 0 a) If Yes, what is the number of calls requiring  
0 Operator Verification via the Tone & Scrambler \_\_\_\_\_
- 0 b) What is the Holding Time/100 of the line  
0 under verification by the Operator \_\_\_\_\_
- 0 15. (Refer to IOE ECM for modem questions)
- 0 16. Quantity of Misc Frames requiring 19" - 26" Full  
0 Frame Mounting Adapters \_\_\_\_\_
- 0 17. Quantity of Misc Frames requiring 23" - 26" Full  
0 Frame Mounting Adapters \_\_\_\_\_

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## 0 CALCULATIONS

0  
0 Numbers preceded by an octothorpe (#) refer to question numbers  
0 in the Customer Questions section.

0 Quantity A31-500-48V-A6 = #1a

0 Quantity NTZZ18CA = #2

0 Quantity NT3X25AA = #3

0 If #4 = Yes, then Quantity NT3X25BA = one (1)

0 If #5 = Yes, then Quantity NTZZ18DA = one (1)

0 If #6 = Yes, then Quantity NT5X86AA = one (1)

0 If #7 = Yes, then Quantity NT7F18AD = one (1)

0 If #8 = Yes, then Quantity NT5X72AB = one (1)

0 If #9 = Yes, then Quantity NTZZ18FA = one (1)

0 If #9a = Yes, then Quantity 9293 = one (1)

0 If #9b = Yes, then Quantity 9296 = two (2)

0 If #9c = Yes, then Quantity 9293 = one (1),  
0 AND Quantity 9296 = one (1)

0 Quantity 9296 = #9d

0 If #9e = Yes, then Quantity 9133 = one (1),  
0 AND Quantity 6073 = one (1)

0 Quantity 9291 = #9f + #9g

0 Quantity NTZZ18GA = (#9g / 10) {Round up}

0 If #9h = Yes, then Quantity 6073 = one (1)  
0 {Note: May be already provisioned via #9e}

0 Quantity NT3J00BB = #11a

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0  
0 Quantity NT3J00BE = #11b  
0 If #13 = Yes, then Quantity NT5X69AA = one (1)  
0 If #14 = Yes, then Quantity NT3J00AA = two (2)  
0 Tone & Scrambler CCS = #14a X #14b  
0 Quantity NT3J00AB = Tone & Scrambler CCS at p.001  
0 (minimum of two (2) CPs)  
0 Quantity P0706032 = 2 X #16  
0 Quantity P0706033 = 2 X #17  
0 Quantity NT0X9594 = 1 X (NTZZ18JA + NTZZ23AA) dedicated to  
0 modems (U.S. applications only).

0  
0 13.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 13.1.5 TRAFFIC TABLES

0  
0 Not applicable.

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0 13.2 PRODUCT/SYSTEM SPECIFICATION

0

0 13.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 13.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 13.2.3 SPARING INFORMATION

0  
0 Not applicable.

0 13.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not applicable.

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0 13.2.5 CURRENT DRAIN INFORMATION

0  
0 Not applicable.

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0 13.3 SOFTWARE PROVISIONING

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0 13.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Not applicable.

0 13.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 13.3.3 MEMORY PROVISIONING

0

0 Not applicable.

0 13.4 REAL TIME IMPACT

0 Not applicable.

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0 This ECM describes the CMIS cabinet developed for the international  
0 and domestic market as well as the international aspects of the base  
0 cabinets.

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| DMS-100 C28 Cabinets<br>for International Applications |                               |         |                                 |
|--------------------------------------------------------|-------------------------------|---------|---------------------------------|
| Cabinet<br>Name                                        | ECM<br>General<br>Description |         | Engineering<br>Manual<br>Insert |
| CLCE                                                   | ECM-600 and                   | ECM-636 | NTZZ37LA                        |
| CLMI                                                   | ECM-600 and                   | ECM-636 | NTZZ33AA                        |
| CPDC                                                   | ECM-600 and                   | ECM-636 | NTZZ37MA                        |
| CTME                                                   | ECM-600 and                   | ECM-636 | NTZZ37QA                        |
| CIOE                                                   | ECM-600 and                   | ECM-636 | NTZZ37AM                        |
| CMIS                                                   | ECM-600 and                   | ECM-636 | NTRX34AB                        |
| CDSN                                                   | ECM-600 and                   | ECM-636 | NTZZ37XA                        |
| CSLC                                                   | ECM-600 and                   | ECM-636 | NTZZ21CA                        |
| CDNI                                                   | ECM-600 and                   | ECM-636 | NTZZ20CA                        |
| CIPE                                                   |                               | ECM-636 | NTZZ37AA                        |
| CIDC                                                   |                               | ECM-636 | NTZZ37EA                        |
| CMS7                                                   |                               | ECM-636 | NTZZ37HA                        |
| CMSS                                                   | ECM-600 and                   | ECM-636 | NTRX49AA                        |





0 P AND C SIDE PORT REQUIREMENTS

0  
0 N/A

0 DMS BUS PORT REQUIREMENTS

0  
0 N/A

0 CIRCUITS PER CARD

0  
0 N/A

0 DISCRIMINATION NUMBERING

0  
0 The CMIS is sequentially number in the office

0 14.1.3 PROVISIONING CONSIDERATIONS

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0 NTRX34AB Cabinetized Miscellaneous Equipment (CMIS)

0 The provisioning considerations of ECM-600 are modified for the  
0 Cabinetized Miscellaneous Equipment (CMIS) as follows:

0 For international markets provide: an international modem shelf  
0 (RACAL), and an international inverter (FISKAR) for UK require-  
0 ments.

0 The CMIS is provided for US and Canadian markets when an addi-  
0 tional RMM is required in an RSC-SONET office.

0 14.1.4 OFFICE LAYOUT INFORMATION

0  
0 Please refer to ECM-600 DMS-100 Cabinetized.

0 Please refer to ECM-617 Building Block/Detail RSC-SONET for in-  
0 formation concerning CMIS for RSC-S application

0 14.1.5 TRAFFIC TABLES

0  
0 Not Applicable.

0 14.2 PRODUCT/SYSTEM SPECIFICATION

0

0 14.2.1 PHYSICAL CHARACTERISTICS

0  
0 Refer to ECM-600 DMS-100 Cabinetized.

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0 Refer to ECM-617 Building Block/Detail RSC-SONET for CMIS in  
0 RSC-S.

0 14.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Refer to ECM-600 DMS-100 Cabinetized.

0 Refer to ECM-617 Building Block/Detail RSC-SONET for CMIS in  
0 RSC-S.

0 14.2.3 SPARING INFORMATION

0  
0 Sparing practices are not impacted by the application of cabi-  
0 nets. Equipment should be spared per existing practices.

0 14.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Refer to ECM 600

0 14.3 DRAIN INFORMATION

0 Refer to ECM 600

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0 14.4 SOFTWARE PROVISIONING

0

0 14.4.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Software provisioning is not affected by the application of  
0 cabinetized equipment.

0 14.4.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Refer to ECM 617 Building Block/Detail RSC-SONET for any software  
0 usage restrictions when CMIS is required in an RSC-SONET office.

0 14.4.3 MEMORY PROVISIONING

0  
0 Not Applicable.

0 14.5 REAL TIME IMPACT

0 Not Applicable.

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## 0 15.0 Wideband Test Access (WTA) Panel

0 The Wideband Test Access (WTA) Panel replaces the use of the Main Dis-  
0 tributing Frame (MDF) for metallic cross-connecting of test circuits  
0 (such as the Line Test Unit/Multiline Test Unit (LTU/MTU)), Metallic  
0 Test Access (MTA), and line equipment in DMS offices.

0 The WTA Panel is a cross-connect panel that provides the metallic  
0 cross-connect capability for the testing of DMS wideband subscriber  
0 services such as Datapath and ISDN as well as existing voice frequency  
0 DMS-100 subscriber services. The WTA is recommended for the testing  
0 of Datapath service and is a must when a PGTC (Pair Gain Test Control-  
0 ler) is used in the Central Office for testing. The existing MDF ca-  
0 bling method cannot support the testing of these services mainly  
0 because of the transmission impairment caused by the excessive switch-  
0 ing office cabling. For example, the WTA reduces the cabling needed  
0 in large offices that have non-integrated SLC-96 subscriber carrier  
0 systems that require the use of the Pair Gain Test Controller (PGTC).

0 This method of cross-connecting office wiring for the test circuits,  
0 MTA, and test access cables drastically reduces the amount of office  
0 cabling resulting from the existing MDF method.

0 This panel mounts on the Miscellaneous Equipment (MIS) Frame NT0X02AB.  
0 With the panel mounted on an MIS frame within the DMS equipment frame  
0 lineups, all unnecessary cabling to the MDF is eliminated and this re-  
0 sults in much shorter office wiring for the testing of subscriber ser-  
0 vices.

## 0 | 15.1 HARDWARE PROVISIONING

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### 0 | 15.1.1 HARDWARE USAGE RESTRICTIONS

0

0 | Not applicable.

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0 | 15.1.1.2 HARDWARE DEPENDENCIES

0  
0 | When a WTA Panel is added as an extension to an existing office  
0 | that has:

0 | NT2X52ACs  
0 | NT2X52AGs  
0 | NT2X52APs

0 | TM8 Trunk Module shelves, a NT2X52AU Product Change kit must be  
0 | ordered for each shelf to be connected to the WTA panel. The  
0 | MONTALK trunks cannot be connected to the WTA panel on these  
0 | shelves unless they are retrofitted with this product change kit  
0 | to bring the release of the shelf up to NT2X52AV.

0 | For all new offices using the WTA panel, order the new TM8 shelf,  
0 | NT2X52AV. The NT2X52AV is essentially a NT2X52AG with a NT2X52AU  
0 | product change kit applied to it on the manufacturing shop floor.

## 0 | P AND C SIDE PORT REQUIREMENTS

0  
0 | Not applicable

## 0 | DMS BUS PORT REQUIREMENTS

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0 | Not applicable

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## 0 | CIRCUITS PER CARD

0  
0 | Not applicable

## 0 | DISCRIMINATION NUMBERING

0  
0 | Not applicable

0 | 15.1.3 PROVISIONING CONSIDERATIONS

0  
0 | 2.4.1 The Wide-band Test Access (WTA) Panel (NT7X76AA/B0233245) was  
0 developed to replace the functionality of the Main Distribution  
0 Frame (MDF) for metallic cross-connecting of the line equipment  
0 to the Metallic Test Access (MTA) and test heads. The DMS-100  
0 test heads include the Line Test Unit (LTU), the Multi-line Test  
0 Unit (MTU), and the Enhanced Services Test Unit (ESTU).

0 | The introduction of the WTA panel drastically reduces the amount  
0 of Central Office wiring necessary to cross-connect the test bus  
0 side of the line cards to the MDF, the Metallic Test Access  
0 (MTA) and the test heads. The panel can be engineered to be  
0 mounted into the Miscellaneous Equipment (MIS) Frame. When the  
0 MIS Frame is engineered into the DMS Equipment frame line-up,  
0 all the equipment cross-connections are completed locally on the  
0 WTA panel, not at the MDF.

0 | The WTA panel also drastically reduces the amount of CO wiring  
0 necessary to support the channel testing of Universal Digital  
0 Loop Carriers (UDLC) using a Pair Gain Controller (PGTC) and the  
0 channel testing of Integrated Digital Loop Carriers (IDLCs) us-  
0 ing the Loop Test Applique. Again the WTA panel can be engi-  
0 neered into the MIS Frame to eliminate unnecessary wiring  
0 between the CO equipment and the MDF.



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0 2.4.2 There are two (2) versions of the WTA Panel:

0 NT7X76AA WTA Panel

0 NT7X76BA WTA Panel (Dedicated LTU/MTU)

0 The NT7X76AA/BA allows the cross-connection of up to 30 NT3X09BA  
0 MTA circuits in a matrix of three (3) horizontal NT3X09BA rows  
0 by ten (10) vertical NT3X09BA columns. This is equivalent to  
0 the cross-connection of 24 horizontal test appearances to 80  
0 vertical appearances. The NT3X09BA card has 8 horizontals and 8  
0 verticals.

0 The NT3X09AA is not recommended for use with the WTA panel. The  
0 NT3X09AA has a 4X8 matrix as opposed to the NT3X09BA which has  
0 an 8X8 matrix. An NT3X09AA can be connected to the WTA panel us-  
0 ing the NT3X09BA connectorized cable, but once a WTA horizontal  
0 row has a NT3X09AA, only NT3X09AAs can be connected to that par-  
0 ticular horizontal row. The NT3X09AAs and NT3X09BAs cannot be  
0 mixed on the same row of a WTA panel.

0 The NT7X76BA is similar to NT7X76AA with one exception. The  
0 first horizontal test appearance of the 24 horizontal test ap-  
0 pearances of the NT7X76BA panel is grouped into five (5) sub-  
0 groups, each horizontal 0 with access to 16 verticals when  
0 NT3X09BA cards are used for cross-connection purposes. Each  
0 horizontal subgroup can have a dedicated LTU/MTU. Hence, up to  
0 five (5) dedicated LTU/MTUs can be connected to NT7X76BA. If  
0 NT3X09BA cards are used, each dedicated LTU/MTU has access to 16  
0 verticals or 8 Line Concentrating Modules (LCMs) within each  
0 horizontal subgroup 0.

0 For U.S. applications, the NT7X76BA is the standard WTA panel  
0 for all configurations that require dedicated LTU functionality.

0 2.4.3 The NT7X76BA WTA Panel is only used for the dedicated LTU/MTU  
0 function.

0 When the dedicated LTU/MTU function is used, the vertical ap-  
0 pearances are expanded using the NT7X76BA. The horizontal ap-  
0 pearances can be expanded with the NT7X76AA.

0 The NT7X76AA can also be used if the office requires more than  
0 one (1) (horizontal) row of WTA Panels or more than 24 horizon-  
0 tal test appearances.

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0 2.4.4 For offices without dedicated LTU/MTUs, only NT7X76AA would be  
0 required for expansion both horizontally and vertically.

0 For offices with dedicated LTU/MTUs, the first row of the WTA  
0 Panel matrix would be of the NT7X76BA type. Our current stand-  
0 ard is to have dedicated LTU/MTUs on the first row of the matrix  
0 of WTA Panels (i.e. NT7X76BA) and not to have dedicated LTU/MTUs  
0 on the second and all subsequent rows of the matrix of WTA Pan-  
0 els (i.e. NT7X76AA). If connection to more dedicated LTU/MTUs  
0 was required, NT7X76BA Panels would be used for the second row  
0 of WTA Panels. Otherwise, the NT7X76AA Panel should be used.

0 2.4.5 The WTA Panel replaces the Intermediate Distribution Frame (IDF)  
0 for the testing of the universal SLC 96 subscriber loop carrier  
0 system which uses an AT&T test tool called Pair Gain Test Con-  
0 troller (PGTC).

0 The location of the WTA shall be selected such that the overall  
0 cable length from the PGTC to the universal SLC 96 COT CU (Cen-  
0 tral Office Terminal Channel Unit), and the total multiple cable  
0 length is less than 2500 feet (see Figure 1 on page 19-158).  
0 'Multiples' are all the open-ended cables connected to the test  
0 signal path; namely, all the open-ended WTA/MTA cables bridged  
0 on the test signal path between the PGTC and the COT CU. Since  
0 the WTA Panel consists of a 3 row x 10 column matrix of WTA to  
0 MTA connectors, and assuming that all 30 connectors are equipped  
0 with cables, the total number of 'multiples' is:  $(10-1) + (3-1)$   
0 = 11. The decrements by one are necessary because one horizontal  
0 and one vertical multiple belong to the test signal path. The  
0 number of multiples will increase if more WTA panels are used.

0 In existing offices, some equipment relocation may be necessary  
0 in order to comply with the cable length restrictions when PGTCs  
0 are used.

0 Referring to the Figure 1 on page 19-158, the PGTC to COT CU ca-  
0 ble length, L, is composed of the following segments:

0 
$$L = (\text{PGTC to MDF}) + (\text{MDF to 2X90}) + (\text{2X90 to APPLIQUE}) +$$
  
0 
$$(\text{APPLIQUE to WTA}) + 2 \times (\text{WTA to MTA}) + (\text{WTA to LCM}) +$$
  
0 
$$(\text{LCM to MDF}) + (\text{MDF to COT CU})$$

0 The PGTC to COT cable length ("L"), must be calculated based on  
0 the longest metallic patch between the PGTC and the furthest  
0 universal SLC 96 COT CU in the central office.

0



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0 2.4.6 The WTA panel mounts on the Miscellaneous Equipment (MIS) Frame  
0 NT0X02AB. With the panel mounted on an MIS frame within the DMS  
0 equipment frame lineups, much of the cabling to the MDF can be  
0 eliminated and this results in much shorter office wiring for  
0 the testing of subscriber services.

0 For installation into an existing MIS Frame in an existing of-  
0 fice, the WTA Panel(s) can be mounted on any available shelf po-  
0 sition of the MIS frame, preferably the top shelf position.  
0 Before engineering the Panel(s) into the frame, insure that the  
0 cable trough has adequate room for the necessary WTA Panel cabl-  
0 ing. Remember, the MIS Frame must be in proximity to the MTAs,  
0 test heads, etc..

0 For initial and extension offices requiring new MIS Frames, the  
0 WTA Panels are to be engineered and mounted on standard shelf  
0 positions in the following order:

|   |          |          |
|---|----------|----------|
| 0 | Panel #1 | 65 Front |
| 0 | Panel #2 | 51 Front |
| 0 | Panel #3 | 51 Rear  |
| 0 | Panel #4 | 32 Front |
| 0 | Panel #5 | 32 Rear  |
| 0 | Panel #6 | 18 Front |
| 0 | Panel #7 | 18 Rear  |
| 0 | Panel #8 | 04 Front |

0 Currently WTA cannot be mounted on shelf position 65R because of  
0 the conflict with the ground cable lug. This restriction will be  
0 removed in the future when the workaround is available.

0 Notes:

- 0 1. A maximum of 8 WTA Panels can be provisioned per NT0X02AB Mis-  
0 cellaneous Frame.
- 0 2. For ease of engineering cables, the WTA Panels are assigned  
0 from the top of the MIS frame to the bottom.

0 2.4.7 WTA Panel Interconnect Cables:

0 To allow open access to the WTA Panel's connectors, all WTA  
0 panel interconnect cables (e.g. MTA Cables) are to be routed be-  
0 hind the panel(s).

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0 2.4.8 Although a Frame Supervisory Panel (FSP) is not required for the  
0 WTA Panel, an FSP can be mounted in shelf position 45F if other  
0 devices (which can mount on the MIS Frame) require an FSP.  
0 Hence, if the MIS Frame is not fully provisioned with WTA Panels,  
0 other valid hardware units can be mounted.

0 2.4.9 To minimize the office wiring required for line testing, the  
0 Maintenance Trunk Modules (MTM) that are provisioned with  
0 NT3X09BA cards and LTU/MTUs should be reduced to a minimum and  
0 placed in the adjacent TME Frames next to the MIS Frames containing  
0 WTA Panels.

0 The Line Concentrating Equipment Frames (LCE) and should be  
0 clustered around the MIS Frames containing WTA Panels in order  
0 to minimize the cabling to these panels.

0 Hence, the signal loss caused by office wiring should be reduced  
0 to the minimum that is possible. The signal loss should be less  
0 than one (1) db in most offices.

0 2.4.10 Discrimination Numbering

0 WTA Panels NT7X76AA/BA are numbered from 000 on up (e.g. WTA  
0 000, WTA 001, etc.).

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0 2.4.11 WTA Panel Configuration for Offices with Line Size  $\geq$  75,000

0 For offices larger than 75,000 lines and requiring more than  
0 three (3) WTA Panels, the straight forward WTA matrix configura-  
0 tion cannot be used due to the software limitation of a maximum  
0 of 32 multiples eight (8) verticals each which can be datafilled  
0 for each horizontal subgroup i.e. 256 verticals.

0 The way to solve this problem is to split the total number of  
0 multiples into either groups of 32 (using Method 1) or groups of  
0 31 (using Method 2).

0 Method 1

0 Using Method 1, the multiples can be divided evenly into two (2)  
0 groups of up to 32 multiples within each group. Each WTA Panel  
0 allows the cross-connection of up to ten (10) multiples except  
0 for the fourth panel which can only have two (2) multiples.  
0 Hence, WTA Panels "B", "C", "D", and "E" provide cross-connections  
0 for 32 multiples.

0 Access to the line circuits is provided via the extended verti-  
0 cals of WTA Panel "A" P1 to the horizontals of WTA Panel "B" as  
0 illustrated. Therefore, the test circuits connected to WTA  
0 Panel "A" have access to more than 75,000 lines by using the ex-  
0 tended vertical and horizontal connections.

0 The connections between WTA Panels "A" and "B" and between WTA  
0 Panels "A" and "F" are for illustration purposes only. That is,  
0 the first group of eight (8) verticals on WTA "A" are datafilled  
0 as extended verticals and connected to the first group of eight  
0 (8) horizontals datafilled as extended horizontals on WTA "B".  
0 The second group of eight (8) verticals of WTA "A" are connected  
0 to the first group of eight (8) horizontals of WTA "F". Simi-  
0 larly, the third and fourth group of eight (8) verticals on WTA  
0 "A" are connected to the second group of eight (8) horizontals  
0 of WTA "B" and "F" respectively. The fifth and sixth group of  
0 eight (8) verticals on WTA "A" are connected to the third group  
0 of eight (8) horizontals on WTA "B" and "F" respectively. The  
0 actual connections are made from connectors P43 to P44 of WTA  
0 "A" to connectors P31 to P42 and P97 to P108 of WTA "B" and "F".

0 Method 2

0 Using Method 2, WTA Panel "A" is connected to WTA Panel "B" in  
0 such a way as to provide for the cross-connections for the first  
0 group of 29 (32-3) multiples via WTA Panels "A", "B", "C", and "D"

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0 as in a normal matrix configuration. Three (3) vertical multi-  
0 ples are used for expansion into the second group.

0 For the second group of 32 multiples via WTA Panels "F", "G",  
0 "H", and "I", the extended verticals from WTA "A" are connected  
0 to the horizontals of WTA "B".

0 The connections between WTA Panels "A" and "F" are for illus-  
0 tration purposes only. That is, the first group of eight (8)  
0 verticals datafilled as extended verticals on WTA "A" is con-  
0 nected to the first group of eight (8) horizontals datafilled as  
0 extended horizontals on WTA "F". Similarly, the second group of  
0 eight (8) verticals on WTA "A" is connected to the second group  
0 of eight (8) horizontals on WTA "F". The third group of eight  
0 (8) verticals on WTA "A" is connected to the third group of  
0 eight (8) horizontals on WTA "F". The actual connections are  
0 made from connectors P43 to P48 on WTA "A" to connectors P31 to  
0 P42 and connectors

0 Differences Between Methods 1 and 2

0 Method 1 requires one (1) more WTA Panel which is panel "E" and  
0 three (3) more NT3X09BA cards, six (6) instead of three (3),  
0 connected to panel "A".

0 Using Method 1, line testing involving the first and second  
0 groups of 32 multiples is subjected to the multiple cabling  
0 within the group or a maximum of 32 multiple cables. Using  
0 Method 2, line testing involving the second group of 32 multi-  
0 ples is also involve the first group of 29 multiples or is sub-  
0 jected to a maximum of 61 multiple cables.

0 Generally, Method 1 would be preferred over Method 2 due to the  
0 effect on line testing. However, Method 2 may be worth consid-  
0 ering if an LCE expansion is done properly to reduce the effect  
0 of multiple cabling on line testing.

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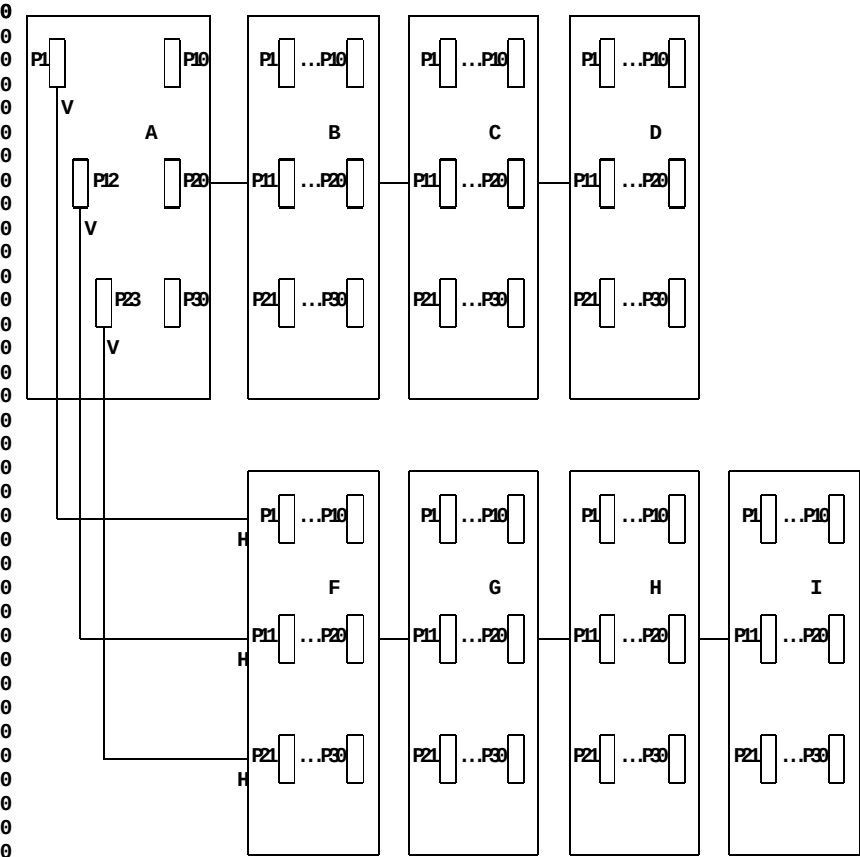
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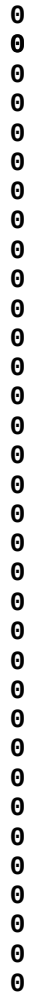
0 Method 1



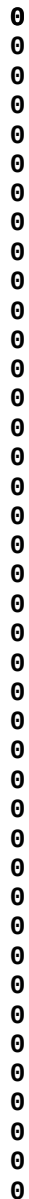
0 WTA Panel Configuration for Offices with Line Size > 75,000  
0 Method 2



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0 WTA Panel Worksheet0 HORIZONTAL APPEARANCES

- 0 Q1) Number of No. 3 Local Test Cabinet trunks \_\_\_\_\_
- 0 Q2) Number of No. 14 Local Test Cabinet trunks \_\_\_\_\_
- 0 Q3) Number of Operator Verification trunks \_\_\_\_\_
- 0 Q4) Number of Coin Line Test Interface trunks \_\_\_\_\_
- 0 Q5) Number of Mechanized Loop Test trunks \_\_\_\_\_
- 0 Q6) Number of Dialable Tone Locator circuits \_\_\_\_\_  
0 (NTX277AA feature package)
- 0 Q7) Number of Pair Gain Test Controllers (PGTC) \_\_\_\_\_
- 0 Q8) Number of rover LTUs required \_\_\_\_\_  
0 (MTUs are preferred)
- 0 Q9) Number of rover MTU circuits required \_\_\_\_\_  
0 Each MTU has 2 circuits. (1 MTU replaces 2 LTUs)
- 0 Q10) Number of Enhanced Services Test Units (ESTU) \_\_\_\_\_
- 0 Q11) Number of other test circuits \_\_\_\_\_

0 HA (number of NT3X09BA MTA for all horizontal appearances)

0 =  $(Q1+Q2+Q3+Q4+Q5+Q6+Q7+Q8+Q9+Q10+Q11+1)/8$   
0 (rounded to next integer)

0 1 represents the horizontal '0' which  
0 is shared by all dedicated LTUs/MTUs

0 HWTAs (number of horizontal WTAs) =  $HA/3$  (rounded to next integer)

0 VERTICAL APPEARANCES

0 VA (number of NT3X09BA MTA for all vertical appearances)

0 =  $(LCM/4 + LCMI/4 + RCS/8 + SMU/8 + SMR/8)$   
0 (rounded to next integer)

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0 VTA (number of vertical VTAs) =  $VA/10$  (rounded to next integer)

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0 Number of WTA PANELS

0 WTA (number of WTA panels) = HWTa X VWTa \_\_\_\_\_

0 MDF Connector Blocks0 Q20) Number of WTA HORIZONTAL panels X 1 \_\_\_\_\_  
0 (requires 48 pins per MDF block)0 Q21) Number of WTA panels with SLC/Urban \_\_\_\_\_  
0 software sites  
0 (requires 160 pins per MDF block)0 Q22) Number of MDF blocks:  $[Q10 \times 48 + Q11 \times 160] / P$  \_\_\_\_\_  
0 (where 'P' varies with the PEC of the DF block  
0 chosen for a particular central office job.)

## 0 Note:

0 RCS - RCS represents the number of Remote Concentrator Software sites.  
0 A Remote Concentrator Software site is a group of SLC-96 Remote  
0 Terminals tested via the same vertical (one vertical may be used  
0 for testing up to 10 co-located SLC-96 Remote Terminals).0 | SMU - Subscriber Multiplexor Urban represents the number of Remote  
0 DMS-1U Software sites. One Remote DMS-1U Software site is a  
0 group of DMS-1U terminals tested via the same vertical.0 | SMR - Subscriber Multiplexor Rural represents the number of Remote  
0 DMS-1R Software sites. One Remote DMS-1R Software site is a  
0 group of DMS-1R terminals tested via the same vertical.

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0 15.1.4 OFFICE LAYOUT INFORMATION

0  
0 See item 2.4 entitled PROVISIONING CONSIDERATIONS.

0 15.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 15.2 PRODUCT/SYSTEM SPECIFICATION

0

0 15.2.1 PHYSICAL CHARACTERISTICS

0  
0 WTA Panel NT7X76AA/BA Physical Dimensions

0 Height 14.00" Width 26.26" Depth 2.25"

0 There is no power required for this panel.  
0 |

0 15.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

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0 15.2.3 SPARING INFORMATION

0  
0 Not applicable.

0 15.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not applicable

0 15.2.5 CURRENT DRAIN INFORMATION

0  
0 Not applicable

0 15.3 SOFTWARE PROVISIONING

0

0 15.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 For office extensions, the following information must be provided  
0 to the Equipment Application Engineer by the Systems Application  
0 Engineer before any work can be done to extend the MTA test ma-  
0 trix in a central office:

0 A listing of all the data tuples in software tables  
0 MTAMDRVE,  
0 MTAHORIZ  
0 MTAVERT

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0 The data tuples in table TRKMEM for all the following trunk types  
0 (pseudo CLLIs) must also be provided:

0 DTU  
0 LTU  
0 MLT  
0 LTC  
0 MTU  
0 MONTALK  
0 VER90

0 It is critical to have the latest engineered data for these ta-  
0 bles because the telephone operating company may have made  
0 changes to these tables since the last office extension and the  
0 central office job database may not have the most current engi-  
0 neering information.  
0 Incorrect information can lead to the manufacturing of incorrect  
0 cables, which would have to be re-engineered and re-manufactured.

0 15.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 15.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

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0 15.4 REAL TIME IMPACT

0 Not applicable.

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## 0 16.0 Miscellaneous Hardware Kits

0 The following PECs have been introduced for U.S. Application only:

0 NT0X58AE : 25 Frame Hardware Kit  
0 NT0X58AF : 50 Frame Hardware Kit  
0 NT0X58AG : 75 Frame Hardware Kit  
0 NT0X58AH : 100 Frame Hardware Kit  
0 NT0X58AJ : 10 Frame EXT. Hardware Kit  
0 NT0X58AK : 10 Frame Remote Hardware Kit  
0 NT0X58AL : 0-2 Frame EXT. Hardware Kit  
0 NT0X58AM : 3-5 Frame EXT. Hardware Kit  
0 NT0X58AN : 5 Frame Remote Hardware Kit  
0 NT0X58AP : 1 Frame RLCM Hardware Kit  
0 A0383689 : Shipping Crate Assembly DMS-100

0 The appropriate Miscellaneous Hardware kit is to be ordered in Section  
0 17 of the Main Equipment List (MEL) by System Application Engineering.

0 The NT0X58-series kits differ from QKM kits in that the designation  
0 labels have been omitted, except for the following:

- 0 - ES-10153 G01 & G02 remain in kits NT0X58AE-AJ
- 0 - ES-10153 G14, G15, G17 & G18 remain in NT0X58AK

0 Only Frame Row, Position, and some PDC Shelf Name labels are included  
0 in kits NT0X58AL-AP.

0 All FSP labels except Frame Row and Position are now being affixed by  
0 Manufacturing. Equipment Application Engineering should provide PDC  
0 designation labels for any frame type (e.g. peripheral) not covered by  
0 these new kits. Refer to ES-10153-RTP Issue 08 or later.

0 16.1 HARDWARE PROVISIONING

0

0 16.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

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0 16.1.2 HARDWARE DEPENDENCIES

0  
0 Not applicable.

0 16.1.3 PROVISIONING CONSIDERATIONS

0  
0 The appropriate Miscellaneous Hardware kit is to be ordered in  
0 Section 17 of the Main Equipment List (MEL) by System Application  
0 Engineering.

0 All FSP labels except Frame Row and Position are now being af-  
0 fixed by Manufacturing. Equipment Application Engineering should  
0 provide PDC designation labels for any frame type (e.g. periph-  
0 eral) not covered by these new kits. Refer to ES-10153-RTP Issue  
0 08 or later.

0 The A0383689 Shipping Crate Assembly is used when re-deploying  
0 the DMS-100 Frames from one site to another. One (1) Shipping  
0 Crate Assembly is required per frame for re-deployment. The ship-  
0 ping crates are not to be used to ship frames backs to NT.

0 Hardware kits for cabinetized applications are to be ordered  
0 based on the number of cabinets ordered for the initial or exten-  
0 sion order or for RSC-SONET installations. The following kits are  
0 now available:

| Application                      | PEC      | CPC      |
|----------------------------------|----------|----------|
| Domestic 25 Cabinet Initial      | NT0X58BA | B0237132 |
| Domestic 50 Cabinet Initial      | NT0X58BB | B0237133 |
| Domestic 75 Cabinet Initial      | NT0X58BC | B0237134 |
| Domestic 100 Cabinet Initial     | NT0X58BD | B0237135 |
| Domestic 150 Cabinet Initial     | NT0X58BE | B0237136 |
| Domestic 0-2 Cabinet Extension   | NT0X58BF | B0237137 |
| Domestic 3-5 Cabinet Extension   | NT0X58BG | B0237138 |
| Domestic 6-10 Cabinet Extension  | NT0X58BH | B0237139 |
| Domestic 11-15 Cabinet Extension | NT0X58BJ | B0237140 |
| Domestic RSC-SONET (All Jobs)    | NT0X58BK | B0237141 |

0 16.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 16.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 16.2 PRODUCT/SYSTEM SPECIFICATION

0

0 16.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 16.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 16.2.3 SPARING INFORMATION

0  
0 Not applicable.

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0 16.3 SOFTWARE PROVISIONING

0

0 16.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Not applicable.

0 16.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 16.3.3 MEMORY PROVISIONING

0

0 Not applicable.

0 16.4 REAL TIME IMPACT

0 Not applicable.

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## 0 17.0 DMS Building Block - MSS Engineering

0 This document simplifies the provisioning of Maintenance Spare  
0 Storage equipment via the development of Building Blocks.

0 There are two components to this ECM:

0 1. MSS Customer Questions

0 2. MSS Calculations

0 MSS Customer Questions:

0 Worksheet of Telco inputs required at the time of order capture.

0 MSS Calculations:

0 Worksheet of provisioning algorithms driven from the results of  
0 the Customer Question section.

0 17.1 HARDWARE PROVISIONING

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0 17.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 17.1.2 HARDWARE DEPENDENCIES

0  
0 Not applicable.

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0 17.1.3 PROVISIONING CONSIDERATIONS

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0 Customer Questions.

0 Note: The quantity of spare circuit packs required in an office  
0 can only be determined after an order has been detail  
0 engineered. The customer should specify the quantity of  
0 spares to be provided for each circuit type.

0 All questions pertain to SPARE card quantities:

- 0 1. Quantity of old peripheral line cards and/or Ringing Bus  
0 MUX cards? \_\_\_\_\_
- 0 2. Quantity of old peripheral Bus Interface (NT2X16) cards? \_\_\_\_\_
- 0 3. Quantity of new peripheral single-slot line cards? \_\_\_\_\_
- 0 4. Quantity of new peripheral two-slot line cards? \_\_\_\_\_
- 0 5. Quantity of new peripheral Bus Interface (NT6X54) cards? \_\_\_\_\_
- 0 6. Quantity of DMS circuit packs? \_\_\_\_\_
- 0 7. Quantity of Supernode circuit packs? \_\_\_\_\_
- 0 8. Quantity of Supernode paddle cards? \_\_\_\_\_
- 0 9. Quantity of Supernode power modules? \_\_\_\_\_
- 0 10. Minimum quantity of spares to be provided for each  
0 circuit type? \_\_\_\_\_
- 0 11. Enter specific sparing information on blank lines  
0 below if required.

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0 CALCULATIONS

0 Numbers preceded by an octothorpe (#) refer to question numbers  
0 in the Customer Questions section. The calculations are designed  
0 to spread the spare equipment over the storage bays as effi-  
0 ciently as possible.

0 Quantity NT3X55AA:

0 Calculate A = GREATER of: (#1 / 20) {Rounded up},  
0 OR: (#2 / 4 ) {Rounded up}

0 Quantity NT3X55AA = A

0 Quantity NT3X55BA:

0 Calculate B = (#4 / 10) {Rounded up}

0 Calculate C = #3 - (10 \* B)

0 Calculate D = (C / 30) {Rounded up}

0 Calculate E = GREATER of: (B + D),  
0 OR: #5

0 Quantity NT3X55BA = E

0 Quantity NTZZ27BA:

0 Calculate F = (A / 4) {Rounded up}

0 Calculate G = (E / 4) {Rounded up}

0 Calculate H = (#6 - (3 \* E))

0 Calculate J = (H / 20) {Rounded up}

0 Calculate K = (F + G + J)

0 Quantity NTZZ27BA = (K / 5) {Rounded up}

0 Quantity NT0X24BR and NTZZ27CA:

0 Calculate L = GREATER of: (#7 / 26) {Rounded up},  
0 OR: (#8 / 26) {Rounded up},  
0 OR: (#9 / 4) {Rounded up}

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0 Calculate  $M = (L / 4)$  {Rounded up}

0 Quantity NT0X24BR =  $(L - M)$

0 Quantity NTZZ27CA = M

0 Quantity of Maintenance Storage Cabinet (MSC) (Newton)  
0 (Holds single and double slot cards) (150 slots total)  
0 (U.S. applications only) A0300464

0 Calculate  $N = (\text{Total spare slots required} / 150)$

0 Quantity A0300464 = N

0 Note: The MSS frame occupies an equipment bay space in the  
0 office line-up. The MSC can be placed away from the  
0 actual switch. Six (6) NT3X55BA Line Card Storage  
0 Chassis may be placed on one (1) MSC shelf.

0 17.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 17.1.5 TRAFFIC TABLES

0  
0 Not applicable.

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0 17.2 PRODUCT/SYSTEM SPECIFICATION

0

0 17.2.1 PHYSICAL CHARACTERISTICS

0

0 Not applicable.

0 17.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

0 17.2.3 SPARING INFORMATION

0

0 Not applicable.

0 17.3 SOFTWARE PROVISIONING

0

0 17.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Not applicable.

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0 17.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 17.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 17.4 REAL TIME IMPACT

0 Not applicable.

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## 0 18.0 DMS-100 Standard DF Terminal Blocks

0 This document defines the Distributing Frame Terminal Blocks (DFTB)  
0 provisionable from the RTP approved sources (i.e. Northern Telecom  
0 Outside Plant Division (OPD) and Telzon ) and relates those products  
0 to specific applications.

0 18.1 HARDWARE PROVISIONING

0

0 18.1.1 HARDWARE USAGE RESTRICTIONS

0

0 A Connectorized Terminal Block (CTB) 8X32 can only be used for  
0 Line and Trunk Module 8-Wire (TM8) applications. Non-  
0 connectorized Terminal Block 8x32 can be used for Line, Trunk  
0 Module 8-Wire (TM8) and Miscellaneous applications.

0 18.1.2 HARDWARE DEPENDENCIES

0

0 Not Applicable

## 0 P AND C SIDE PORT REQUIREMENTS

0

0 Not Applicable

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

## 0 CIRCUITS PER CARD

0  
0 Not Applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not Applicable0 18.1.3 PROVISIONING CONSIDERATIONS0  
0 Distribution frame terminal blocks are intended for use as a ter-  
0 minating device on Central Office or PBX distributing frames. A  
0 Terminal Block (TB) has two terminating sides, the Equipment Side  
0 (Termination of DMS-100 equipment) and the Cross Connect Side  
0 (Termination of incoming lines, trunks and miscellaneous cir-  
0 cuits).

## 0 EQUIPMENT SIDE TERMINATION TYPE

0

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0 Terminations on the Equipment Side can be made by using terminal  
0 pins (NON-CONNECTORIZED) or interlocking connectors  
0 (CONNECTORIZED). Connectorized Terminal Blocks (CTB) can be used  
0 with Northern Telecom's DMS-100 connectorized cables for quick  
0 installation. Customers have realized a full 75 to 95% reduction  
0 in installation labor costs. It should be noted CTB'S are used  
0 for lines and trunks (TM8) applications only.

0 CROSS CONNECT TERMINATION TYPE

0  
0 Terminations on the Cross Connect Side are made by using only  
0 terminal pins.

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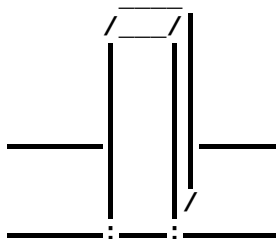


0 TERMINAL PIN TYPE

0  
0 There are (3) terminal pin types : Single Post Wire-Wrap (SP),  
0 Bifurcated Wire-Wrap (BIF) and Insulation Displacement Bifurcated  
0 (IDV) also called Quick Connect (QC).

0 SINGLE POST WIRE-WRAP terminal pin is rectangular in shape and  
0 extends from the face of the terminal field for connection of 22  
0 to 26 AWG wire.

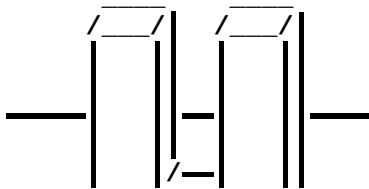
0 Single Post Wire-Wrap



0 Front View of Terminal

0  
0 BIFURCATED WIRE-WRAP terminal pin is "U" in shape and extends  
0 from the face of the terminal field for convenient connection of  
0 22 to 26 AWG wire.

0 Bifurcated Wire-Wrap

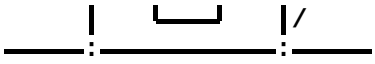


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Front View of Terminal

The diagram shows a horizontal line with two vertical lines intersecting it. Above the horizontal line, there is a small horizontal bar between the two vertical lines, and a diagonal slash on the right vertical line.

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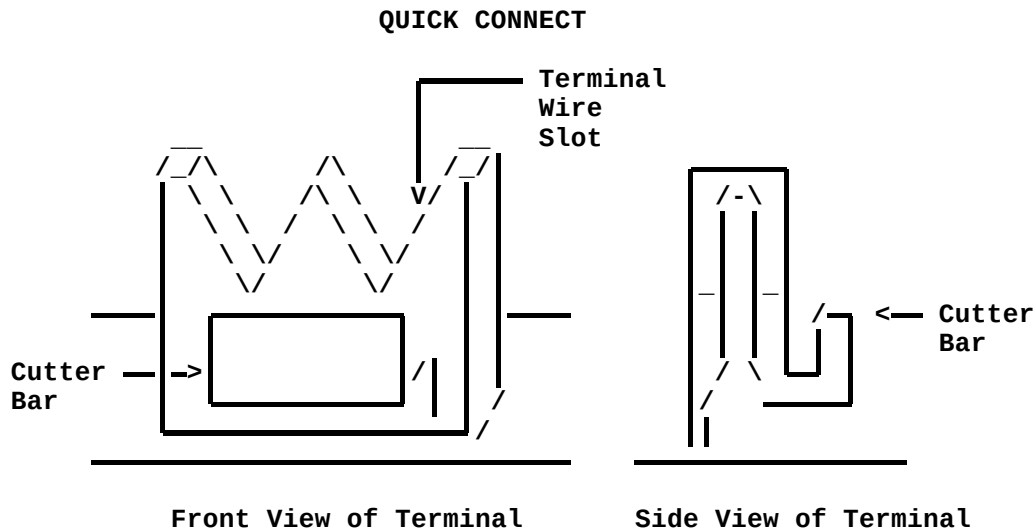
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# INSULATION DISPLACEMENT BIFURCATED (IDV) OR QUICK CONNECT

(QC) terminal pin is "W" in shape. Although this terminal is ordered less than 6% of the time it automatically strips, terminates, and cuts to length the wire applied to it. When a wire is inserted into the termination slot, the insulation is displaced and the exposed conductor is wedged into an electrical connection with the terminal. Simultaneously, the strain relief connection is made and the cutter bar shears the wire to the correct length. IDV or QC terminals can be used with 22 or 24 AWG wire.



## CONNECTOR TYPE

Up to four interlocking 32 pair TRW or AMP male (plug) ribbon connectors are telephone industry standard offerings on both OPD and TELZON 8X32 CTB'S. The male (plug) connectors are designed to engage spring clips on female (receptable) connectors (standard on Northern Telecom's connectorized line cables). These connectors may be disconnected by using a pointed object and depressing the metal spring of the connector and pulling them apart

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0 on at least one end. This latching arrangement eliminates the need  
0 for additional locking hardware and safeguards against accidental  
0 uncoupling.

0 Each connector is wired for 32 circuits. When used with Line  
0 equipment, one connector represents one Line Sub Group (LSG) or  
0 one half of a Line Drawer. A standard CTB with four (4) connec-  
0 tors will then terminate four (4) LSG'S or two (2) Line Drawers.

0 For Trunk Module 8-Wire (TM8) equipment, one connector represents  
0 4 of 16 wires required for each card slot on a TM8 shelf. A  
0 standard CTB with four connectors will then terminate all 16  
0 wires required for each card slot for a total of 240 wires for 15  
0 slots per shelf.

#### 0 QUANTITY OF TERMINAL BLOCKS

0  
0 The quantity of Terminal Blocks (TB) for an office (D) is deter-  
0 mined by the sum of blocks required for Trunk Cards (A), Lines  
0 (B) and Miscellaneous (C):  $(A + B + C) = (D)$ .

#### 0 QUANTITY OF TERMINAL BLOCKS FOR TRUNK CARDS

0  
0 An estimate of required terminal blocks for Trunk Cards mounted  
0 in Maintenance Trunk Module (MTM) Shelves and/or Remote Mainte-  
0 nance Module (RMM) can be made by using the TRUNK CARD PIN ROW  
0 REQUIREMENT CALCULATION TABLES.

0  
0 ---  
0 Enter the Quantity of Trunk Cards mounted in MTM and/or RMM  
0 shelves which require MDF terminations in column (A).

0  
0 ---  
0 Select the Block Type Ordered in column (B) (6X, 8X, or  
0 10X..etc). The numbers in the columns represent the Pin Rows  
0 required for each card type per the Contract Drafting Depart-  
0 ment 3424.

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0  
0 Determine the Total Number of Pin Rows Required for Cards ---  
0 and/or Modules in column (C) by multiplying the Quantity of  
0 Trunk Cards and/or Modules in column (A) by the number of Pin  
0 Rows required in column (B):(A X B)=C.

0  
0 Determine the Total Number of Pin Rows Required for all Trunk ---  
0 Cards and/or Modules (D) by adding the Total Number of Pin  
0 Rows Required for each card type and/or Modules together in  
0 column (C).

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FOR DETAIL ENGINEERING

| TRUNK<br>CARD | (A)<br>QTY<br>OF<br>CARDS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>CARD BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|---------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|               |                           | 6X                                                                            | 8X | 10X |                                                                |
|               |                           |                                                                               |    |     |                                                                |
| NT0X10AA      |                           | 5                                                                             | 4  | 4   |                                                                |
| NT1X54AA      |                           | 2                                                                             | 1  | 1   |                                                                |
| NT2X01AA      |                           | 4                                                                             | 4  | 4   |                                                                |
| NT2X10AB      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X10AC      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X10BA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X57AA      |                           | 5                                                                             | 4  | 4   |                                                                |
| NT2X57AB      |                           | 5                                                                             | 4  | 4   |                                                                |
| NT2X66AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X67AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X72AA      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT2X72AB      |                           | 3                                                                             | 2  | 2   |                                                                |
| NT2X81AA      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT2X81AB      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT2X82AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X83AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X88AA      |                           | 4                                                                             | 2  | 2   |                                                                |
| NT2X90AD      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT2X92AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X98AA      |                           | 2                                                                             | 1  | 1   |                                                                |
| NT2X98AB      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT3X05AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT3X09AA      |                           | 13                                                                            | 12 | 12  | SEE NOTE 1                                                     |
| NT3X09BA      |                           | 13                                                                            | 12 | 12  | SEE NOTE 1                                                     |
| NT5X03AA      |                           | 3                                                                             | 2  | 2   |                                                                |
| NT5X04AA      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT5X06AA      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT5X30AA      |                           | 1                                                                             | 1  | 1   |                                                                |

TOTAL NUMBER OF PIN  
ROWS REQUIRED FOR  
CARDS (D)

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0 NOTE 1: Provide at least 1 Dedicated Block for NT3X09AA/BA cards.  
0 The result should be rounded up to the next whole number.

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RELEASE 28.01  
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FOR BUILDING BLOCK ENGINEERING

| (A)                          |                    | (B)                                                                    |    |     | (C)                                                     |
|------------------------------|--------------------|------------------------------------------------------------------------|----|-----|---------------------------------------------------------|
| TRUNK<br>CARDS OR<br>MODULAR | QTY<br>OF<br>UNITS | NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>CARD BASED ON<br>BLOCK TYPE |    |     | (A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|                              |                    | 6X                                                                     | 8X | 10X |                                                         |
| 1ST PAGE TOTALS              |                    |                                                                        |    |     |                                                         |
| NTZZ12BA                     |                    | 29                                                                     | 25 | 25  | SEE NOTE 01                                             |
| NTZZ12FA                     |                    | 36                                                                     | 31 | 31  | SEE NOTE 01                                             |
| NTZZ16AA                     |                    | 20                                                                     | 17 | 17  | SEE NOTE 01                                             |
| NTZZ16AB                     |                    | 20                                                                     | 17 | 17  | SEE NOTE 01                                             |
| NTZZ16BA                     |                    | 39                                                                     | 33 | 33  | SEE NOTE 01                                             |
| NTZZ06DA                     |                    | 1                                                                      | 1  | 1   |                                                         |
| NTZZ06EA                     |                    | 1                                                                      | 1  | 1   |                                                         |

TOTAL NUMBER OF PIN  
ROWS REQUIRED FOR  
ALL ITEMS (D)

NOTE 1 Provide at least 1 Dedicated Block for NT3X09AA/BA cards  
which are part of the stock list for these part numbers.  
The result should be rounded up to the next whole number.



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0 Determine the Number of Pin Rows on the Type of Block Ordered  
0 (E) ( See Example ).

0 Example:

0

0 Terminal Block

0

0 8 X 32

0 10 X 30

Number of Pin  
Rows on Block

32

30

0

0 Terminal Blocks for Trunk Cards and Modules (F) can be deter-  
0 mined by using the formula below:

0 Total Number of Pin Rows Required  
0 for Trunk Cards and/or Modules (D)

0

0 Number of Pin Rows on the Type of  
0 Block Ordered (E)

==== Terminal Blocks  
for Trunk Cards  
and/or Modules  
(F)

0 The result of the formula should be rounded up to the next  
0 whole number.

# 0 QUANTITY OF TERMINAL BLOCKS FOR LINES

0

0 An estimate of required terminal blocks for Lines (LSG'S) can be  
0 made by using the LINE SUB GROUP PER BLOCK CALCULATION TABLE.

0

LINE SUB GROUP PER BLOCK CALCULATION TABLE

0

|                                     | (A)<br>TERMINAL BLOCK TYPE |      |      |       |
|-------------------------------------|----------------------------|------|------|-------|
|                                     | 8X24                       | 8X30 | 8X32 | 10X30 |
| QUANTITY OF LSG'S<br>PER BLOCK TYPE | 3                          | 3    | 4    | 4     |

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|--|--|--|--|--|--|
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|--|--|--|--|--|--|

0 --- Select the Block Type Ordered in column (A). The numbers  
0 in the columns represent the quantity of LSG'S which can be  
0 terminated on one block per the Contract Drafting Department  
0 3424.

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0 --- Determine the Total Number of Line Sub Groups required  
0 for a Detail Engineered office by multiplying the Total Num-  
0 ber of Line Draws (NT6X05AA or NTB32BA) ordered by (2):

0  
0 
$$\left[ \begin{array}{l} \text{Required number of} \\ \text{NT6X05AA or NTB32BA} \end{array} \right] \times 2 \quad \text{====} \quad \begin{array}{l} \text{Total Number of} \\ \text{Line Sub Groups} \end{array}$$
  
0

0 --- Determine the Total Number of Line Sub Groups required  
0 for a Building Block Engineered office by the following ta-  
0 ble:

## 0 NUMBER OF LINE SUB GROUPS FOR BUILDING BLOCK PECS

0  
0  
0  
0  
0  
0  
0  
0

| BUILDING<br>BLOCK PART<br>NUMBER | NUMBER OF<br>LSG'S |
|----------------------------------|--------------------|
| LCM NTZZ08BA                     | 20                 |
| ISDN 2B1Q LCM NTZZ17HA           | 16                 |

0 --- Terminal Blocks for Lines can be determined by using the  
0 formulas below:

0  
0 
$$\frac{\begin{array}{l} \text{Total Number of Line Sub Group} \\ \text{requirement for office} \end{array}}{\begin{array}{l} \text{Number of Line Sub Groups per} \\ \text{Block Type Ordered} \end{array}} \quad \text{====} \quad \begin{array}{l} \text{Terminal Blocks} \\ \text{For Lines} \end{array}$$
  
0  
0

0 The result of the formula should be rounded up to the  
0 next whole number.

0

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## 0 QUANTITY OF TERMINAL BLOCKS FOR MISCELLANEOUS

0  
0 An estimate of required terminal blocks for Miscellaneous items  
0 can be made by using the MISCELLANEOUS PIN ROW REQUIREMENT CALCU-  
0 LATION TABLES.

0 --- Enter the Quantity of Miscellaneous items which require  
0 MDF terminations in column (A).

0 --- Select the Block Type Ordered in column (B) (6X, 8X, or  
0 10X..etc). The numbers in the columns represent the Pin Rows  
0 required for each item type per the Contract Drafting Depart-  
0 ment 3424.

0 --- Determine the Total Number of Pin Rows Required for each  
0 item type in column (C) by multiplying the Quantity of Items  
0 in column (A) by the number of Pin Rows required in column  
0 (B):  $(A \times B) = C$ .

0 --- Determine the Total Number of Pin Rows Required for all  
0 Miscellaneous Items (D) by adding the Total Number of Pin  
0 Rows Required for each item type together in column (C).

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MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE  
FOR DETAIL AND BUILDING BLOCK ENGINEERING

| MISCELLANEOUS<br>ITEM                  | (A)<br>QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|----------------------------------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                                        |                           | 6X                                                                            | 8X | 10X |                                                                |
| TM8 SH. NT2X52AK                       | 1                         | -                                                                             | 30 | 30  | SEE NOTE 1                                                     |
| NTZZ06RA                               | 1                         | -                                                                             | 30 | 30  | SEE NOTE 1                                                     |
| EXIT ALARM PANEL<br>NT0X64AA           |                           | -                                                                             | 5  | 5   |                                                                |
| AXU ALARM<br>NT3X89AA                  |                           | -                                                                             | 15 | 15  |                                                                |
| DATA SHELF<br>NT4X25BH                 |                           | -                                                                             | 12 | 12  |                                                                |
| NT4X25DH                               |                           | -                                                                             | 12 | 12  |                                                                |
| NTZZ24BA                               |                           | -                                                                             | 12 | 12  |                                                                |
| BSAC NT4X09BA                          |                           | 6                                                                             | 5  | 5   |                                                                |
| HIGH TONE GEN.<br>NT5X52AA             |                           | 1                                                                             | 1  | 1   |                                                                |
| BD TO BD TEST<br>UNIT NT5X73AA         |                           | -                                                                             | 8  | 6   |                                                                |
| NT5X73AB                               |                           | -                                                                             | 8  | 6   |                                                                |
| UNIV. CAMA CKT.<br>NT5X74AA            |                           | 2                                                                             | 1  | 1   |                                                                |
| AUX CAMA CKT.<br>NT5X75AA              |                           | 2                                                                             | 2  | 2   |                                                                |
| NT5X75AB                               |                           | 2                                                                             | 2  | 2   |                                                                |
| BOARD TO BOARD<br>TEST NT5X79AA        |                           | 2                                                                             | 2  | 2   |                                                                |
| ABBT APPLIQUE SP1<br>NT5X88AA          |                           | 1                                                                             | 1  | 1   |                                                                |
| COM AUDIBLE ALARM<br>PANEL NT5X92AA    |                           | 1                                                                             | 1  | 1   |                                                                |
| ALARM EXTENSION<br>PANEL NT5X92AB      |                           | 9                                                                             | 7  | 7   |                                                                |
| COIN STATION LINE<br>APPLIQUE NT5X93AA |                           | 2                                                                             | 2  | 2   |                                                                |
| DTH ROTL NT7F18AB                      |                           | -                                                                             | 15 | 15  |                                                                |
| TOTAL NUMBER OF PIN ROWS               |                           |                                                                               |    |     |                                                                |

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0  
0 REQUIRED FOR ITEMS  
0 PAGE TOTALS (D) \_\_\_\_\_

0 --- Note 1: Provide at least (1) Dedicated Block for Trunk  
0 Modules. The result should be rounded up to the next whole num-  
0 ber.

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MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM | QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|-----------------------|--------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                       |                    | 6X                                                                            | 8X | 10X |                                                                |
| 1ST PAGE TOTALS       |                    |                                                                               |    |     |                                                                |
| COOK DRA              |                    |                                                                               |    |     |                                                                |
| 1-CH. NT7M00CC        |                    | 2                                                                             | 2  | 2   |                                                                |
| NT7M00CR              |                    | 2                                                                             | 2  | 2   |                                                                |
| NT7M00DB              |                    | 2                                                                             | 2  | 2   |                                                                |
| NT7M00DC              |                    | 2                                                                             | 2  | 2   |                                                                |
| COOK DRA              |                    |                                                                               |    |     |                                                                |
| 4-CH. NT7M25CV        |                    | 5                                                                             | 5  | 5   |                                                                |
| NT7M25DG              |                    | 5                                                                             | 5  | 5   |                                                                |
| NT7M25DH              |                    | 5                                                                             | 5  | 5   |                                                                |
| NT7M25DN              |                    | 5                                                                             | 5  | 5   |                                                                |
| NT7M25DP              |                    | 5                                                                             | 5  | 5   |                                                                |
| NT7M25EA              |                    | 5                                                                             | 5  | 5   |                                                                |
| NT7M25EB              |                    | 5                                                                             | 5  | 5   |                                                                |
| NT7M25FM              |                    | 5                                                                             | 5  | 5   |                                                                |
| COOK DPP UNIT         |                    |                                                                               |    |     |                                                                |
| NT8X48AD              |                    | 1                                                                             | 1  | 1   |                                                                |
| NTZZ09LA              |                    | 1                                                                             | 1  | 1   |                                                                |
| NTZZ32CA              |                    | 1                                                                             | 1  | 1   |                                                                |
| NTZZ32DA              |                    | 1                                                                             | 1  | 1   |                                                                |
| COOK BMC              |                    |                                                                               |    |     |                                                                |
| REDUNDANT UNIT        |                    |                                                                               |    |     |                                                                |
| NT8M04AA              |                    | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BA              |                    | 1                                                                             | 1  | 1   |                                                                |
| NT8M04CA              |                    | 1                                                                             | 1  | 1   |                                                                |
| NT8M04AC              |                    | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BC              |                    | 1                                                                             | 1  | 1   |                                                                |
| NT8M04CC              |                    | 1                                                                             | 1  | 1   |                                                                |
| NT8M04AD              |                    | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BD              |                    | 1                                                                             | 1  | 1   |                                                                |
| NT8M04CD              |                    | 1                                                                             | 1  | 1   |                                                                |

TOTAL NUMBER OF PIN ROWS  
REQUIRED FOR ITEMS  
PAGE TOTALS (D)

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## MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM           | (A)<br>QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|---------------------------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                                 |                           | 6X                                                                            | 8X | 10X |                                                                |
| 2ST PAGE TOTALS                 |                           |                                                                               |    |     |                                                                |
| COOK BMC<br>REDUNDANT UNIT      |                           |                                                                               |    |     |                                                                |
| NT8M04AE                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BE                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04CE                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04DE                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04AF                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BF                        |                           | 1                                                                             | 1  | 1   |                                                                |
| REDUNDANT UNIT<br>COOK DRA      |                           |                                                                               |    |     |                                                                |
| NT8M04CF                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04AJ                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BJ                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04CJ                        |                           | 1                                                                             | 1  | 1   |                                                                |
| COOK BMC DEUCE                  |                           |                                                                               |    |     |                                                                |
| NT8M04AG                        |                           | 3                                                                             | 2  | 2   |                                                                |
| NT8M04BG                        |                           | 3                                                                             | 2  | 2   |                                                                |
| LIU DS0A NT9X78AA               |                           | 2                                                                             | 1  | 1   |                                                                |
| NTZZ11BA                        |                           | 2                                                                             | 1  | 1   |                                                                |
| NTZZ30BA                        |                           | 2                                                                             | 1  | 1   |                                                                |
| NT9X78AB                        |                           | 2                                                                             | 1  | 1   |                                                                |
| NTZZ11DA                        |                           | 2                                                                             | 1  | 1   |                                                                |
| NTZZ30DA                        |                           | 2                                                                             | 1  | 1   |                                                                |
| LIU V.35 NT9X77AA               |                           | 3                                                                             | 2  | 2   |                                                                |
| NTZZ11DA                        |                           | 3                                                                             | 2  | 2   |                                                                |
| NTZZ30DA                        |                           | 3                                                                             | 2  | 2   |                                                                |
| DIX ETHERNET                    |                           |                                                                               |    |     |                                                                |
| NT9X85AA                        |                           | 2                                                                             | 1  | 1   |                                                                |
| AT&T DAS UNIT<br>TELCO PROVIDED |                           |                                                                               |    |     |                                                                |
| 1-J1P056A-1_l3                  |                           | 10                                                                            | 7  | 7   |                                                                |

TOTAL NUMBER OF PIN ROWS



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0 REQUIRED FOR ALL ITEMS (D) \_\_\_\_\_

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Host - Miscellaneous Equipment  
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MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM                | (A)<br>QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|--------------------------------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                                      |                           | 6X                                                                            | 8X | 10X |                                                                |
| 3RD PAGE TOTALS                      |                           |                                                                               |    |     |                                                                |
| UDS RM16M SHELF<br>62005220          | 1                         | -                                                                             | 30 | 30  | SEE NOTE 2                                                     |
| UDS STANDALONE<br>108 61035119       |                           | 1                                                                             | 1  | 1   |                                                                |
| 201BC/AS 62015186                    |                           | 1                                                                             | 1  | 1   |                                                                |
| 202S/D 62025199                      |                           | 1                                                                             | 1  | 1   |                                                                |
| 202S/T 62025201                      |                           | 1                                                                             | 1  | 1   |                                                                |
| 202T/R 62025232                      |                           | 1                                                                             | 1  | 1   |                                                                |
| 208A/B 62085064                      |                           | 1                                                                             | 1  | 1   |                                                                |
| 212 62245030                         |                           | 1                                                                             | 1  | 1   |                                                                |
| 212A 62125069                        |                           | 1                                                                             | 1  | 1   |                                                                |
| T212AL1A/2<br>62125068               |                           | 1                                                                             | 1  | 1   |                                                                |
| 19.2K 64565005                       |                           | 1                                                                             | 1  | 1   |                                                                |
| 56K 61035119                         |                           | 1                                                                             | 1  | 1   |                                                                |
| CASE/DATATEL 4200<br>MODEM SHELF     |                           |                                                                               |    |     |                                                                |
| DC 905-5222-003                      | 1                         | -                                                                             | 32 | 32  | SEE NOTE 2                                                     |
| AC 905-5222-001                      | 1                         | -                                                                             | 32 | 32  | SEE NOTE 2                                                     |
| CASE STANDALONE<br>4201 905-5220-001 |                           | 1                                                                             | 1  | 1   |                                                                |
| 4202 905-5185-001                    |                           | 1                                                                             | 1  | 1   |                                                                |
| 4208 905-5227-001                    |                           | 1                                                                             | 1  | 1   |                                                                |
| 4212 905-5223-001                    |                           | 1                                                                             | 1  | 1   |                                                                |
| 4222 905-5230-011                    |                           | 1                                                                             | 1  | 1   |                                                                |
| 4229 905-5224-001                    |                           | 2                                                                             | 2  | 2   |                                                                |
| 4296 905-5191-001                    |                           | 1                                                                             | 1  | 1   |                                                                |

TOTAL NUMBER OF PIN ROWS  
REQUIRED FOR ALL ITEMS (D)

--- Note 2: Provide (1) Dedicated Block for each modem shelf.

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## MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM         | QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|-------------------------------|--------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                               |                    | 6X                                                                            | 8X | 10X |                                                                |
| 4TH PAGE TOTALS               |                    |                                                                               |    |     |                                                                |
| 3703-03 LOCAL<br>TEST CABINET |                    |                                                                               |    |     |                                                                |
| 4-TRK NT0J62BA                |                    | 4                                                                             | 3  | 3   |                                                                |
| 4-TRK NT0J63BA                |                    | 4                                                                             | 3  | 3   |                                                                |
| 16-TRK NT0J64BA               |                    | 16                                                                            | 8  | 8   |                                                                |
| DRTU I/F NT0J04ED             |                    | 2                                                                             | 1  | 1   |                                                                |
| DRTU NT0J04EA                 |                    | 2                                                                             | 1  | 1   |                                                                |
| NT0J04EB                      |                    | 2                                                                             | 1  | 1   |                                                                |
| MLT NT3J00BA                  |                    | -                                                                             | 20 | 20  |                                                                |
| TOPS MP NTNX57AC              | 1                  | -                                                                             | 32 | 32  | SEE NOTE 3                                                     |
| TOPS MP NTNX60AA              | 1                  | -                                                                             | 32 | 32  | SEE NOTE 3                                                     |
| FR RELAY T1<br>NTEX30AA       |                    | 4                                                                             | 4  | 4   |                                                                |
| LIU ALARM<br>NT4G46BK         |                    | 6                                                                             | 5  | 5   |                                                                |
| LIU 4110<br>NT4G46CA          |                    | 1                                                                             | 1  | 1   |                                                                |
| TOPS MPX<br>NTNX5103          | 1                  | -                                                                             | 30 | 30  | SEE NOTE 3                                                     |
| VSN MODEMS<br>NT1M41BA        |                    | -                                                                             | 9  | 9   |                                                                |
| NORSTAR KEY SYS.<br>NTZX18AB  | 1                  | -                                                                             | 32 | 32  | SEE NOTE 3                                                     |
| TELLABS 292 SYS.<br>292BR-1   |                    | -                                                                             | 20 | 20  |                                                                |
| NTZZ18FA                      |                    | -                                                                             | 20 | 20  |                                                                |
| 292DR                         |                    | -                                                                             | 12 | 12  |                                                                |
| NTZX18GA                      |                    | -                                                                             | 12 | 12  |                                                                |
| 8108                          |                    | 1                                                                             | 1  | 1   |                                                                |

TOTAL NUMBER OF PIN ROWS  
REQUIRED FOR ALL ITEMS (D)

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0 --- Note 3: Provide (1) Dedicated Block for each unit.

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## MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM | (A)<br>QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|-----------------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                       |                           | 6X                                                                            | 8X | 10X |                                                                |
| 5TH PAGE TOTALS       |                           |                                                                               |    |     |                                                                |
| 1A2 KEY SYSTEM        |                           |                                                                               |    |     |                                                                |
| TCS1800AA-1L1         |                           | -                                                                             | 12 | 12  |                                                                |
| NTZZ14GA              |                           | -                                                                             | 12 | 12  |                                                                |
| TELTREND SHELF        |                           |                                                                               |    |     |                                                                |
| TELCO PROVIDE         |                           |                                                                               |    |     |                                                                |
| USD23-120             |                           | -                                                                             | 12 | 12  |                                                                |
| IAU EMULATOR          |                           |                                                                               |    |     |                                                                |
| TELCO PROVIDE         |                           |                                                                               |    |     |                                                                |
| 2216                  |                           | 4                                                                             | 6  | 6   |                                                                |
| MINI-RESPONDER        |                           |                                                                               |    |     |                                                                |
| 1056A                 |                           | 2                                                                             | 1  | 1   |                                                                |
| 4-WIRE MINI-          |                           |                                                                               |    |     |                                                                |
| RESPONDER 1056B       |                           | 2                                                                             | 2  | 2   |                                                                |
| UNIV. DATA CON-       |                           |                                                                               |    |     |                                                                |
| VERTER 8448           |                           | 1                                                                             | 1  | 1   |                                                                |
| TERMINAL BLOCK        |                           |                                                                               |    |     |                                                                |
| NT3X25BA              | 1                         | -                                                                             | 32 | 32  | SEE NOTE 4                                                     |

TOTAL NUMBER OF PIN ROWS  
REQUIRED FOR ALL ITEMS (D) \_\_\_\_\_

--- Note 4: Provide (1) Dedicated Block for each unit.

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0 --- Determine the Number of Pin Rows on the Type of Block Or-  
0 dered (E) ( See example in section 2.4.6).

0 --- Terminal Blocks for Miscellaneous Items (F) can be deter-  
0 mined by using the formula below:

|   |                                   |                        |
|---|-----------------------------------|------------------------|
| 0 | Total Number of Pin Rows Required |                        |
| 0 | for all Miscellaneous Items (D)   | Terminal Blocks        |
| 0 | <hr/>                             | ==== for Miscellaneous |
| 0 | Number of Pin Rows on the Type of | Items (F)              |
| 0 | Block Ordered (E)                 |                        |

0 The result of the formula should be rounded up to the next  
0 whole number.

0

0 18.1.4 PIN CONFIGURATION FOR CONNECTORIZED TERMINAL BLOCKS

0

0 Approved sources for connectorized terminal blocks offer four (4)  
0 standard telephone pin configurations. Each pin configuration has  
0 a specific application for Trunks (TM8) and or Line circuits  
0 only.

0 Figures A-F show each configuration's unique pin layout, circuit  
0 and connector number growth patterns. Figures A-D can be used for  
0 line circuit applications and Figures E-F are only to be used for  
0 Trunk (TM8) applications.

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## 0 LINE CIRCUIT APPLICATIONS

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0 For line application the circuits for each connector are numbered  
0 (00)-(31) representing 32 line circuits. Circuit number growth  
0 patterns can be Top to Bottom (See Figure A) or Bottom to Top  
0 (See Figure B), with all patterns growing Left to Right (See Fig-  
0 ures A-D).

0 Connectors and Line Sub Groups (LSG) can be grouped horizontally  
0 in rows (See Figures C & D), with a growth pattern Bottom to Top  
0 (See Figure C) or Top to Bottom (See Figure D). Also, they can be  
0 grouped vertically in columns, with a growth pattern Left to  
0 Right (See Figures A & B).

0 The Ring and Tip configuration for each CTB is unique to the  
0 internal wiring and can not be changed. Configurations can be  
0 Ring below Tip (See Figures A & D) or Ring above Tip (See Figures  
0 B & C).

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0 18.2 A LINE APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "A" for Lines. Note: Ring below Tip pin pat-  
0 tern, with Line Sub Group (LSG) growth is form Left to  
0 Right and Top to Bottom Circuit number growth.

Line Application (LSG)

| Block Pin Row numbers for 8X32 CTB |   |         |         |   |         |         |   |         |         |   |         |
|------------------------------------|---|---------|---------|---|---------|---------|---|---------|---------|---|---------|
| 1                                  | - | 8       | 9       | - | 16      | 17      | - | 24      | 25      | - | 32      |
| T<br>00                            |   |         | T<br>00 |   |         | T<br>00 |   |         | T<br>00 |   |         |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>01                            |   |         | T<br>01 |   |         | T<br>01 |   |         | T<br>01 |   |         |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>02                            |   |         | T<br>02 |   |         | T<br>02 |   |         | T<br>02 |   |         |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>03                            |   | T<br>31 | T<br>03 |   | T<br>31 | T<br>03 |   | T<br>31 | T<br>03 |   | T<br>31 |
| R                                  |   | R       | R       |   | R       | R       |   | R       | R       |   | R       |



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|   |           |           |           |           |
|---|-----------|-----------|-----------|-----------|
| 0 | CONNECTOR | CONNECTOR | CONNECTOR | CONNECTOR |
| 0 | A         | B         | C         | D         |
| 0 | LSG AA    | LSG BB    | LSG CC    | LSG DD    |
| 0 |           |           |           |           |

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0 18.3 B LINE APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "B" for Lines. Note: Ring above Tip pin pat-  
0 tern, with Line Sub Group (LSG) growth is form Left to  
0 Right and Bottom to Top Circuit number growth.

Line Application (LSG)

| Block Pin Row numbers for 8X32 CTB |   |         |         |   |         |         |   |         |         |   |         |
|------------------------------------|---|---------|---------|---|---------|---------|---|---------|---------|---|---------|
| 1                                  | - | 8       | 9       | - | 16      | 17      | - | 24      | 25      | - | 32      |
| R                                  |   | R       | R       |   | R       | R       |   | R       | R       |   | R       |
| T<br>03                            |   | T<br>31 | T<br>03 |   | T<br>31 | T<br>03 |   | T<br>31 | T<br>03 |   | T<br>31 |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>02                            |   |         | T<br>02 |   |         | T<br>02 |   |         | T<br>02 |   |         |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>01                            |   |         | T<br>01 |   |         | T<br>01 |   |         | T<br>01 |   |         |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>00                            |   |         | T<br>00 |   |         | T<br>00 |   |         | T<br>00 |   |         |

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|   |           |           |           |           |
|---|-----------|-----------|-----------|-----------|
| 0 | CONNECTOR | CONNECTOR | CONNECTOR | CONNECTOR |
| 0 | A         | B         | C         | D         |
| 0 | LSG AA    | LSG BB    | LSG CC    | LSG DD    |
| 0 |           |           |           |           |

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0 18.4 C LINE APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "C" for Lines. Note: Ring above Tip pin pat-  
0 tern, with Line Sub Group (LSG) growth is form Bottom  
0 to Top and Left to Right Circuit number growth.

| Line Application (LSG)             |         |  |  |  |  |         |  |  |  |  |  |         |
|------------------------------------|---------|--|--|--|--|---------|--|--|--|--|--|---------|
| Block Pin Row numbers for 8X32 CTB |         |  |  |  |  |         |  |  |  |  |  |         |
| 1 - - - - 16 - - - - 32            |         |  |  |  |  |         |  |  |  |  |  |         |
| CONNECTOR D<br>LSG DD              | R       |  |  |  |  | R       |  |  |  |  |  | R       |
|                                    | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
| CONNECTOR C<br>LSG CC              | R       |  |  |  |  | R       |  |  |  |  |  | R       |
|                                    | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
| CONNECTOR B<br>LSG BB              | R       |  |  |  |  | R       |  |  |  |  |  | R       |
|                                    | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
| CONNECTOR A<br>LSG AA              | R       |  |  |  |  | R       |  |  |  |  |  | R       |
|                                    | T       |  |  |  |  | T       |  |  |  |  |  | T       |

0 | | | | | 00 | | | | | 15 | | | | | 31 |  
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0 18.5 D LINE APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "D" for Lines. Note: Ring below Tip pin pat-  
0 tern, with Line Sub Group (LSG) growth is form Top to  
0 Bottom and Left to Right Circuit number growth.

| Line Application (LSG)             |         |  |  |  |  |         |  |  |  |  |  |         |
|------------------------------------|---------|--|--|--|--|---------|--|--|--|--|--|---------|
| Block Pin Row numbers for 8X32 CTB |         |  |  |  |  |         |  |  |  |  |  |         |
| 1 - - - - 16 - - - - 32            |         |  |  |  |  |         |  |  |  |  |  |         |
| CONNECTOR A<br>LSG AA              | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
|                                    | R       |  |  |  |  | R       |  |  |  |  |  | R       |
| CONNECTOR B<br>LSG BB              | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
|                                    | R       |  |  |  |  | R       |  |  |  |  |  | R       |
| CONNECTOR C<br>LSG CC              | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
|                                    | R       |  |  |  |  | R       |  |  |  |  |  | R       |
| CONNECTOR D                        | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
|                                    | R       |  |  |  |  | R       |  |  |  |  |  | R       |

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|   |        |   |  |  |  |  |   |  |  |  |  |   |
|---|--------|---|--|--|--|--|---|--|--|--|--|---|
| 0 | LSG DD |   |  |  |  |  |   |  |  |  |  |   |
| 0 |        | R |  |  |  |  | R |  |  |  |  | R |
| 0 |        |   |  |  |  |  |   |  |  |  |  |   |
| 0 |        |   |  |  |  |  |   |  |  |  |  |   |
| 0 |        |   |  |  |  |  |   |  |  |  |  |   |

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## 0 TRUNK (TM8) APPLICATIONS

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For Trunk application the circuits for each connector are number (00)-(29) representing 30 circuits. Circuit number growth pattern will always to Left to Right.

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Connectors for Trunks are grouped horizontally in rows, with a growth pattern Top to Bottom (See Figure F) or Bottom to Top (See Figure E).

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The Ring and Tip Configuration for Trunks can be Ring below Tip (See Figure F) or Ring above Tip (See Figure E).

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0 18.6 E TRUNK (TM8) APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "E" for TM8'S. Note: Ring above Tip pin pat-  
0 tern, with Connector number growth is form Bottom to  
0 Top and Left to Right Circuit number growth.

|                                    |          |  |  |  |  |  |  |  |  |          |  |  |
|------------------------------------|----------|--|--|--|--|--|--|--|--|----------|--|--|
| Trunk TM8 Application              |          |  |  |  |  |  |  |  |  |          |  |  |
| Block Pin Row numbers for 8X32 CTB |          |  |  |  |  |  |  |  |  |          |  |  |
| 1 - - - - - - - - - 30 31 32       |          |  |  |  |  |  |  |  |  |          |  |  |
| CONNECTOR D                        | -/<br>MB |  |  |  |  |  |  |  |  | -/<br>MB |  |  |
|                                    | -/<br>MA |  |  |  |  |  |  |  |  | -/<br>MA |  |  |
| CONNECTOR C                        | M/<br>EB |  |  |  |  |  |  |  |  | M/<br>EB |  |  |
|                                    | E/<br>EA |  |  |  |  |  |  |  |  | E/<br>EA |  |  |
| CONNECTOR B                        | R1       |  |  |  |  |  |  |  |  | R1       |  |  |
|                                    | T1       |  |  |  |  |  |  |  |  | T1       |  |  |
| CONNECTOR A                        | R        |  |  |  |  |  |  |  |  | R        |  |  |
|                                    | T        |  |  |  |  |  |  |  |  | T        |  |  |



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0 18.7 F TRUNK (TM8) APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "F" for TM8'S. Note: Ring below Tip pin pat-  
0 tern, with Connector number growth is form Top to Bot-  
0 tom and Left to Right Circuit number growth.

|                                    |                      |
|------------------------------------|----------------------|
| Trunk TM8 Application              |                      |
| Block Pin Row numbers for 8X32 CTB |                      |
|                                    | 1 - - - - - 30 31 32 |
| CONNECTOR A                        | T<br>00              |
|                                    | R                    |
| CONNECTOR B                        | T1                   |
|                                    | R1                   |
| CONNECTOR C                        | E/<br>EA             |
|                                    | M/<br>EB             |
| CONNECTOR D                        | -/<br>MA             |
|                                    | -/                   |

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0 18.7.1 PIN CONFIGURATION FOR NON-CONNECTORIZED TERMINAL BLOCKS

0

0 Approved sources for Non-Connectorized Terminal Blocks  
0 (Non-CTB'S) offer many standard terminal pair configurations. A  
0 Non-CTB has no pin configuration restrictions like the CTB.

0 These blocks are generally used for terminating miscellaneous  
0 circuits; however, the connectorized 8X32 layout (Figures A thru  
0 F) for Lines and Trunks may be provisioned in conjunction with  
0 this block.

0

0 18.7.2 ORDERING TABLE FOR APPROVED BLOCKS

0

0 The following tables have been designed to define block ordering  
0 options for each vendor's blocks.

| 0 COLUMN HEADING | DESCRIPTION                                                                                                                                                                                                           |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 PEC            | Vendors manufacturers part number.                                                                                                                                                                                    |
| 0 BLOCK SIZE     | Terminal pin field array.                                                                                                                                                                                             |
| 0 EQT. SIDE      | Equipment Side, Block side which DMS-100<br>0 Equipment is terminated. Terminations can be<br>0 made by 32 pair male connectors (CONN),<br>0 Bifurcated Wire Wrap pins (BIF) or Single<br>0 Post Wire Wrap pins (SP). |
| 0 X-CON SIDE     | Cross Connect Side, Block side which incoming<br>0 circuits to the office are terminated. Termi-<br>0 nations can be made by Bifurcated Wire Wrap<br>0 pins (BIF), Single Post Wire Wrap pins (SP)                    |

0

0 or Quick Connect Wire Wrap pins (QC) only ap-  
0 plicable for Telzon Blocks.

0 FUNCTION Block application termination functions. Line  
0 Sub Group terminations (LINES), Trunk Module  
0 terminations (TRUNKS) and Miscellaneous ter-  
0 minations (MISC).

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| 0 | COLUMN HEADING   | DESCRIPTION                                                                                                                                                                                                                                                                                                                                    |
|---|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | TERMINAL PATTERN | Four factors define a unique terminal pattern: Frame mount (Horizontal or Vertical), Ring to Tip relationship, LSG or connector growth, and circuit number growth. Each terminal pattern is identified by the letter P followed by a number from 1 to 10. All of the terminal patterns (P1 thru P10) are described below. For NON-CTB's (N/A). |
| 0 | .....P1          | Horizontal Mount.....<br>Ring Below Tip.....<br>LSG growth Left to Right.....<br>Circuit growth Top to Bottom.....                                                                                                                                                                                                                             |
| 0 | .....P2          | Horizontal Mount.....<br>Ring Below Tip.....<br>LSG growth Top to Bottom.....<br>Circuit growth Left to Right.....                                                                                                                                                                                                                             |
| 0 | .....P3          | Horizontal Mount.....<br>Ring Above Tip.....<br>LSG growth Bottom to Top.....<br>Circuit growth Left to Right.....                                                                                                                                                                                                                             |
| 0 | .....P4          | Horizontal Mount.....<br>Ring Above Tip.....<br>LSG growth Left to Right.....<br>Circuit growth Bottom to Top.....                                                                                                                                                                                                                             |
| 0 | .....P5          | Vertical mount.....<br>Ring Left of Tip.....<br>LSG growth Top to Bottom.....<br>Circuit growth Right to Left.....                                                                                                                                                                                                                             |
| 0 | .....P6          | Vertical mount.....<br>Ring Left of Tip.....<br>LSG growth Right to Left.....<br>Circuit growth Top to Bottom.....                                                                                                                                                                                                                             |
| 0 | .....P7          | Vertical mount.....<br>Ring Right of Tip.....<br>LSG growth Left to Right.....<br>Circuit growth Top to Bottom.....                                                                                                                                                                                                                            |

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0 .....P8 Vertical mount.....  
0 Ring Right of Tip.....  
0 LSG growth Top to Bottom.....  
0 Circuit growth Left to Right.....

0 .....P9 Canadian applications only.....  
0 Vertical mount.....  
0 Ring Above Tip.....  
0 LSG growth Bottom to Top.....  
0 Circuit growth Left to Right.....

0 .....P10 Canadian applications only.....  
0 Horizontal mount.....  
0 Ring Above Tip.....  
0 LSG growth Bottom to Top.....  
0 Circuit growth Left to Right.....

0 HOUSING SIZE Telzon blocks are made with a 6.0 inch (6.0)  
0 or 4.3/4 inch (4.75) housing. OPD blocks only  
0 have one housing size (N/A).

0 FANNING STRIP Telzon blocks can be order with Fanning Strip  
0 numbering 00-31 (0) or 01-32 (1). OPD blocks  
0 can not be ordered with Fanning Strip number-  
0 ing (N/A).

0 FRAME MOUNT How the block is mounted on the MDF Frame  
0 Horizontal (HOR) or Vertical (VERT).

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## 0 OPD VERSABLOCK APPROVED PARTS LIST

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0 The HOUSING SIZE and FANNING STRIP Terminal Block Attributes are  
0 not applicable to the OPD VERSABLOCKS.

| PEC             | BLOCK<br>SIDE | EQT.<br>SIDE | X-CON<br>SIDE | FUNCTION | TERMINAL<br>PATTERN | FRAME<br>MOUNT |
|-----------------|---------------|--------------|---------------|----------|---------------------|----------------|
| 130-A4128L001   | 08X32         | CONN         | BIF           | LINES    | P1                  | HOR            |
| 130-A4128W001   | 08X32         | CONN         | SP            | LINES    | P1                  | HOR            |
| 130-A4128L001   | 08X32         | CONN         | BIF           | LINES    | P5                  | VERT           |
| 130-A4128W001   | 08X32         | CONN         | SP            | LINES    | P5                  | VERT           |
| 130-A4128L002   | 08X32         | CONN         | BIF           | LINES    | P2                  | HOR            |
| 130-A4128L002   | 08X32         | CONN         | BIF           | TRUNKS   | P2                  | HOR            |
| 130-A4128W002   | 08X32         | CONN         | SP            | LINES    | P2                  | HOR            |
| 130-A4128W002   | 08X32         | CONN         | SP            | TRUNKS   | P2                  | HOR            |
| 130-A4128L002   | 08X32         | CONN         | BIF           | LINES    | P6                  | VERT           |
| 130-A4128L002   | 08X32         | CONN         | BIF           | TRUNKS   | P6                  | VERT           |
| 130-A4128W002   | 08X32         | CONN         | SP            | LINES    | P6                  | VERT           |
| 130-A4128W002   | 08X32         | CONN         | SP            | TRUNKS   | P6                  | VERT           |
| 130-A4128L003   | 08X32         | CONN         | BIF           | LINES    | P3                  | HOR            |
| 130-A4128L003   | 08X32         | CONN         | BIF           | TRUNKS   | P3                  | HOR            |
| 130-A4128W003   | 08X32         | CONN         | SP            | LINES    | P3                  | HOR            |
| 130-A4128W003   | 08X32         | CONN         | SP            | TRUNKS   | P3                  | HOR            |
| 130-A4128L003   | 08X32         | CONN         | BIF           | LINES    | P7                  | VERT           |
| 130-A4128L003   | 08X32         | CONN         | BIF           | TRUNKS   | P7                  | VERT           |
| 130-A4128W003   | 08X32         | CONN         | SP            | LINES    | P7                  | VERT           |
| 130-A4128W003   | 08X32         | CONN         | SP            | TRUNKS   | P7                  | VERT           |
| 130-A4128L011   | 08X32         | CONN         | BIF           | LINES    | P4                  | HOR            |
| 130-A4128W011   | 08X32         | CONN         | SP            | LINES    | P4                  | HOR            |
| 130-A4128L011   | 08X32         | CONN         | BIF           | LINES    | P8                  | VERT           |
| 130-A4128W011   | 08X32         | CONN         | SP            | LINES    | P8                  | VERT           |
| QBB66QP096SG336 | 08X24         | CONN         | BIF           | LINES    | P9                  | VERT           |
| QBB66QP096SG336 | 08X24         | CONN         | BIF           | LINES    | P10                 | HOR            |
| 130-N0128L001   | 08X32         | BIF          | BIF           | MISC     | N/A                 | HOR            |
| 130-N0128W001   | 08X32         | BIF          | SP            | MISC     | N/A                 | HOR            |
| 130-N0128L001   | 08X32         | BIF          | BIF           | MISC     | N/A                 | VERT           |
| 130-N0128W001   | 08X32         | BIF          | SP            | MISC     | N/A                 | VERT           |
| 130-N0100L012   | 08X25         | BIF          | BIF           | MISC     | N/A                 | HOR            |
| 130-N0100W012   | 08X25         | BIF          | SP            | MISC     | N/A                 | HOR            |



0 NOTE: The QBB66QP096SG336 is provisionable in the Canadian market only  
0 and its wiring pattern is incompatible with the US wiring patterns for  
0 lines.

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## 0 OPD ROTATING APPROVED PARTS LIST

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0 NOTE: The TERMINAL PATTERN, HOUSING SIZE, and FANNING STRIP Ter-  
0 minal Block Attributes are not applicable to the OPD Rotating  
0 Terminal Blocks.

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| PEC           | BLOCK<br>SIDE | EQT.<br>SIDE | X-CON<br>SIDE | FUNCTION | FRAME<br>MOUNT |
|---------------|---------------|--------------|---------------|----------|----------------|
| 130-4030      | 10X30         | SP           | SP            | MISC     | HOR            |
| 130-4030      | 10X30         | SP           | SP            | MISC     | VERT           |
| 130-4620      | 06X20         | SP           | SP            | MISC     | HOR            |
| 130-4620      | 06X20         | SP           | SP            | MISC     | VERT           |
| 130-4630      | 06X30         | SP           | SP            | MISC     | HOR            |
| 130-4630      | 06X30         | SP           | SP            | MISC     | VERT           |
| 130-4820      | 08X20         | SP           | SP            | MISC     | HOR            |
| 130-4820      | 08X20         | SP           | SP            | MISC     | VERT           |
| 130-4824      | 08X24         | SP           | SP            | MISC     | HOR            |
| 130-4824      | 08X24         | SP           | SP            | MISC     | VERT           |
| 130-N0096W014 | 08X24         | SP           | SP            | MISC     | HOR            |
| 130-N0096W014 | 08X24         | SP           | SP            | MISC     | VERT           |
| 130-4830      | 08X30         | SP           | SP            | MISC     | HOR            |
| 130-4830      | 08X30         | SP           | SP            | MISC     | VERT           |

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## 0 TELZON TERMINAL BLOCK APPROVED PARTS LIST

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| PEC          | BLOCK<br>SIDE | EQT.<br>SIDE | X-CON<br>SIDE | FUNCTION | TERMINAL<br>PATTERN | HOUSING<br>SIZE | FANNING<br>STRIP | FRAME<br>MOUNT |
|--------------|---------------|--------------|---------------|----------|---------------------|-----------------|------------------|----------------|
| 400-0010-000 | 10X30         | SP           | SP            | MISC     | N/A                 | 6.0             | 1                | HOR            |
| 400-0010-000 | 10X30         | SP           | SP            | MISC     | N/A                 | 6.0             | 1                | VERT           |
| 400-0010-040 | 10X30         | SP           | SP            | MISC     | N/A                 | 4.75            | 1                | HOR            |
| 400-0010-040 | 10X30         | SP           | SP            | MISC     | N/A                 | 4.75            | 1                | VERT           |
| 482-0000-000 | 08X32         | SP           | SP            | MISC     | N/A                 | 6.0             | 1                | HOR            |
| 482-0000-000 | 08X32         | SP           | SP            | MISC     | N/A                 | 6.0             | 1                | VERT           |
| 482-0000-040 | 08X32         | SP           | SP            | MISC     | N/A                 | 4.75            | 1                | HOR            |
| 482-0000-040 | 08X32         | SP           | SP            | MISC     | N/A                 | 4.75            | 1                | VERT           |
| 482-1004-301 | 08X32         | CONN         | SP            | LINE     | P2                  | 6.0             | 1                | HOR            |
| 482-1004-301 | 08X32         | CONN         | SP            | TRUNK    | P2                  | 6.0             | 1                | HOR            |
| 482-1004-301 | 08X32         | CONN         | SP            | LINE     | P6                  | 6.0             | 1                | VERT           |
| 482-1004-301 | 08X32         | CONN         | SP            | TRUNK    | P6                  | 6.0             | 1                | VERT           |
| 482-1004-341 | 08X32         | CONN         | SP            | LINE     | P2                  | 4.75            | 1                | HOR            |
| 482-1004-341 | 08X32         | CONN         | SP            | TRUNK    | P2                  | 4.75            | 1                | HOR            |
| 482-1004-341 | 08X32         | CONN         | SP            | LINE     | P6                  | 4.75            | 1                | VERT           |
| 482-1004-341 | 08X32         | CONN         | SP            | TRUNK    | P6                  | 4.75            | 1                | VERT           |
| 482-1064-301 | 08X32         | CONN         | SP            | LINE     | P3                  | 6.0             | 1                | HOR            |
| 482-1064-301 | 08X32         | CONN         | SP            | TRUNK    | P3                  | 6.0             | 1                | HOR            |
| 482-1064-301 | 08X32         | CONN         | SP            | LINE     | P7                  | 6.0             | 1                | VERT           |
| 482-1064-301 | 08X32         | CONN         | SP            | TRUNK    | P7                  | 6.0             | 1                | VERT           |
| 482-1064-341 | 08X32         | CONN         | SP            | LINE     | P3                  | 4.75            | 1                | HOR            |
| 482-1064-341 | 08X32         | CONN         | SP            | TRUNK    | P3                  | 4.75            | 1                | HOR            |
| 482-1064-341 | 08X32         | CONN         | SP            | LINE     | P7                  | 4.75            | 1                | VERT           |
| 482-1064-341 | 08X32         | CONN         | SP            | TRUNK    | P7                  | 4.75            | 1                | VERT           |
| 482-1064-345 | 08X32         | CONN         | SP            | LINE     | P3                  | 4.75            | 0                | HOR            |
| 482-1064-345 | 08X32         | CONN         | SP            | TRUNK    | P3                  | 4.75            | 0                | HOR            |
| 482-1064-345 | 08X32         | CONN         | SP            | LINE     | P7                  | 4.75            | 0                | VERT           |
| 482-1064-345 | 08X32         | CONN         | SP            | TRUNK    | P7                  | 4.75            | 0                | VERT           |
| 482-2004-301 | 08X32         | CONN         | SP            | LINE     | P1                  | 6.0             | 1                | HOR            |
| 482-2004-301 | 08X32         | CONN         | SP            | LINE     | P5                  | 6.0             | 1                | VERT           |
| 482-2004-341 | 08X32         | CONN         | SP            | LINE     | P1                  | 4.75            | 1                | HOR            |
| 482-2004-341 | 08X32         | CONN         | SP            | LINE     | P5                  | 4.75            | 1                | VERT           |
| 482-2064-301 | 08X32         | CONN         | SP            | LINE     | P4                  | 6.0             | 1                | HOR            |
| 482-2064-301 | 08X32         | CONN         | SP            | LINE     | P8                  | 6.0             | 1                | VERT           |
| 482-2064-341 | 08X32         | CONN         | SP            | LINE     | P4                  | 4.75            | 1                | HOR            |
| 482-2064-341 | 08X32         | CONN         | SP            | LINE     | P8                  | 4.75            | 1                | VERT           |

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## 0 TELZON TERMINAL BLOCK APPROVED PARTS LIST

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| 0 | 0            | 0             | 0            | 0             | 0        | 0                   | 0               | 0                | 0              |
|---|--------------|---------------|--------------|---------------|----------|---------------------|-----------------|------------------|----------------|
| 0 | PEC          | BLOCK<br>SIDE | EQT.<br>SIDE | X-CON<br>SIDE | FUNCTION | TERMINAL<br>PATTERN | HOUSING<br>SIZE | FANNING<br>STRIP | FRAME<br>MOUNT |
| 0 | 582-0000-000 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 6.0             | 1                | HOR            |
| 0 | 582-0000-000 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 6.0             | 1                | VERT           |
| 0 | 582-0000-040 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 4.75            | 1                | HOR            |
| 0 | 582-0000-040 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 4.75            | 1                | VERT           |
| 0 | 582-0000-045 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 4.75            | 0                | HOR            |
| 0 | 582-0000-045 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 4.75            | 0                | VERT           |
| 0 | 582-1004-301 | 08X32         | CONN         | BIF           | LINE     | P2                  | 6.0             | 1                | HOR            |
| 0 | 582-1004-301 | 08X32         | CONN         | BIF           | TRUNK    | P2                  | 6.0             | 1                | HOR            |
| 0 | 582-1004-301 | 08X32         | CONN         | BIF           | LINE     | P6                  | 6.0             | 1                | VERT           |
| 0 | 582-1004-301 | 08X32         | CONN         | BIF           | TRUNK    | P6                  | 6.0             | 1                | VERT           |
| 0 | 582-1004-341 | 08X32         | CONN         | BIF           | LINE     | P2                  | 4.75            | 1                | HOR            |
| 0 | 582-1004-341 | 08X32         | CONN         | BIF           | TRUNK    | P2                  | 4.75            | 1                | HOR            |
| 0 | 582-1004-341 | 08X32         | CONN         | BIF           | LINE     | P6                  | 4.75            | 1                | VERT           |
| 0 | 582-1004-341 | 08X32         | CONN         | BIF           | TRUNK    | P6                  | 4.75            | 1                | VERT           |
| 0 | 582-1004-345 | 08X32         | CONN         | BIF           | LINE     | P2                  | 4.75            | 0                | HOR            |
| 0 | 582-1004-345 | 08X32         | CONN         | BIF           | TRUNK    | P2                  | 4.75            | 0                | HOR            |
| 0 | 582-1004-345 | 08X32         | CONN         | BIF           | LINE     | P6                  | 4.75            | 0                | VERT           |
| 0 | 582-1004-345 | 08X32         | CONN         | BIF           | TRUNK    | P6                  | 4.75            | 0                | VERT           |
| 0 | 582-1064-301 | 08X32         | CONN         | BIF           | LINE     | P3                  | 6.0             | 1                | HOR            |
| 0 | 582-1064-301 | 08X32         | CONN         | BIF           | TRUNK    | P3                  | 6.0             | 1                | HOR            |
| 0 | 582-1064-301 | 08X32         | CONN         | BIF           | LINE     | P7                  | 6.0             | 1                | VERT           |
| 0 | 582-1064-301 | 08X32         | CONN         | BIF           | TRUNK    | P7                  | 6.0             | 1                | VERT           |
| 0 | 582-1064-341 | 08X32         | CONN         | BIF           | LINE     | P3                  | 4.75            | 1                | HOR            |
| 0 | 582-1064-341 | 08X32         | CONN         | BIF           | TRUNK    | P3                  | 4.75            | 1                | HOR            |
| 0 | 582-1064-341 | 08X32         | CONN         | BIF           | LINE     | P7                  | 4.75            | 1                | VERT           |
| 0 | 582-1064-341 | 08X32         | CONN         | BIF           | TRUNK    | P7                  | 4.75            | 1                | VERT           |
| 0 | 582-1064-345 | 08X32         | CONN         | BIF           | LINE     | P3                  | 4.75            | 0                | HOR            |
| 0 | 582-1064-345 | 08X32         | CONN         | BIF           | TRUNK    | P3                  | 4.75            | 0                | HOR            |
| 0 | 582-1064-345 | 08X32         | CONN         | BIF           | LINE     | P7                  | 4.75            | 0                | VERT           |
| 0 | 582-1064-345 | 08X32         | CONN         | BIF           | TRUNK    | P7                  | 4.75            | 0                | VERT           |
| 0 | 582-2004-301 | 08X32         | CONN         | BIF           | LINE     | P1                  | 6.0             | 1                | HOR            |
| 0 | 582-2004-301 | 08X32         | CONN         | BIF           | LINE     | P5                  | 6.0             | 1                | VERT           |
| 0 | 582-2004-341 | 08X32         | CONN         | BIF           | LINE     | P1                  | 4.75            | 1                | HOR            |
| 0 | 582-2004-341 | 08X32         | CONN         | BIF           | LINE     | P5                  | 4.75            | 1                | VERT           |
| 0 | 582-2064-301 | 08X32         | CONN         | BIF           | LINE     | P4                  | 6.0             | 1                | HOR            |
| 0 | 582-2064-301 | 08X32         | CONN         | BIF           | LINE     | P8                  | 6.0             | 1                | VERT           |

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|   |              |       |      |     |      |    |      |   |      |
|---|--------------|-------|------|-----|------|----|------|---|------|
| 0 | 582-2064-341 | 08X32 | CONN | BIF | LINE | P4 | 4.75 | 1 | HOR  |
| 0 | 582-2064-341 | 08X32 | CONN | BIF | LINE | P8 | 4.75 | 1 | VERT |
| 0 |              |       |      |     |      |    |      |   |      |

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## 0 TELZON TERMINAL BLOCK APPROVED PARTS LIST

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| 0<br>0<br>0<br>0<br>0 | PEC          | BLOCK<br>SIDE | EQT.<br>SIDE | X-CON<br>SIDE | FUNCTION | TERMINAL<br>PATTERN | HOUSING<br>SIZE | FANNING<br>STRIP | FRAME<br>MOUNT |
|-----------------------|--------------|---------------|--------------|---------------|----------|---------------------|-----------------|------------------|----------------|
| 0                     | 982-1004-301 | 08X32         | CONN         | QC            | LINE     | P2                  | 6.0             | 1                | HOR            |
| 0                     | 982-1004-301 | 08X32         | CONN         | QC            | TRUNK    | P2                  | 6.0             | 1                | HOR            |
| 0                     | 982-1004-301 | 08X32         | CONN         | QC            | LINE     | P6                  | 6.0             | 1                | VERT           |
| 0                     | 982-1004-301 | 08X32         | CONN         | QC            | TRUNK    | P6                  | 6.0             | 1                | VERT           |
| 0                     | 982-1004-341 | 08X32         | CONN         | QC            | LINE     | P2                  | 4.75            | 1                | HOR            |
| 0                     | 982-1004-341 | 08X32         | CONN         | QC            | TRUNK    | P2                  | 4.75            | 1                | HOR            |
| 0                     | 982-1004-341 | 08X32         | CONN         | QC            | LINE     | P6                  | 4.75            | 1                | VERT           |
| 0                     | 982-1004-341 | 08X32         | CONN         | QC            | TRUNK    | P6                  | 4.75            | 1                | VERT           |
| 0                     | 982-2004-301 | 08X32         | CONN         | QC            | LINE     | P1                  | 6.0             | 1                | HOR            |
| 0                     | 982-2004-301 | 08X32         | CONN         | QC            | LINE     | P5                  | 6.0             | 1                | VERT           |
| 0                     | 982-2004-341 | 08X32         | CONN         | QC            | LINE     | P1                  | 4.75            | 1                | HOR            |
| 0                     | 982-2004-341 | 08X32         | CONN         | QC            | LINE     | P5                  | 4.75            | 1                | VERT           |

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0 18.7.3 OFFICE LAYOUT INFORMATION

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0 Not Applicable

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0 18.7.4 TRAFFIC TABLES

0

0 Not Applicable

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0 18.8 PRODUCT/SYSTEM SPECIFICATION

0

0 18.8.1 PHYSICAL CHARACTERISTICS

0

## 0 OPD VERSABLOCK

0

## 0 MECHANICAL DIMENSIONS

0 Height..... 3 7/8" (98.4mm)  
0 Width..... 7 7/8" (200mm)  
0 Depth..... 4 3/4" (121mm)  
0 Weight..... 3.0 lbs

## 0 TECHNICAL SPECIFICATIONS

0 Plastic Materials..... Noryl and Polycarbonate  
0 Colors Available..... Beige and White.  
0 Dielectric Strength..... 2,000 Vdc  
0 Insulation Resistance..... > 500 Megohms

## 0 TEMPERATURE CHARACTERISTICS

0 SAE Measurements..... - 4 to + 113 degrees Fahrenheit  
0 Metric Measurements..... - 20 to + 45 degrees Celsius

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## 0 OPD ROTATING BLOCK

0  
0 MECHANICAL DIMENSIONS

0 Height..... 3 7/8" (98.4mm)  
0 Width..... 7 7/8" (200mm)  
0 Depth..... 3 5/8" (92mm)  
0 Weight..... 1.0 lb 12 oz.

## 0 TECHNICAL SPECIFICATIONS

0 Plastic Materials..... Polycarbonate  
0 Color Available..... White.  
0 Dielectric Strength..... 1500 Vdc and 100 Vac at 50-60 hz  
0 for 2 minutes  
0 Insulation Resistance..... > 30 Megohms at 1000 Vdc

## 0 TEMPERATURE CHARACTERISTICS

0 SAE Measurements..... 32 to 122 degrees Fahrenheit  
0 Metric Measurements..... 0 to 50 degrees Celsius

0

## 0 TELZON TERMINAL BLOCK

0  
0 MECHANICAL DIMENSIONS FOR STANDARD BLOCK

0 Height..... 3.99" (101.3mm)  
0 Width..... 7.95" (201.9mm)  
0 Depth..... 5.96" (151.4mm)  
0 Weight..... 4.0 lbs

## 0 MECHANICAL DIMENSIONS FOR COMPACT BLOCK

0 Height..... 3.99" (101.3mm)  
0 Width..... 7.95" (201.9mm)  
0 Depth..... 4.71" (119.6mm)  
0 Weight..... 3.5 lbs



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## 0 TECHNICAL SPECIFICATIONS

0 Plastic Materials..... Polycarbonate  
0 Colors Available..... Gray and White.  
0 Dielectric Strength..... 85,000 Vdc Minimum  
0 Insulation Resistance..... > 10,000 Megohms Minimum (500 Vdc)

## 0 TEMPERATURE CHARACTERISTICS

0 SAE Measurements..... 32 to 122 degrees Fahrenheit  
0 Metric Measurements..... 0 to 50 degrees Celsius

0 18.8.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not Applicable

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0 18.8.3 SPARING INFORMATION

0  
0 Not Applicable

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0 18.8.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not Applicable

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0 18.8.5 CURRENT DRAIN INFORMATION

0  
0 Not Applicable

0 18.9 SOFTWARE PROVISIONING

0

0 18.9.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not Applicable

0

0 18.9.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not Applicable

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0 18.9.3 MEMORY PROVISIONING

0  
0 Not Applicable

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0 18.10 REAL TIME IMPACT

0 Not Applicable

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0 CHAPTER 20

0 HOST - LOCAL TEST CABINET EQUIPMENT

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Chapter 20

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0 1.0 Mechanized Line Testing

0 1.1 Introduction

0 Mechanized line testing is the testing of subscriber loops and  
0 line cards using non-DMS equipment located at a remote site (e.g.  
0 #14 Local Test Desk (LTD), #3 Local Test Cabinet (LTC), Mech-  
0 anized Loop Testing (MLT), etc.). The remote test site works  
0 with the DMS system to gain metallic access to the subscriber  
0 loops. The mechanized line test equipment executes tests on the  
0 loop such as measuring foreign AC and DC voltage, resistance,  
0 etc.

0 Line testing is also provided for the DMS-1R Remote Concentrator  
0 Terminal (RCT) and the DMS-1 Urban Remote Terminal subscriber  
0 lines, either through the Maintenance and Administration Position  
0 or via the above remote test equipment.

0 1.2 Features

0 NTX195AA - Mechanized Loop Tester (MLT) Interface

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0 1.3 Equipment Provisioning

0 1.3.1 Local Test Cabinet

0 (a) General Description

0 The NSD Model 3703-03 is a microprocessor controlled Local Test  
0 Cabinet (hereafter referred to as LTC) designed to test subscriber  
0 line circuits and trunk circuits. The LTC generates all test  
0 tones and test voltages without the aid of external devices. The  
0 LTC can access from one to sixteen test trunks and one MDF test  
0 trunk.

0 The LTC has the capability to test lines and trunks in DMS100F  
0 remote offices and other pair gain devices such as the AT&T  
0 SLC-96. This functionality is achieved via the Digital Remote  
0 Test Unit (DRTU).

0 The DRTU is a remote slave of the LTC. It is mounted in an  
0 equipment frame/Cabinet at the Remote Site. The DRTU to LTC com-  
0 munication is via Dial-up or Dedicated data lines. Refer to Fig-  
0 ure 37.4 for a pictorial representation of LTC to DRTU  
0 configuration.

0 The Local Test Cabinet works into any DMS100F test trunk and  
0 trunks from major switch manufacturers including AT&T/Western  
0 Electric, Automatic Electric, ITT/North, Stromberg Carlson, and  
0 TRW Vidar types. When properly calibrated, the LTC eliminates  
0 the effects of test trunk resistance and capacitance from the  
0 measured values displayed to the user. Busy lead sensing permits  
0 trunk sharing with other test equipment that may be installed in  
0 the office, (e.g., an LRS Loop Test Unit), and thus avoids the  
0 need for additional test trunks.

0 Please note that in Canada, the LTC will be ordered directly from  
0 the Network Service Division (NSD). In the U.S. (NTI), the LTC  
0 will be ordered from NTI.

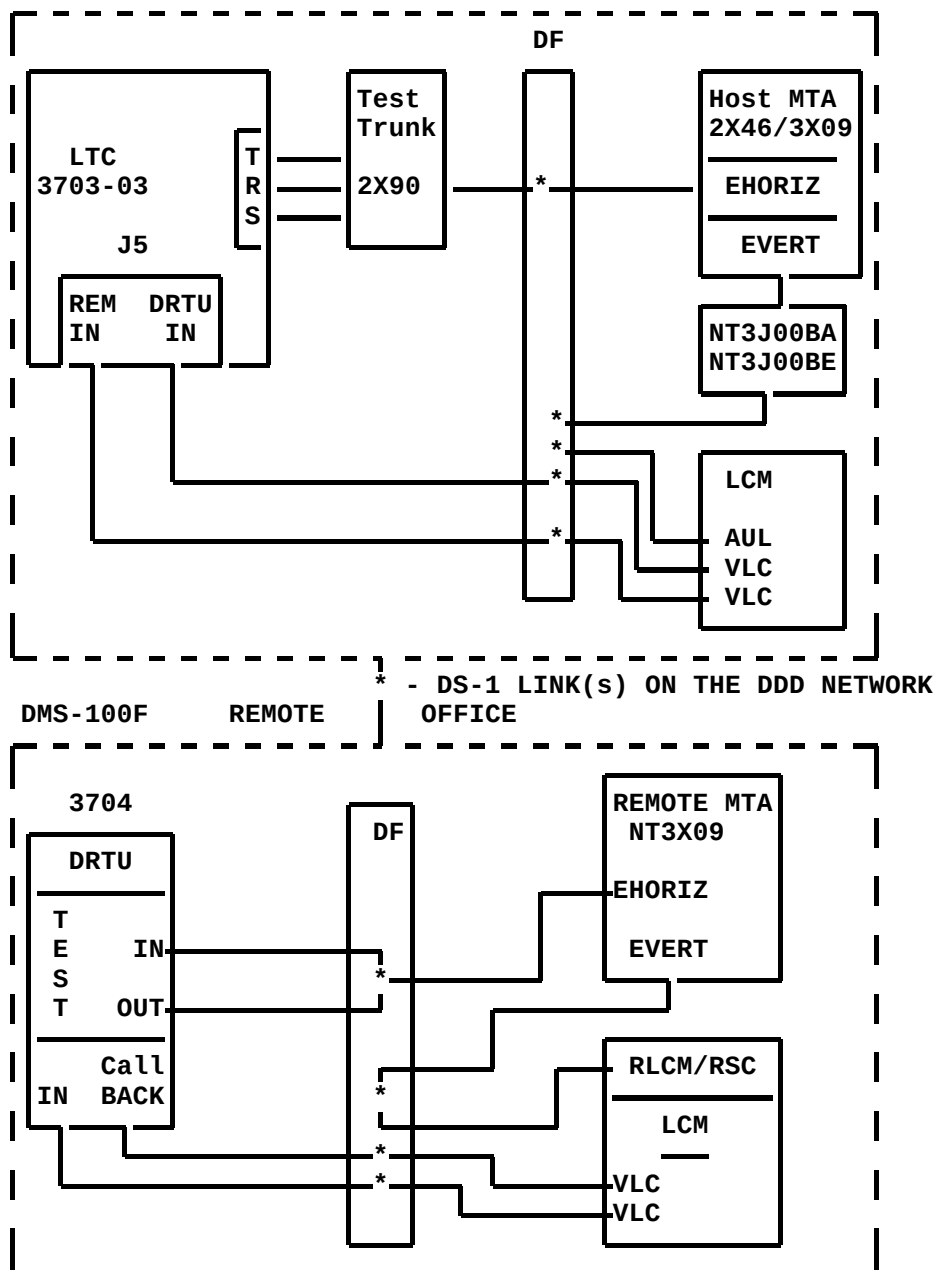
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Figure 37.11: HOST LTC TO DRTU CONCEPTUAL DIAGRAM

(b) References

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0 NTP 662-5101-130 Model 3703-03 Local Test Cabinet (LTC) Switch  
0 and Jumper Configuration Guide.  
0 NTP 662-5101-203 Model 3703-03 Local Test Cabinet (LTC) In-  
0 stallation  
0 NTP 662-5101-204 Model 3703-03 Local Test Cabinet (LTC) Up-  
0 grade Kit Installation  
0 NTP 662-5101-207 Model 3703-03 Local Test Cabinet (LTC) and  
0 Remote Test Unit (RTU) Ribbon Cabling  
0 NTP 662-5101-304 Model 3703-03 Local Test Cabinet (LTC) Opera-  
0 tion  
0 NTP 662-5021-110 Signature Accessory Feature Guide  
0 NTP 662-5021-215 Model 3704 Digital Remote Test Unit (DRTU)  
0 Installation, Operation, and Maintenance  
0 NTP 662-5021-224 Signature Accessory Shelf Installation, Oper-  
0 ation, and Maintenance

0 (c) Provisioning Considerations

0 ( i) If the resistance of the metallic loop from test desk to of-  
0 fice exceeds 300 ohms, ensure that the Test Trunk Ringing  
0 Circuit (SD96474-01 or equivalent) and an external Ring  
0 and Tone supply are provided.

0 ( ii) One Incoming Outgoing Test Trunk (NT2X90AB) is required  
0 for each test trunk which interfaces DMS to the #3 LTC.

0 ( iii) The LTC is designed to provide automated tests and  
0 measurements in a wall/desk/frame/MDF mounted configura-  
0 tion. The Model 3703-03 LTC offers an automatic measure-  
0 ment and diagnosis sequence plus a host of specialized  
0 loop test functions.

0 The LTC is available as a Local or Remote configuration.  
0 Two colours are available, Ash and Brown (brown units  
0 preferred for DMS-100F), with additional options to pro-  
0 vide four or sixteen test trunk access.

0 A typical Local Test Cabinet (LTC) consists of a pushbut-  
0 ton (key) control panel, a 5-inch video display (VDU), a  
0 telephone handset, and a 310-type connector for connect-  
0 ing additional test equipment.

0 The following LTC equipment is approved for use with the  
0 DMS-100F.

0 a) DMS Brown Colored NSD Model 3703-03 Equipment List:

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| <u>PEC</u> | <u>DESCRIPTION</u>            |
|------------|-------------------------------|
| NT0J04BB   | LTU Mainframe BRN             |
| NT0J04BQ   | Local Control Front Panel Brn |
| NT0J04BG   | LTC Remote Front Panel Brn    |
| NT0J04BD   | LTC System Upgrade Kit Brn    |
| NT0J04DC   | Wall Mounting Kit Brn         |
| NT0J08AD   | MDF Mounting Kit              |
| NT0J04DD   | Rack Mtg Kit 26" Brn          |
| NT0J04BY   | Rack Mtg Kit 19"/23" Brn      |
| NT0J04EB   | Digital Remote Test Unit Brn  |

## 0 b) ASH Colored NSD Model 3703-03 Equipment List:

| <u>PEC</u> | <u>DESCRIPTION</u>           |
|------------|------------------------------|
| NT0J04BA   | LTU Mainframe (ASH)          |
| NT0J04BL   | Local Control Frnt Pnl ASH   |
| NT0J04BH   | LTC Remote Front Panel ASH   |
| NT0J04BK   | LTC System Upgrade Kit (ASH) |
| NT0J04DB   | Wall Mounting Kit (ASH)      |
| NT0J08AD   | MDF Mounting Kit             |
| NT0J04BX   | Rack mtg 19"/23" (ASH)       |
| NT0J04EA   | Digital Remote Test Unit Ash |

## 0 c) Color Independent NSD Model 3703-03 Equipment List:

| <u>PEC</u> | <u>DESCRIPTION</u>        |
|------------|---------------------------|
| NT0J04BN   | Universal 4Trk Acc Opt    |
| NT0J04BU   | 4Trk Acc Opt For DMS100   |
| NT0J04BP   | Universal 16Trk Acc Opt   |
| NT0J04ED   | DRTU Interface Option 2   |
| NT0J04BT   | Remote Access (DCP) Opt.  |
| NT0J04BW   | 16 Trk Mux Card Option    |
| NT0J04DE   | Buzzer Pair Ident         |
| NT0J04DA   | Trunk Calibrator          |
| NT0J04BZ   | 3703-03 LTC Spares Kit    |
| NT0J04DF   | 3703-00/01 LTC Spares Kit |

0 The minimum components for LTC operation are:

- 0 - The LTC Mainframe
- 0 - The LTC Front Panel
- 0 - Trunk Access Card
- 0 - Mounting Brackets

0 The optional components for enhanced LTC operation  
0 are:

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- 0 - Buzzer Pair Identifier
- 0 - Spares Kit
- 0 - DRTU Model 3704
- 0 - DRTU Access Card
- 0 - MLT Applique Shelf
- 0 - Signature Accessory Card

0 ( iv) The LTC Model 3703-00 & 01 Upgrade Kit provides the  
0 hardware necessary to upgrade an existing unit to the LTC  
0 Model 3703-03 standards.

0 Telcos having a NSD Model 3703-00 or 3703-01 LTC must up-  
0 grade the unit to the Model 3703-03 standards in order to  
0 take advantage of the majority of the LTC features as de-  
0 fined in the General Section.

0 The earlier vintage LTCs may be upgraded using the System  
0 Upgrade Kit (NT0J04BD for Brown units or NT0J04BK for Ash  
0 units). When provisioning the Upgrade Kit the following  
0 information must be included with the order:

- 0 - The serial number of the existing Model
- 0 - The color of the existing Model

0 This information is required because the LTC card cage  
0 will be replaced and the existing serial number used on  
0 the new card cage.

0 The NT0J04BD System Upgrade Kit provides a new LTC card  
0 cage which provides the following features:

- 0 - Trunk Control Keys
- 0 - A Boost Key
- 0 - Four (4) More Ports:
  - 0 - Local EIA RS-232-C
  - 0 - Two (2) Dial-In Ports
  - 0 - Call-Back
- 0 - Four (4) Trunk Connectors Instead Of One (1)

0 ( v) The following software package is required for the Local  
0 Test Cabinet:

0 NTX064AA Automatic Line Insulation Testing (ALIT)

0 Prerequisite:

0 NTX000AA - BILGE

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0 NTX001AA - Common Basic  
0 NTX901AA - Local Features

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0 1.3.2 Mechanized Loop Testing (MLT)

0 (a) General Description

0 Mechanized Loop Testing (MLT) refers to the interface of the  
0 Western Electric Mechanized Loop Testing System (MLT 1 or MLT 2)  
0 to a DMS-100F Switch. This interface is required so that the  
0 Western Electric MLT 1 or MLT 2 can gain metallic access and test  
0 subscriber lines working out of a DMS-100F. This interface and  
0 test trunk arrangements support all MLT 1 or MLT 2 tests. The  
0 tests run on the subscriber loops include measuring foreign AC  
0 and DC voltage, resistance, etc.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules

0 (c) Provisioning Considerations

0 ( i) The Western Electric Mechanized Loop Testing System (MLT 1  
0 or MLT 2) will interface to the DMS-100F Switch via a  
0 modified test trunk. A NT2X90AD test multiple will pro-  
0 vide all functions currently supported by previous vin-  
0 tages of the NT2X90 CP and will support the Subscriber  
0 Carrier module loop testing requirements. Subscriber Car-  
0 rier modules refer to the SMS, SMR, and SMU peripheral  
0 modules in a DMS office.

0 ( ii) For DMS offices containing line cards only, the test  
0 multiple CP is the only requirement for mechanized line  
0 testing.

0 ( iii) For DMS offices containing Subscriber Carrier modules  
0 (with or without line cards), in addition to the test  
0 multiple CP, an applique circuit must also be provisioned  
0 to support line testing results to the Mechanized Loop  
0 Testing system (MLT). The applique will provide DC  
0 signals required to report channel test results to the  
0 MLT system.

0 ( iv) For applique requirements in a DMS office, the engineer  
0 should order the NT3J00BA applique shelf and the  
0 NT3J00BB applique circuit pack. The applique shelf will  
0 house ten (10) applique circuit packs. Offices containing  
0 SMS, SMR and SMU peripherals may share applique facili-  
0 ties. The applique CP is required for any interface test

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0 multiple CP which utilizes Mechanized Loop Testing (MLT)  
0 on subscriber carrier modules SMU, SMS, and SMR.

0 ( v) An applique circuit pack contains two (2) circuits. Each  
0 circuit will interface one test multiple CP provisioned  
0 for line testing to the remote terminals for loop test-  
0 ing. An applique CP is required for each NT2X90AD test  
0 trunk connecting to a MLT.

0 ( vi) A Signal Distribution circuit, (NT2X57AA) is required  
0 for each applique circuit pack provisioned to operate re-  
0 lays on the CP.

0 ( vii) Access to the subscriber carriers is interfaced via the  
0 DMS metallic test access (MTA). One MTA vertical can ac-  
0 cess one subscriber carrier site. Each site can have a  
0 maximum of ten (10) SLC-96's or ten (10) DMS-1R's.

0 When using the NT2X46AB MTA configuration, if there are  
0 no more than ten (10) SLC-96's per site, one connector  
0 (C01-C10) should be cabled to the DF for every two sites.  
0 One connector can access two MTA verticals. This option  
0 shall only be used for offices having available connec-  
0 tors on existing MTA units.

0 The NT3X09BA MTA configuration shall be used on all ini-  
0 tials and offices adding MTAs. Refer to Section 3.5 Pe-  
0 ripheral Modules for more information.

0 (viii) The applique shelf is mounted in a standard MIS frame  
0 and is seven (7) inches high by twenty six (26) inches  
0 wide. The applique circuit pack is packaged on a double  
0 wide circuit pack. Cards are to be located in odd slots  
0 03 through 21. An NT3J00BC applique power supply is al-  
0 ways provided in slot 01 of the shelf.

0 ( ix) The applique shelf should be fused at 1 1/3 amps with  
0 power terminations at TB1-1 (-48V) and TB1-2 (GRD) using  
0 22 AWG wire.

0 ( x) The applique shelf is cabled to the distributing frame ia  
0 four (4) NT0X26UE 50 pin connectorized cables. These ca-  
0 bles terminate on the following shelf connectors:

0 Connector J1 - cabling circuits 01-06, slots 03,05,07  
0 Connector J2 - cabling circuits 07-12, slots 09,11,13  
0 Connector J3 - cabling circuits 13-18, slots 15,17,19

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0 Connector J4 - cabling circuits 19-20, slot 21

0 Leads for each individual circuit are T, R, TT, RR, SD1,  
0 SD2, SD3, SD4.

0 An 812A cable should also be provided from the NT3J00BA  
0 card cage to the DF for the alarm leads (NO,C).

0 ( xi) Provide one (1) Applique CP and one (1) Applique Power  
0 Supply CP as spares (recommended).

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0 2.0 Cutover Requirements

0 2.1 Introduction

0 This section describes auxilliary equipment which assists in the  
0 process of transferring telephone service from an existing, oper-  
0 ating facility to new DMS equipment. Connections to the new  
0 equipment are tested and verified before cutting over, to avoid  
0 possible service disruption. The equipment is portable and can  
0 be moved to a new job site after successful cutover.

0 2.2 Features

0 Equipment used to assist in cutting over a new office includes  
0 the Automatic Board to Board Testing unit, which can be used in  
0 transferring service from both DMS and non-DMS existing switches.  
0 The DCM Cutover unit assists in cutting over trunks to DMS trunk  
0 peripherals (both "old" and "new" peripherals).

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0 2.3 Equipment Provisioning

0 2.3.1 Automatic Board to Board Testing (ABBT)

0 (a) General Description

0 The Automatic Board to Board Testing Unit (NT5X73AB) is a self-  
0 contained portable unit which checks that DMS translation tables  
0 and Distribution Frame (DF) cross connections match the existing  
0 subscriber line connection of the old system prior to the trans-  
0 fer of service. It should be located near the DF. The ABBT unit  
0 is used between K date and In Service date. After the DMS-100 or  
0 DMS-100/200 office cuts into service, the unit can be used at an-  
0 other job site. It can be used with either new peripherals (LCM)  
0 or old peripherals (LME).

0 (b) References

0 NTP 297-1001-522 Automatic Board-to-Board  
0 Testing Reference Manual

0 (c) Provisioning Considerations

0 ( i) When ABBT is required from a DMS switch to an Automatic  
0 Electric Step by Step (SXS) switch, applique circuit  
0 (NT5X79AA) must be provided to interface between the Au-  
0 tomatic Electric Test Distributor and the ABBT  
0 (NT5X73AB).

0 ( ii) When ABBT is required from a DMS switch to #5 Cross-  
0 bar, SP-1, #1 ESS or North Electric NX1D, software fea-  
0 ture package NTX057AB is required to interface between  
0 the 2-wire outgoing trunk and the ABBT unit.

0 ( iii) The following hardware is required in addition to one  
0 ABBT unit:

- 0 - One Scan Card (plugs into MTM). This is not re-  
0 quired if a block of 7 scan points is already  
0 available.
- 0 - One Signal Distribution Card (plugs into MTM).  
0 This is not required if a block of 14 SD points  
0 is already available.

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- 0 - One 2W Outgoing Trunk (NT2X83AA), which provides
- 0 two circuits per card.
- 0 - One Floating Battery (Eveready No. 766, 22.5
- 0 volts (variable))
- 0 - One Floating Battery (Eveready No. 731, 6.0
- 0 volts)
- 0 - Five Connectorized cables, length as required.

0 ( iv) When ABBT is required at an RLM site, provide scan card,  
0 SD card, ABBT test unit and applique circuit (if re-  
0 quired) at the remote site, and outgoing trunk at the  
0 host site. Also, channel bank facilities should exist  
0 between the host and the RLM site.

0 ( v) Provide one line drawer cutoff strap for each line drawer  
0 whose line cards are to be held simultaneously cutoff by  
0 this method. Since straps can be re-used, the quantity to  
0 be provided is determined based on the maximum number of  
0 line drawers to be held in this state.

0 ( vi) When testing subscriber loops attached to a SLC-96 Remote  
0 Remote (RT) there are prerequisites/limitations which  
0 must be met to complete the ABBT.

0 The Central Office Terminals (COT) must be reconfigured  
0 using external C.O. repeaters and a DSX patch panel.  
0 Jacks on the DSX will provide a monitor path for the  
0 transmitted PCM signal from COT to SLC-96. Along this  
0 path the regenerated PCM signals from the repeaters will  
0 be transmitted to the appropriate SMS port.

0 ABBT on a Mode I system will require five (5) bridging  
0 repeaters. Mode II systems will require three (3) bridg-  
0 ing repeaters.

0 The reconfigured cabling must appear at the same DSX bay  
0 to facilitate patching from the COT DS-1 link monitor  
0 jacks to the bridging repeater input jacks, and from the  
0 bridging output jacks to the SMS port input jacks.

0 SMS board-to-board testing will require the provisioning  
0 of an applique unit (ES-10233-RTP) in addition to the  
0 regularly ordered equipment. The SMS applique unit con-  
0 tains miscellaneous hardware required to adapt the ABBT  
0 unit (NT5X73AB) to recognize the SMS lines. One (1) SMS  
0 applique unit is required for each ABBT unit that will be  
0 testing the SMS lines.

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0 One limitation is that only one "Channel Test" can be  
0 performed at a time per SLC-96 to verify line assign-  
0 ments. Multiple ABBT units cannot be used to test a sin-  
0 gle Remote Terminal or group of RT's which share the same  
0 MTA vertical.

0 ABBT of SLC-96 lines is limited to the verification of  
0 software assignment vs. hardware location. ABBT units  
0 cannot check for party assignment or ground start.

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0 2.3.2 DCM Cutover Unit

0 (a) General Description

0 The DCM Cutover Unit (DCU) is used where DMS is replacing an ana-  
0 log switch which interfaces to DS-1 facilities via channel banks.  
0 It allows testing of the new transmission path into DMS, the  
0 trunk interface, and the software translations with minimal ser-  
0 vice disruption. This is accomplished by allowing the traffic to  
0 be tandemed through the DMS machine while still terminating on  
0 the existing switch. After testing, the unit permits the new fa-  
0 cility to be cut into service. The DCM Cutover Unit can be used  
0 with new peripherals (LGC/DTC/LTC) as well as old peripherals  
0 (DCM). It should be located close to the office DSX-1 array.

0 (b) References

0 NTP 297-1001-523 PM Pre Testing and Cutover  
0 Man-Machine Interface Description

0 (c) Provisioning Considerations

- 0 ( i) Each DCM Cutover circuit pack (NT5X67AA) has two Pre-Test  
0 and Cutover circuits. Each circuit can accomodate one  
0 DS-1 (T1) link.
- 0 ( ii) One DCU (NT5X68AA) can accomodate up to twelve DCM  
0 Cutover circuit packs and up to two test DCM DS-1 ports.  
0 Provision the number of DCUs required accordingly.
- 0 ( iii) The number of DCUs required should be no less than the  
0 number of simultaneous test positions required divided by  
0 two (round up to next higher integer). Use this quantity  
0 if greater than that required by Consideration ( ii).
- 0 ( iv) The maximum number of DCUs per DMS is five.
- 0 ( v) For old peripherals (DCMs), provide up to two DCM DS-1  
0 cards (NT2X35AB) equipped on DCMs to serve as Test DCM  
0 Interface for each DCU. These can be re-assigned upon  
0 completion of the cutover procedure.
- 0 ( vi) For new peripherals (LGC/DTC/LTC), provide one DS-1  
0 Interface Card (NT6X50AA) equipped on LGC/DTC/LTC to  
0 serve as test digital interface for each DCU. These can  
0 be re-assigned upon completion of the cutover procedure.



0 ( vii) Provide six patch cords (NE-P6Q1C) for each DCU provided,  
0 to connect it to the DSX-1 array.

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0 3.0 Commissioning Requirements

0 3.1 Introduction

0 This section describes facilities and equipment that must be pro-  
0 vided to enable commissioning testing of new DMS equipment.

0 3.2 Features

0 The office load simulator device enables simulated traffic test-  
0 ing to ensure proper operation before an office goes into ser-  
0 vice.

0 Remote offices require certain communication links and terminal  
0 equipment to be in place by specified dates to enable commission-  
0 ing the office.

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0 3.3 Equipment Provisioning

0 3.3.1 Office Load Simulator Device

0 (a) General Description

0 An Office Load Simulator Device may be rented by the Telco to  
0 perform traffic testing between K and In Service dates.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) Depending on whether trunks or lines are to be tested,  
0 the following will be provided at NT's discretion: Traf-  
0 fic Simulator Program (trunks), Line Traffic Simulator  
0 (lines), Load Box, Terminating Test Set.

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0 3.3.2 Remote Office Commissioning Requirements

0 (a) General Description

0 Certain equipment and facilities are required to commission Re-  
0 mote offices.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) A data link facility between host and remote must be pro-  
0 vided by the Telco. Dedicated or dial-up modems can be  
0 provided by either Telco or NT.

0 ( ii) Telco-supplied video display terminals for initial of-  
0 fices must be on site by H+6 date.

0 ( iii) The Telco must provide an in-service line (FX to another  
0 switch or to an LM at working host) by K-4 or earlier.  
0 This provides communication with the host and the outside  
0 world during installation.

0 ( iv) Refer to Table 37.1 Test Equipment & Facilities Provided  
0 by Telco, for further details and requirements.

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0 Table 37.1

## 0 TEST EQUIPMENT &amp; FACILITIES PROVIDED BY TELCO

| 0 ITEM | 0 DESCRIPTION                                       | 0 MINIMUM<br>0 QUANTITY | 0 WHEN   | 0 WHERE REQUIRED                           |
|--------|-----------------------------------------------------|-------------------------|----------|--------------------------------------------|
| 0 1    | 0 DP Sub Set-Tip party                              | 0 2                     | 0 Note 2 | 0 all offices with<br>0 lines or RLM sites |
| 0 2    | 0 DP Sub Set-Ring party                             | 0 3                     | 0 Note 2 | 0 all offices with<br>0 lines or RLM sites |
| 0 3    | 0 DTMF Sub Set-Tip party                            | 0 2                     | 0 Note 2 | 0 all offices with<br>0 lines or RLM sites |
| 0 4    | 0 DTMF Sub Set-Ring party                           | 0 3                     | 0 Note 2 | 0 all offices with<br>0 lines or RLM sites |
| 0 5    | 0 Coin Box                                          | 0 1                     | 0 Note 2 | 0 all offices with<br>0 lines or RLM sites |
| 0 6    | 0 CAMA/LAMA Magnetic Tapes                          | 0 6                     | 0 Note 2 | 0 if AMA provided                          |
| 0 7    | 0 Transmission Measurement<br>0 Set                 | 0 1                     | 0 Note 2 | 0 all offices                              |
| 0 8    | 0 End Facilities to Switch<br>0 Board, i.e. #14 LTD | 0 as req'd              | 0 Note 2 | 0 all offices so<br>0 equipped             |
| 0 9    | 0 TOPS Positions                                    | 0 1                     | 0 Note 2 | 0 offices with TOPS                        |
| 0 10   | 0 T1 Facilities from Remote<br>0 to Host            | 0 Note 1                | 0 H + 1  | 0 RLM                                      |
| 0 11   | 0 T1 Facilities to a<br>0 Synchronizing Office      | 0 1                     | 0 K - 4  | 0 Note 3                                   |
| 0 12   | 0 Visual Display Units<br>0 available On-Site       | 0 3                     | 0 H + 6  | 0 all offices,<br>0 Note 4                 |

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0 Table 37.1 (Continued)

## 0 TEST EQUIPMENT &amp; FACILITIES PROVIDED BY TELCO

| 0 ITEM | 0 DESCRIPTION                                                | 0 MINIMUM | 0 WHEN | 0 WHERE REQUIRED |
|--------|--------------------------------------------------------------|-----------|--------|------------------|
|        |                                                              | QUANTITY  |        |                  |
| 0 13   | 0 Data Link to Billing                                       | 1         | Note 2 | offices with     |
| 0      | 0 Center                                                     |           |        | Remote           |
| 0      |                                                              |           |        | Transmission of  |
| 0      |                                                              |           |        | Billing Data and |
| 0      |                                                              |           |        | Operational      |
| 0      |                                                              |           |        | Measurements     |
| 0 14   | 0 FX Line to another Switch                                  | 1         | K - 4  | all offices and  |
| 0      | 0 or LM at HOST                                              |           |        | RLM sites        |
| 0      | Note 1: a minimum of 2 "DS1 links" per RLM                   |           |        |                  |
| 0      | Note 2: as required by the installation supervisor - usually |           |        |                  |
| 0      | midway between H and K or thereabouts                        |           |        |                  |
| 0      | Note 3: if the clock synchronization feature is to be opera- |           |        |                  |
| 0      | tionally tested by NT                                        |           |        |                  |
| 0      | Note 4: the VDU's include 1 MAP terminal and 2 or more other |           |        |                  |
| 0      | types, which are compatible with the DMS switch.             |           |        |                  |

## 0 4.0 DMS-100F/SCCS Interface

0 4.1 Introduction

0 The purpose of the the DMS-100F/Switching Control Centre  
0 System Interface feature is to provide the Bell Operating  
0 Companies (BOC's) with the means of centralizing maintenance  
0 of DMS-100F switches as with other switching systems at  
0 Switching Control Centre (SCC) locations.

0 The interface arrangement between the DMS-100F switch and  
0 the SCC of telephone operating companies will apply equally  
0 to the DMS-100, DMS-200 and DMS-100/200 switches.

0 The DMS-100F/SCCS interface enables telephone operating com-  
0 panies to perform remote maintenance and surveillance from a  
0 centralized location. This results in the ability to perform  
0 maintenance activities, trouble analysis, and emergency re-  
0 covery of DMS-100F switches remotely.

0 The software involved is the NTX210AA (DMS-100F Switching  
0 Control Center System Interface) feature package. This  
0 package is optional and facilitates "centralized mainte-  
0 nance".

0 Feature package NTX210AA supports interaction between a DMS  
0 and an SCCS. The SCCS serves as a computerized maintenance  
0 center, where Bell Operating Company (BOC) personnel can  
0 troubleshoot and correct problems on connected switches.

0 The hardware involved includes a combination of Telco and  
0 NT-provided products as follows: operating companies pro-  
0 vide the Digital Alarm Scanner and must ensure proper wir-  
0 ing. Refer to Figure One (1) for a simplified configuration  
0 connection between a DMS switch and an SCCS. This feature  
0 package does not affect any known internal system controls.

## 0 Telco Provided H/W:

- 0 - Western Electric (WECO) E2A Digital Alarm Scanner (DAS)
- 0 - Optional WECO 59A1 Data Shelf and 202T-R style modems  
0 (See Note below).
- 0 - Optional equipment rack (See note below)

## 0 NT Provided H/W NT40 CPU

- 0 - Optional MIS Frame (See note below).
- 0 - SD Points
- 0 - Optional UDS/Rixon Modem shelf for 202T-R style modems  
0 (See Note below).
- 0 - an NT1X48CA Remote Control Processor Maintenance card
- 0 - an NT1X42AA E2A Telemetry card
- 0 - cabling for these two processors

#### 0 NT Provided H/W DMS Supernode Requirements

- 0 - NT9X26 RTIF PCB

0 NOTE: Optional equipment above may be provided by the  
0 Telco or NT.

#### 0 4.2 Features

0 None

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### 0 4.3 Equipment Provisioning

#### 0 4.3.1 DMS-100F/SCCS Interface Equipment

##### 0 (a) General Description

0 The DMS-100F/SCCS interface consists of two main areas and  
0 components. the first is Remote Maintenance, which consists  
0 of two primary input/output channels for maintenance and  
0 system log reports. The second is Remote Surveillance which  
0 consists of the E2A telemetry interface.

0 The input/output (I/O) interface to the No. 2 SCCS transmits  
0 interactive commands and responses on the maintenance chan-  
0 nel, and messages on the logging channel.

0 Generally, the I/O interface for remote maintenance consists  
0 of one primary MAP channel and one primary logging channel  
0 configured in the dedicated mode, with one or more I/O de-  
0 vices configured in the dial-up mode for backup.

0 Detailed below are the requirements for the NT40 and DMS  
0 Supernode CPUs.

##### 0 NT40 CPU:

0 a. The E2A telemetry interface consists of a serial  
0 data interface and a discrete contact closure inter-  
0 face. Two new cards mounted on the CPM shelf will  
0 provide the serial interface. SD cards will provide  
0 the discrete contact closure interface.

0 b. This feature provides a modified NT1X48 maintenance  
0 card and a new NT1X42 serial conversion card on the  
0 CPM shelf. Full control over CPU switch and  
0 thumbwheel functions is extended to the SCC for  
0 maintenance and recovery operations. These control  
0 functions are accompanied by comprehensive status  
0 indicators sent to the SCC by the telemetry serial  
0 interface.

0 c. The discrete contact closure interface, as provided  
0 by way of loop closures on SD points, allows the SCC  
0 to receive alarms from the DMS-100F switch. Standard

0 NT2X57AA SD cards (14 SD points per card) are used  
0 for the interface and are provisioned in quantities  
0 to meet the customer's specified SCC requirements.

0 DMS SUPERNODE

0 a. In the DMS SUPERNODE system the NT9X26 performs the  
0 functions of the NT1X48 and NT1X42 pair.

0 b. All other requirements are the same

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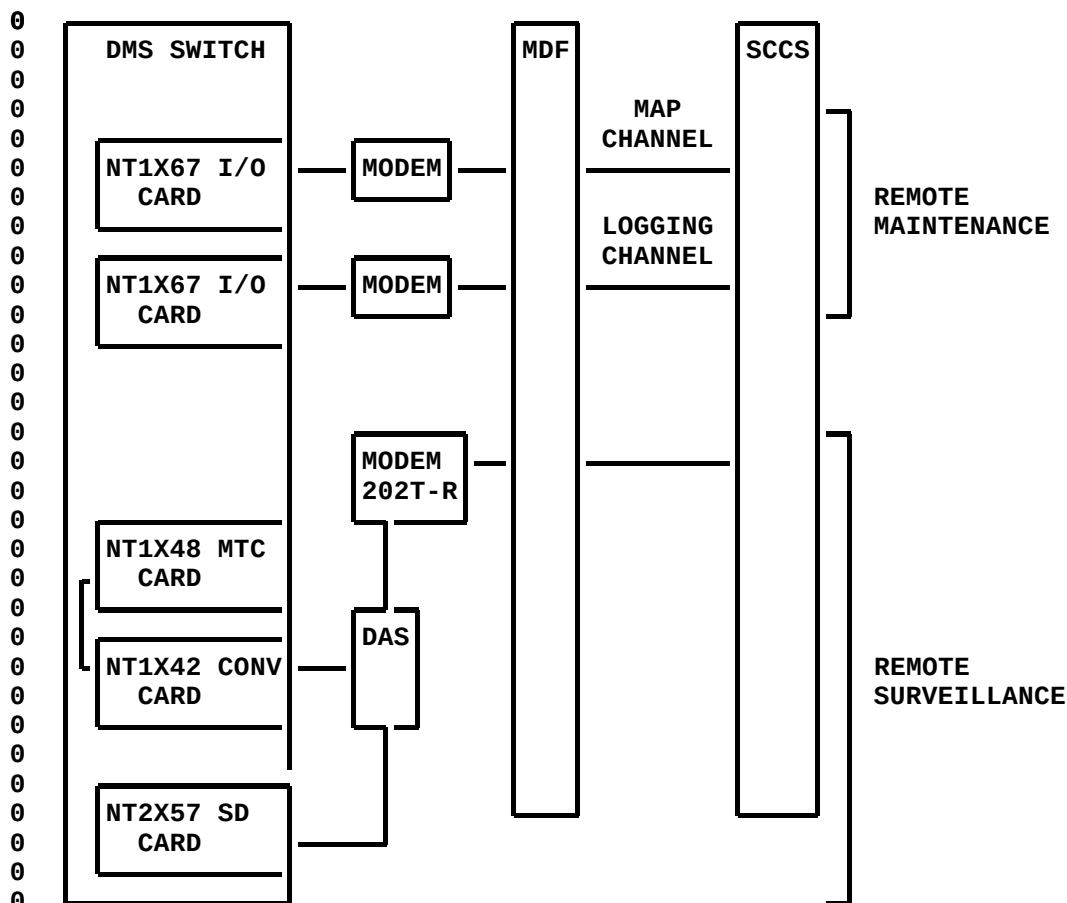
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0 MDF = MAIN DISTRIBUTION FRAME      CONV = CONVERSION  
0 DAS = DIGITAL ALARM SCANNER      SD = SIGNAL DISTRIBUTION  
0 MTC = MAINTENANCE

0 FIGURE 37.12: DMS-100F/SCCS INTERFACE DIAGRAM

0 Provisioning the WECO DAS unit in the DMS environment is a  
0 combined effort between NT and the BOC, as some equipment  
0 must be provided by both.

0 (b) References

0 None

0 (c) Provisioning Considerations

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0 NT Provided H/W & S/W

0 ( i) Existing NT-40 CPUs

0 Existing CCC Frames require one (1) NT3X45DS (Remote  
0 Surveillance and Control Via WECO E2A DAS Unit Prod-  
0 uct Change Kit) if not previously applied.

0 The Product change kit, NT3X45DS (Remote Surveil-  
0 lance and Control via W.E. E2A Scanner Kit) is re-  
0 quired to implement this feature. This kit provides  
0 the following cards:

- 0 - Two (2) each NT1X48CA Remote Control Processor  
0 Maintenance CP
- 0 - Two (2) each NT1X42AA E2A Telemetry Serial  
0 Interface CP

0 The NT1X42AA is inserted between the NT1X48CA and  
0 the Western Electric Digital Alarm Scanner (DAS)  
0 Unit in order to provide an E2A telemetry interface.

0 NOTE: The amount of material and circuit packs pro-  
0 vided by NT3X45DS is sufficient to modify both  
0 planes of one CCC frame.

0 NT3X45EW NT-40 CPU

- 0 - Provide two (2) each NT1X48CA Remote Control  
0 Processor Maintenance CP
- 0 - Provide two (2) each NT1X42AA E2A Telemetry Se-  
0 rial Interface CP
- 0 - Provide Designation Labels for the NT1X48CA and  
0 NT1X42AA

0 DMS SUPERNODE CPU

- 0 - Provide NT9X26 Remote Terminal Interface (RTIF)  
0 CP

0 ( ii) For sparing purposes, provide NT1X48CA and NT1X42AA  
0 as required.

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- 0 ( iii) Provide Modems and/or mounting hardware as required.  
0 If NT is to provide the modem, it shall be a 4-wire  
0 private line 202 style modem with reverse channel  
0 capabilities. The 202 modems and the the WECO 48FR1  
0 Data Units require a 829 unit. The 829 unit may be  
0 provided by NT or the Telco per contract.
- 0 ( iv) For alarm purposes, sixteen (16) SD points, config-  
0 ured in the loop closure mode, are required. Dis-  
0 tribution of critical and major alarms over two SD  
0 cards is recommended for redundancy.
- 0 ( v) Three (3) I/O devices are required for the dedicated  
0 MAP channel, dedicated logging channel, and a backup  
0 MAP channel. The SD Points will be configured in  
0 the "Loop Closure Mode". Ideally, these I/O devices  
0 should be assigned to different I/O Terminal Con-  
0 troller cards, NT1X67BD/BC. Since each card con-  
0 tains four (4) circuits, the other circuits can be  
0 assigned to other I/O functions.

0 Telco Provided Hardware.

- 0 ( vi) Customer is to provide one (1) WECO JIP056A DAS  
0 equipped with L3 and L8 (where L3 = 48V operation,  
0 L8 = base unit equipped with DMS-100 hardware, cus-  
0 tom backplane, CPU with four (4) custom EPROMs, one  
0 (1) TM 319 combination card with 64 alarm points and  
0 16 control contact points).

0 A customer-provided Digital Alarm Scanner (DAS) can  
0 be mounted on a Miscellaneous Equipment Frame,  
0 NT0X02AB, equipped with a frame supervisory panel.  
0 There are no restrictions on location of this frame  
0 equipped with the DAS. The DAS must be offset to-  
0 wards the rear of the bay to provide front aisle  
0 clearance.

0 The DAS can be mounted in a customer provided rack,  
0 if desired.

- 0 ( vii) Customer is to provide four (4) WECO 202T 4-wire  
0 private line modems for primary MAP, logging chan-  
0 nel, DAS and backup MAP. Customer shall also pro-  
0 vide one (1) WECO 59A1 Modem Shelf. These modems  
0 and modem shelf may be provided by NT.

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0 Customer shall provide one (1) WECO 48FR1 data unit.  
0 One (1) 829 must be provided (by NT or the Customer)  
0 per 48FR1 Data Unit.

0 The 59A1 Modem Shelf and the 202T Modem Shelf can be  
0 mounted on the MIS frame.

0 (viii) Customer shall provide one (1) cable from DAS to MDF  
0 for cross-connection of discrete contact closures to  
0 SD points.

0 Customer shall provide one (1) cable from the TELCO  
0 provided WECO 59A1 to MDF for facility cross-  
0 connection to backup MAP modem.

0 Customer shall provide one (1) cable from the 59A1  
0 to the MDF for 2-wire FX circuits.

0 Customer shall provide three 4-wire facilities to  
0 MDF.

0 Customer shall provide four (4) cables from modems  
0 to MDF for facility cross-connection.

0 Customer shall provide one (1) RS-232 cable from DAS  
0 to modem.

0 Customer shall provide two 2-wire dial-up facilities  
0 (FX or local). NOTE: FX = Foreign Exchange (i.e.  
0 circuits from another switching system).

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0 Host - Local Test Cabinet Equipment  
0 Chapter 20

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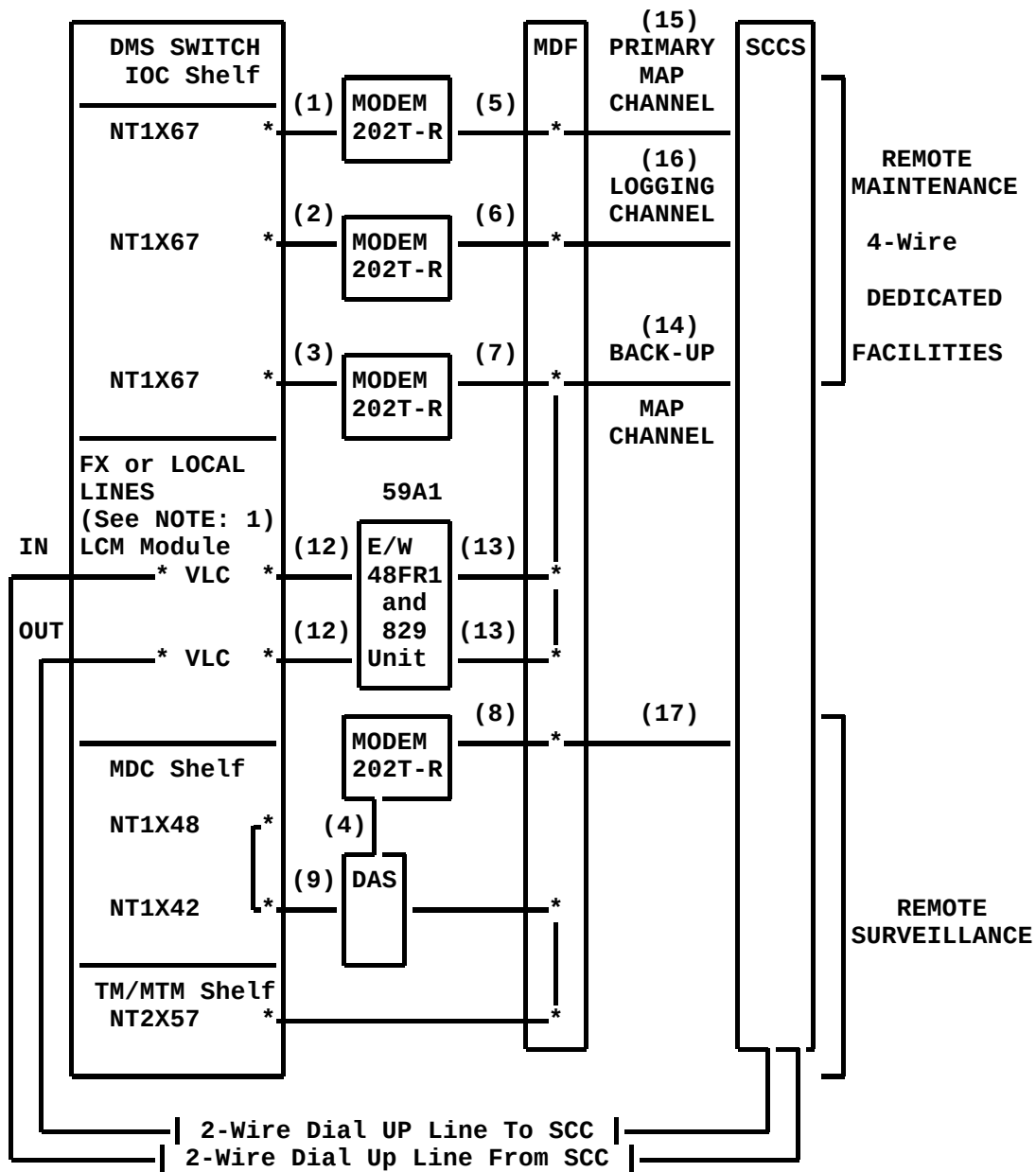


Figure 37.13: DAS Unit Interconnection Diagram

Notes for Figure 37.6:

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Note 1: FX Lines for a DMS-100 Office is recommended but not required. FX Lines for a DMS-200 Office is required at all times.

Note 2: Numbers enclosed in parenthesis in Figure #2 represent Cabling Responsibility, where:

- Cables 1-3, 9, and 10 are NT provided.
- Cables 4-8, and 11-17 are Telco provided.

Note 3: A type 829 DATA Auxiliary Set is required with the 202 Modems for all physical facilities to the SCC.

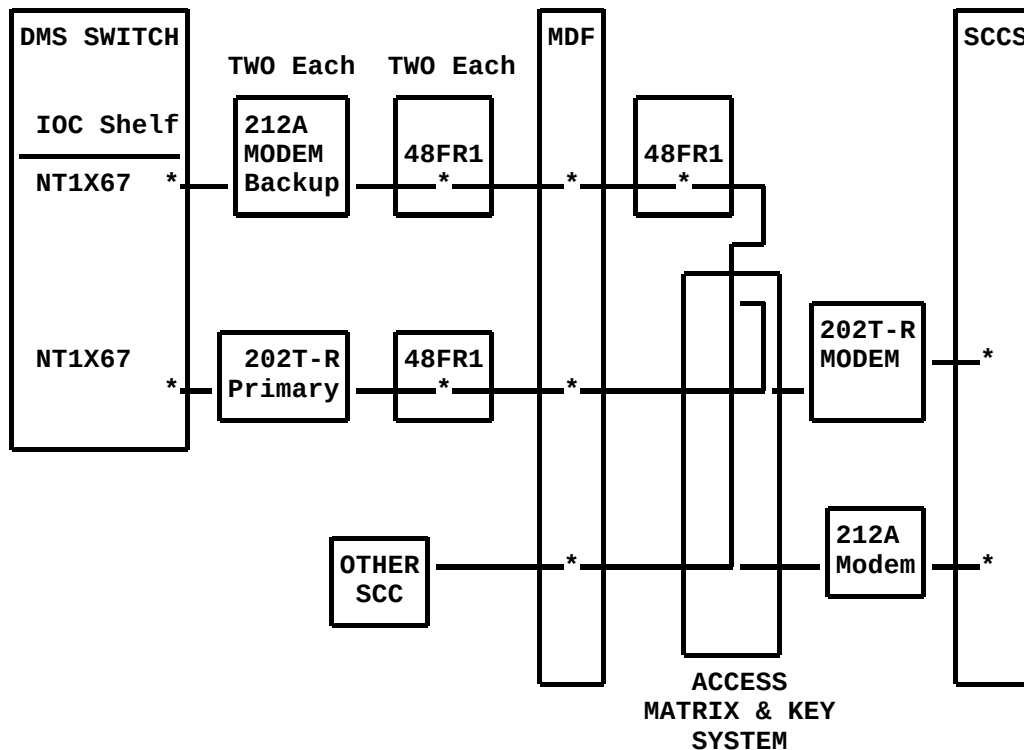


Figure 37.14: Secure Dial-Up Diagram

- ( ix) It is recommended that the DAS and 59A1 data mounting shelf be located in the same bay or rack to facilitate testing. A mounting shelf for 202T modems may occupy the same bay or rack as the DAS and 59A1 for efficiency.



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0 ( x) The WECO J92621 - E2A Remote (Central Office end) is  
0 not compatible with the Remote Surveillance and Con-  
0 trol feature (RSC) in feature package NTX210AA, as  
0 of BCS-14. This unit can be used if Alarm Scanning  
0 Only is required by the SCC, when the RSC feature is  
0 not purchased.

0 ( xi) As a prerequisite, the office must be equipped with  
0 BCS-14 or later software. Software feature package  
0 NTX210AA, No. 2 SCC Interface, is required, as a  
0 minimum.

0 Feature Package NTX210AA Needs Feature Packages:

0 NTX000AA - BILGE  
0 NTX001AA - Common Basic

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## 0 5.0 DMS-100F / No. 2 SES Interface

0 5.1 Introduction

0 The No.2 Service Evaluation System (SES) interface allows  
0 the centralized operations system No.2 SES to perform ser-  
0 vice evaluation of calls served by the DMS-100 family  
0 switch. This interface provides an end user perspective for  
0 the Bell operating companies (BOC) who perform service eval-  
0 uation on a centralized basis from a No.2 SES.

0 Two distinct types of service evaluation are performed on  
0 the No.2 SES for the DMS-100 F interface; Incoming Trunk  
0 Service Evaluation (ITSE) and/or Dial Line Service Evalu-  
0 ation (DLSE).

0 ITSE provides for service evaluation of calls coming from an  
0 Inter- Exchange Carrier Point of Prescence (POP) to the ac-  
0 cess tandem. Note that a DMS-100 office would not be able to  
0 perform ITSE functions.

0 DLSE provides for service evaluation of calls originating at  
0 an end office. These can be either intralata and/or  
0 interlata calls. Note that DLSE would not be performed on a  
0 strictly DMS-200 office. However, both may be performed on  
0 a local/toll office. (MAX one ITSE & one DLSE interface per  
0 office ).

0 5.2 Features

0 Software features required:

0 NTX215AA No. 2 SES Interface  
0 NTX273AA Multi-Protocol Controller

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### 0 5.3 Equipment Provisioning

#### 0 5.3.1 DMS-100F/No. 2 SES Interface

##### 0 (a) General Description

0 The The DMS-100F interfaces with the No. 2 SES via a dedi-  
0 cated, synchronous 2400 baud data link and one voice link  
0 (trunk) as shown in Figure 37.15. One set of a Data link  
0 and a Voice link is required per each ITSE and DLSE applica-  
0 tions.

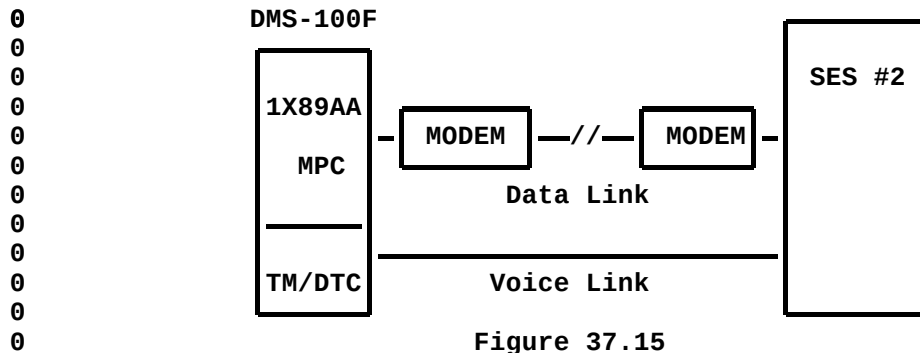


Figure 37.15

##### 0 (b) References

0 Chapter 3, Section 3.5 Peripheral Module - Host

##### 0 (c) Provisioning Considerations

- 0 ( i) One data link is required for both DSLE and ITSE  
0 each. Physical requirements for a data link include  
0 one RS232 synchronous BX.25 communication link on  
0 the NT1X89AA Multi-Protocol Controller (MPC) (link 2  
0 or 3) and a 2400 baud synchronous modem compatible  
0 with the far end modem.
- 0 ( ii) SES functionality may not be combined on an MPC with  
0 other features. The MPC mounts on the IOE frame.

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0 ( iii) A 1-way outgoing trunk must be dedicated for ITSE  
0 and a second trunk must be dedicated for DLSE. These  
0 trunks can be Analog or Digital. For Analog appli-  
0 cations, use NT2X82AA. For Digital applications,  
0 use Digital facilities. These trunks also interface  
0 with the No. 2 SES. (Refer to the Peripheral Modules  
0 - Host, Section 3.5. for more information on Analog  
0 and Digital facilities).

0 ( iv) Each Voice link (trunk), either Analog or Digital  
0 requires a dedicated 3-port conference circuit (see  
0 Peripheral Modules - Host, Section 3.5 for more in-  
0 formation on the 3-port conference circuit).

0 ( v) The SES No. 2 Interface requires the following soft-  
0 ware packages:

0 NTX215AA No. 2 SES Interface  
0 NTX273AA Multi-Protocol Controller

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## 0 6.0 Integrated Bit Error Rate Test Facility

0 6.1 Introduction

0 The Integrated Bit Error Rate Test Facility or IBERT is an  
0 optional maintenance feature which can be ordered for test-  
0 ing the data loops in a DMS office (i.e. office with  
0 DATAPATH features).

0 IBERT is necessary to fulfill two distinct requirements:  
0 Datapath bit error rate testing, and Datapath Extension  
0 (DPX) maintenance messaging.

0 In conjunction with Datapath maintenance software, Datapath  
0 bit error rate testing will provide the DMS craftsperson  
0 with the ability to monitor and diagnose from the MAP, the  
0 data transmission quality of a selected Datapath line. Cur-  
0 rent methods of testing Datapath circuits and equipment re-  
0 quires the use of cumbersome external test sets,  
0 inaccessible from a MAP and outside the control of any auto-  
0 mated DMS/SL-100 maintenance process.

0 A Bit Error Rate Test is a test used to measure the trans-  
0 mission quality of a loop. The basic idea of a BERT is to  
0 send a known stream of data over a given loop, and to have  
0 this data reflected back to the sender. The received data is  
0 then compared with the sent data thereby giving a measure of  
0 the transmission quality. By looping back data at different  
0 points in the loop and measuring the quality of transmission  
0 at each point, faults which may exist on the loop can be  
0 isolated.

0 With an external BERT, a piece of test equipment which is  
0 not a part of the DMS, regular methods are used to establish  
0 a connection between a line to be tested and the test equip-  
0 ment. However, an integrated BERT is a resident piece of  
0 equipment in the DMS which is accessed by means of a single  
0 command located at the LTPMAN level of the MAP. The benefits  
0 of this feature are a simpler method of testing Datapath  
0 loops as well as dropping the need for any external test  
0 equipment.

0 The IBERT will also be used as a 64 kbps inband signalling  
0 interface to the Datapath Extension System (DPX) based on  
0 the DE-4E channel bank, providing a maintenance messaging  
0 channel between the DMS/SL-100 central control and the DPX.  
0 This will give the MAP-situated craftsperson the ability to

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0 diagnose the DPX card and the associated Data Unit/Data Line  
0 Card (DU/DLC) facility with diagnostics similar to the ex-  
0 isting Datapath maintenance or to test the error rate per-  
0 formance of the entire DS1/DPX/DLC/DU facility.

0 The IBERT can be used to test virtually any type of data  
0 line connected to the DMS which supports the TLINK protocol.  
0 This includes Data Unit, AIM, Data Above Voice, coax elimi-  
0 nator Data Units and loop extended Data Units (those ex-  
0 tended using the Line Interface Unit and Data Terminating  
0 Unit method).

0 Note that the intent of providing an integrated BERT is to  
0 enhance the maintenance capabilities for Datapath. This is  
0 not meant to be used as a tool for networks or speech links  
0 within the DMS. No attempt is made by this feature to pro-  
0 vide a BERT while a data unit is involved in a call with an-  
0 other data unit. For this type of testing, an external BERT  
0 must still be used.

## 0 6.2 Features

0 None.

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0 6.3 Equipment Provisioning0 6.3.1 Integrated Bit Error Rate Test Facility0 (a) General Description

0 The IBERT will perform the following functions:

- 0 - Transmit standard 511 or 2047-bit data test pattern  
0 at 50 bps to 19.2 kbps asynchronous or 1.2 kbps to  
0 64 kbps synchronous using T-link
- 0 - Transmit standard 511 or 2047-bit data test pattern  
0 at 64 kbps without T-link handshaking
- 0 - Transmit standard 511 or 2047-bit data test pattern  
0 at 56 kbps with a ones density suitable for T-  
0 carrier, without T-link handshaking
- 0 - Receive data in any of the above formats and detect  
0 bit errors and sync losses in the bit stream
- 0 - Count the number of error free seconds and total  
0 number of seconds in a test
- 0 - Derive data timing from the 64 kbps channel rate  
0 with the option to derive clocking from the re-  
0 ceived data stream if the far end uses external  
0 clocking (indicated in T-link handshake)
- 0 - When in T-link mode adapt the data transmission and  
0 reception rate to the far end equipment
- 0 - Allow the MAP user to do the following:
  - 0 - activate a loopback at the line card or set to be  
0 tested
  - 0 - start BERT as one of the following:
    - 0 1. 64 kbps (no T-link handshake)
    - 0 2. 56 kbps (no T-link handshake)
    - 0 3. T-link adaptive data rate

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0 4. Default to (1),(2), or (3) according to type  
0 of loopback selected

0 - inject error(s) in the transmitted data pattern

0 - stop BERT

0 - display test results (bit error count, sync loss  
0 count, total number of bits, etc.)

0 - display the operating data rate of the test

0 - support the inband signalling scheme used for DPX  
0 maintenance

0 - on request from DMS/SL-100 send pattern at the  
0 start of the call to put the DPX into maintenance  
0 mode

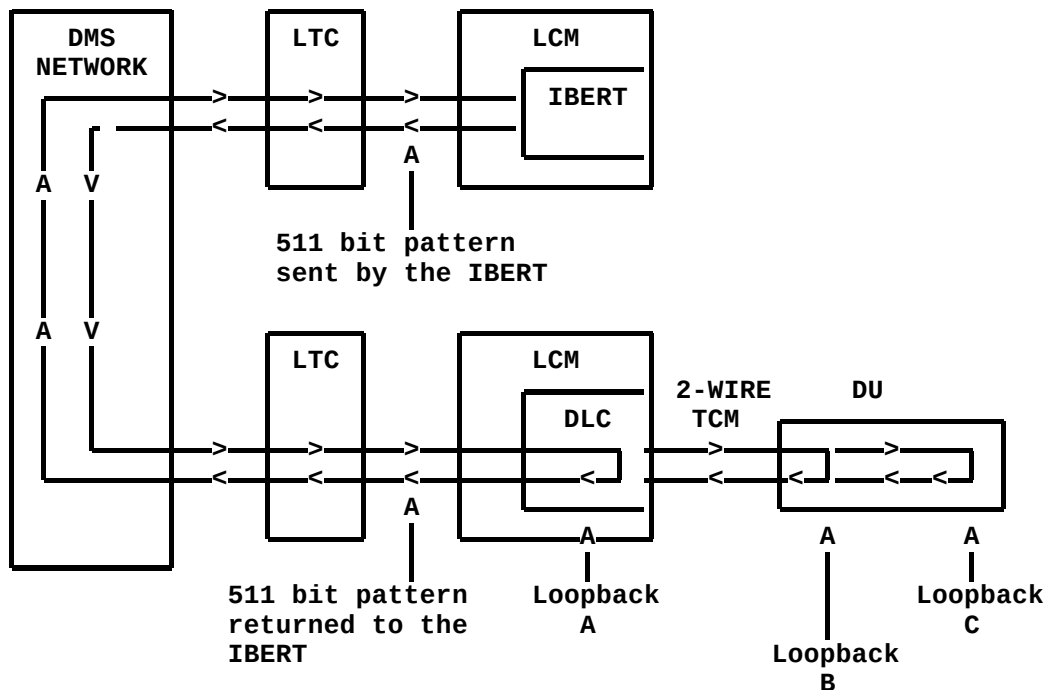
0 - accept messages from DMS/SL-100 addressed to the  
0 DPX and transmit them on transparently via inband  
0 signalling

0 - detect inband messages from DPX and send them to  
0 the DMS/SL-100

0 A pictorial representation of an Integrated BERT is  
0 shown in Figure 37.9



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Typical Datapath Bit Error Rate Test Setup

Figure 37.16

The loopbacks labelled A, B and C in the figure are respectively a 64 Kilo-bit loopback at the Data Line Card (DLC), a 64 Kilo-bit loopback at the Data Unit (DU) and a loopback at the RS-232C interface of the Data Unit. These loopbacks correspond respectively to the LOOPBK DLC, LOOPBK DU\_64K and LOOPBK DU commands at the LTPMAN level of the MAP.

As can be seen from the diagram, the 511 bit pattern is sent from the IBERT through the network, out to the line in question and is looped back from wherever the loopback is set (either A, B or C) through the network to the IBERT where it is compared with the pattern that was sent.

0 Optionally, no loopback may be set. This is referred  
0 to as a straight away test. In this case, an external  
0 BERT is connected to the Data Unit being tested. An  
0 external BERT takes care of receiving the bit pattern  
0 sent by the IBERT and sending its own bit pattern  
0 back. This scenario is generally used for verifying  
0 the accuracy of the IBERT. The external BERT would be  
0 used in this case to inject errors into the pattern  
0 sent back to the IBERT so that it can be verified  
0 that in fact the IBERT detected the error and re-  
0 ported it. Note that in this case the external BERT  
0 used must conform to CCITT standards so that it will  
0 generate the same 511 bit pattern used by the IBERT.

0 A list of Datapath products and the loopback points  
0 supported by each is shown in Figure 37.17

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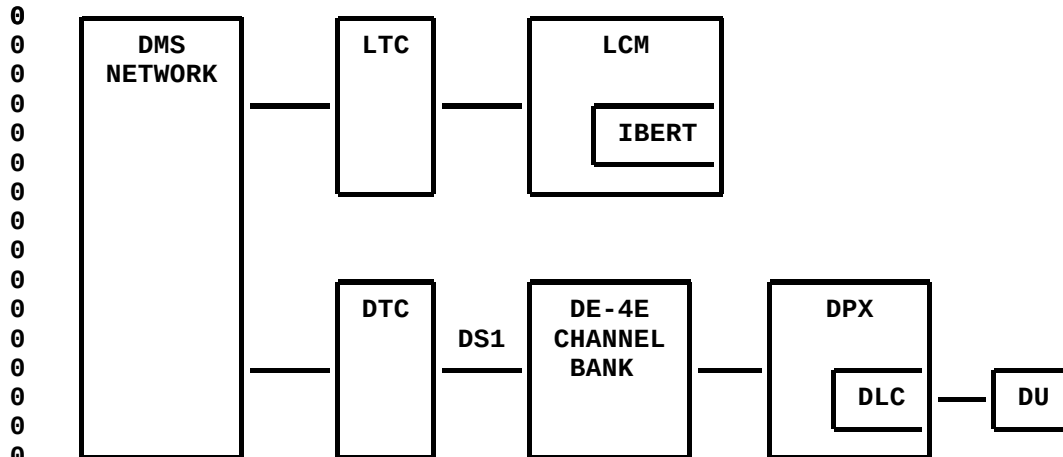
| Datapath Product     | Loopback A:<br>DLC Loopback | Loopback B:<br>64kb Loopback | Loopback C:<br>DU Loopback |
|----------------------|-----------------------------|------------------------------|----------------------------|
| Low Speed Data Unit  | DLC cutoff relay            | DU TCM interface             | RS232 interface            |
| High Speed Data Unit | DLC cutoff relay            | DU TCM interface             | V35 interface              |
| Coax Eliminator      | DLC cutoff relay            | DU TCM interface             | Not Supported              |
| AIM/AILC             | AILC cutoff relay           | Not Supported                | RS422 firmware I/F         |
| DPX                  | DLC cutoff relay            | DU TCM interface             | DU RS232/V35 interface     |
| LIU/DTU              | DLC cutoff relay            | LIU TCM interface            | DTU RS232/V35 interface    |

Note: The LIU/DTU combination also supports several other loopbacks including loopbacks within the loop extension data facility. For more information see "Datapath Loop Extension Maintenance", by J. Henderson, FDOC BV1342, October 1985.

#### Datapath Products and Supported Loopback Locations

Figure 37.17

0 A pictorial representation of a DPX Maintenance Mes-  
0 saging setup is shown in Figure 37.18.



0 Typical DPX Maintenance Messaging Setup

0 Figure 37.18

0 To perform maintenance diagnostics on the DPX/DLC/DU facil-  
0 ity shown in Figure 37.18, the craftsperson would post the  
0 associated DU on the MAP and enter the diagnostic command.  
0 The maintenance software recognizing this as a DPX would au-  
0 tomatically connect an available IBERT to the DPX. All  
0 maintenance messages are subsequently sent to the IBERT but  
0 addressed to the far end DPX, DLC, or DU and encoded in the  
0 W78 bulk data transfer format. The IBERT removes the mes-  
0 sages from the bulk data transfer format and passes them on  
0 transparently to the DPX via the inband signalling protocol.  
0 All messages addressed to the DLC or the DU are passed on  
0 transparently by the DPX.

0 In this example the DLC/DU configuration illustrated could  
0 refer to a DLC/low speed DU, DLC/high speed DU, or DLC/coax  
0 eliminator.

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0 (b) References

0 "Extension Maintenance", by J. Henderson, FDOC BV1342, Octo-  
0 ber 1985.  
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0 (c) Provisioning Considerations

0 ( i) The hardware of the Integrated BERT (NT6X99AA) re-  
0 sides in the line drawer (NT6X05AA) of an LCM in a  
0 Host office, in an RSC site, or in an OPM site (or  
0 RLCM) taking the physical space of a two slot line  
0 card. The two vertical slots in the LCM line drawer  
0 must be in the same logical line drawer subgroup  
0 (i.e., in the same line subgroup (LSG)).

0 ( ii) The IBERT must be located in a Line Concentrating  
0 Module (LCM) or Remote Line Concentrating Module  
0 (RLCM) which may or may not be the same LCM or RLCM  
0 as the one which the line it is testing resides.  
0 Even though the IBERT may be located on the same LCM  
0 as the line which it is testing, intraswitching for  
0 the connection is not used. This means that a con-  
0 nection between the IBERT and the line it is testing  
0 will be established through the DMS network. No con-  
0 nection between the IBERT and the line it is testing  
0 in the LCM, without going through the DMS network,  
0 can be established at the present time.

0 ( iii) Although the appearance of the IBERT is that of a  
0 line card, the IBERT is NOT a line card in the  
0 normal sense as there is no subscriber loop or set  
0 associated with it. The only interaction with an  
0 IBERT is achieved from a MAP through the DMS/IBERT  
0 messaging interface.

0 ( iv) While BER testing can be performed by either the  
0 NT6X99AA card, which mounts in an LCM, or by the  
0 NT4X23AA card, which mounts in an MTM, there is a  
0 software problem that prevents the NT4X23AA from  
0 successfully testing Datapath Extension trunks.  
0 Therefore, it is recommended that the NT6X99AA be  
0 used for DMS-100 and DMS-100/200 offices (local and  
0 local/toll applications) and the NT4X23AA be used  
0 for DMS-200 offices (toll applications).

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0 ( v) A minimum of one (1) NT6X99AA per LCM or 24 per of-  
0 fice (whichever is larger) should be provisioned for  
0 basic test capability in DMS-100 or DMS-100/200 of-  
0 fices. Higher quantities of test cards will provide  
0 faster office coverage.

0 ( vi) For datapath loop testing, due to a high volume of  
0 messaging traffic, it is recommended that one (1)  
0 IBERT line card (NT6X99AA) be provisioned per LCM  
0 equipped with a data line card.

0 ( vii) For switch bit error rate testing (in NTX881AC) it  
0 is recommended that one (1) IBERT line card  
0 (NT6X99AA) be provisioned per LCM for every LCM in  
0 the office.

0 (viii) Up until BCS-24, the maximum number of IBERT line  
0 cards (NT6X99AA) and DTU BERT Unit (NT4X23AA) cir-  
0 cuits (i.e., 2 circuits per card) allowed in an of-  
0 fice (Host plus all associated remotes) is 64.

0 As of BCS-25, the maximum number of NT6X99A cards  
0 and NT4X23AA circuits allowed in an office is 128.

0 For Canadian applications only, if the IBERT line  
0 card requirement exceeds the above software limita-  
0 tions (of 64 and 128 respectively in an office), it  
0 is permissible to perform the associated tests by  
0 restructuring the associated software data tables  
0 accordingly (i.e. perform the required test for the  
0 first group of 64 or 128 IBERT line cards, restruc-  
0 ture applicable software data tables for the next  
0 group of 64 or 128 IBERT line cards, perform the re-  
0 quired test, and so on).

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0 and furnished as NTXP13AA for ENET SuperNode of-  
0 fices.

0 If software package SPD exists in a DMS office prior  
0 to an ENET upgrade, then both NTX885AB and NTXP13AA  
0 are to be provided in the retrofit software load to  
0 provide both Network Module (NM) and ENET coverage.  
0 NTX885AB is to be removed on the next BCS applica-  
0 tion following the upgrade.

0 The above rules are an example of unautomated rules  
0 which are stored in a document entitled "SW Package  
0 Ordering Rules - Not Automated" in the SMS Documen-  
0 tation Menu in CODA.

0 Interdependencies for NTX259AA:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX100AA Integrated Business Networks - Basic  
0 (IBN)  
0 NTX106AA IBN - Proprietary Business Set  
0 NTX250AA DATAPATH - Basic  
0 NTX270AA New Peripheral Maintenance Package  
0 NTX901AA Local Features 1

0 Interdependencies for NTX881AC:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package  
0 NTX901AA Local Features 1

0 Interdependencies for NTX885AB:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package

0 Interdependencies for NTXP13AA:

0 NTXE01AA Enhanced Network - Basic  
0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package

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0 Host - Local Test Cabinet Equipment  
0 Chapter 20



## 0 7.0 Digital Test Unit BERT

0 7.1 Introduction

0 The Digital Test Unit Bit Error Ratio Test (DTU BERT) Unit  
0 CP, NT4X23AA, is an optional maintenance feature which can  
0 be ordered for the measurement of bit error ratio (BER) and  
0 error-free interval of pseudo random test data.

0 A Bit Error Ratio Test (BERT) is a test used to measure the  
0 transmission quality of a loop. The basic idea of a BERT is  
0 to send a known stream of data over a given loop, and to  
0 have this data reflected back to the sender. The received  
0 data is then compared with the sent data thereby giving a  
0 measure of the transmission quality. By looping back data  
0 at different points in the loop and measuring the quality of  
0 transmission at each point, faults which may exist on the  
0 loop can be isolated.

0 There are available commercial stand alone external semi-  
0 automated BERT instruments, requiring some manual configura-  
0 tion and operation but this is too unwieldy an approach for  
0 long term switch maintenance. Also, since these are not in-  
0 tegrated within DMS, there is no facility for automated path  
0 control or fault sectionalization.

0 The DTU BERT Unit CP is an integrated or resident piece of  
0 equipment in the DMS. Access to this unit will be by means  
0 of a single command located at the TTP level of the MAP. The  
0 benefit of this will be a simpler method of testing loops as  
0 well as dropping the need for any external test equipment.

0 The DTU Based BERT will be capable of performing some BERT  
0 functions available on the IBERT Line Card, NT6X99AA, in-  
0 cluding Data Unit (DU) interface via T-link protocol, but  
0 not the DPX feature.

0 However, initially the DTU BERT Unit CP will only be appli-  
0 cable in a DMS toll or local/toll office. This MAP control-  
0 lable BERT device will ensure data integrity within and  
0 between toll exchanges.

0 7.2 Features

0 None

0 7.3 Equipment Provisioning0 7.3.1 DTU BERT0 (a) General Description

0 The DTU BERT will perform the following functions:

- 0 - Transmit standard 511, 2047 or 32767 bit data test  
0 pattern at 50 bits per second to 19.2 Kbit/s asyn-  
0 chronous or 1.2 Kbit/s to 64 Kbit/s synchronous us-  
0 ing T-link.
- 0 - Transmit standard 511, 2047 or 32767 data test pat-  
0 tern at 64 Kbit/s without T-link handshaking.
- 0 - Transmit standard 511, 2047 or 32767 bit test data  
0 pattern at 64 Kbits with a 1's density suitable for  
0 T-carrier, without T-link handshaking.
- 0 - Transmit standard 511, 2047 or 32767 bit test data  
0 pattern at 56 Kbit/s in 56 Kbit/s data mode (LSB  
0 held marking) without T-link handshaking.
- 0 - Receive data in any of the above formats and detect  
0 bit errors, block errors, sync losses and errored  
0 and error-free seconds.
- 0 - When in T-link mode, derive data timing from the 64  
0 Kbit/s channel rate with the option to derive clock-  
0 ing from the received data stream if the far end  
0 uses external clocking (indicated in T-link hand-  
0 shake).
- 0 - When in T-link mode, the data transmission and re-  
0 ception rate are adaptable to the far end equipment.

0 The DTU Based BERT is capable of performing some  
0 BERT functions available on the IBERT Line Card,  
0 NT6X99AA, including Data Unit (DU) interface via T-  
0 link protocol, but not the DPX feature. It is re-  
0 commended that the NT6X99AA be used for DMS-100 and  
0 DMS-100/200 offices (local and local/toll applica-  
0 tions). For information on IBERT Line Card,

0 NT6X99AA, see ECM274 on subject Integrated Bit Error  
0 Rate Test Facility (IBERT).

0 It is recommended that the DTU BERT Unit CP be used  
0 for DMS-200 offices (toll applications). This MAP  
0 controllable BERT device will ensure data integrity  
0 within and between toll exchanges.

0 A pictorial representation of a DTU BERT Unit CP  
0 Configuration for Datapath BER Testing is shown in  
0 Figure 37.19

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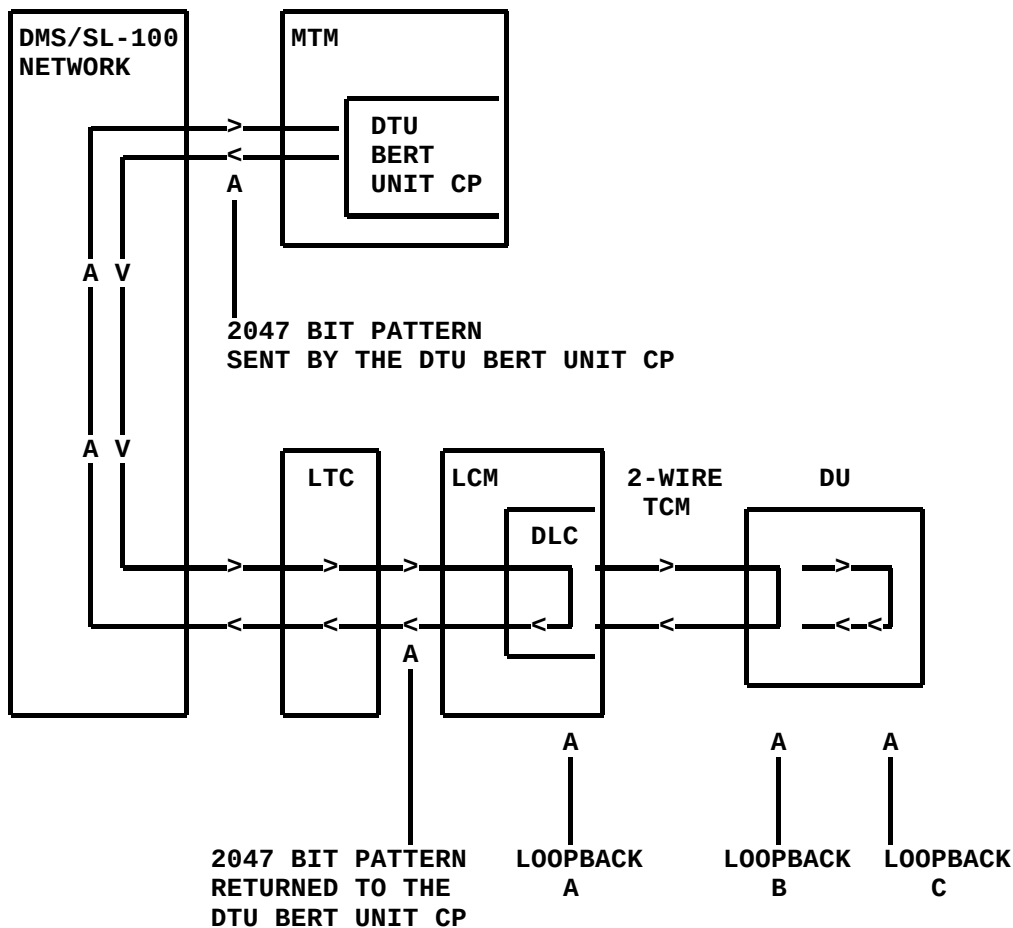
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TYPICAL DATAPATH BIT ERROR RATE TEST SETUP

Figure 37.19

The loopbacks labelled A, B, and C in Figure 37.19 are respectively a 64 Kilo-bit loopback at the Data Line Card (DLC), a 64 Kilo-bit loopback at the Data Unit (DU), and a loopback at the RS-232C interface of the Data Unit.

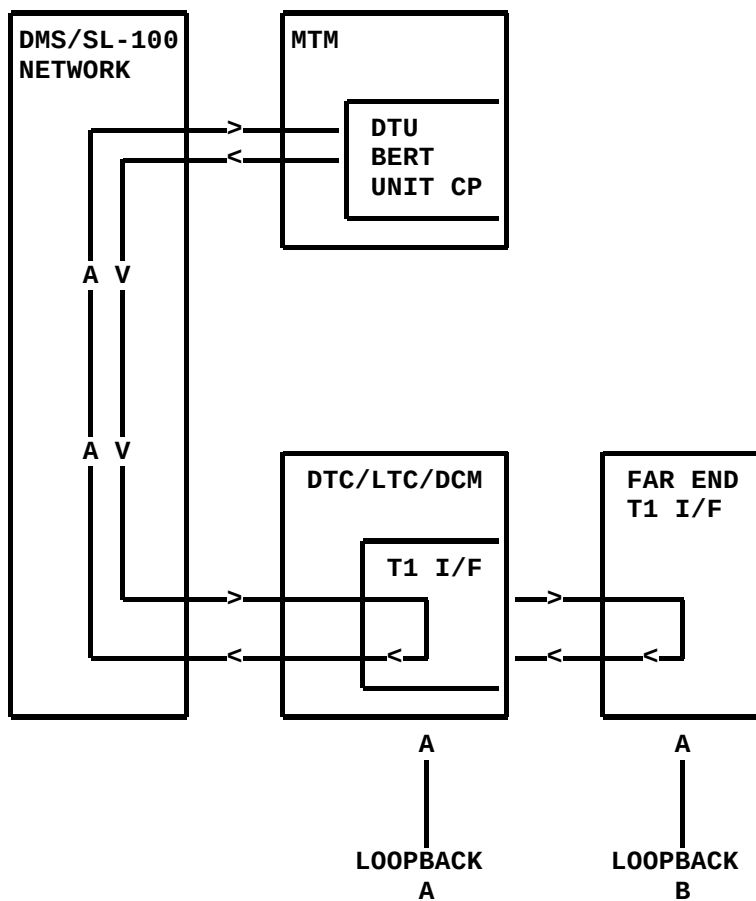
As can be seen from the diagram, the 2047 bit pattern is sent from the DTU BERT Unit CP through the network, out to the line in question, and is looped back

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0 from wherever the loopback is set (either A, B, or C)  
0 through the network to the DTU BERT Unit CP where it  
0 is compared with the pattern that was sent.

0 Optionally, no loopback may be set. This is referred  
0 to as a straight away test. In this case, an external  
0 BERT is connected to the Data Unit being tested. An  
0 external BERT takes care of receiving the bit pattern  
0 sent by the DTU BERT Unit CP and sending its own bit  
0 pattern back. This scenario is generally used for  
0 verifying the accuracy of the DTU BERT Unit CP. The  
0 external BERT would be used in this case to inject  
0 errors into the pattern sent back to the DTU BERT  
0 Unit CP so that it can be verified that in fact the  
0 DTU BERT Unit CP detected the error and reported it.  
0 Note that in this case the external BERT used must  
0 conform to CCITT standards so that it will generate  
0 the same 2047 bit pattern used by the DTU BERT Unit  
0 CP.

0 A pictorial representation of a DTU BERT Unit CP Con-  
0 figuration for T1 Carrier Testing is shown in Figure  
0 37.20

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TYPICAL T1 CARRIER BIT ERROR RATE TEST SETUP

Figure 37.20

The loopbacks labelled A and B in Figure 37.20 are respectively a loopback at the DTC/LTC/DCM T1 interface card and a loopback at the far end T1 interface card. Or alternatively, at each of the respective locations, a manually configured jacked loopback can be performed at the DSX.

0 (b) References

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0 (c) Provisioning Considerations

0 ( i) The DTU BERT Unit CP, NT4X23AA, is a provisionable  
0 single slot service circuit card which resides in an  
0 MTM or DRA.

0 ( ii) The DTU BERT Unit CP has the following character-  
0 istics:

0 2 circuits/card  
0 2 amperes/card  
0 10 watts/card  
0 1 slot/card

0 ( iii) An MTM may be fully provisioned with DTU BERT cards.

0 ( iv) Up until BCS-24 the maximum number of IBERT Line  
0 Cards (NT6X99AA) and DTU BERT Unit Circuits  
0 (NT4X23AA) (i.e. two circuits per card) allowed in  
0 an office (host plus all associated remotes) is 64.

0 As of BCS-25, the maximum number of NT6X99AA cards  
0 and NT4X23AA circuits allowed in an office is 128.

0 Other than the above restrictions, there are no re-  
0 strictions to the number of DTU cards provisioned in  
0 a DMS switch for data integrity testing.

0 ( v) Simultaneous calls/tests may be made by any number  
0 of DTU BERT circuits.

0 ( vi) While BER testing can be performed by either the  
0 NT6X99AA card, which mounts in an LCM, or by the  
0 NT4X23AA card, which mounts in an MTM, there is a  
0 software problem that prevents the NT4X23AA from  
0 successfully testing Datapath Extension trunks.  
0 Therefore, it is recommended that the the NT6X99AA  
0 be used for DMS-100 and DMS-100/200 offices (local  
0 and local/toll applications) and that the NT4X23AA  
0 be used for DMS-200 offices (toll applications).

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0 (vii) Determining The Number of DTU BERT Cards

0 The assumption placed on office testing shall be  
0 that an entire office should be tested within 12  
0 hours.

0 12 hours = 720 minutes

0 1 call or test requires 10 minutes.

0 Hence  $720/10 = 72$  calls or tests can be performed  
0 within a twelve hour period by one DTU BERT circuit.

0 (viii) One DTC or LTC can accommodate up to ten (10)  
0 NT6X50AA cards.

0 1 DTC or LTC = 10 NT6X50AA cards  
0 = 20 DS-1 or T1 spans  
0 = 20 calls or tests

0 Hence  $72/20 = 3.6$  DTC or LTC can be tested within a  
0 twelve hour period by one DTU BERT circuit.

0 1 DTU BERT circuit = 3.6 DTC or LTC

0 2 DTU BERT circuits = 1 DTU BERT card  
0 = 7.2; approximately 7 DTC or  
0 LTC

0 Hence one DTU BERT card can test up to seven DTC or  
0 LTC within a twelve hour period.

0 (ix) One DCM can accommodate up to five NT2X35AA/AB  
0 cards.

0 1 DCM = 5 NT2X35AA/AB cards  
0 = 5 DS-1 or T1 spans  
0 = 5 calls or tests

0 Hence  $72/5 = 14.4$ ; approximately 14 DCM can be  
0 tested within a twelve hour period by one DTU BERT  
0 circuit.

0 1 DTU BERT circuit = 14 DCM

0 2 DTU BERT circuits = 1 DTU BERT card  
0 = 28 DCM



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0 Hence one DTU BERT card can test up to 28 DCM within  
0 a twelve hour period.

0 (x) A minimum of twelve (12) NT4X23AA CPs should be pro-  
0 visioned for DMS-200 (toll) offices.

0 (xi) Software Feature Packaging

0 (xii) DMS Toll Office

0 The applicable software is in the following software  
0 packages:

0 NTX882AA Bit Error Ratio Indicator for Toll  
0 Switches

0 Interdependencies for NTX882AA:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package  
0 NTX801AA Toll Features 1

0 (xiii) DMS Local, Local/Toll Offices

0 The applicable software is in the following software  
0 packages:

0 \* NTX881AC Switch Bit Error Rate Maintenance  
0 (Upgrade of NTX881AB)

0 \* NTX885AB Switch Path Diagnostics  
0 (Upgrade of NTX885AA)

0 \* When ordering software package NTX881AC, it is re-  
0 commended that NTX885AB be ordered as well.

0 Interdependencies for NTX881AC:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX901AA Local Features 1  
0 NTX270AA New Peripheral Maintenance Package

0 Interdependencies for NTX885AB:

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0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package

0 (xiv) To determine/verify software package interdependency  
0 or master package content, the SMS89 document or  
0 SMSQUERY should be used.

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## 0 8.0 NSSD Local Test Cabinet

0 The NSSD LTC is a microprocessor controlled Local Test Cabinet  
0 (hereafter referred to as LTC) designed to test subscriber line  
0 circuits and trunk circuits. The LTC generates all test tones  
0 and test voltages without the aid of external devices. The LTC  
0 can access from one to sixteen test trunks and one MDF test  
0 trunk.

0 The LTC has the capability to test lines and trunks in DMS100F  
0 remote offices and other pair gain devices such as the AT&T  
0 SLC-96. This functionality is achieved via the Digital Remote  
0 Test Unit (DRTU).

0 The DRTU is a remote slave of the LTC. It is mounted in an  
0 equipment frame/Cabinet at the Remote Site. The DRTU to LTC com-  
0 munication is via Dial-up or Dedicated data lines. Refer to Fig-  
0 ure 1 for a pictorial representation of LTC to DRTU  
0 configuration.

0 The Local Test Cabinet works into any DMS100F test trunk and  
0 trunks from major switch manufacturers including AT&T/Western  
0 Electric, Automatic Electric, ITT/North, Stromberg Carlson, and  
0 TRW Vidar types. When properly calibrated, the LTC eliminates  
0 the effects of test trunk resistance and capacitance from the  
0 measured values displayed to the user. Busy lead sensing permits  
0 trunk sharing with other test equipment that may be installed in  
0 the office, (e.g., an LRS Loop Test Unit), and thus avoids the  
0 need for additional test trunks.

0 The LTC is designed to provide automated tests and measurements  
0 in a wall/desk/frame/MDF mounted configuration. The NSSD LTC of-  
0 fers an automatic measurement and diagnosis sequence plus a host  
0 of specialized loop test functions. The diagnosis sequence con-  
0 sists of the following:

- 0 \* Measurements of AC volts, DC volts, resistance, and  
0 capacitance between all combinations of tip, ring, and ground
- 0 \* Ringer presence check between all combinations of tip, ring  
0 and ground (shows where ringers are connected)
- 0 \* Microprocessor analysis of the above tests to determine the  
0 condition of the line, which includes automatic recognition  
0 of pair gain and intercept arrangements.
- 0 \* Measurement of the lines physical length.

0 Additional, individually-selectable test functions include:

0 \* Talk/monitor on subscriber's line via built-in handset or  
0 call-back path in remote applications.

0 \* Draw dial tone and dial on subscriber's line

0 \* Ring subscriber

0 \* Check DP or DTMF digits dialed from subscriber's station set

0 \* Apply howler (receiver off-hook) tone

0 \* Permanent signal release

0 \* Coin collect/return

0 \* Control/interrogate AT&T Pair Gain Test Controller in SLC-96,  
0 DMS-1/DMS-1 Urban, and certain other subscriber carrier ar-  
0 rangements

0 \* Activate remote device, pair gain metallic bypass path, or  
0 optional Digital Remote Test Unit (DRTU) slave measurement  
0 unit

0 \* Condition loop.

0 \* LINE ACCESS TEST FUNCTIONS

0 - Automatic test trunk selection based on NNX code.

0 - Supports both normal directory number access and line  
0 equipment number (LEN) access with automatic dialing of  
0 prefix digits.

0 - Handles up to 16 test trunks, (up to four trunks on the  
0 standard unit), and supports any mixture of dial or MDF  
0 shoe trunks.

0 - A special MDF trunk interface provides a full in/out  
0 bridge capability for any type of shoe.

0 - The standard four trunk LTC provides one such interface  
0 while four are available on the 16-trunk unit.

0 \* AUTOMATIC MEASUREMENT AND DIAGNOSIS SEQUENCE

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0 The Automatic Measurement and Diagnostic Sequence provides a  
0 single-button multi-test sequence that includes:

- 0 - Measurement of AC volts, DC volts, resistance and  
0 capacitance between all combinations of tip, ring, and  
0 ground;
- 0 - ringer presence check;
- 0 - measurement of line length;
- 0 - Analysis via fault algorithm including recognition of  
0 pair gain and intercept arrangements.

0 Note: CRT display shows full discrete results plus  
0 line status message. Site dependent ringer data con-  
0 tained in nonvolatile memory "fine tunes" algorithm for  
0 high accuracy.

0 \* DRAW DIAL TONE. The LTC applies off hook supervision on sub-  
0 scriber line to draw dial tone from central office. Operator  
0 can select either loop start or ground start supervision as  
0 appropriate.

0 \* DIAL ON SUBSCRIBER LINE. Checks CO's ability to receive sub-  
0 scriber dialed digits and complete a call. DP, MF, or DTMF  
0 dialing mode may be selected.

0 \* TALK AND MONITOR. Supplies talk battery when talking toward  
0 the station end of the loop. A high impedance, monitor-only  
0 mode is also selectable for situations where desired.

0 \* CHECK SUBSCRIBER DIGITS. Permits analysis of DP or DTMF dig-  
0 its sent by the subscriber's dial.

0 \* RING SUBSCRIBER. Connects the appropriate ringing signal to  
0 the accessed line.

0 \* CONDITION LOOP. Places one or more of the following loop  
0 conditions on the line for applications where required:

- 0 - reversed tip and ring,
- 0 - shorted tip and ring,
- 0 - ground on tip and ring,

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- 0 \* COIN COLLECT/RETURN. Applies coin collect/return voltage to  
0 line. Display indicates whether on not pay station relay op-  
0 erates, if test is successful, and the operating current.
- 0 \* PERMANENT SIGNAL RELEASE (PSR). Frees office line equipment  
0 tied up by a permanent line busy fault condition such as Re-  
0 ceiver Off Hook (ROH). Permanent signal release is applica-  
0 ble only where supported by the central office test trunk.
- 0 \* APPLY HOWLER. Places howler tone on a subscriber line to  
0 signal a permanent receiver off hook (ROH) condition.
- 0 \* ACTIVATE/DEACTIVATE DRTU OR OTHER REMOTE DEVICE. Sets up  
0 3704 Digital Remote Test Unit (DRTU) communication path in  
0 certain common subscriber carrier systems and remote line  
0 concentrators.
- 0 \* INTERROGATE PAIR GAIN TEST CONTROLLER. In SLC96 and DMS-1  
0 arrangements equipped with the AT&T Pair Gain Test Controller  
0 (PGTC), collects and displays the results of digital carrier  
0 channel tests.
- 0 \* CONNECT EXTERNAL JACK. Terminates the accessed line in a  
0 type 310 panel jack for connection of external test equip-  
0 ment. Provides a convenient access point for measuring  
0 level, noise, and other transmission parameters. The external  
0 jack function also enables the Pair ID Buzzer accessory de-  
0 scribed in the following paragraph.
- 0 \* PAIR IDENTIFICATION. A Pair ID Buzzer accessory NT0J04DE  
0 provides audible and visual indications when the accessed  
0 tip/ring pair has been located at the wiring frame.
- 0 \* TEST TRUNK CALIBRATION. Stores in nonvolatile memory the re-  
0 sistance and capacitance characteristics of each individual  
0 test trunk connected to the LTC. Eliminates the effects of  
0 test trunk length on the measurement results displayed to the  
0 user. A Trunk Calibrator accessory NT0J04DA reduces the num-  
0 ber of steps required to obtain calibration values.
- 0 \* REMOTE ACCESS/CONTROL PORTS. Permit LTC control from a re-  
0 mote or local data terminal, or intelligent controller via  
0 dial-up or dedicated operation. Also features call-back ca-  
0 pability for talk/monitor functions, high level ASCII proto-  
0 col, built-in 300/1200 baud modem, and user transparent  
0 log-in security feature.

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0 \* SELF TEST. Checks and displays the operational status of  
0 each CP within the NSSD LTC.

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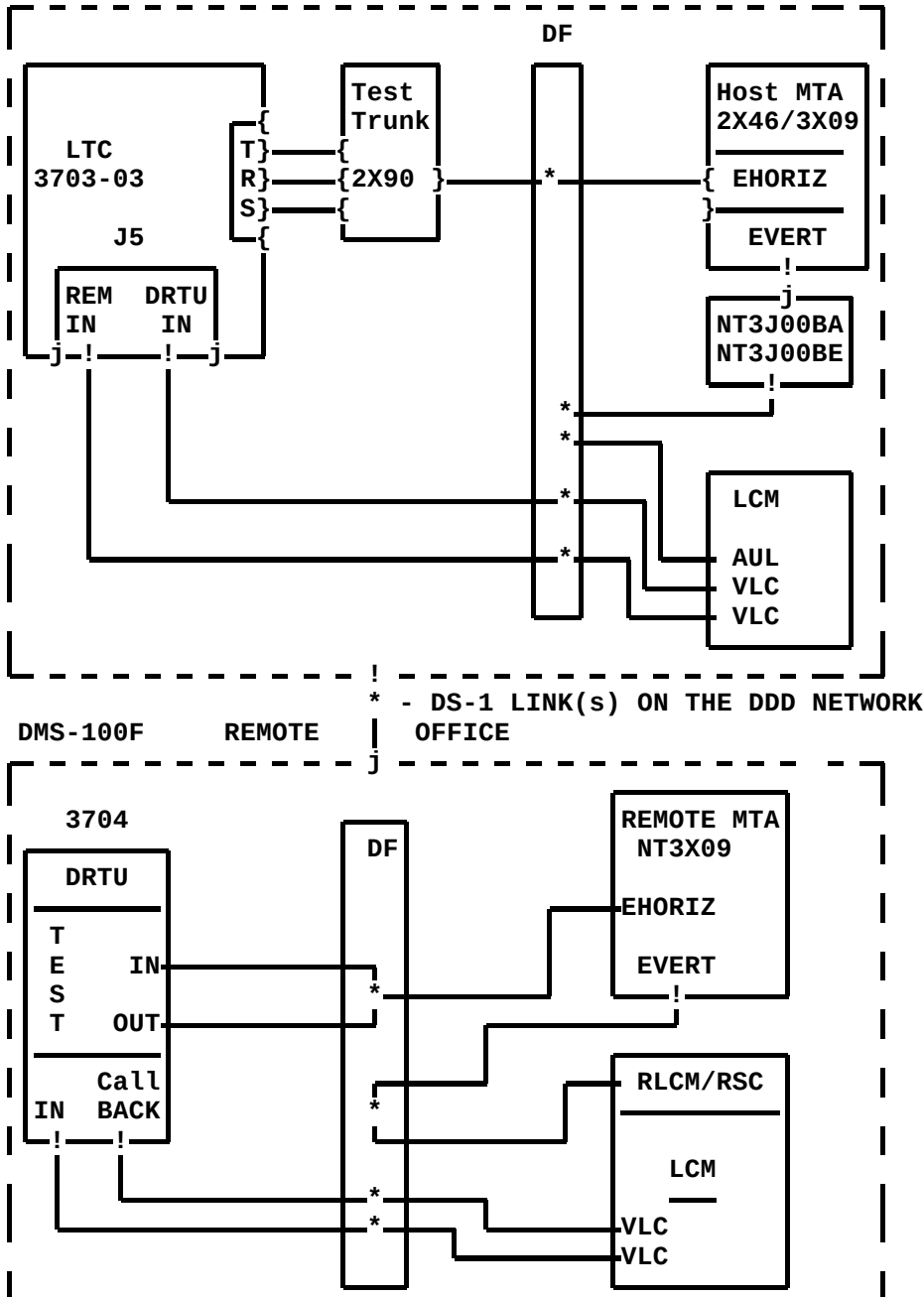
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Figure 1: HOST LTC TO DRTU CONCEPTUAL DIAGRAM





0 8.1 HARDWARE PROVISIONING0 8.1.1 HARDWARE USAGE RESTRICTIONS

The 4trunk 3Wire access card (NT0J62BA) is required to access up to four trunks on all other switching system. This is due to the fact that these switching systems utilize the 3-wire (Tip, Ring, Sleeve & Gnd) trunk accessing methodologies.

The 4trunk 4Wire access card (NT0J63BA) is required to access up to four trunks on the DMS-100 Product Families and the Western Electric/Bell Technology Product Families. This is due to the fact that these switching systems utilize the 3-wire (Tip, Ring, & Sleeve) trunk accessing methodologies.

The 16trunk 4Wire access card (NT0J64BA) is required to access up to sixteen trunks on the DMS-100 Product Families. This is due to the fact that these switching systems utilize the 4-wire (Tip, Ring, Sleeve & Gnd) trunk accessing methodologies.

0 8.1.2 HARDWARE DEPENDENCIES

When the Digital Remote Test Unit (DRTU) is used at a Remote Office a MLT Applique Shelf (NT3J00BA) card slot is required at the host to mount the DRTU Signature Card (NT3J00BE).

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not Applicable

## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

## 0 CIRCUITS PER CARD

0  
0 Not Applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not Applicable0 8.1.3 PROVISIONING CONSIDERATIONS0  
0 Several configurations of the NSSD Local Test Cabinet exist,  
0 which are Model 3703-00, 3703-01, and 3703-03. The Model  
0 3703-03 is the current version provisioned, and upgrade kits  
0 exist for the earlier vintages. The NSSD LTC Models 3703-00  
0 & 01 were ordered with a single PEC which provided all  
0 available options. The NSSD LTC Model provides increased

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0 functionality which is facilitated by ordering multiple PECs  
0 to provide the unit (See Section 2.4.2).

0 The NSSD LTC is available as a Local or Remote configuration  
0 in Brown. Mounting options available are Equipment  
0 Rack/Wall/Desk/MDF mounting. Options allow for 4 or 16 test  
0 trunk access.

0 Please note that in Canada, our customers will be ordering  
0 the LTC directly from the Network Systems Support Division  
0 (NSSD). In the U.S. (NTI), our customers will be ordering  
0 it from NTI. For Canadian jobs, note that we must still  
0 provide the appropriate cables, jack boxes, and test jacks.  
0 Refer to CAX04 cable drawing for cabling information.

#### 0 LTC Model 3703-00/01 Upgrade Kit

0  
0 The LTC Model 3703-00 & 01 Upgrade Kit provides the hardware  
0 necessary to upgrade an existing unit to the LTC Model  
0 3703-03 standards.

0 Telcos having a NSSD Model 3703-00 or 3703-01 LTC must up-  
0 grade the unit to the Model 3703-03 standards in order to  
0 take advantage of the majority of the LTC features as de-  
0 fined in the General Section.

0 The earlier vintage LTCs may be upgraded using the NT0J60AA  
0 System Upgrade Kit. When provisioning the Upgrade Kit the  
0 following information must be included with the order:

0 \* The serial number of the existing Model

0 \* The color of the existing Model

0 This information is required because the LTC card cage will  
0 be replaced and the existing serial number used on the new  
0 card cage.

0 The NT0J60AA System Upgrade Kit provides a new LTC card cage  
0 which provides the following features:

0 \* Trunk Control Keys

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- 0 \*
- 0 \* A Boost Key
- 0 \* Four (4) More Ports:
  - 0 Local EIA RS-232-C
  - 0 Two (2) Dial-In Ports
  - 0 Call-Back
- 0 \*
- 0 \* Four (4) Trunk Connectors Instead Of One (1)

## 0 LTC Provisioning

0  
0 The NSSD LTC is an independent-operable unit that supports a  
0 full range of loop testing for existing and recently in-  
0 stalled circuits. A typical Local Test Cabinet (LTC) con-  
0 sists of a pushbutton (key) control panel, a 5-inch video  
0 display (VDU), a telephone handset, and a 310-type connector  
0 for connecting additional test equipment.

0 The LTC is provisioned via several PECs which include:

- 0 \*
- 0 \* Minimum Components for LTC operation
  - 0 - LTC Mainframe (includes front panel and test trunk
  - 0 access option)
  - 0 - Mounting Brackets
- 0 \*
- 0 \* Optional Components for enhanced LTC operation
  - 0 - Buzzer Pair Identifier
  - 0 - Spares Kit
  - 0 - Digital Remote Test Unit (DRTU) Model 3704
  - 0 - DRTU Access Card
  - 0 - MLT Applique Shelf
  - 0 - Signature Accessory Card

0 Refer to the NSSD LTC Engineering Manual Insert attached

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0 8.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable

0 8.1.5 TRAFFIC TABLES

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0 Not applicable

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0 8.2 PRODUCT/SYSTEM SPECIFICATION

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0 8.2.1 PHYSICAL CHARACTERISTICS

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0 Local Test Cabinet

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0 Dimensions (WxHxD).....17" x 19.25" x 12"  
0 .....(43.2 cm x 48.9 cm x 30.5 cm)  
0 Weight.....50lbs w/o Brackets  
0 .....(22.7 kg w/o Brackets)

0 DRTU

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0 Dimensions (WxHxD).....17" x 3.5" x 11.25"  
0 .....(43.2 cm x 8.9 cm x 28.6 cm)

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0 8.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable

0 8.2.3 SPARING INFORMATION

0  
0 Standard sparing algorithms shall apply.

0 8.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 Local Test Cabinet

0

0 Input Voltage.....-42 to -56Vdc -48Vdc Nominal  
0 Power Consumption.....192 Watts  
0 Fusing Requirements.....8amps

0 DRTU

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0 Input Voltage.....-42 to -56Vdc -48Vdc Nominal  
0 Power Consumption.....72 Watts  
0 Fusing Requirements.....1 1/3 Amps

0 NOTE: The unit(s) described in this section must be powered  
0 in accordance with ISG Specifications. (Refer to the  
0 Engineering Manual Active Equipment, chapter EMA17,  
0 Grounding Requirements.)

0  
0 8.2.5 CURRENT DRAIN INFORMATION

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0 Local Test Cabinet

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0 Current Drain.....3 to 4 Amps

0 DRTU

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0 Current Drain.....1.5 Amps

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0 8.3 SOFTWARE PROVISIONING

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0 8.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 The following software package is required for the Local  
0 Test Cabinet:

0 NTX064AA - Automatic Line Insulation Testing (ALIT)

0 Prerequisite:

0 NTX000AA - BILGE

0 NTX001AA - Common Basic

0 NTX901AA - Local Features

0 8.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not applicable

0 8.3.3 MEMORY PROVISIONING

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0 Not applicable

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0 8.4 REAL TIME IMPACT

0 Not applicable

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0 9.0 Integrated Bit Error Rate Test Facility (IBERT)

0 1. Introduction

0 1.1 The Integrated Bit Error Ratio Test Facility or IBERT is an  
0 optional maintenance feature which can be ordered for test-  
0 ing the data loops in a DMS office (i.e. office with  
0 DATAPATH features).

0 1.2 IBERT is necessary to fulfill two distinct requirements:

0 1) Datapath Bit Error Rate Testing

0 2) and Datapath Extension (DPX) Maintenance Messaging.

0 1.3 Datapath Bit Error Rate Testing

0 1) In conjunction with Datapath maintenance software, it  
0 will provide the DMS craftsperson with the ability to  
0 monitor and diagnose from the MAP, the data transmission  
0 quality of a selected Datapath line. Current methods of  
0 testing Datapath circuits and equipment requires the use  
0 of cumbersome external test sets, inaccessible from a  
0 MAP and outside the control of any automated DMS/SL-100  
0 maintenance process.

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0 2) A Bit Error Rate Test is a test used to measure the  
0 transmission quality of a loop. The basic idea of a  
0 BERT is to send a known stream of data over a given  
0 loop, and to have this data reflected back to the  
0 sender. The received data is then compared with the  
0 sent data thereby giving a measure of the transmission  
0 quality. By looping back data at different points in  
0 the loop and measuring the quality of transmission at  
0 each point, faults which may exist on the loop can be  
0 isolated.

0 3) At present, the only capabilities provided are for an  
0 external BERT. An external BERT is a piece of test  
0 equipment which is not a part of the DMS. Regular meth-  
0 ods are used to establish a connection between a line to  
0 be tested and this external piece of test equipment. An  
0 integrated BERT, i.e. resident piece of equipment in the  
0 DMS, has been developed. The purpose of this feature  
0 will be to provide access to this integrated BERT by  
0 means of a single command located at the LTPMAN level of  
0 the MAP. The benefit of this will be a simpler method  
0 of testing Datapath loops as well as dropping the need  
0 for any external test equipment.

#### 0 1.4 Datapath Extension (DPX) Maintenance Messaging

0 1) The IBERT will also be used as a 64 kbps inband signal-  
0 ling interface to the Datapath Extension System (DPX)  
0 based on the DE-4E channel bank, providing a maintenance  
0 messaging channel between the DMS/SL-100 central control  
0 and the DPX. This will give the MAP-situated  
0 craftsman the ability to diagnose the DPX card and  
0 the associated Data Unit/Data Line Card (DU/DLC) facil-  
0 ity with diagnostics similar to the existing Datapath  
0 maintenance or to test the error rate performance of the  
0 entire DS1/DPX/DLC/DU facility.

0 1.5 The IBERT can be used to test virtually any type of data  
0 line connected to the DMS which supports the TLINK protocol.  
0 This includes Data Unit, AIM, Data Above Voice, coax elimi-  
0 nator Data Units and loop extended Data Units (those ex-  
0 tended using the Line Interface Unit and Data Terminating  
0 Unit method).

0 1.6 Note that the intent of providing an integrated BERT is to  
0 enhance the maintenance capabilities for datapath. This is  
0 not meant to be used as a tool for networks or speech links

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within the DMS. No attempt is made by this feature to provide a BERT while a data unit is involved in a call with another data unit. For this type of testing, an external BERT must still be used.

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0 2. Product Features

## 0 2.1 The IBERT will perform the following functions:

- 0 1) transmit standard 511 or 2047-bit data test pattern at  
0 50 bps to 19.2 kbps asynchronous or 1.2 kbps to 64 kbps  
0 synchronous using T-link
- 0 2) transmit standard 511 or 2047-bit data test pattern at  
0 64 kbps without T-link handshaking
- 0 3) transmit standard 511 or 2047-bit data test pattern at  
0 56 kbps with a ones density suitable for T-carrier,  
0 without T-link handshaking
- 0 4) receive data in any of the above formats and detect bit  
0 errors and sync losses in the bit stream
- 0 5) count the number of error free seconds and total number  
0 of seconds in a test
- 0 6) derive data timing from the 64 kbps channel rate with  
0 the option to derive clocking from the received data  
0 stream if the far end uses external clocking (indicated  
0 in T-link handshake)
- 0 7) when in T-link mode adapt the data transmission and re-  
0 ception rate to the far end equipment
- 0 8) allow the MAP user to do the following:
  - 0 - activate a loopback at the line card or set to be  
0 tested
  - 0 - start BERT as one of the following:
    - 0 1. 64 kbps (no T-link handshake)
    - 0 2. 56 kbps (no T-link handshake)
    - 0 3. T-link adaptive data rate
    - 0 4. default to (1),(2), or (3) according to type of  
0 loopback selected
  - 0 - inject error(s) in the transmitted data pattern
  - 0 - stop BERT

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- display test results (bit error count, sync loss  
count,

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total number of bits, etc.)

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- display the operating data rate of the test

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0 9) support the inband signalling scheme used for DPX main-  
0 tenance

0 - on request from DMS/SL-100 send pattern at the start  
0 of  
0 the call to put the DPX into maintenance mode

0 - accept messages from DMS/SL-100 addressed to the DPX  
0 and  
0 transmit them on transparently via inband signalling

0 - detect inband messages from DPX and send them to the  
0 DMS/SL-100

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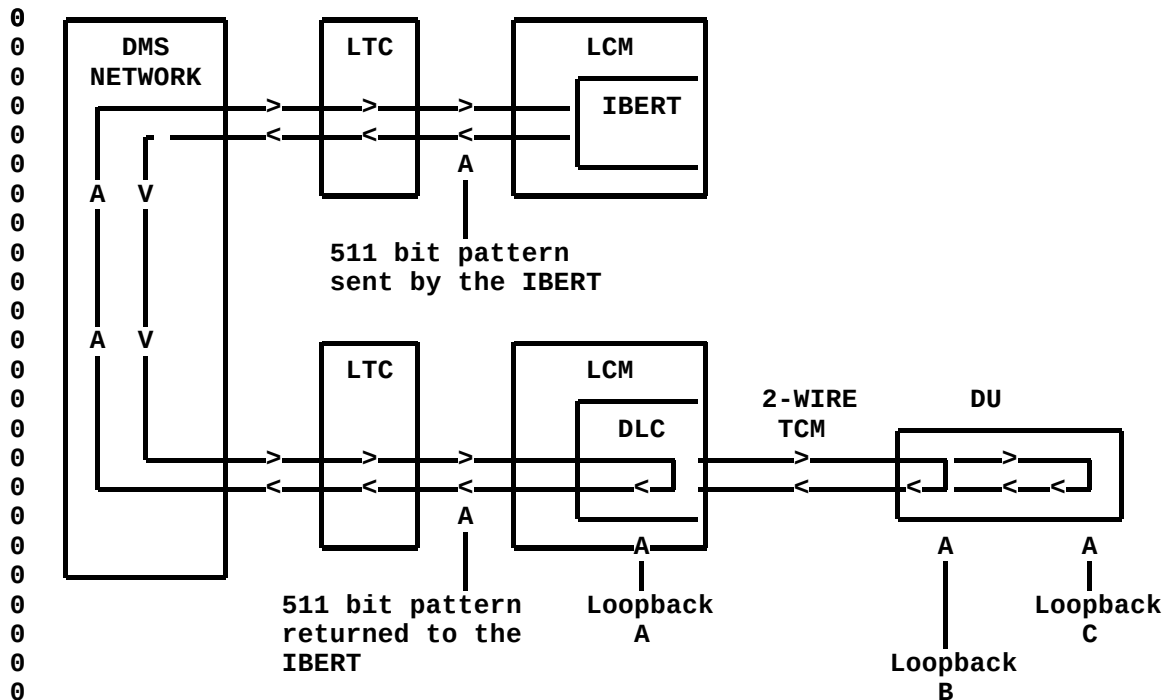
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0 3. Product Description

0 3.1 Datapath Bit Error Rate Testing

0 3.1.1 A pictorial representation of an Integrated BERT is as  
0 follows:



0 Typical Datapath Bit Error Rate Test Setup

0 Figure 1

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0 3.1.2 The loopbacks labelled A, B and C are respectively a 64  
0 Kilo-bit loopback at the Data Line Card (DLC), a 64 Kilo-  
0 bit loopback at the Data Unit (DU) and a loopback at the  
0 RS-232C interface of the Data Unit. These loopbacks cor-  
0 respond respectively to the LOOPBK DLC, LOOPBK DU\_64K and  
0 LOOPBK DU commands at the LTPMAN level of the MAP.

0 3.1.3 As can be seen from the diagram, the 511 bit pattern is  
0 sent from the IBERT through the network, out to the line  
0 in question and is looped back from wherever the loopback  
0 is set (either A, B or C) through the network to the IBERT  
0 where it is compared with the pattern that was sent.

0 3.1.4 Optionally, no loopback may be set. This is referred to  
0 as a straight away test. In this case, an external BERT  
0 is connected to the Data Unit being tested. An external  
0 BERT takes care of receiving the bit pattern sent by the  
0 IBERT and sending its own bit pattern back. This scenario  
0 is generally used for verifying the accuracy of the IBERT.  
0 The external BERT would be used in this case to inject er-  
0 rors into the pattern sent back to the IBERT so that it  
0 can be verified that in fact the IBERT detected the error  
0 and reported it. Note that in this case the external BERT  
0 used must conform to CCITT standards so that it will gen-  
0 erate the same 511 bit pattern used by the IBERT.

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3.1.5 A list of Datapath products and the loopback points supported by each is shown as follows:

| Datapath Product     | Loopback A:<br>DLC Loopback | Loopback B:<br>64kb Loopback | Loopback C:<br>DU Loopback |
|----------------------|-----------------------------|------------------------------|----------------------------|
| Low Speed Data Unit  | DLC cutoff relay            | DU TCM interface             | RS232 interface            |
| High Speed Data Unit | DLC cutoff relay            | DU TCM interface             | V35 interface              |
| Coax Eliminator      | DLC cutoff relay            | DU TCM interface             | Not Supported              |
| AIM/AILC             | AILC cutoff relay           | Not Supported                | RS422 firmware I/F         |
| DPX                  | DLC cutoff relay            | DU TCM interface             | DU RS232/V35 interface     |
| LIU/DTU              | DLC cutoff relay            | LIU TCM interface            | DTU RS232/V35 interface    |

Note: The LIU/DTU combination also supports several other loopbacks including loopbacks within the loop extension data facility. For more information see "Datapath Loop Extension Maintenance", by J. Henderson, FDOC BV1342, October 1985.

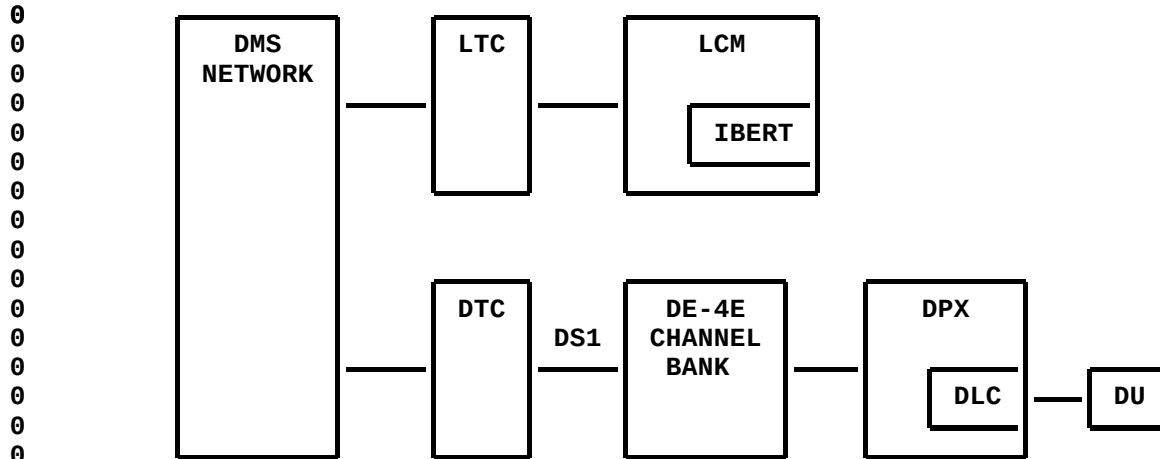
#### Datapath Products and Supported Loopback Locations

Figure 2

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### 0 3.2 Datapath Extension (DPX) Maintenance Messaging

0 3.2.1 A pictorial representation of a DPX Maintenance Messaging  
0 setup is as follows:



0 Typical DPX Maintenance Messaging Setup

0 Figure 3

0 3.2.2 To perform maintenance diagnostics on the DPX/DLC/DU fa-  
0 cility shown above, the craftsperson would post the asso-  
0 ciated DU on the MAP and enter the diagnostic command. The  
0 maintenance software recognizing this as a DPX would auto-  
0 matically connect an available IBERT to the DPX. All  
0 maintenance messages are subsequently sent to the IBERT  
0 but addressed to the far end DPX, DLC, or DU and encoded  
0 in the W78 bulk data transfer format. The IBERT removes  
0 the messages from the bulk data transfer format and passes  
0 them on transparently to the DPX via the inband signalling  
0 protocol. All messages addressed to the DLC or the DU are  
0 passed on transparently by the DPX.

0 3.2.3 In this example the DLC/DU configuration illustrated could  
0 refer to a DLC/low speed DU, DLC/high speed DU, or  
0 DLC/coax eliminator.

0

0 9.1 HARDWARE PROVISIONING

0

0 9.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 9.1.2 HARDWARE DEPENDENCIES

0

0 Not applicable.

0 | P AND C SIDE PORT REQUIREMENTS

0

0 | Not applicable.

0 | DMS BUS PORT REQUIREMENTS

0

0 | Not applicable.

0

0

0

0 | CIRCUITS PER CARD

0  
0 | Not applicable.

0 | DISCRIMINATION NUMBERING

0  
0 | Not applicable.

0 9.1.3 PROVISIONING CONSIDERATIONS

0  
0 1.1 The hardware of the Integrated BERT (NT6X99AA) resides in  
0 the line drawer (NT6X05AA) of an LCM in a Host office, in an  
0 RSC site, or in an OPM site (or RLCM) taking the physical  
0 space of a two slot line card. The two vertical slots in  
0 the LCM line drawer must be in the same logical line drawer  
0 subgroup (i.e., in the same line subgroup (LSG)).

0 1.2 The IBERT must be located in a Line Concentrating Module  
0 (LCM) or Remote Line Concentrating Module (RLCM) which may  
0 or may not be the same LCM or RLCM as the one which the line  
0 it is testing resides. Even though the IBERT may be located  
0 on the same LCM as the line which it is testing, intra-  
0 switching for the connection is not used. This means that a  
0 connection between the IBERT and the line it is testing will  
0 be established through the DMS network. No connection be-  
0 tween the IBERT and the line it is testing in the LCM, with-  
0 out going through the DMS network, can be established at the  
0 present time.

0 1.3 Although the appearance of the IBERT is that of a line card,  
0 the IBERT is NOT a line card in the normal sense as there is  
0 no subscriber loop or set associated with it. The only  
0 interaction with an IBERT is achieved from a MAP through the  
0 DMS/IBERT messaging interface.

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- 0 1.4 While BER testing can be performed by either the NT6X99AA  
0 card, which mounts in an LCM, or by the NT4X23AA card, which  
0 mounts in an MTM, there is a software problem that prevents  
0 the NT4X23AA from successfully testing Datapath Extension  
0 trunks. Therefore, it is recommended that the NT6X99AA be  
0 used for DMS-100 and DMS-100/200 offices (local and  
0 local/toll applications) and the NT4X23AA be used for  
0 DMS-200 offices (toll applications).
- 0 1.5 A minimum of one (1) NT6X99AA per LCM or 24 per office  
0 (whichever is larger) should be provisioned for basic test  
0 capability in DMS-100 or DMS-100/200 offices. Higher quan-  
0 tities of test cards will provide faster office coverage.
- 0 1.6 For datapath loop testing, due to a high volume of messaging  
0 traffic, it is recommended that one (1) IBERT line card  
0 (NT6X99AA) be provisioned per LCM equipped with a data line  
0 card.
- 0 1.7 For switch bit error rate testing (in NTX881AC) it is recom-  
0 mended that one (1) IBERT line card (NT6X99AA) be provi-  
0 sioned per LCM for every LCM in the office.
- 0 1.8.1 Up until BCS-24 the maximum number of IBERT line cards  
0 (NT6X99AA) and DTU BERT Unit circuits (NT4X23AA) (i.e. 2  
0 circuits per card) allowed in an office (Host plus all as-  
0 sociated remotes) is 64.
- 0 For more information on DTU BERT Unit card (NT4X23AA), see  
0 ECM-352 on subject Digital Test Unit BERT Unit CP,  
0 NT4X23AA.
- 0 1.8.2 As of BCS-25, the maximum number of NT6X99AA cards and  
0 NT4X23AA circuits allowed in an office is 128.
- 0 1.8.3 For Canadian Applications Only
- 0 If the IBERT line card requirement exceeds the above soft-  
0 ware limitations of 64 and 128 respectively in an office,  
0 it is permissible to perform the associated tests by re-  
0 structuring the associated software data tables accord-  
0 ingly (i.e. perform the required test for the first group  
0 of 64 or 128 IBERT line cards, restructure applicable  
0 software data tables for the next group of 64 or 128 IBERT  
0 line cards, perform the required test, and so on).
- 0 1.9 The data rates supported by IBERT are the following:

**0**

## 00

00

0

0



0 9.2 PRODUCT/SYSTEM SPECIFICATION

0

0 9.2.1 PHYSICAL CHARACTERISTICS

0

0 Not applicable.

0 9.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

0 9.2.3 SPARING INFORMATION

0

0 Normal sparing algorithms apply.

0| 9.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0| Not applicable.

0

0

0

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0 | 9.2.5 CURRENT DRAIN INFORMATION

0  
0 | Not applicable.

0 9.3 SOFTWARE PROVISIONING

0

0 9.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 1. The applicable software is in the following software packages:  
0

0 NTX259AA DATAPATH Extension - DPX

0 \* NTX881AC Switch Bit Error Rate Maintenance  
0 (Upgrade of NTX881AB)

0 \* NTX885AB Switch Path Diagnostics (SPD)  
0 (Upgrade of NTX885AA)

0 \* NTXP13AA ENET Switch Path Diagnostics (SPD)

0 \* When ordering software package NTX881AC, it is recommended  
0 that NTX885AB/NTXP13AA be ordered as well.

0 When ordered by the Customer, the Switch Path Diagnostics  
0 (SPD) software package is to be furnished as NTX885AB for  
0 non-ENET SuperNode and NT-40 offices and furnished as  
0 NTXP13AA for ENET SuperNode offices.

0 If software package SPD exists in a DMS office prior to an  
0 ENET upgrade, then both NTX885AB and NTXP13AA are to be pro-  
0 vided in the retrofit software load to provide both Network  
0 Module (NM) and ENET coverage. NTX885AB is to be removed on  
0 the next BCS application following the upgrade.

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0 The above rules are an example of unautomated rules which  
0 are stored in a document entitled "SW Package Ordering Rules  
0 - Not Automated" in the SMS Documentation Menu in CODA.

0 Interdependencies for NTX259AA:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX100AA Integrated Business Networks - Basic (IBN)  
0 NTX106AA IBN - Proprietary Business Set  
0 NTX250AA DATAPATH - Basic  
0 NTX270AA New Peripheral Maintenance Package  
0 NTX901AA Local Features 1

0 Interdependencies for NTX881AC:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package  
0 NTX901AA Local Features 1

0 Interdependencies for NTX885AB:

0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package

0 Interdependencies for NTP13AA:

0 NTXE01AA Enhanced Network - Basic  
0 NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX270AA New Peripheral Maintenance Package

0 To determine/verify software package interdependency or mas-  
0 ter package content, refer to the reports available from the  
0 SOLID System.

0

0

0

0

0 9.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Refer to section 4.1.

0 9.3.3 MEMORY PROVISIONING

0  
0 Normal memory algorithms apply.

0 9.4 REAL TIME IMPACT

0 Normal real time algorithms apply.

0

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0 CHAPTER 21

0 HOST - NETWORK EQUIPMENT

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Host - Network Equipment  
Chapter 21

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## 0 1.0 Introduction to Host Network Equipment

0 The Network Module (NM) is the major building block of the net-  
0 work. It establishes and maintains two-way speech and signalling  
0 paths between the Peripheral Modules (PM) lines, trunks, service  
0 circuits and digital carrier facilities for the duration of the  
0 call.

0 The fully duplicated network provides reliability because every  
0 active connection in one plane is backed up by a corresponding  
0 inactive connecting in the other plane. If any channel of the  
0 connection fails, the back-up channel is automatically made ac-  
0 tive, and takes over the call. Several types of network module  
0 are available.

0 There are five types of network module which accomplish the same  
0 switching function but have different internal electronics and  
0 physical configurations. The five network types are as follows:

- 0 A) NT9X05AB 128K Dual Cabinet Enhanced Network (ENET)
- 0 B) NT9X05AD 64K Single Cabinet Enhanced Network (ENET)
- 0 C) NT8X10AA Double Shelf Network (DSNE)
- 0 D) NT0X48 Network (NET)
- 0 E) NTZZ34\_\_ DMS-SuperNode SE (SNSE)

### 0 1.1 Double Cabinet Enhanced Network (128K ENET)

0 The Enhanced Network (ENET) is a single-stage, junctor-less  
0 switching matrix that replaces the junctored network system. The  
0 128K Dual Cabinet Enhanced Network equipped with four ENET  
0 shelves (i.e. one plane per cabinet) provides 128K non-blocking  
0 channels access.

### 0 1.2 Single Cabinet Enhanced Network (64K ENET)

0 The 64K Single Cabinet Enhanced Network provides 64K non-  
0 blocking, junctor-less channels on two planes in a single cabi-  
0 net.

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0 1.3 Double Shelf Network (DSNE)

0 The DSNE packages one network plane (64 ports) on a single shelf  
0 rather than two shelves as does the NETC frame, and therefore  
0 permits two complete networks per plane in a single bay, doubling  
0 the density of the NETC.

0 1.4 NET

0 The NT0X48 network has a single network module per single bay  
0 frame, and therefore requires 32 frames to accommodate a complete  
0 set of NM.

0 1.5 DMS-SuperNode SE

0 The DMS SuperNode SE (SNSE) is an alternative provisioning option  
0 to the traditional SuperNode, Enhanced Network (ENET) and Link  
0 Peripheral Processor (LPP).

0 The selection of the DMS SuperNode SE is recommended where the  
0 application's projected growth will not exceed any of the follow-  
0 ing characteristics:

0 ! 20 FXPM or 80 DS30 network interfaces for Peripherals Mod.

0 ! 3 Link Peripheral Processors(LPP).

0 ! 2 Application / File Processors(AP/FP).

0 It is normally recommended that applications that exceed these  
0 parameters use the standard SuperNode.

0 The SNSE is intended for end-offices that require an initial ca-  
0 pacity of up to 13,000 subscriber lines. The network can provide  
0 growth potential of 20,000 to 40,000 subscriber lines or 12,000  
0 trunks, depending on the traffic and service mix of an applica-  
0 tion and the required peripheral configuration.

0 The SNSE platform is defined as containing the CM/SLM  
0 functionality, DMS-Bus functionality, LIS and Network  
0 functionality. In essence, SuperNode SE provides DMS-Core,  
0 DMS-Bus, ENET 16K Channels, and a Link Interface Shelf(LIS) in a  
0 single cabinet.

0 All initial jobs requiring Network Modules should be provisioned  
0 with either DSNE or ENET (combinations are not possible).



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0 Extensions should be provisioned with DSNE; if ENET is desired, a  
0 complete retrofit to ENET is necessary. (See discussion of ENET  
0 Retrofit, later in this section.)

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0 2.0 128K Enhanced Network (Dual Cabinet ENET)

0 In this document ENET refers to the 128K Enhanced Network.

0 In the Junctored Network(JNET) system, each network module (NM) inter-  
0 faces up to 64 DS-30 speech links. This equates to 2K channels per NM.  
0 That is,

0 64 Ports per NM X 32 Channels per port = 2048 Channels

0 The total channel capacity of junctored network system is

0 2K X 32 NM = 64K Channels or 2 way Peripheral Module access

0 (Rule: Minimum junctors required between two NM is 2.)  
0 (64 junctors(ports) Divide by 2 junctors per NM = 32NM)

0 Theoretically 32K simultaneous 2 way paths could be set up across the  
0 network. The network modules have to be interconnected to achieve the  
0 desired network size. The channel delay through the network is vari-  
0 able dependent on the path, and access between one port to another may  
0 be blocked due to congestion in the network or on the junctors.

0 The Enhanced Network (ENET) is a single-stage junctor-less switching  
0 matrix that replaces the junctored network system. By comparison, a  
0 128K Enhanced Network Cabinet (ENC) with four (4) Enhanced Network  
0 (ENET) shelves (i.e. one plane per cabinet) provides 128K channel ac-  
0 cess. This is nominally equivalent to twice the existing capacity of  
0 Junctored Network System(32 NM max). In ENET constant delay between  
0 any two ports on the matrix. Moreover, any port is insured access to  
0 any free ports by its associated cross-point. This makes blocking im-  
0 possible.

0 In the junctored network system, speech links (PM-NET) and message  
0 links (NET-CMC, MS) utilize the DMS DS-30 format. This format consists  
0 of 32 PCM channels each 10 bits wide and operate at 2.56 M-  
0 bits/sec. Each 10 bit channel includes 8 data (speech) bits, one  
0 channel supervision bit and one parity bit.

0 With the introduction of the ENET - ENET to MS and XPM to ENET will  
0 utilize fiber medium. Fiber transmission links were first used in the  
0 DMS-S/N to connect the CM and MS. Each fiber link is the transmission  
0 equivalent of 16 DS-30 copper links in that there is a of total 512  
0 channels in each. Sixteen DS-30 is the speech link compliment of one  
0 XPM.

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0 Also with the introduction of ENET, there is a significant change in  
0 the way that the Message Switch (MS) is provisioned. MS ports and mes-  
0 sage channels are dedicated to specific peripherals. Message links are  
0 nailed up over cross-points for direct access from the DMS-Bus to the  
0 PM.

0 Refer to the following Figure for an overview for the ENET system.

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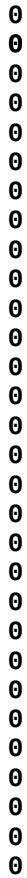
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## 0 NETWORK ARCHITECTURE

0 Benefits derived from the non-blocking design of ENET is described in  
0 terms of Full Availability, Switched PCM, the Switching Matrix, Speech  
0 Link Interfaces, and Control Plus Messaging as follows:

## 0 \* Full Availability

- 0 - No traffic penalty for nailed up or wide-band connections.
- 0 - No traffic balancing on speech links is necessary; port  
0 spreads are not required thus Speech Link Connector (SLC)  
0 Frames and Digital Network Interface (DNI) Frames are elimi-  
0 nated for this purpose.
- 0 - No path search required since all possible paths are independ-  
0 ent.
- 0 - Dual plane redundancy is provided for improved reliability.

## 0 \* SWITCHED PCM

0 Switching is performed on 2 K-channel PCM streams which are multi-  
0 plexed from four converted DS-512 sources. Each DS-512 is derived  
0 either from a fiber speech link originating from a fiber XPM  
0 (FXPM) or from up to 16 copper speech links operating in the DS-30  
0 format from conventional PMs.

## 0 \* SWITCHING MATRIX

- 0 - The basic building block of the switching element is a 16 K-  
0 channel (input) x 4 K-channel (output) matrix time switch.  
0 Four such units are combined on each Network Cross-Point CP to  
0 form a 16 K-channel x 16 K-channel time switch. These are  
0 one-way connections and two paths would be required for each  
0 two-way conversation.
- 0 - The 16K PCM inputs to the time switch on each CP are derived  
0 as follows:  
  
0 2K is multiplexed from four DS-512 streams then passed from  
0 the PB behind the cross point CP. This 2K PCM is also distrib-  
0 uted to the cross point CP in the same slot on the other three  
0 shelves, when equipped, via the Vertical Bus (V-Bus).
- 0 - 6K PCM are derived from the other three shelves when equipped  
0 via the upper and lower V-Bus.

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- 0 - 8K PCM are derived from the corresponding V-Bus array of the  
0 mate cross-point card in the same shelf.
- 0 - The unswitched PCM distributed vertically between the shelves  
0 in the cabinet utilize the V-Bus (or Unswitched Bus). This bus  
0 is implemented via orderable local cables.
- 0 - Eight 2K switched outputs from 16 cross-point CP pairs on a  
0 shelf are combined in the backplane to form the Horizontal Bus  
0 (H-Bus) or (Switched Bus) and makes the shelf a 128K x 32K ma-  
0 trix. One switched PCM from the H-Bus is demultiplexed on  
0 each cross point CP into four DS-512 PCM streams and fed to  
0 the interface PB behind the CP.
- 0 - The four shelves on a single cabinet combine to form a 128K x  
0 128K matrix. This configuration, contained in a single cabi-  
0 net per plane, is nominally equivalent (terminations) to 64 NM  
0 per plane of the current design.
- 0 - Despite its 16K X 16K size, each new cross-point CP adds only  
0 one new 2K PCM input and output to the network.

0 \* SPEECH LINK INTERFACES

- 0 - Three basic types of paddleboard are available i.e. DS-30,  
0 DS-512. and DS-30/DS-512.
- 0 - The DS-512 PB has four (4) DS-512 inputs (i.e. 0.5K Channels  
0 per input) which are utilized on fiber XPMs.
- 0 - The DS-30 PB combines 16 DS-30 copper speech links which are  
0 utilized on Series I Peripherals and non fiber XPMs.
- 0 - The DS-30/DS-512 PB is a new peripheral interface paddle board  
0 to be used only on the 128K ENET(Enhanced NETwork). This pack  
0 can interface 3 DS-512 fiber links and 16 DS-30 copper links.  
0 It combines the functionality of two existing packs. The  
0 NT9X40BA/40BB (4 DS-512) fully utilize the ENET's channel han-  
0 dling capacity. But, it does not provide copper links. On the  
0 other hand, the NT9X41BA (16 DS-30) pack does not fully uti-  
0 lize ENET's channel handling capacity(only 25% utilization of  
0 crosspoints). Using an NT9X45BA results in a 100% utilization  
0 of ENET crosspoints and providing both copper and fiber links.  
0 For example an ENET currently equipped with 4 NT9X41BAs and 3  
0 NTX40BA/BBs requires 7 Crosspoints. This could be reconfigured  
0 with 4 NT9X45BAs and only 4 Crosspoints a savings of 3 Cross-  
0 points cards.

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## 0 \* CONTROL &amp; MESSAGING

- 0 - Each ENET shelf is equipped with and controlled by a Motorola  
0 68020 CPU. This processor, equipped with 4 M-bytes of memory,  
0 operates on downloaded SOS-based software. Control is di-  
0 rected by messages sent via the MS over fiber message links.
- 0 - The ENET-to-MS message links now become multi-message channel  
0 facilities. The set of MS message port hardware associated  
0 with a given ENET shelf pair and the peripherals which it  
0 interfaces is referred to as a " MS Port Group ". Each group  
0 consists of at least one (1) MS Port CP (NT9X17AA/AD or DA)  
0 and associated PB. The cards of a port group occupy adjacent  
0 slots on the MS shelf.
- 0 One port group is required on each MS shelf to interface each  
0 ENET shelf. Thus, an office equipped with one pair (i.e.  
0 plane 0, 1) of ENET shelves would require four (4) port  
0 groups.
- 0 - A major deviation from the current NM practice is the method  
0 by which control messages are distributed to peripherals.
- 0 - Peripherals connected to ENET shelves are assigned inde-  
0 pendent message ports on each MS, one (1) port for each  
0 message channel required.
- 0 - The message channels are connected to the message ports  
0 via Nailed-Up connections in the interfacing ENET shelf  
0 and via the DS-512 message link extended between the ENET  
0 shelf and MS.
- 0 - One (1) cross-point CP on each ENET shelf is reserved for  
0 message switching with 0.5K channels assigned to each MS  
0 link. The remaining 1K channels are not available for  
0 speech link access.
- 0 - The MS port requirements are greatly increased with the intro-  
0 duction of ENET making necessary the development of the MS 64  
0 port CP (NT9X17DA). The 64 port CP is used for connection to  
0 ENET. The MS 4 port CP (NT9X17AA/AD) is still used for con-  
0 nection to the IOCs, NM, LPP, FLIS and CM.

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0 2.1 HARDWARE PROVISIONING

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0 2.1.1 HARDWARE USAGE RESTRICTIONS

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0 The following restriction apply to ENET H/W applications:

0 \* The Enhanced Network must interface to a SuperNode (i.e. Mes-  
0 ssa ge Switch & Computing Module). An NT-40 (i.e. Central Con-  
0 trol Complex) will not support an Enhanced Network.

0 \* The Enhanced Network will not interwork with any previous  
0 version of Network frames.

0 \* The NT9X41BA has 16-Ports numbered 0-15. All ports except  
0 port #1 may be used for Voice or Messaging Links. Port #1 is  
0 valid for Voice Links only. This is a S/W restriction on the  
0 hardware.

0 \* The NT9X45BA has 16 DS-30 ports numbered 0-15 and 3 DS-512  
0 ports. All DS-30 ports except port #1 may be used for Voice  
0 or Messaging Links. Port #1 is valid for Voice Links only.  
0 This is a S/W restriction on the hardware.

0 \* Application of the above restriction prohibits the assign-  
0 ments of the following Peripheral Module (PM) ports to Link  
0 #1 as follows:

- 0 - Single link PMs (e.g. MTMs, TM8s, OAUs, etc.)
- 0 - Port Zero of DCMs and LMs
- 0 - Port Zero and Two of XPMs

0 \* The MSB6, SMR, DTC6 are not ENET ready in that facilities to  
0 equip these units with enhanced messaging (NT6X69AC/MA) are  
0 not available. Therefore, offices equipped with these vin-  
0 tages of XPMs should not be considered for ENET unless an  
0 agreement can be reached with the Telco.

0 \* MS to ENET, ENET to FXPM Distance Restrictions are as fol-  
0 lows:

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- 0 - MS-9X20BB To ENET-9X40BB  
0 Length: 250ft (1,4), Variance: 25ft (3)
- 0 - MS-9X62BA To ENET-9X40BB  
0 Length: 250ft (1,2), Variance: 25ft (3)
- 0 - ENET-9X40BB To FXPM-6X40DA  
0 Length: 1000m (4), Variance: 200ft
- 0 - ENET-9X40BB To FXPM-6X40GA  
0 Length: 1000m, Variance: 200ft
- 0 - ENET-9X41BA to XPM/PM  
0 Length: 750ft, Variance: 200ft
- 0 - ENET-9X41BA to XPM/PM  
0 Length: 600ft, Variance: 200ft

0 NOTES:

- 0 1. Refer To ECM-626 For MS TO ENET Restrictions
- 0 2. Recommended length limit so that the received optical  
0 power is greater than -26dbm. This optical receive power  
0 is based on the jitter limit of the R94-Hybrid on the  
0 9X20BB/9X40BB in loopback.
- 0 3. The limits placed on the variation in cable length be-  
0 tween either MS and any ENET shelf is required to main-  
0 tain integrity of the ENET Vertical Busses.
- 0 4. This value is base on the link interface CPs having a  
0 R94-Hybred on one end and a G64-Hybred with a 5L78 Clock  
0 recovery hybrid on the other.

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0 2.1.2 HARDWARE DEPENDENCIES0 ENET SUPPORTED PERIPHERALS A. Peripherals verified in  
0 FAST/VO/Ramp site

0 Non-cabinetized peripherals which fall under this category in-  
0 clude,

|   |         |                                    |
|---|---------|------------------------------------|
| 0 | DCM     | Digital Carrier Controller         |
| 0 | * DRAM  | Digital Recorded Answering Machine |
| 0 | LM      | Line Module                        |
| 0 | MTM     | Maintenance Trunk Module           |
| 0 | * MTU   | Metallic Test Unit                 |
| 0 | OAU     | Office Alarm Unit                  |
| 0 | TM8     | Trunk Module 8-Wire                |
| 0 | DTC     | Digital Trunk Controller           |
| 0 | LGC     | Line Group Controller              |
| 0 | LTC     | Line Trunk Controller              |
| 0 | * RSC   | Remote Switching Centre            |
| 0 | SMU     | Subscriber Carrier Module: DMS-1U  |
| 0 | RCU/RCC | Remote Cluster Unit                |
| 0 | LCM     | Line Concentrating Module          |
| 0 | * RMM   | Remote Maintenance Module          |
| 0 | * DPP   | Distributing Processing Peripheral |
| 0 | * LCME  | Line Concentrating Module E        |
| 0 | * MPC   | Multi Protocol Controller          |
| 0 | * LCMI  | Line Concentrating Module ISDN     |
| 0 | LTCI    | ISDN Line Trunk Controller         |
| 0 | DTCI    | ISDN Digital Trunk Controller      |

0 B. Peripherals verified in FAST only

0 Non-cabinetized peripherals which fall under this category in-  
0 clude,

|   |        |                                   |
|---|--------|-----------------------------------|
| 0 | DES    | Digital Echo Suppressor           |
| 0 | * DTU  | Digital Test Unit                 |
| 0 | * RLM  | Remote Line Module                |
| 0 | * RSM  | Remote Service Module             |
| 0 | SMR    | Subscriber Carrier Module: DMS-1R |
| 0 | SMS    | Subscriber Carrier Module: SLC-96 |
| 0 | SMSR   | Subscriber Carrier Module Remote  |
| 0 | * OPM  | Outside Plant Module              |
| 0 | * RLCM | Remote Line Concentrating Module  |

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0 C. Peripherals which have never been verified with ENET

0 Peripherals which fall under this category include,

0 TM2 Trunk Module 2-Wire  
0 TM4 Trunk Module 4-Wire  
0 T8A Trunk Module 8-Wire with Metallic Test Access  
0 MSB6 Message Switch Buffer #6  
0 \* TOPS TOPS Interfaces

0 Note that the TM2, TM4 and T8A use the same processor as the TM8,  
0 which has been verified. Moreover, these peripherals do not re-  
0 quire hardware changes for compatibility with ENET. The associ-  
0 ated risks are therefore low. In addition, the MSB6 has been  
0 tested in BNR DMS-300 lab, and the risks are known be to low.

0 \* These are not peripheral modules which are connected di-  
0 rectly to the network.

0 Note if APIs/ECMs do not adequately address ENET ineterface re-  
0 quirements for the peripherals to be connected to the ENET, then  
0 the SAE is to flag the issue to PLM/Market primes (with a copy to  
0 Engineering Process Update).

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0 93 12 030 SERIES I PERIPHERALS0 Series I peripherals (DCM, LM, DES, etc.) will interface the ENET  
0 using existing copper speech link cable group arrangements. How-  
0 ever, the Messaging CP (NT2X33AA/AB) must be replaced with a  
0 NT2X33AE.0 Modification For Existing Offices0 Use Product Change Kit (PC Kit) NT2X31AS converts the PM to the  
0 minimum level required to interface the ENET.0  
0

|   | Existing<br>Level | PC Kit<br>Required |
|---|-------------------|--------------------|
| 0 | * DCM - NT2X31AA  | NT2X31AS           |
| 0 | NT2X31AB          | NT2X31AS           |
| 0 | NT2X31AC          | NT2X31AS           |
| 0 | NT2X31AH          | NT2X31AS           |
| 0 | NT2X31AJ          | NT2X31AS           |
| 0 | NT2X31AK          | NT2X31AS           |
| 0 | NT2X31AL          | NT2X31AS           |
| 0 | LMC - NT2X14AA    | NT2X31AS           |
| 0 | NT2X14AC          | NT2X31AS           |
| 0 | NT2X14AE          | NT2X31AS           |
| 0 | NT2X14AG          | NT2X31AS           |
| 0 | DES - NT2X12AA    | NT2X31AS           |
| 0 | NT2X12AB          | NT2X31AS           |
| 0 | NT2X12AD          | NT2X31AS           |

0 For Canadian Applications, when required, the SAE/EAE shall in-  
0 form CS0 Change Application Dept.S895 BRW of this requirement us-  
0 ing 160 SPEC. That is, SAE/EAE shall order this kit through the  
0 160 SPEC.0 \* New applications for DCMs will provide the NT2X31AT which  
0 has a NT2X33AE circuit pack always provided.

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0 SERIES II PERIPHERALS

0 Series II peripherals (XPM: e.g. LGC) will interface the ENET us-  
0 ing fiber speech links and require modification.

0 Copper Interface to ENET Only

0 Note that MSB7 will interface the ENET using copper speech links  
0 only.

0 Note that for ENET Retrofit (Upgrade) jobs, the following rules  
0 apply until BCS34 (These rules do not apply for initials or pe-  
0 ripheral extensions). DTCs that do not have exactly 4,8,12 or 16  
0 C-side links can not be fiberized. That is they will interface to  
0 ENET using copper speech links only. Also DO NOT fiberize periph-  
0 erals appearing in table SPECCONN (including DTCs) which have  
0 fewer than 16 C-side links.

0 Fiber Interface

0 The following equipment is required to modify the XPM for fiber  
0 interface (i.e. FXPM) to the ENET:

| 0 PEC      | Description                         | Quantity |
|------------|-------------------------------------|----------|
| 0 NT6X02BU | - Fiber Interface Hardware Assembly | 1        |
| 0 NT6X40CA | - DS-512 XPM Interface CP           | 2        |
| 0 NT6X40DA | - DS-512 Link Paddle Board          | 2        |
| 0 NT6X40FA | - DS-512 XPM Interface CP           | 2        |
| 0 NT6X40GA | - DS-512 Link Paddle Board          | 2        |
| 0 NT6X69AC | - Message Protocol & Tone CP        | 2        |

0 Note 1: The NT6X69AC CP performs the same functions as the  
0 NT6X69MA CP. The NT6X69AC is the ASIC version of  
0 NT6X69MA.

0 Note 2: Upon general availability, the NT6X40FA will replace  
0 the NT6X40CA as the standard DS512 XPM Interface and  
0 the NT6X40GA will replace the NT6X40DA as the standard  
0 DS512 Link Paddle Board.

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0 While fiber conversion of the XPMs is not enforced by ENET design,  
0 it becomes the rule because DS-30 copper speech link interface  
0 to the ENET under utilizes Network port capacity by 75%.

0 The NT9X45BA card uses up the XPT card(9X35BA/CA) to its maximum  
0 capacity(ie. 2K Channels), where as the 9X41BA only utilized 1/4  
0 of the XPT capacity.

0 XPM NEW MESSAGING REQUIREMENT FOR ENET

0 The messaging protocol in the Old Messaging card (i.e. NT6X43\_\_)  
0 is not compatible with the Message Switch (MS) messaging protocol.  
0 Hence, XPMs using the NT6X43\_\_ card cannot be supported by  
0 ENET.

0 | Host XPMs in all ENET offices must have the New Messaging card  
0 NT6X69AC or later in order to interface ENET.  
0 |

0 Currently, the SMR, DTC6, and MSB6 modules do not support New  
0 Messaging. Therefore, these modules cannot interface ENET.

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# 0 MINIMUM XPM TO ENET CP FILLS

0 The following is a breakdown of the minimum XPM packfill level  
0 required to interface the ENET.

## 0 Initial Offices

0 DTC7 Common CP Fill = NT6X02IC  
0 LGC Common CP Fill = NT6X02LC  
0 LTC Common CP Fill = NT6X02MC  
0 MSB7 Common CP Fill = NT6X32CC  
0 SMS Common CP Fill = NT6X02DH  
0 SMU Common CP Fill = NT6X02EG  
0 DTCI Common CP Fill = \* NT6X02NA  
0 LGCI Common CP Fill = \* NT6X02NA  
0 LTCI Common CP Fill = \* NT6X02NA

0 \* NT6X69AC/MA is provisionable on the NT6X02NA CP Fill

## 0 Existing Offices

0 Use Product Change Kit (PC Kit) NT6X02BQ (NT6X02BR for  
0 NT6X02AA/AC modules only) to convert the XPM to the minimum level  
0 required to interface the ENET. The NT6X02BQ PC Kit contains two  
0 (2) NT6X69AC CPs. The NT6X02BR PC Kit makes CPs, which were pre-  
0 viously always provided, provisionable.

| 0 | Existing        | PC Kit   | New Module |
|---|-----------------|----------|------------|
| 0 | Level           | Required | Level      |
| 0 | DTC - NT6X02IA  | NT6X02BQ | NT6X02IC   |
| 0 | NT6X02AS        | NT6X02BQ | NT6X02IC   |
| 0 | LGC - NT6X02LA  | NT6X02BQ | NT6X02LC   |
| 0 | NT6X02AT        | NT6X02BQ | NT6X02LC   |
| 0 | LTC - NT6X02MA  | NT6X02BQ | NT6X02MC   |
| 0 | NT6X02AU        | NT6X02BQ | NT6X02MC   |
| 0 | MSB7 - NT6X32AB | NT6X02BQ | NT6X32CC   |
| 0 | NT6X32CA        | NT6X02BQ | NT6X32CC   |
| 0 | SMS - NT6X02DC  | NT6X02DK | NT6X02DJ   |
| 0 | NT6X02DD        | NT6X02DK | NT6X02DJ   |
| 0 | SMU - NT6X02EB  | NT6X02EH | NT6X02EF   |
| 0 | NT6X02AW        | NT6X02EH | NT6X02EF   |

0 NORTHERN TELECOM  
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PRACTICE 297-1001-450

0  
0 DTCI - Same As Initial Office  
0 LGCI - Same As Initial Office  
0 LTCI - Same As Initial Office

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Host - Network Equipment  
Chapter 21

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## 0 P AND C SIDE PORT REQUIREMENTS

0 WORK SHEETS.

0 +-----+  
0 | WORKSHEET # 1 |  
0 +-----+

0 +-----+  
0 | Determine the Number of Enhanced Network (ENET) Shelves & Cards Req'd |  
0 | for Plane 0 |  
0 +-----+

0 +-----+  
0 | Step | Procedure | Answer |  
0 +-----+  
0 | 1 | Determine the total number of copper(DS30) speech |  
0 | links. |  
0 | |  
0 | |

| Column A        | Column B              | Column C               | Column D                      |
|-----------------|-----------------------|------------------------|-------------------------------|
| Peripheral Type | Number of Peripherals | Speech Lks/ Peripheral | Total Links (Col C) x (Col B) |
| LM (2 port)     |                       | 2                      |                               |
| LM (3 port)     |                       | 3                      |                               |
| LM (4 port)     |                       | 4                      |                               |
| DCM             |                       | 4                      |                               |
| DCMR            |                       | 4                      |                               |
| SMS             |                       | ____ (3-4)             |                               |
| SMR             |                       | ____ (3-16)            |                               |
| DES *           |                       | 3                      |                               |
| MSB7            |                       | 3                      |                               |
| TM              |                       | 1                      |                               |
| MTM             |                       | 1                      |                               |
| DRAM            |                       | 1                      |                               |
| Spare:          |                       |                        |                               |

|   |  |  |                           |  |
|---|--|--|---------------------------|--|
| 0 |  |  | ----- ----- ----- -----   |  |
| 0 |  |  | Total of Column D         |  |
| 0 |  |  | +-----+                   |  |
| 0 |  |  | * Digital Echo Suppressor |  |
| 0 |  |  | +-----+                   |  |

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0 +-----+  
0 | WORKSHEET # 1 Continued |  
0 +-----+

| Step              | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Answer              |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------|----------|----------|-----------------|-----------------------|---------------------|----------------------------------|-------------|--|---|--|-------------|--|---|--|-------------|--|---|--|-----|--|---|--|------|--|---|--|-----|--|---|--|-----|--|---|--|-----|--|---|--|------|--|---|--|----|--|---|--|-----|--|---|--|------|--|---|--|--------|--|--------|--|-------------------|--|--|-------|--|
| 2                 | Determine the total number of copper(DS30) message channels                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | _____               |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
|                   | <table><tr><th>Column A</th><th>Column B</th><th>Column C</th><th>Column D</th></tr><tr><th>Peripheral Type</th><th>Number of Peripherals</th><th>Channels/Peripheral</th><th>Total Channels (Col C) x (Col B)</th></tr><tr><td>LM (2 port)</td><td></td><td>1</td><td></td></tr><tr><td>LM (3 port)</td><td></td><td>1</td><td></td></tr><tr><td>LM (4 port)</td><td></td><td>1</td><td></td></tr><tr><td>DCM</td><td></td><td>1</td><td></td></tr><tr><td>DCMR</td><td></td><td>1</td><td></td></tr><tr><td>DES</td><td></td><td>1</td><td></td></tr><tr><td>SMS</td><td></td><td>2</td><td></td></tr><tr><td>SMR</td><td></td><td>2</td><td></td></tr><tr><td>MSB7</td><td></td><td>2</td><td></td></tr><tr><td>TM</td><td></td><td>1</td><td></td></tr><tr><td>MTM</td><td></td><td>1</td><td></td></tr><tr><td>DRAM</td><td></td><td>1</td><td></td></tr><tr><td>Spare:</td><td></td><td>1 or 2</td><td></td></tr><tr><td colspan="3">Total of Column D</td><td>_____</td></tr></table> | Column A            | Column B                         | Column C | Column D | Peripheral Type | Number of Peripherals | Channels/Peripheral | Total Channels (Col C) x (Col B) | LM (2 port) |  | 1 |  | LM (3 port) |  | 1 |  | LM (4 port) |  | 1 |  | DCM |  | 1 |  | DCMR |  | 1 |  | DES |  | 1 |  | SMS |  | 2 |  | SMR |  | 2 |  | MSB7 |  | 2 |  | TM |  | 1 |  | MTM |  | 1 |  | DRAM |  | 1 |  | Spare: |  | 1 or 2 |  | Total of Column D |  |  | _____ |  |
| Column A          | Column B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Column C            | Column D                         |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| Peripheral Type   | Number of Peripherals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Channels/Peripheral | Total Channels (Col C) x (Col B) |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| LM (2 port)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| LM (3 port)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| LM (4 port)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| DCM               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| DCMR              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| DES               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| SMS               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| SMR               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| MSB7              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| TM                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| MTM               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| DRAM              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| Spare:            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1 or 2              |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |
| Total of Column D |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                     | _____                            |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |       |  |

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For INITIAL ENET installations continue WORKSHEET #1 to end & skip WORKSHEET # 2. For ENET EXTENSIONS go to WORKSHEET # 2 after Step 4.

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+-----+  
| WORKSHEET # 1 Continued |  
+-----+

| Step                                                                       | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Answer                                                                                    |    |                                                                                           |       |    |                                                                                         |       |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------|-------|----|-----------------------------------------------------------------------------------------|-------|
| 5                                                                          | <p>Determine the number of DS-512/DS-30 I/F Assy's required for DS30's. (Round up to an integer)<br/>Take the greater of :</p> <table> <tr> <td> <div> <div>Step 1</div> <div>-----</div> <div>=</div> <div>16</div> </div> </td><td>OR</td><td> <div> <div>Step 2</div> <div>-----</div> <div>=</div> <div>15</div> </div> </td></tr> </table>                                                                                                                                       | <div> <div>Step 1</div> <div>-----</div> <div>=</div> <div>16</div> </div>                | OR | <div> <div>Step 2</div> <div>-----</div> <div>=</div> <div>15</div> </div>                | _____ |    |                                                                                         |       |
| <div> <div>Step 1</div> <div>-----</div> <div>=</div> <div>16</div> </div> | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div> <div>Step 2</div> <div>-----</div> <div>=</div> <div>15</div> </div>                |    |                                                                                           |       |    |                                                                                         |       |
| 6                                                                          | <p>Determine the number of DS-512/DS-30 I/F Assy's required. (Round up to an integer)<br/>Take the lesser of :</p> <table> <tr> <td> <div> <div>Step 3</div> <div>-----</div> <div>=</div> <div>3</div> </div> </td><td>OR</td><td> <div> <div>Step 5</div> <div>-----</div> <div>=</div> <div></div> </div> </td></tr> </table>                                                                                                                                                      | <div> <div>Step 3</div> <div>-----</div> <div>=</div> <div>3</div> </div>                 | OR | <div> <div>Step 5</div> <div>-----</div> <div>=</div> <div></div> </div>                  | _____ |    |                                                                                         |       |
| <div> <div>Step 3</div> <div>-----</div> <div>=</div> <div>3</div> </div>  | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div> <div>Step 5</div> <div>-----</div> <div>=</div> <div></div> </div>                  |    |                                                                                           |       |    |                                                                                         |       |
| 7                                                                          | <p>Determine the number of Quad DS-512 Fiber I/F Assy's required. (Round up to an integer)<br/>Take the greater of :</p> <table> <tr> <td> <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div> </td><td>OR</td><td> <div> <div>Step 3 - (Step 6 x3)</div> <div>-----</div> <div>=</div> <div>4</div> </div> </td></tr> </table>                                                                                                                                | <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div>                | OR | <div> <div>Step 3 - (Step 6 x3)</div> <div>-----</div> <div>=</div> <div>4</div> </div>   | _____ |    |                                                                                         |       |
| <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div> | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div> <div>Step 3 - (Step 6 x3)</div> <div>-----</div> <div>=</div> <div>4</div> </div>   |    |                                                                                           |       |    |                                                                                         |       |
| 8                                                                          | <p>Determine the number of DS-30 Interface Asmbly's required. (Round up to an integer)<br/>Take the greater of :</p> <table> <tr> <td> <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div> </td><td>OR</td><td> <div> <div>Step 2 - (Step 6 x15)</div> <div>-----</div> <div>=</div> <div>15</div> </div> </td></tr> <tr> <td></td><td>OR</td><td> <div> <div>Step 1 - (Step 6 x16)</div> <div>-----</div> <div>=</div> <div></div> </div> </td></tr> </table> | <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div>                | OR | <div> <div>Step 2 - (Step 6 x15)</div> <div>-----</div> <div>=</div> <div>15</div> </div> |       | OR | <div> <div>Step 1 - (Step 6 x16)</div> <div>-----</div> <div>=</div> <div></div> </div> | _____ |
| <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div> | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div> <div>Step 2 - (Step 6 x15)</div> <div>-----</div> <div>=</div> <div>15</div> </div> |    |                                                                                           |       |    |                                                                                         |       |
|                                                                            | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div> <div>Step 1 - (Step 6 x16)</div> <div>-----</div> <div>=</div> <div></div> </div>   |    |                                                                                           |       |    |                                                                                         |       |

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0 Host - Network Equipment  
0 Chapter 21

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## Page 21-26



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0 +-----+  
0 | WORKSHEET # 1 Continued |  
0 +-----+0 +-----+  
0 | Step | Procedure | Answer |  
0 +-----+  
0 | 12 | Determine the number of Crosspoint CP's (NT9X35BA) required:  
0 | | |  
0 | | +-----+  
0 | | | If | is equal to | Provide |  
0 | | | Step 6 + | or |  
0 | | | Step 7 + | less than |  
0 | | | Step 8 |  
0 | | +-----+  
0 | | | 16 | 0-12\* |  
0 | | | 24 | 18 |  
0 | | | 32 | 24 |  
0 | | | 40 | 30 |  
0 | | | 48 | 36 |  
0 | | | 56 | 42 |  
0 | | | 64 | 48 |  
0 | | +-----+  
0 | | \* These are provisioned in pairs, so if the total  
0 | | of Step 6+7+8 is an odd number, add 1 to it.  
0 | | Let that quantity be Y. The number of Cross-  
0 | | point CP's to provide is equal to Y-4  
0 +-----+

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|   |                                                                       |  |  |
|---|-----------------------------------------------------------------------|--|--|
| 0 | +-----+                                                               |  |  |
| 0 | WORKSHEET # 1 End                                                     |  |  |
| 0 | +-----+                                                               |  |  |
| 0 | Determine the Number of ENET Shelves & Cards Required for Plane 0 & 1 |  |  |
| 0 | +-----+                                                               |  |  |
| 0 | +-----+                                                               |  |  |
| 0 | +-----+                                                               |  |  |
| 0 | Step   Procedure   Answer                                             |  |  |
| 0 | +-----+                                                               |  |  |
| 0 | 13                                                                    |  |  |
| 0 |                                                                       |  |  |
| 0 | +-----+                                                               |  |  |
| 0 | Equipment Item   Provide                                              |  |  |
| 0 | +-----+                                                               |  |  |
| 0 | ENET Cabinet   2                                                      |  |  |
| 0 | ENET Sh.Assy.(NT9X0801)*   (Step 9 - 1) X 2 =                         |  |  |
| 0 | Blank Sh.Assy.(NT0X24BD)   Step 10 X 2 =                              |  |  |
| 0 | 48 DS30/DS512 Bulkhead   see section 2.4.4                            |  |  |
| 0 | 112 DS30/DS512 Bulkhead   see section 2.4.4                           |  |  |
| 0 | Fiber Bulkhead   see section 2.4.4                                    |  |  |
| 0 | DS512/DS30 I/F Assy   Step 6 X 2 =                                    |  |  |
| 0 | DS30 Interface Asmbly   Step 8 X 2 =                                  |  |  |
| 0 | Quad DS512 Fiber I/F   Step 7 X 2 =                                   |  |  |
| 0 | Term Crosspoint CP   Step 11 X 2 =                                    |  |  |
| 0 | Crosspoint CP   Step 12 X 2 =                                         |  |  |
| 0 | ISN Cable Structure Cab   see section 2.4.7                           |  |  |
| 0 | +-----+                                                               |  |  |
| 0 | * 1 shelf is ALWAYS PROVIDED(AP) with ENET cabinet.                   |  |  |
| 0 | +-----+                                                               |  |  |

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WORKSHEET # 2

Determine the Number of Enhanced Network (ENET) Shelves & Cards Req'd  
to Extend an Existing ENET - Plane 0

| Step                  | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Answer         |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------------|----------|----------|-----------|-----------------|----------------|-----------------------------|---------------------|--|----|--|-----------------------|--|----|--|-------------------|--|--|--|--|
| 1                     | <p>Determine the DS30 speech link capacity of the installed cards.</p> <table border="1"> <thead> <tr> <th>Column A</th> <th>Column B</th> <th>Column C</th> <th>Column D</th> </tr> <tr> <th>Card Type</th> <th>Number of Cards</th> <th>Spch Lks/ Card</th> <th>Total Links (Col B)x(Col C)</th> </tr> </thead> <tbody> <tr> <td>DS512 DS30 I/F Assy</td> <td></td> <td>16</td> <td></td> </tr> <tr> <td>DS30 Interface Asmbly</td> <td></td> <td>16</td> <td></td> </tr> <tr> <td colspan="3">Total of Column D</td> <td></td> </tr> </tbody> </table>     | Column A       | Column B                    | Column C | Column D | Card Type | Number of Cards | Spch Lks/ Card | Total Links (Col B)x(Col C) | DS512 DS30 I/F Assy |  | 16 |  | DS30 Interface Asmbly |  | 16 |  | Total of Column D |  |  |  |  |
| Column A              | Column B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Column C       | Column D                    |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
| Card Type             | Number of Cards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Spch Lks/ Card | Total Links (Col B)x(Col C) |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
| DS512 DS30 I/F Assy   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 16             |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
| DS30 Interface Asmbly |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 16             |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
| Total of Column D     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
| 2                     | <p>Determine the additional DS30 speech link capacity required.</p> <p>Step 1 of WS1 - Step 1 of WS2 =</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
| 3                     | <p>Determine the DS30 message channel capacity of the installed cards.</p> <table border="1"> <thead> <tr> <th>Column A</th> <th>Column B</th> <th>Column C</th> <th>Column D</th> </tr> <tr> <th>Card Type</th> <th>Number of Cards</th> <th>Msg Chnl/ Card</th> <th>Total Links (Col B)x(Col C)</th> </tr> </thead> <tbody> <tr> <td>DS512 DS30 I/F Assy</td> <td></td> <td>15</td> <td></td> </tr> <tr> <td>DS30 Interface Asmbly</td> <td></td> <td>15</td> <td></td> </tr> <tr> <td colspan="3">Total of Column D</td> <td></td> </tr> </tbody> </table> | Column A       | Column B                    | Column C | Column D | Card Type | Number of Cards | Msg Chnl/ Card | Total Links (Col B)x(Col C) | DS512 DS30 I/F Assy |  | 15 |  | DS30 Interface Asmbly |  | 15 |  | Total of Column D |  |  |  |  |
| Column A              | Column B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Column C       | Column D                    |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
| Card Type             | Number of Cards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Msg Chnl/ Card | Total Links (Col B)x(Col C) |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
| DS512 DS30 I/F Assy   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 15             |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
| DS30 Interface Asmbly |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 15             |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |
| Total of Column D     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |  |

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| Step     | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Answer               |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--|---------|----------|----|----------------------|-------|----|-------|----|--|----|---------|--|---------|-------|
| 7        | <p>Determine the additional number of DS-512 DS-30 I/F Assy's required for DS30's. (Round up to an integer)<br/>NOTE: complete this step only if step 2 or step 4 is 1 or more. If both step 2 &amp; 4 are zero or negative, enter 0 in step 7.</p> <p>Take the greater of :</p> <table> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> <tr> <td>  Step 2  </td><td></td><td>  Step 4  </td></tr> <tr> <td>  -----  </td><td>OR</td><td>  -----  </td></tr> <tr> <td>  16  </td><td></td><td>  15  </td></tr> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> </table> | +-----+              |  | +-----+ | Step 2   |    | Step 4               | ----- | OR | ----- | 16 |  | 15 | +-----+ |  | +-----+ | _____ |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| Step 2   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Step 4               |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| -----    | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -----                |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| 16       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15                   |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| 8        | <p>Determine the additional number of DS-512 DS-30 I/F Assy's required. (Round up to an integer)</p> <p>Take the lesser of :</p> <table> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> <tr> <td>  Step 6  </td><td></td><td>  Step 7  </td></tr> <tr> <td>  -----  </td><td>OR</td><td>  -----  </td></tr> <tr> <td>  3  </td><td></td><td>   </td></tr> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> </table>                                                                                                                                                     | +-----+              |  | +-----+ | Step 6   |    | Step 7               | ----- | OR | ----- | 3  |  |    | +-----+ |  | +-----+ | _____ |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| Step 6   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Step 7               |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| -----    | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -----                |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| 3        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| 9        | <p>Determine the additional number of Quad DS-512 Fiber I/F's required. (Round up to an integer)</p> <p>Take the greater of :</p> <table> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> <tr> <td>  Zero (0)  </td><td>OR</td><td>  Step 6 - (Step 8 x3)  </td></tr> <tr> <td>  -----  </td><td></td><td>  -----  </td></tr> <tr> <td>   </td><td></td><td>  4  </td></tr> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> </table>                                                                                                                                    | +-----+              |  | +-----+ | Zero (0) | OR | Step 6 - (Step 8 x3) | ----- |    | ----- |    |  | 4  | +-----+ |  | +-----+ | _____ |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| Zero (0) | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Step 6 - (Step 8 x3) |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| -----    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -----                |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4                    |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |

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| WORKSHEET # 2, Cont'd |  
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| Step | Procedure                                                                                                                                                                                                                                                                                                                                                               | Answer |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 10   | <p>Determine the additional number of DS-30 Interface Asmbly's required. (Round up to an integer)<br/>Take the greater of :</p> <p>+-----+<br/>  Zero (0)  <br/>+-----+</p> <p>OR</p> <p>+-----+<br/>  Step 4 - (Step 8 x15)  <br/>  ----- =  <br/>  15  <br/>+-----+</p> <p>OR</p> <p>+-----+<br/>  Step 2 - (Step 8 x16)  <br/>  ----- =  <br/>  16  <br/>+-----+</p> | _____  |
| 11   | <p>Determine the total number of DS512 DS30 I/F Assy's required.</p> <p>+-----+<br/>  Step 8 + exist DS512 DS30 I/F Assy's  <br/>  (see step 1)  <br/>+-----+</p>                                                                                                                                                                                                       | _____  |
| 12   | <p>Determine the total number of Quad DS-512 Fiber I/F's required.</p> <p>+-----+<br/>  Step 9 + exist Quad DS512 Fiber I/F's  <br/>  (see step 5)  <br/>+-----+</p>                                                                                                                                                                                                    | _____  |
| 13   | <p>Determine the total number of DS-30 Interface Asmbly's required.</p> <p>+-----+<br/>  Step 10 + exist DS30 Interface Asmbly's  <br/>  (see step 1)  <br/>+-----+</p>                                                                                                                                                                                                 | _____  |

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| Step | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Answer |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 14   | Determine the number of ENET Shelf Assemblies required. (Round up to an integer)<br>+-----+<br>  (Step 11 + Step 12 + Step 13) / 15 =  <br>+-----+                                                                                                                                                                                                                                                                                                                        | _____  |
| 15   | Determine the number of Term Crosspoint CP's req.<br>+-----+<br>  If Steps   is equal to   Provide  <br>  (11+12+13)   or less than  <br>+-----+<br>    16   4  <br>    24   6  <br>    32   8  <br>    40   10  <br>    48   12  <br>    56   14  <br>    64   16  <br>+-----+                                                                                                                                                                                           | _____  |
| 16   | Determine the number of Crosspoint CP's required.<br>+-----+<br>  If Steps   is equal to   Provide  <br>  (11+12+13)   or less than  <br>+-----+<br>    16   0-12*  <br>    24   18  <br>    32   24  <br>    40   30  <br>    48   36  <br>    56   42  <br>    64   48  <br>+-----+<br>* These are provisioned in pairs, so if the total of Steps 6+7+8 is an odd number, add 1 to it. Let that quantity be Y. The number of Crosspoint CP's to provide is equal to Y-4 | _____  |

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0 +-----+  
0 | WORKSHEET # 2, End |  
0 +-----+  
0 | Determine the Number of Enhanced Network (ENET) Shelves & Cards Req'd |  
0 +-----+  
0 | to Extend an Existing ENET - for Both Plane 0 & 1 |  
0 +-----+

| Step                     | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Answer         |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------|--------------|---|--------------------------|---------------------|------------------------|-------------------|-------------------------|-------------------|----------------|-------------------|---------------------|--------------|-----------------------|--------------|----------------------|---------------|--------------------|---------------|---------------|---------------|-------------------------|-------------------|--|
| 17                       | <table><tr><th>Equipment Item</th><th>Provide</th></tr><tr><td>ENET Cabinet</td><td>2</td></tr><tr><td>ENET Sh.Assy.(NT9X0801)*</td><td>(Step 14 - 1) X 2 =</td></tr><tr><td>48 DS30/DS512 Bulkhead</td><td>see section 2.4.4</td></tr><tr><td>112 DS30/DS512 Bulkhead</td><td>see section 2.4.4</td></tr><tr><td>Fiber Bulkhead</td><td>see section 2.4.4</td></tr><tr><td>DS512 DS30 I/F Assy</td><td>Step 8 X 2 =</td></tr><tr><td>DS30 Interface Asmbly</td><td>Step 9 X 2 =</td></tr><tr><td>Quad DS512 Fiber I/F</td><td>Step 10 X 2 =</td></tr><tr><td>Term Crosspoint CP</td><td>Step 16 X 2 =</td></tr><tr><td>Crosspoint CP</td><td>Step 17 X 2 =</td></tr><tr><td>ISN Cable Structure Cab</td><td>See section 2.4.7</td></tr></table> <p>* 1 shelf is provided with the ENET cabinet</p> | Equipment Item | Provide | ENET Cabinet | 2 | ENET Sh.Assy.(NT9X0801)* | (Step 14 - 1) X 2 = | 48 DS30/DS512 Bulkhead | see section 2.4.4 | 112 DS30/DS512 Bulkhead | see section 2.4.4 | Fiber Bulkhead | see section 2.4.4 | DS512 DS30 I/F Assy | Step 8 X 2 = | DS30 Interface Asmbly | Step 9 X 2 = | Quad DS512 Fiber I/F | Step 10 X 2 = | Term Crosspoint CP | Step 16 X 2 = | Crosspoint CP | Step 17 X 2 = | ISN Cable Structure Cab | See section 2.4.7 |  |
| Equipment Item           | Provide                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| ENET Cabinet             | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| ENET Sh.Assy.(NT9X0801)* | (Step 14 - 1) X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| 48 DS30/DS512 Bulkhead   | see section 2.4.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| 112 DS30/DS512 Bulkhead  | see section 2.4.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| Fiber Bulkhead           | see section 2.4.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| DS512 DS30 I/F Assy      | Step 8 X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| DS30 Interface Asmbly    | Step 9 X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| Quad DS512 Fiber I/F     | Step 10 X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| Term Crosspoint CP       | Step 16 X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| Crosspoint CP            | Step 17 X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| ISN Cable Structure Cab  | See section 2.4.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |         |              |   |                          |                     |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |

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| Step | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Answer            |           |                   |   |  |  |  |  |  |   |   |   |   |  |   |                                                                              |   |  |  |  |  |   |                                                         |  |  |  |  |  |   |                                                        |  |  |  |  |  |   |                                                 |  |  |  |  |  |   |                                                      |  |  |  |  |  |  |
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| 1    | <p>Assign I/F cards to ENET shelves:</p> <p>Note: 1. Shelf 0 must be filled prior to assigning on to Shelf 1; Shelf 1 filled prior to assigning on to Shelf 2, etc.</p> <p>2. Maximum cards per shelf = 15 (excluding the AP MS Link card).</p> <p>3. On extensions, do not reassign existing cards to new locations.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |           |                   |   |  |  |  |  |  |   |   |   |   |  |   |                                                                              |   |  |  |  |  |   |                                                         |  |  |  |  |  |   |                                                        |  |  |  |  |  |   |                                                 |  |  |  |  |  |   |                                                      |  |  |  |  |  |  |
|      | <table><tr><th>Item</th><th>Card Type</th><th>ENET Shelf Number</th><th></th><th></th><th></th><th></th></tr><tr><th></th><th></th><th>0</th><th>1</th><th>2</th><th>3</th><th></th></tr><tr><td>1</td><td>MS Link card (1 per shelf is always required in slot 8R in each Shelf Assy.)</td><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td>DS-512 DS-30 I/F Assy (Step 6 WS-1 ) or (Step 11 WS-2 )</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td>Quad DS-512 Fiber I/F (Step 7 WS-1) or (Step 12 WS-2 )</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td>DS-30 I/F Assy (Step 8 WS-1) or (Step 13 WS-2 )</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td>Total (Item 1+2+3+4) (Max=16 including MS Link card)</td><td></td><td></td><td></td><td></td><td></td></tr></table> | Item              | Card Type | ENET Shelf Number |   |  |  |  |  |  | 0 | 1 | 2 | 3 |  | 1 | MS Link card (1 per shelf is always required in slot 8R in each Shelf Assy.) | 1 |  |  |  |  | 2 | DS-512 DS-30 I/F Assy (Step 6 WS-1 ) or (Step 11 WS-2 ) |  |  |  |  |  | 3 | Quad DS-512 Fiber I/F (Step 7 WS-1) or (Step 12 WS-2 ) |  |  |  |  |  | 4 | DS-30 I/F Assy (Step 8 WS-1) or (Step 13 WS-2 ) |  |  |  |  |  | 5 | Total (Item 1+2+3+4) (Max=16 including MS Link card) |  |  |  |  |  |  |
| Item | Card Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ENET Shelf Number |           |                   |   |  |  |  |  |  |   |   |   |   |  |   |                                                                              |   |  |  |  |  |   |                                                         |  |  |  |  |  |   |                                                        |  |  |  |  |  |   |                                                 |  |  |  |  |  |   |                                                      |  |  |  |  |  |  |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0                 | 1         | 2                 | 3 |  |  |  |  |  |   |   |   |   |  |   |                                                                              |   |  |  |  |  |   |                                                         |  |  |  |  |  |   |                                                        |  |  |  |  |  |   |                                                 |  |  |  |  |  |   |                                                      |  |  |  |  |  |  |
| 1    | MS Link card (1 per shelf is always required in slot 8R in each Shelf Assy.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                 |           |                   |   |  |  |  |  |  |   |   |   |   |  |   |                                                                              |   |  |  |  |  |   |                                                         |  |  |  |  |  |   |                                                        |  |  |  |  |  |   |                                                 |  |  |  |  |  |   |                                                      |  |  |  |  |  |  |
| 2    | DS-512 DS-30 I/F Assy (Step 6 WS-1 ) or (Step 11 WS-2 )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                   |           |                   |   |  |  |  |  |  |   |   |   |   |  |   |                                                                              |   |  |  |  |  |   |                                                         |  |  |  |  |  |   |                                                        |  |  |  |  |  |   |                                                 |  |  |  |  |  |   |                                                      |  |  |  |  |  |  |
| 3    | Quad DS-512 Fiber I/F (Step 7 WS-1) or (Step 12 WS-2 )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |           |                   |   |  |  |  |  |  |   |   |   |   |  |   |                                                                              |   |  |  |  |  |   |                                                         |  |  |  |  |  |   |                                                        |  |  |  |  |  |   |                                                 |  |  |  |  |  |   |                                                      |  |  |  |  |  |  |
| 4    | DS-30 I/F Assy (Step 8 WS-1) or (Step 13 WS-2 )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |           |                   |   |  |  |  |  |  |   |   |   |   |  |   |                                                                              |   |  |  |  |  |   |                                                         |  |  |  |  |  |   |                                                        |  |  |  |  |  |   |                                                 |  |  |  |  |  |   |                                                      |  |  |  |  |  |  |
| 5    | Total (Item 1+2+3+4) (Max=16 including MS Link card)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |           |                   |   |  |  |  |  |  |   |   |   |   |  |   |                                                                              |   |  |  |  |  |   |                                                         |  |  |  |  |  |   |                                                        |  |  |  |  |  |   |                                                 |  |  |  |  |  |   |                                                      |  |  |  |  |  |  |

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| Step                        | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Answer            |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---|-------------------|---------------------------|--|--|-------------|--|---|-----------------------------|---|---|---|------------------------|--|--|--|--|---|------------------------|--|--|--|--|---|------------------|--|--|--|--|--|
| 2                           | <p>Calculate the number of DS512 message ports required per ENET shelf:</p> <table><tr><th>Item</th><th></th><th colspan="4">ENET Shelf Number</th></tr><tr><th></th><th></th><th>0</th><th>1</th><th>2</th><th>3</th></tr><tr><td>1</td><td>Step 1 Item 2 X 6</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td>Step 1 Item 3 X 8</td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td>Total (Item 1+2)</td><td></td><td></td><td></td><td></td></tr></table>          | Item              |   | ENET Shelf Number |                           |  |  |             |  | 0 | 1                           | 2 | 3 | 1 | Step 1 Item 2 X 6      |  |  |  |  | 2 | Step 1 Item 3 X 8      |  |  |  |  | 3 | Total (Item 1+2) |  |  |  |  |  |
| Item                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ENET Shelf Number |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0                 | 1 | 2                 | 3                         |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 1                           | Step 1 Item 2 X 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 2                           | Step 1 Item 3 X 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 3                           | Total (Item 1+2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 3                           | <p>Calculate the average number of DS30 message channels per DS30 I/F card.</p> <p>For Initial ENET's:</p> <table><tr><td colspan="2">Step 2 WS-1</td><td></td></tr><tr><td colspan="2">Step 6 WS-1 + Step 8 WS-1</td><td></td></tr></table> <p>For ENET Extensions:</p> <table><tr><td colspan="2">Step 2 WS-1</td><td></td></tr><tr><td colspan="2">Step 11 WS-2 + Step 13 WS-2</td><td></td></tr></table>                                                                                   | Step 2 WS-1       |   |                   | Step 6 WS-1 + Step 8 WS-1 |  |  | Step 2 WS-1 |  |   | Step 11 WS-2 + Step 13 WS-2 |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| Step 2 WS-1                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| Step 6 WS-1 + Step 8 WS-1   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| Step 2 WS-1                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| Step 11 WS-2 + Step 13 WS-2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 4                           | <p>Calculate the number of DS30 message ports required per ENET shelf:</p> <table><tr><th>Item</th><th></th><th colspan="4">ENET Shelf Number</th></tr><tr><th></th><th></th><th>0</th><th>1</th><th>2</th><th>3</th></tr><tr><td>1</td><td>Step 1 Item 2 X Step 3</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td>Step 1 Item 4 X Step 3</td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td>Total (Item 1+2)</td><td></td><td></td><td></td><td></td></tr></table> | Item              |   | ENET Shelf Number |                           |  |  |             |  | 0 | 1                           | 2 | 3 | 1 | Step 1 Item 2 X Step 3 |  |  |  |  | 2 | Step 1 Item 4 X Step 3 |  |  |  |  | 3 | Total (Item 1+2) |  |  |  |  |  |
| Item                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ENET Shelf Number |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0                 | 1 | 2                 | 3                         |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 1                           | Step 1 Item 2 X Step 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 2                           | Step 1 Item 4 X Step 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 3                           | Total (Item 1+2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |   |                   |                           |  |  |             |  |   |                             |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |

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| +-----+                                  |                                                                         |                                            |   |   |   |   |  |  |        |
| WORKSHEET # 3 cont'd                     |                                                                         |                                            |   |   |   |   |  |  |        |
| +-----+                                  |                                                                         |                                            |   |   |   |   |  |  |        |
| Determine the Size of the MS Port Groups |                                                                         |                                            |   |   |   |   |  |  |        |
| +-----+                                  |                                                                         |                                            |   |   |   |   |  |  |        |
| +-----+                                  |                                                                         |                                            |   |   |   |   |  |  |        |
| Step                                     | Procedure                                                               |                                            |   |   |   |   |  |  | Answer |
| +-----+                                  |                                                                         |                                            |   |   |   |   |  |  |        |
| 5                                        | Calculate the total number of message ports<br>required per ENET shelf: |                                            |   |   |   |   |  |  |        |
| +-----+                                  |                                                                         |                                            |   |   |   |   |  |  |        |
|                                          | Item                                                                    | ENET Shelf Number                          |   |   |   |   |  |  |        |
|                                          |                                                                         | 0                                          | 1 | 2 | 3 |   |  |  |        |
| +-----+                                  |                                                                         |                                            |   |   |   |   |  |  |        |
|                                          | 1                                                                       | MS Link message ports<br>Step 1 Item 1 X 1 |   |   |   | 1 |  |  |        |
|                                          | 2                                                                       | Total DS512 message ports<br>Step 2 Item 3 |   |   |   |   |  |  |        |
|                                          | 3                                                                       | Total DS30 message ports<br>Step 4 Item 3  |   |   |   |   |  |  |        |
| +-----+                                  |                                                                         |                                            |   |   |   |   |  |  |        |
|                                          | 4                                                                       | Total (Item 1+2+3)                         |   |   |   |   |  |  |        |
| +-----+                                  |                                                                         |                                            |   |   |   |   |  |  |        |
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0 | Worksheet # 3 End |

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| Step                                                             | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Answer          |          |         |                    |   |                    |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------|---------|--------------------|---|--------------------|------------------|--|--|--|--|--|------------------|--|--|--|--|--|----------------|--|--|--|--|--|------------------------------------------------------------------|---------|--------|--------------------|----------|---------------------------------------------|-----------|-----------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------|--|
| 6                                                                | <div>Calculate the total number of ENET I/F cards required.</div> <table><tr><th>I/F Card Type *</th><th>ENET 0</th><th>Shelf 1</th><th>Number 2</th><th>3</th><th>Total of Shlfr 0-3</th></tr><tr><td>Initial ENET I/F</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Intermediate I/F</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Final ENET I/F</td><td></td><td></td><td></td><td></td><td></td></tr></table> <div>* Provide Cards according to table below:</div> <table><tr><th>If # of Message Ports per ENET shelf (WS-3 Step 5 item 4) equals</th><th>Provide</th></tr><tr><td>1 - 64</td><td>1 Initial ENET I/F</td></tr><tr><td>65 - 128</td><td>1 Initial ENET I/F plus<br/>1 Final ENET I/F</td></tr><tr><td>129 - 192</td><td>1 Initial ENET I/F plus<br/>1 Intermediate ENET I/F plus<br/>1 Final ENET I/F</td></tr><tr><td>193 - 256</td><td>1 Initial ENET I/F plus<br/>2 Intermediate ENET I/F plus<br/>1 Final ENET I/F</td></tr></table> | I/F Card Type * | ENET 0   | Shelf 1 | Number 2           | 3 | Total of Shlfr 0-3 | Initial ENET I/F |  |  |  |  |  | Intermediate I/F |  |  |  |  |  | Final ENET I/F |  |  |  |  |  | If # of Message Ports per ENET shelf (WS-3 Step 5 item 4) equals | Provide | 1 - 64 | 1 Initial ENET I/F | 65 - 128 | 1 Initial ENET I/F plus<br>1 Final ENET I/F | 129 - 192 | 1 Initial ENET I/F plus<br>1 Intermediate ENET I/F plus<br>1 Final ENET I/F | 193 - 256 | 1 Initial ENET I/F plus<br>2 Intermediate ENET I/F plus<br>1 Final ENET I/F |  |
| I/F Card Type *                                                  | ENET 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Shelf 1         | Number 2 | 3       | Total of Shlfr 0-3 |   |                    |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| Initial ENET I/F                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |          |         |                    |   |                    |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| Intermediate I/F                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |          |         |                    |   |                    |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| Final ENET I/F                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |          |         |                    |   |                    |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| If # of Message Ports per ENET shelf (WS-3 Step 5 item 4) equals | Provide                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |          |         |                    |   |                    |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| 1 - 64                                                           | 1 Initial ENET I/F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |          |         |                    |   |                    |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| 65 - 128                                                         | 1 Initial ENET I/F plus<br>1 Final ENET I/F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |          |         |                    |   |                    |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| 129 - 192                                                        | 1 Initial ENET I/F plus<br>1 Intermediate ENET I/F plus<br>1 Final ENET I/F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |          |         |                    |   |                    |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| 193 - 256                                                        | 1 Initial ENET I/F plus<br>2 Intermediate ENET I/F plus<br>1 Final ENET I/F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |          |         |                    |   |                    |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 The following equipment is the minimum requirement in the Message  
0 Switch (MS) to interface with the ENET. The NT9X25AA and NT9X25BA  
0 are required, only if a chain of 17DAs is required.

- 0
- 0 - NT9X13DC, MS CPU Processor CP (4 Megabytes)
  - 0 - NT9X17DA, MS 64 Port CP
  - 0 - NT9X20BB, ENET/MS Fiber Interface PB
  - 0 - NT9X25AA, MS Port Expander PB
  - 0 - NT9X25BA, MS Port Expander/Terminator PB
  - 0 - NT9X49CB, MS P-Bus Terminator CP (Tracer Card)

0 To interface with ENET, the MS requires 10 Megabytes of memory.  
0 This is achieved in the following ways:0

| QTY | PEC             | QTY | PEC              | Application     | NOTE |
|-----|-----------------|-----|------------------|-----------------|------|
| 2   | NT9X13DC (4 MB) | 2   | NT9X14BB (6 MB)  | Canadian & U.S. |      |
| 2   | NT9X13DB (1 MB) | 2   | NT9X14DB (24 MB) | Richardson      | 1    |

## 0 NOTE:

0 1 This configuration is non-standard and will not be supported  
0 by the formal design documentation. Earlier releases of NT9X13DB  
0 are not compatible with NT9X25AA/BA, later releases are. Release  
0 numbers are transparent to our documentation and process. Hence,  
0 Richardson will be responsible for keeping track of the proper  
0 type of NT9X13DB CPs for their offices.0 Existing Offices With NT9X01BA/JA SuperNode Cabinet0 Product Change Kit (PC Kit) NT9X04AY converts the MS to the mini-  
0 mum level required to interface the ENET. It removes NT9X49CA  
0 and makes slot position 32F provisionable. It can be applied to  
0 NT9X04AG in order to upgrade the MS to NT9X04AH which is the min-  
0 imum level required to interface the ENET. Other existing PC  
0 Kits can be applied to existing MS Common CP Fills in order to  
0 bring them up to the necessary level.0

|  | Existing | PC Kit   | New       |
|--|----------|----------|-----------|
|  | Level    | Required | Common CP |
|  |          |          | Level     |

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0 MS - NT9X04AA NT9X04AD NT9X04AB  
0 MS - NT9X04AB NT9X04AF NT9X04AE  
0 MS - NT9X04AE \* NT9X04AZ NT9X04AG  
0 MS - NT9X04AG \* NT9X04AY NT9X04AH

0 \* NT9X04AE may be upgraded directly to NT9X04AH by applying  
0 NT9X04AY if the external clock interface is not required.

0 The introduction of ENET has increased the number of MS ports re-  
0 quired dramatically. Therefore, a 64 port CP (NT9X17DA) is in-  
0 troduced. The 4-Port CP (NT9X17AA/AD) is retained for use with  
0 IOC, CM, NM, FLIS, and LPP.

0 MS Port Group (Chain)

0 A MS Port Group is a set of one (1) or more adjacent MS Port  
0 cards, DS-512 Interface Paddleboards, and MS Port  
0 Expander/Terminator Paddleboards that are required to support the  
0 DS-512 link to an ENET shelf.

0 One MS Port Group is required per MS for each ENET shelf (per  
0 plane). Because there are two (2) ENET planes, therefore two port  
0 groups are associated with each ENET shelf. Both port groups are  
0 located on MS 0 and, on MS 1.

0 Each MS port group is provisioned as a sum of the following:

0 - 1 port for the ENET Shelf Processor

0 - 1 port for each active message channel Processor associated  
0 with a speech link that terminates on the shelf (i.e. each Series  
0 I peripheral has one (1) Message Channel Processor, Each Series  
0 II peripheral has two (2) Message Channel Processors).

0 Each port group must be assigned a contiguous group of CP slots  
0 on the MS shelf. In order to size the MS Port Group, the distrib-  
0 ution of peripheral types (i.e. Series I \* II) over the ENET  
0 shelf pairs must be known.

0 NOTE: If the DMS office will require more than one (1) equipped  
0 ENET shelf (per plane), the assignment of the NT9X40BA/40BB,  
0 NT9X41BA, and the NT9X45BA Paddleboards (PBs) on the ENET shelves  
0 will directly affect the size of each MS Port Group. Hence, to  
0 optimize the size of the MS Port Group, it may be necessary to  
0 reassign the quantity of NT9X40BA/40BB, NT9X41BA and the  
0 NT9X45BA PBs from one ENET shelf to another in order to avoid  
0 crossing the boundary of message ports which would necessitate



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0 the addition of an MS 64 Port Card NT9X17DA and the associated  
0 paddleboards. (This card and the associated paddleboards are ex-  
0 plained later in this section.) Note that any reassignments  
0 would only pertain to new equipment (i.e. initial offices or new  
0 equipment being added into an existing office). Existing  
0 paddleboards on an ENET shelf must not be reassigned during an  
0 extension.

0 For reasons previously discussed consideration should be given to  
0 making allowances for the future growth requirements of the last  
0 incomplete network shelf. RESERVE slots on the MS for the  
0 PROJECTED FUTURE REQUIREMENTS of partially equipped ENET shelves.

0 An MS Port Group will consist of the following types of hardware:

- 0 - NT9X17DA MS 64 Port CP
- 0 - NT9X20BB ENET/MS Fiber Interface PB
- 0 - NT9X25AA MS Port Expander PB
- 0 - NT9X25BA MS Port Expander/Terminator PB

0 ENET will utilize only MS 64 Port CP for network and peripheral  
0 message port assignments.

0 NT9X17DA, MS 64 PORT CP

- 0 - One can connect up to 64 message ports.

0 The following PBs are required to complete each port group  
0 which is expected to consist of between 1 and 4 NT9X17DA cards:

0 NT9X20BB, ENET/MS Fiber Interface PB

- 0 - One required per plane behind the first NT9X17DA CP of each  
0 port group.
- 0 - Interfaces the message link from the Enhanced Network Shelf.

0 NT9X25AA, MS PORT EXPANDER PB

- 0 - One required per plane behind the middle NT9X17DA CP of each  
0 port group if equipped.
- 0 - Expands the bus to accommodate a larger port group beyond  
0 64 channels.

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0 NT9X25BA, MS PORT EXPANDER/TERMINATOR PB

- 0 - One required per plane behind the last NT9X17DA CP of each  
0 port group if equipped.  
0 - Terminates the bus.

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0 Important rules.

0 1) Provide two (2) NT9X17DA MS 64-Port CP and two (2) NT9X20BB  
0 DS-512 ENET/MS Fiber interface PB to interface with an ENET  
0 shelf. An NT9X17DA/NT9X20BB pair is required per MS (per plane)  
0 for each link.

0 2) The NT9X17DA used only with ENET and it requires BCS31 or  
0 higher.

0 3) If the number of message ports required for interfacing with  
0 ENET is greater than 64, provide additional NT9X17DA MS 64-Port  
0 CP in successive higher numbered slots. For each additional  
0 NT9X17DA except the last, provide one (1) NT9X25AA MS Port  
0 Expander PB; for the last NT9X17DA, provide one (1) NT9X25BA MS  
0 Port Terminator PB. This is illustrated as follows:

0 The following figures represent examples of the physical circuit  
0 pack assignments to a MS shelf for ENET-MS port groups of the  
0 four possible capacities. Please note these are examples and the  
0 MS can contain a mixture of ENET-MS port groups of various capac-  
0 ities and circuit pack locations. The NT9X20 and NT9X25 circuit  
0 packs (if required) of an ENET-MS port group must occupy contig-  
0 uous slots on the MS as shown in the examples. The circuit pack  
0 locations shall be the same on the second MS shelf of the Super-  
0 node.

0 For ENET Initial, assign IOCs, EIOCs and LPPs to the highest num-  
0 bered MS slots in descending order starting from slot 29 (i.e.  
0 slots 29, 28, etc.). These slots will contain 4-port cards  
0 (NT9X17AA/AD) in the front and 4-port DS-30 interface  
0 paddleboards (NT9X23AA for IOCs and EIOCs; NT9X23BA for LPPs) in  
0 the rear.

0 In MS Port Group, assign the ENET ports to the lowest numbered MS  
0 slots in ascending order starting from slot 12 (i.e. slots 12,  
0 13, etc.). However, the SAEs and EAEs should anticipate and  
0 plan all future growth on each ENET shelf and provision the MS  
0 cards accordingly, by leaving a spare slot for future expansion  
0 if necessary, as shown below.

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0 For 64 Ports Requirement  
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|     | Front    | Rear     |                           |
|-----|----------|----------|---------------------------|
| n   | NT9X17DA | NT9X20BB | to Plane 0 of ENET        |
| n+1 |          |          | reserve for future growth |

|     | Front    | Rear     |                           |
|-----|----------|----------|---------------------------|
| n+2 | NT9X17DA | NT9X20BB | to Plane 1 of ENET        |
| n+3 |          |          | reserve for future growth |

0 For 128 Ports Requirement  
0 -----

|     | Front    | Rear     |                           |
|-----|----------|----------|---------------------------|
| n   | NT9X17DA | NT9X20BB | to Plane 0 of ENET        |
| n+1 | NT9X17DA | NT9X25BA |                           |
| n+2 |          |          | reserve for future growth |

|     | Front    | Rear     |                           |
|-----|----------|----------|---------------------------|
| n+3 | NT9X17DA | NT9X20BB | to Plane 1 of ENET        |
| n+4 | NT9X17DA | NT9X25BA |                           |
| n+5 |          |          | reserve for future growth |

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|    | Front    | Rear     |                               |
|----|----------|----------|-------------------------------|
| 12 | NT9X17DA | NT9X20BB | to Plane 0 of ENET, 192 PORTS |
| 13 | NT9X17DA | NT9X25AA |                               |
| 14 | NT9X17DA | NT9X25BA |                               |
| 15 | NT9X17DA | NT9X20BB | to Plane 1 of ENET, 192 PORTS |
| 16 | NT9X17DA | NT9X25AA |                               |
| 17 | NT9X17DA | NT9X25BA |                               |

|    | Front    | Rear     |                               |
|----|----------|----------|-------------------------------|
| 12 | NT9X17DA | NT9X20BB | to Plane 0 of ENET, 256 PORTS |
| 13 | NT9X17DA | NT9X25AA |                               |
| 14 | NT9X17DA | NT9X25AA |                               |
| 15 | NT9X17DA | NT9X25BA | to Plane 1 of ENET, 256 PORTS |
| 16 | NT9X17DA | NT9X20BB |                               |
| 17 | NT9X17DA | NT9X25AA |                               |
| 18 | NT9X17DA | NT9X25AA |                               |
| 19 | NT9X17DA | NT9X25BA |                               |

#### Cable Length from MS Shelf to ENET Shelf

All fiber optic cables from both MS Shelves (i.e. plane 0 & 1) to any ENET shelf (on either plane) must not deviate in length from each other by more than 25 feet.

All fiber optic cables from an MS Shelf to any pair of ENET shelves in the same plane must not deviate in length from each other by more than 25 feet.

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## 0 CIRCUITS PER CARD

0  
0 Not applicable

## 0 DISCRIMINATION NUMBERING

0  
0 NAME ABBREVIATION <Plane> <Shelf, Cabinet> <Function>

0 Where NAME ABBREVIATION = ENC or ENET

0 Plane = 0 or 1  
0 Shelf = 00 through 03  
0 Cabinet = 00  
0 Function = ABS, and B1 through B4

0 where ABS = Alarm Battery Supply  
0 B = Blower Fan

0 eg. ENC 0 00 B1  
0 ENET 0 00  
0 ENC 0 00 ABS

## 0 ENET RETROFIT (UPGRADE)

0  
0 An ENET retrofit (upgrade) occurs when the switching network of  
0 an existing inservice DMS-SuperNode office changes from a  
0 Junctored Network Module (JNET/NM) implementation to an Enhanced  
0 Network (ENET) implementation.

0 The objectives of ENET Retrofit are as follows:

- 0 1. Reconfigure the MS Shelf to support both JNETs and ENETs tem-  
0 porarily. Note, after the ENET Retrofit the JNETs shall be  
0 removed.

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- 0 2. Determine if NT9X69AAs are required to support MS Port Con-  
0 centration. MS Port Concentration is required if:
- 0 a. a insufficient quantity of card slots are available on  
0 the MS to add NT9X17DAs required to Interface ENET,  
0 and/or
- 0 b. the total number of slots required in MS is greater than  
0 18.
- 0 3. The provisioning of the MS slots and ports is the responsi-  
0 bility of the SAE/EAE. The rules for the ENET Retrofits (Up-  
0 grades) with MS Port Concentration are found in ECM-626.
- 0 4. Document the MS shelf configuration Before, During, and After  
0 the ENET Retrofit via the CI and D610 job drawing.
- 0 5. If MS Port Concentration is required define the quantity of  
0 NT9X69AAs required, and report this requirement to Installa-  
0 tion via the CI.
- 0 6. Obtaining the H/W required for MS Port Concentration is the  
0 responsibility of the Installation Staff. Refer to the ap-  
0 propriate section of IM-925/926.

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0 2.1.3 PROVISIONING CONSIDERATIONS

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0 ENET in C42(S/DMS) Cabinet

0

0 The ENET in C42(S/DMS) cabinet is a cost and functionally en-  
0 hanced version of the existing ENET cabinet. The S/DMS cabinet  
0 is 42 inches wide compared with Streamline's width of 28 inches.  
0 This new cabinet supports features such as modified framework  
0 based on Streamline, "horizontal"(through line-up) cabling, and  
0 "hot slide" capability. "Horizontal" cabling meaning, cables run-  
0 ning through a hole in the side of a cabinet and into the next  
0 cabinet(s) in the same lineup. "Hot slide" is the process of mov-  
0 ing an operating cabinet into an existing lineup of equipment.  
0 Note that the S/DMS cabinet is very similar to the existing cabi-  
0 net, items such as packs, shelf assemblies, interconnect cables,  
0 and bulkhead packs do not change. The differences from the exist-  
0 ing ENET cabinet are listed below.

0 1) The Cabinet changes from NT9X0113 to NT9X95AA

0 2) The Kick plate is not required with the S/DMS cabinet.

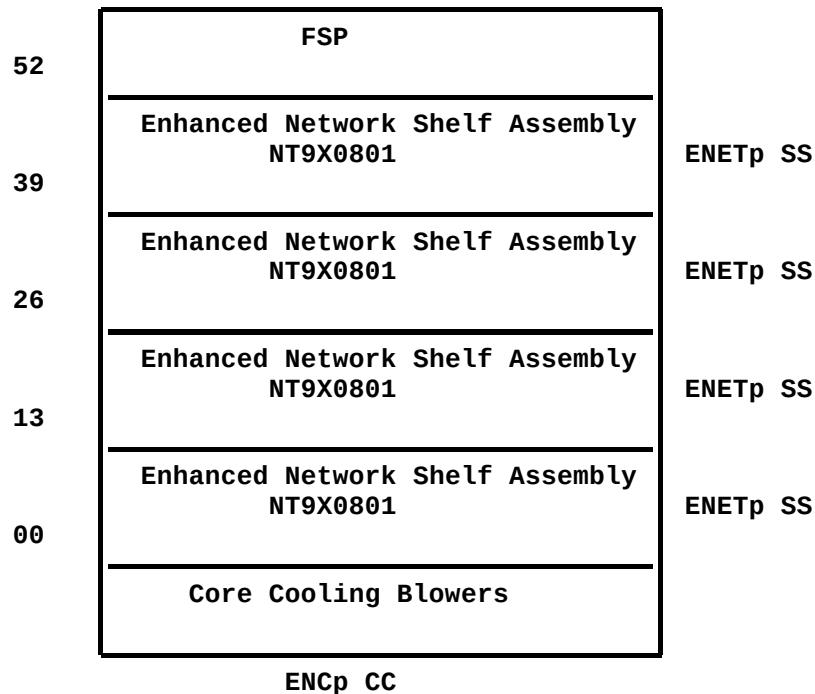
0 3) Power wiring is optional. If the cabinet is in a Stream-  
0 line lineup, the cables will be equipped to take advantage  
0 of "horizontal" cabling. If the cabinet is in a  
0 non-Cabinetized lineup, power cables will be similar to  
0 existing power cables, so filters will have to be  
0 provisioned.

0 The NT9X05AC has been approved for all applications. All new ini-  
0 tial offices with ENET will specify the NT9X05AC Cabinet. The  
0 NT9X05AB PEC will be A&M and will remain for all existing of-  
0 fices.

0



The NT9X05AB/AC is a 128K Enhanced Network product which is a single cabinet model equipped with a minimum of one shelf and expandable to four shelves (see figure following).



## Enhanced Network Cabinet

where    p = the Plane number 0 or 1  
          CC = the Cabinet number 00  
          SS = the Shelf number 00-03  
                  (assign from top down)

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0 New Designation Labels have been developed for the ENET Cabinet  
0 (ENC) and ENET Shelf (ENET) to be applied to the Cabinet and the  
0 PDC as follows:

0 The Exterior Cabinet Door Label will be as follows:

0 P0710504 - Exterior Door Label (Lime Green)  
0 P0711199 - Exterior Door Label (Meridian Aqua)  
0 P0734962 - Exterior Door Label (Streamline Blue)

0 The format of this label is as follows:

0 ENC<plane> <cabinet number> ENET, eg. ENC 0 00 ENET

0 Where plane = 0 or 1  
0 cabinet number = 00

0 ENETShelf Designation Label  
0 P0734961 - ENET Shelf ID Label

0 Locate label beside the Frame Supervisory Panel(FSP).  
0 The label format includes Cabinet Name, Plane, Number, Location,  
0 PEC, and Shelf Name is as follows:

0 -Cabinet Name (ENC) <plane> <cabinet number>  
0 eg. ENC 0 0  
0 where plane = 0 or 1  
0 cabinet number = 0

0 -Location : aann eg. A03, BA34

0 where aa = one or two letters from A through Z,  
0 excluding I and O, and AA through ZZ,  
0 excluding II and OO.  
0 nn = two digits from 01 through 49

0 -PEC Code : NT9X05AC

0 - Shelf Name : ENET <Plane> <Shelf>,  
0 eg. ENET 0 00, ENET 1 00

0 where Plane = 0 or 1  
0 Shelf = 00 through 03

0 ThePower Distribution Centre Labels will be as follows:

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## 0 ENHANCED NETWORK (ENET) SHELF PROVISIONING

0  
0 Network shelves are provisioned based on Speech Link PB needs.  
0 One shelf is required per plane for every 15 Speech Link PB. Each  
0 Enhanced Network Cabinet (ENC) can be equipped with up to four  
0 (4) Enhanced Network (ENET) Shelf assemblies NT9X0801, as re-  
0 quired. One (1) shelf assembly is always provided on the ENC  
0 cabinet with the remaining three (3) shelf assemblies being  
0 provisionable.

0 The ENET Shelf assembly does not have a common circuit pack fill.  
0 All circuit packs are provisionable. ENET Shelf Provisioning is  
0 dependent on the quantity and types of peripherals to be inter-  
0 faced. The assumption is made that peripherals and IOC are first  
0 provisioned according to existing engineering rules. ENET rules  
0 relate to one plane only. See worksheets provided.

0 ENET provisioning is not sensitive to traffic or real time and  
0 therefore is provisioned based on terminations only.

0 NT9X40BA/BB Quad DS-512 Fiber Interface Paddle Board

0 - one (1) required per ENET shelf assembly to interface MS links  
0 (i.e. card slot 8R of ENET shelf).  
0 - one (1) required per four (4) DS-512 speech links. One (1)  
0 NT9X40BA/BB can accommodate four (4) fiber XPMs (FXPMs).

0 NT9X41BA DS-30 Interface Paddle Board

0 - one (1) required per 16 DS-30 links. No messaging ports can be  
0 assigned to link #1 (when counting from link #0 up).

0 NT9X45BA 16DS-30/3DS-512 Interface Paddle Board

0 - Note, No messaging ports can be assigned to link #1 of 16DS-30  
0 links (when counting from link #0 up).  
0 -The DS-30/DS-512 PB is a new peripheral interface paddle board  
0 can be used on the Dual Cabinet Enhanced NETwork. This pack can  
0 interface 3 DS-512 fiber links and 16 DS-30 copper links. It com-  
0 bines the functionality of existing NT9X41BA and NT9X40BA/BB  
0 packs. The NT9X40BA/BB(4 DS-512) fully utilize the ENET's chan-  
0 nel handling capacity. But, it does not provide copper links. On  
0 the other hand, the NT9X41BA (16 DS-30) pack does not fully uti-  
0 lize ENET's channel handling capacity(only 25% utilization of

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0 crosspoints). Using an NT9X45BA results in a 100% utilization of  
0 ENET crosspoints and providing both copper and fiber links. For  
0 example an ENET currently equipped with 4 NT9X41BAs and 3  
0 NT9X40BBs requires 7 Crosspoints. This could be reconfigured with  
0 4 NT9X45BAs and only 4 Crosspoints a savings of 3 Crosspoints

0 NT9X35CA 16K x 16K Channel Terminating Cross-point CP  
0 - Used to terminate Horizontal bus (H-bus).  
0 - Minimum 2 per Network Shelf. Maximum 4 per Network Shelf.  
0 - The first Network Shelf always requires four (4) CP.  
0 - One CP, slot 9F, required for MS to Network Shelf messaging.  
0 Slot 9R cannot be equipped with a PB and is therefore NOT  
0 available for speech links to peripherals.  
0 - Other 3 CPs used for speech link interface to peripherals  
0 may be used with DS-30 or DS-512 or DS-30/DS512 PBs.

0 NT9X35BA 16K x 16K Channel Cross-point CP  
0 - One required for each speech link interface PB.  
0 - Maximum 12 per Network Shelf.  
0 - Provisioned in pairs (4K-CH) for the first shelf per plane and  
0 in groups of six CP (12K-CH) for the three subsequent shelves.

0 NT9X13FA CPU CP  
0 - One (1) required per shelf assembly.

0 NT9X30AA +5V 80A Power Converter  
0 - Two (2) required per shelf assembly.

0 NT9X31AA -5V 20A Power Converter  
0 - Two (2) required per shelf assembly.

0 NT9X26AA/AB Remote Terminal Interface  
0 - One (1) required per shelf assembly.

0 NT9X36BA Network Clock & Message Interface Circuit Pack  
0 - Used to interface peripheral Message Channel to the Message  
0 Switch. One (1) required per shelf assembly.

0 NT9X0530 V-Bus Cables  
0 - 16 are required for each shelf assembly added to a cabinet  
0 starting with the second shelf (i.e. shelves 01,02,03 will re-  
0 quire V-Bus cables).

0 NT9X0520 DS-30 Cable Assemblies  
0 - One (1) is required for each NT9X41BA equipped to extend the  
0 DS-30 Speech links to the Bulkhead from the Paddle Board.

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0 NT9X0524 DS-30 Cable Assemblies  
0 - One (1) is required for each NT9X45BA equipped to extend the  
0 DS-30 Speech links to the Bulkhead from the Paddle Board.

0 NT9X19AA Filler Face Plate  
0 - Eight (8) are required per shelf assembly.  
0 - Provide as needed for other unequipped card slots.

0 NT9X19BA Filler Face Plate Paddle Board  
0 - Nine (9) are required per shelf assembly.  
0 - Provide as needed for other unequipped PB slots.

0 See the figure below for a depiction of a fully utilized ENET  
0 shelf.

|   |                                   |     |                      |
|---|-----------------------------------|-----|----------------------|
| 0 | 9X31AA -5V 20A Pwr Converter      | 1F  |                      |
| 0 |                                   |     |                      |
| 0 | 9X30AA +5V 80A Pwr Converter      | 4F  |                      |
| 0 |                                   |     |                      |
| 0 | 9X13FA CPU CP                     | 7F  | 7R 9X26AB            |
| 0 | 9X36BA Network Clock & MSG CP     | 8F  | 8R 9X40BA/40BB       |
| 0 | 9X35CA 16K x 16K Chan Term Xpt CP | 9F  | 9R 9X19BA            |
| 0 | 9X35CA 16K x 16K Chan Term Xpt CP | 10F | 10R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 11F | 11R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 12F | 12R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 13F | 13R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 14F | 14R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 15F | 15R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 16F | 16R 9X40BB/41BA/45BA |
| 0 | 9X19AA Filler Face Plate          | 17F | 17R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 18F | 18R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 19F | 19R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 20F | 20R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 21F | 21R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 22F | 22R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 23F | 23R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 24F | 24R 9X19BA           |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 25F | 25R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 26F | 26R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 27F | 27R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 28F | 28R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 29F | 29R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 30F | 30R 9X40BB/41BA/45BA |

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|   |                                   |     |     |                  |
|---|-----------------------------------|-----|-----|------------------|
| 0 | 9X35CA 16K x 16K Chan Term Xpt CP | 31F | 31R | 9X40BB/41BA/45BA |
| 0 | 9X35CA 16K x 16K Chan Term Xpt CP | 32F | 32R | 9X40BB/41BA/45BA |
| 0 |                                   |     |     |                  |
| 0 | 9X31AA -5V 20A Power Converter    | 33F |     |                  |
| 0 |                                   |     |     |                  |
| 0 | 9X30AA +5V 80A Power Converter    | 36F |     |                  |
| 0 |                                   |     |     |                  |
| 0 |                                   |     |     |                  |

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## 0 SPEECH LINK ASSIGNMENT RULES

0  
0 Reallocation of normal grades of service across system components  
0 taking into account the new switching architecture, may result in  
0 improvements to stated capacities of other traffic sensitive com-  
0 ponents. This area requires further study.

0 In Initial offices, the peripheral modules must be assigned to  
0 the Enhanced Network in the following order of preference.

- 0 1) Different ENET shelves where possible or  
0 2) Different halves of the ENET shelf or  
0 3) Odd/Even slots (but not adjacent slots) or  
0 4) Adjacent Slots.

0 DS-30 Speech links (Series I Peripherals)

0 Distribute speech links with messaging form each peripheral type  
0 (i.e. MTM, LM, TM, DCM, DES) as evenly as possible over the  
0 available shelves and DS-30 PBs. Note that Series I peripherals  
0 require 1 messaging link per peripheral.

0 Distribute the remaining speech links by peripheral types as  
0 evenly as possible over PBs. Note that Series I peripherals re-  
0 quire from 1 to 4 speech links.

0 DS-30 Speech links (Series II Peripherals)

0 Distribute speech links with messaging form each peripheral type  
0 as evenly as possible over the available shelves and DS-30 PBs.

0 Distribute the remaining speech links by peripheral types as  
0 evenly as possible over PBs and shelves.

0 DS-512 Speech links

0 Distribute speech links with messaging form each peripheral type  
0 as evenly as possible over the available shelves and DS-512 PBs.

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0 The telephone company may review and if necessary re-assign the  
0 emergency services to ensure that where possible, all essential  
0 services are not located on the same peripherals which are on the  
0 same ENET shelf, or on the same Paddle Board. The peripherals  
0 with emergency services (police, hospital, fire, etc..) must be  
0 evenly distributed where possible, over ENET shelves and paddle  
0 boards.

0 As previously stated, no rigorous port spreading rules apply to  
0 speech links and respreading is not carried out during exten-  
0 sions. Indeed in ENET offices, no SLC is provided to facilitate  
0 such activity. Peripherals will be cabled directly to the ENET  
0 Shelf, only if fewer than seven (7) NT9X41BA and or NT9X45BA PBs  
0 are on the ENET Shelf.

0 If there are seven (7) or more NT9X41BA and or NT9X45BA PBs on  
0 the ENET Shelf, Speech Link Connector (SLC) frames, Peripheral  
0 Speech Link (PSL) panels, and Network Speech Link (NSL) panels  
0 will be engineered as appropriate. In such a case, if there is  
0 room on an existing SLC frame, the new PSL and NSL panels can be  
0 assigned onto it. Otherwise, new SLC frames will have to be pro-  
0 vided.

0 When SLC Frames/Panels are required, provision PECs and quanti-  
0 ties exactly as documented for JNETs.

0 The NT9X6530 (i.e. left bulkhead panel provides access for 0 to  
0 112 DS-30s) is required, if there are four (4) to seven (7)  
0 NT9X41BA and or NT9X45BA PBs per the corresponding left half of  
0 the shelf (i.e. between card slots 32R-25R). The NT9X6531 (i.e.  
0 right bulkhead panel provides access for 0 to 112 DS-30s) is re-  
0 quired, if there are four (4) to seven (7) NT9X41BA and or  
0 NT9X45BA PBs per the corresponding right half of the shelf (i.e.  
0 between card slots 10R-16R). The DS-30 speech links terminating  
0 on the either half of the shelf will be cross connected at an  
0 SLC. For more information, refer to Bulkhead Provisioning Rules.

0 If any of the above bulkhead panel is used, the number of NSLs  
0 can be calculated using,

0 #of NSLs = {#of NT9X41BA & or 45BAs in one half of the shelf/4}  
0 to be rounded to next higher integer.

0 It is a requirement that each ENET Shelf be fully equipped with  
0 X-Point CPs before another is started. Each X-Point CP need not  
0 have a PB behind it.

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## 0 BULKHEAD PROVISIONING RULES

0  
0 Another factor influences where NT9X41BA/45BA CPs are placed on  
0 the shelf. As with the DMS-SuperNode, all copper switchboard ca-  
0 bles leaving the cabinet route via filter bulkheads. Fiber leads  
0 pass through holes in the bulkheads. Each bulkhead serves the  
0 nearest half shelf. Three (3) different pairs can be provi-  
0 sioned;

- 0 1) NT9X6503 Interface Panel Right Fiber Assembly  
0 NT9X6506 Interface Panel Left Fiber Assembly

- 0 - No DS-30 filtering provided  
0 - Intended to be used only for fiber cables  
0 - Will not normally be used

- 0 2) NT9X6520 Filter Bulkhead Panel Left 48 DS-30  
0 NT9X6521 Filter Bulkhead Panel Right 48 DS-30

- 0 - Each provides filtering and connectivity for DS-30 speech  
0 links for up to 3 NT9X41BA/45BA (3 X 16 = 48 DS-30).  
0 - Each provides 13 holes with grommet to access fiber  
0 connections  
0 - Dedicated cabling to individual peripheral modules  
0 - Intended for use in normal ENET applications

- 0 3) NT9X6530 Filter Bulkhead Panel Left, 112 DS-30  
0 NT9X6531 Filter Bulkhead Panel Right, 112 DS-30

- 0 - Each provides filtering and connectivity for DS-30 speech  
0 links for up to 7 NT9X41BA/45BA  
0 - Each provides 13 holes with grommet to access fiber  
0 connections  
0 - Group cabling to peripherals via SLC and normal speech link  
0 cable group facilities  
  
0 - Intended for use where high concentrations of DS-30  
0 result in more than six (6) NT9X41BA/45BA PBs per ENET  
0 shelf.  
0 (e.g. BOC offices with lots of SLC-96s or ENET retrofits  
0 involving significant quantities of Series I  
0 Peripherals).

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0 Selection of bulkhead types should be based on projected  
0 NT9X41BA/45BA requirement of fully equipped shelves. If the  
0 projected number of NT9X41BA/45BA per shelf exceeds six (6) then  
0 NT9X6530/31 are required else NT9X6520/21 are recommended. In the  
0 majority of new applications the average number of NT9X41BA per  
0 fully equipped shelf is expected to range between two (2) and  
0 four (4). NT9X6530/31 should not be used in preference to  
0 NT9X6520/21. Where fewer than four (4) NT9X41BA are required per  
0 shelf, one NT9X6506 or NT9X6503 can be used in preference to a  
0 NT9X6520 or NT9X6521 but for reasons of flexibility this is not  
0 recommended.

0 From the above discussion, it is assumed that NT9X41BA/45BA would  
0 be distributed evenly over all shelves and half shelves.

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## 0 RESET TERMINALS

0  
0 Although each network shelf is equipped with a RTIF PB, separate  
0 reset terminals are not required. Normal RTIF access is from the  
0 CM reset terminal via out-of-band signalling over the message  
0 links.

0 The only difference between NT9X26AA and 26AB is, 26AB has both  
0 RS-232 and current loop. It is NOT a requirement to have 26AB in  
0 MS in SuperNode if ENET has 26AB. Thus, MS can have 26AA and ENET  
0 can have NT9X26AB.

## 0 OFFICE ALARM UNIT PROVISIONING

0  
0 The Office Alarm Unit (OAU) is configured in two (2) MTM shelves.  
0 Messaging links from these shall be assigned to Cross-point CP's,  
0 NT9X35BA or NT9X35CA in the following order of preference:

- 0 1) Different ENET shelves where possible or  
0 2) Odd/Even slots of different Cross-point pairs or  
0 3) Adjacent Cross-point CPs of the same pair or  
0 4) same Cross-point CP.

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## 0 ISN CABLING STRUCTURE(ICS) CABINET

0  
0 The NT0X35CC (ICS) mounts on the left and/or right side of a ENC  
0 or S/N cabinet. The ICS provides a larger cabling area for cables  
0 connected between cabinets and frames. Cable is intended to run  
0 down (or up) this cabinet, and enter the large holes in the side  
0 of the SuperNode, ENC, etc. cabinet to reach the connector  
0 bulkheads.

0 The NT0X35CC MUST be provisioned for ALL 64K and 128K ENET in-  
0 stallations. Richardson applications do not require the cabling  
0 cabinets on both 64K and 128K ENET installations.

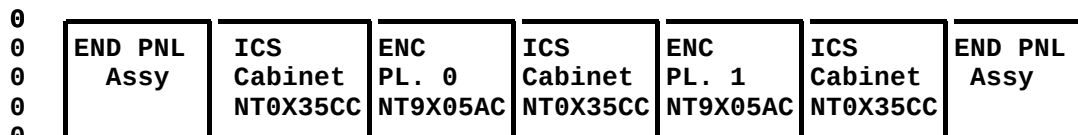
0 If two ENET cabinets are in the same lineup, the number of  
0 NT0X35CC, ICS cabinets provided is equal to the number of  
0 NT9X05AC ENC Cabinets plus one (1). In the same lineup, one ICS  
0 Cabinet is located on each side of the ENC Cabinets and one ICS  
0 Cabinet is located in between each ENC (See figure below). When  
0 two ENET cabinets are in two different lineups, four (4) cabling  
0 cabinets are required.

0 The number of cabling cabinets required for 64K ENET (NT9X05AD)  
0 must be 2(See figure below).

0 From 64K ENET to 128K ENET upgarde refer to the first fig.

0 If not initially installed with ENET, ICS Cabinets cannot be  
0 added at a later date.

0 Rear



0 Front

0 Rear



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|   |      |          |          |          |      |
|---|------|----------|----------|----------|------|
| 0 | Assy | Cabinet  | PL.0 & 1 | Cabinet  | Assy |
| 0 |      | NT0X35CC | NT9X05AD | NT0X35CC |      |
| 0 |      |          |          |          |      |

0 Front

0  
0 2.1.4 OFFICE LAYOUT INFORMATION

0  
0 The S/DMS cabinet will be shipped with the doors, shelves, circuit  
0 packs, FSP, and cooling unit installed. The bus bar will be in-  
0 stalled and appropriate connections will be made at the factory.  
0 The bulkheads form part of the EMC cage around the equipment and  
0 provide a place to mount filter PCBs and optional power filters.  
0 The rear of the cabinet is equipped with two removeable bulkhead  
0 panels near the bottom of the cabinet. When these panels are re-  
0 moved, the cabinet can be installed in, or removed from, a lineup  
0 equipped with horizontal cabling. The cabinet may be slid "FOR-  
0 WARD" only.

0 Refer to ECM 600 for office layout restrictions when this cabinet  
0 is applied in a Streamline lineup.

0 Refer to the following Layout section when this cabinet is ap-  
0 plied in a stand alone lineup.

0 FLOOR LAYOUT

0 A cross aisle trough must be placed from one of the ENC cabinets  
0 to all aisles in the office to accommodate the fiber cables ter-  
0 minating to the ENC.

0 Cabinets and frames should not be mixed in the same line-up. ENC,  
0 DMS-SuperNode and associated SSC and ICS cabinets should be  
0 grouped in separate line-ups.

0 Aisle dimensions have been derived to meet central office envi-  
0 ronmental requirements for floor loading and heat dissipation.  
0 These dimensions are as follows:

0 maintenance or wiring aisles between adjacent line-ups of cabi-  
0 nets, 1.8 m (6'),

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0 maintenance or wiring aisles between a cabinet and a frame  
0 line-up, 1.4 m (4' 6").

0 INITIALS & UPGRADES

0 The above floor layout applies to all ENET only offices where all  
0 cabinets can be accommodated in separate line-ups. However, in  
0 certain upgrade situations this may not be possible due to floor  
0 layout constraints. In such cases cabinets may have to be sepa-  
0 rated and (or) included in line-ups with frames.

0 ENC cabinets should be deployed using one of the following meth-  
0 ods (arranged in descending order of preference):

0 1) as an extension to an existing front line-up,  
0 2) as an extension to an existing or planned line-up in the  
0 network growth area provided that aisle spacing requirements are  
0 met or can be met by the removal of existing NET, SLC or DNI  
0 frames.

0 3) as a new line-up at the growth end of the office,

0 4) as an extension to an existing line-up at the growth end of  
0 the office.

0 When Cabinets and frames are placed in the same line-up, the fol-  
0 lowing rules apply:

0 frames and cabinets are not to be interspersed among each other

0 the backs of frames and cabinets are to be aligned,

0 if a frame and a cabinet are to adjoin each other, a gap of 6"  
0 must separate the two.

0 aisle spacing rules for cabinets must be observed

0 | When ENET Cabinet is installed next to SuperNode  
0 Cabinet(NT9X01BA/JA) the NT9X04AX Message Switch Bulk Head Inter-  
0 face kit must be provisioned.

0 Close attention should be paid to the placement of cross-aisle  
0 ducts and cable racks to ensure that speech link and message link  
0 cables are afforded uncongested access to ENC cabinets. It should  
0 be noted that fiber cables which terminate in an ENC cabinet must  
0 route over the top of the same cabinet before entering the ISN  
0 Cabling Structure (ICS) Cabinet. These cables can only approach

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0 the ICS Cabinet from one direction which may force looping in the  
0 cable trough. Also they cannot enter the ICS Cabinet directly  
0 from a cable rack or cross-aisle duct.

0 The placement of air conditioning diffusers and return air vents  
0 in the vicinity of cabinets and their respective flow rates must  
0 take into consideration the increased dissipation of these cabi-  
0 nets and their increased air flow rates and different intake and  
0 exhaust positions and patterns.

0 Local engineering support groups should be consulted if a raised  
0 floor application is proposed. However the following should be  
0 noted:

0 Stated earthquake performance may not be guaranteed for certain  
0 building floor and earthquake zone combinations.

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0 2.1.5 TRAFFIC TABLES

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0 Not applicable.

0 2.2 PRODUCT/SYSTEM SPECIFICATION

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0 2.2.1 PHYSICAL CHARACTERISTICS

0  
0 The following describes the physical dimension of NTX05AC ENET  
0 Cabinet.

0 MECHANICAL DIMENSIONS

0 Height 72in. Width 42in. Depth 28in.

0 Weight 1400lbs. (Full)

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0 2.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 End panels are required to complete the EMC enclosure for cabi-  
0 nets located at the end of a lineup. In earthquake installa-  
0 tions, the S/DMS cabinet must be bolted to the floor in four(4)  
0 places through anchor holes provided in the base of the cabinet.  
0 The cooling unit must be removed for access to the bolts. When  
0 the cabinet is bolted in place, the optional leveling feet must  
0 not be installed. Leveling will be accomplished through the use  
0 of non-conductive shims. The bolts must be tightened with a  
0 torque wrench to ensure adequate pretension.

0 For raised floor installations, a sub-structure support between  
0 the concrete sub-floor and the raised floor will be required. A  
0 qualified seismic engineer should be consulted regarding the re-  
0 quired additional bracing.

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0 2.2.3 SPARING INFORMATION

0  
0 For U.S. applications use standard sparing algorithms.  
0 For Canadian and other applications the following may be used.

## 0 a) Version 2, C42 Cooling Unit:

0 -----

0 Blowers 660,000 hrs MTBF in its useful life of 10 years.  
0 MTM cards 4,700,000 hrs MTBF  
0 Relay 100,000,000 hrs MTBF

0 Note that the blower's useful life is about 10 years. Around that  
0 time, failures are to be expected. Good practice might dictate  
0 replacement of operating blowers around that time (analagous to  
0 replacing your car's engine belts before they break).

0 Ordering information for Spare Storage Cabinets (SSC) is provided  
0 in ECM-626.

0 Mean Time Before Failure (MTBF) for the ENET Circuit Packs and  
0 related interface Circuit Packs are as follows,

| 0 | PEC      | Failures/<br>0 Millions of hours | MTBF<br>(Years) |
|---|----------|----------------------------------|-----------------|
| 0 | NT9X13FA | 5.0                              | 22              |
| 0 | NT9X30AA | 1.8                              |                 |
| 0 | NT9X31AA | 1.5                              |                 |
| 0 | NT9X35BA | 5.6                              | 20              |
| 0 | NT9X35CA | 5.6                              | 20              |
| 0 | NT9X36BA | 4.2                              | 27              |
| 0 | NT9X40BA | 2.4                              | 47              |
| 0 | NT9X41BA | 1.2                              | 95              |
| 0 | NT9X45BA | 2.3                              | 49              |

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0 For U.S. applications use standard sparing algorithms.  
0 For Canadian applications the following may be used until formal  
0 provisioning is available through the engineering process.

0 a) ENET & DMS- SuperNode Equipment:

| 0 |             |        | (1)        |
|---|-------------|--------|------------|
| 0 |             | NO.    | ENGINEERED |
| 0 | PEC         | SPARES | INVENTORY  |
| 0 |             |        |            |
| 0 | NT9X13FA    | 1      | 8          |
| 0 | NT9X17DA    | 2      | 16         |
| 0 | NT9X20BB    | 1      | 8          |
| 0 | NT9X25AA    | 1      | 8          |
| 0 | NT9X25BA    | 1      | 8          |
| 0 | NT9X26AB    | 1      | 8          |
| 0 | NT9X30AA    | 1      | 16         |
| 0 | NT9X31AA    | 1      | 16         |
| 0 | NT9X35BA    | 3      | 96         |
| 0 | NT9X35CA    | 1      | 32         |
| 0 | NT9X36BA    | 1      | 8          |
| 0 | NT9X40BA/BB | 4      | 128        |
| 0 | NT9X41BA    | 4      | 128        |
| 0 | NT9X45BA    | 4      | 128        |

0 (1) Spares cover all engineered quantities if no entry.

0 (2) Spares quantity based upon MTBF and 720 Hrs turn around  
0 time unless otherwise noted..

0 b) FXPM Equipment:

|   |          |                    |
|---|----------|--------------------|
| 0 | NT6X40CA | MTBF(years) is 62  |
| 0 | NT6X40DA | MTBF(years) is 127 |
| 0 | NT6X40FA | MTBF(years) is 69  |
| 0 | NT6X40GA | MTBF(years) is 245 |

| 0 | PEC      | Failures/Millions of hours |
|---|----------|----------------------------|
| 0 | NT6X40CA | 1.0                        |
| 0 | NT6X40DA | 0.9                        |
| 0 | NT6X40FA | 1.7                        |
| 0 | NT6X40GA | 0.5                        |

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0 Note: Upon general availability, the NT6X40FA will replace  
0 the NT6X40CA as the standard DS512 XPM Interface and  
0 the NT6X40GA will replace the NT6X40DA as the standard  
0 DS512 Link Paddle Board.

0 All ENET offices (U.S. & Canadian) must provide two (2) spare  
0 Quad Fiber cables for use on an emergency basis in the event of a  
0 failure of a job engineered fiber cable. The spares will be used  
0 on a temporary basis until a corrected length fiber cable can be  
0 obtained.

0 The spare fiber cables should be as long as the longest job spec-  
0 ified cable, with a breakout length also equal to the longest  
0 length used in the office.  
0 (eg. NT0X97AK, NT0X97AJ Fiber Cables )

#### 0 2.2.4 POWER FEED AND FUSING REQUIREMENTS

0 Each shelf has four (4) power converters, two at either side of  
0 the shelf, mounted from the front.

0 Logic power distribution to the shelf electronics is from each  
0 power module to the corresponding half of the shelf.

0 Fuses are required as follows for NT9X05AC.

0 For powering from a standard 7' PDC  
0 -----  
0 2 - 20 Amp fuses (for each ENET Shelve)  
0 2 - 10 Amp fuses (for C42 cooling blowers)  
0 1 - 10 Amp Fuse (Alarm Battery Supply (ABS))

0 For powering from a CPDC  
0 -----  
0 2 - 30 Amp fuses (for each ENET Shelve)  
0 2 - 10 Amp fuses (for C42 cooling blowers)  
0 1 - 10 Amp Fuse (Alarm Battery Supply (ABS))

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0 Plane 0 cabinets are powered from A feed while plane 1 cabinets  
0 are powered from B feed.

0 Refer to CA0X04 issue 01 20 and later for power cable informa-  
0 tion.

0 PDC feeds are connected to the cabinet via EMI feed through  
0 capacitors at the top of the frame. Cable and Drop Length shall  
0 be job engineered.

#### 0 2.2.5 CURRENT DRAIN INFORMATION

0  
0 Input Voltage.....-48VDC  
0 Power Consumption.....4432 watts (+/- 10%) fully equipped  
0 Current Drain.....92.0Amps

#### 0 2.3 SOFTWARE PROVISIONING

0

##### 0 2.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 1)Initial jobs with 64K or 128K ENET require NTXE01AA package. In  
0 addition, offices equipped with 64K or 128K ENET must have  
0 - NTXF71AB - SuperNode Enhanced Messaging.

0 2) The optional packages for ENET (64K or 128K) offices are,

0 - NTXP13AA - Switch Path Diagnostics (SPD).  
0 - NTX738AC - Switch Performance Monitoring System (SPMS).

0 Prior to BCS34, the JNET s/w is part of NTX001AA which is a Com-  
0 mon Basic Software package. From BCS34 onwards, the JNET s/w has  
0 been separated into a new software package called NTXP10AA.

0 For all ENET UPGRADE jobs provision the software packages  
0 NTXP10AA and NTXE01AA effective BCS34 and higher BCSs. It is

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0 recommended that NTP10AA be removed in the subsequent BCS up-  
0 grade following the network Upgrade.

0 Example: If an office running with pre BCS34 s/w, with JNET, For  
0 ENET UPGARDE, These steps must be done.

- 0 1) NTP10AA must be ordered for JNET to work.  
0 2) NTXE01AA must be ordered for ENET.  
0 3) NTF71AB must be ordered for SuperNode Enhanced Messaging.

0 Note that, NTP10AA can be removed in the subsequent BCS upgrade  
0 following the network Upgrade.

### 0 2.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 When ordered by the Customer, the Switch Path Diagnostics (SPD)  
0 software package is to be furnished as NTX885AB for non-ENET  
0 SuperNode and NT-40 offices and furnished as NTP13AA for ENET  
0 SuperNode offices.

0 If software package SPD exists in a DMS office prior to an ENET  
0 upgrade, then both NTX885AB and NTP13AA are to be provided in  
0 the retrofit software load to provide both Network Module (NM)  
0 and ENET coverage. NTX885AB is to be removed on the next BCS ap-  
0 plication following the upgrade.

0 The above rules are an example of unautomated rules which are  
0 stored in a document entitled "SW Package Ordering Rules - Not  
0 Automated" in the SMS Documentation Menu in CODA.

### 0 2.3.3 MEMORY PROVISIONING

0  
0 CM Memory must be 6 to 8 megabytes.

0 MS-E(MS Load for ENET) requires 10 megabytes.

0

0 2.4 REAL TIME IMPACT

0 There is not a Real Time improvement or degradation on ENET over  
0 JNET applications (i.e. No impact on DMS-100 Call Processing Ca-  
0 pacity due to JNET/ENET Variance.

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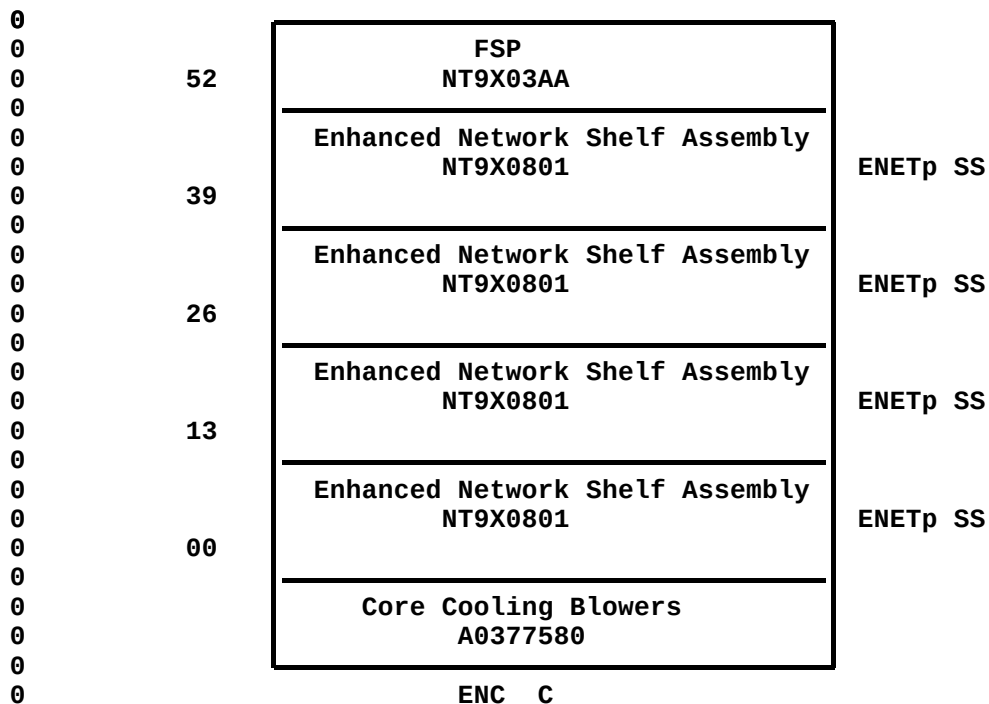


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### 0 3.0 Single Cabinet Enhanced Network

0 In this document ENET refers to the 64K Enhanced Network.

0 Single Cabinet Enhanced Network is designed to allow a network size of  
0 64K channels duplex with modular growth from 4K to 64K channels.  
0 Growth from 4K to 32K will be in 2K increments; 32K to 64K channels  
0 will be in 16K channels. Network Plane 0 and Plane 1 both will be in  
0 the single cabinet. The NT9X05AD is a 64K Enhanced Network Duplex Cab-  
0 inet and the following diagram gives a pictorial representation of  
0 this cabinet:



### 0 Single Cabinet Enhanced Network

0 where p = the Plane number 0 or 1  
0 C = the Cabinet number 0  
0 SS = the Shelf number 00-01  
0 (assign from top down)  
0 (Shelf 39 & 26 is Plane 0)  
0 (Shelf 13 & 00 is Plane 1)

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0 3.1 HARDWARE PROVISIONING

0

0 3.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The following restriction apply to ENET H/W applications:

0 \* The Enhanced Network must interface to a SuperNode (i.e. Mes-  
0 ssa ge Switch & Computing Module). An NT-40 (i.e. Central Con-  
0 trol Complex) will not support an Enhanced Network.

0 \* The Enhanced Network will not interwork with any previous  
0 version of Network frames.

0 \* The NT9X41BA has 16-Ports numbered 0-15. All ports except  
0 port #1 may be used for Voice or Messaging Links. Port #1 is  
0 valid for Voice Links only. This is a S/W restriction on the  
0 hardware.

0 \* The NT9X45BA has 16 DS-30 ports numbered 0-15 and 3 DS-512  
0 ports. All DS-30 ports except port #1 may be used for Voice  
0 or Messaging Links. Port #1 is valid for Voice Links only.  
0 This is a S/W restriction on the hardware.

0 \* Application of the above restriction prohibits the assign-  
0 ments of the following Peripheral Module (PM) ports to Link  
0 #1 as follows:

- 0 - Single link PMs (e.g. MTMs, TM8s, OAUs, etc.)
- 0 - Port Zero of DCMs and LMs
- 0 - Port Zero and Two of XPMs

0 \* The DTC6 is not ENET ready since enhanced messaging  
0 (NT6X69AC/MA) are not available in those facilities. There-  
0 fore, offices equipped with this vintage XPMs should not be  
0 considered for ENET unless an agreement can be reached with  
0 the Telco.

0 \* MS to ENET, ENET to FXPM Distance Restrictions are as fol-  
0 lows:

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- 0 - MS-9X20BB To ENET-9X40BB  
0 Length: 250ft (1,4), Variance: 25ft (3)
- 0 - MS-9X62BA To ENET-9X40BB  
0 Length: 250ft (1,2), Variance: 25ft (3)
- 0 - ENET-9X40BB To FXPM-6X40DA  
0 Length: 1000m (4), Variance: 200m
- 0 - ENET-9X40BB To FXPM-6X40GA  
0 Length: 1000m, Variance: 200m
- 0 - ENET-9X41BA to XPM/PM  
0 Length: 750ft, Variance: 200ft
- 0 \* The NT9X45BA CANNOT be used in a 192K network. In a 192K  
0 ENET, repeaters are required to expand an ENET, the NT9X45BA  
0 is not equipped to allow this expandability.

0 \* NT9X40BA/41BA/45BA Interchange Capability are as follows:

- 0 - NT9X41 to NT9X40 is to fiberize copper XPMs in in-service  
0 ENET offices. This has been verified in FAST office and  
0 it is allowed.
- 0 - NT9X41 to NT9X45 is for adding 3 more DS-512 ports with-  
0 out loss DS-30 ports and without additional Cross point  
0 cards. This procedure has been verified in FAST office  
0 and in V.0 and it is allowed.
- 0 - NT9X45 to NT9X40 has been verified in FAST office and in  
0 V.0, and it is allowed.
- 0 - NT9X40 to NT9X45 may cause service degradation depending  
0 on the configuration. Hence this is NOT ALLOWED.
- 0 - NT9X40 to NT9X41 is possible, but is of no value. Hence  
0 this is NOT ALLOWED.
- 0 - NT9X45 to NT9X41 is possible, with service degradation  
0 and also is of no value. Hence this is NOT ALLOWED.

0 NOTES:

- 0 1. Refer To ECM-626 For MS TO ENET Restrictions

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- 0 2. Recommended length limit so that the received optical  
0 power is greater than -26dbm. This optical receive power  
0 is based on the jitter limit of the R94-Hybrid on the  
0 9X20BB/9X40BB in loopback.
- 0 3. The limits placed on the variation in cable length be-  
0 tween either MS and any ENET shelf is required to main-  
0 tain integrity of the ENET Vertical Busses.
- 0 4. This value is base on the link interface CPs having a  
0 R94-Hybrid on one end and a G64-Hybrid with a 5L78 Clock  
0 recovery hybrid on the other.

0 3.1.2 HARDWARE DEPENDENCIES

0  
0 Same as the current 128K ENET. Refer to ECM 627.

0 P AND C SIDE PORT REQUIREMENTS

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WORK SHEETS.

## WORKSHEET # 1

Determine the Number of Cards required for Plane 0 for ENET Shelve

| Step                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Procedure                                                | Answer                |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------|-------------------------------|----------|----------|----------|-----------------|-----------------------|-----------------------|-------------------------------|-------------|--|---|--|-------------|--|---|--|-------------|--|---|--|----------|--|---|--|--------|--|---|--|-----|--|-------------|--|-----|--|--------------|--|-------|--|---|--|------|--|---|--|-------------|--|---|--|-----------|--|-------------|--|--------|--|--|--|-------------------------|--|--|--|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Determine the total number of copper(DS30) speech links. | _____                 |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| <div>+-----+-----+-----+-----+</div> <table><tr><th>Column A</th><th>Column B</th><th>Column C</th><th>Column D</th></tr><tr><th>Peripheral Type</th><th>Number of Peripherals</th><th>Speech Lks/Peripheral</th><th>Total Links (Col C) x (Col B)</th></tr><tr><td>LM (2 port)</td><td></td><td>2</td><td></td></tr><tr><td>LM (3 port)</td><td></td><td>3</td><td></td></tr><tr><td>LM (4 port)</td><td></td><td>4</td><td></td></tr><tr><td>DCM/DCMR</td><td></td><td>4</td><td></td></tr><tr><td>NIU **</td><td></td><td>4</td><td></td></tr><tr><td>SMS</td><td></td><td>_____ (3-4)</td><td></td></tr><tr><td>SMR</td><td></td><td>_____ (3-16)</td><td></td></tr><tr><td>DES *</td><td></td><td>3</td><td></td></tr><tr><td>MSB7</td><td></td><td>3</td><td></td></tr><tr><td>TM/MTM/DRAM</td><td></td><td>1</td><td></td></tr><tr><td>EDRAM/CTM</td><td></td><td>_____ (0-5)</td><td></td></tr><tr><td>Spare:</td><td></td><td></td><td></td></tr><tr><td colspan="4">Total of Column D _____</td></tr></table> <div>+-----+-----+-----+-----+</div> |                                                          |                       | Column A                      | Column B | Column C | Column D | Peripheral Type | Number of Peripherals | Speech Lks/Peripheral | Total Links (Col C) x (Col B) | LM (2 port) |  | 2 |  | LM (3 port) |  | 3 |  | LM (4 port) |  | 4 |  | DCM/DCMR |  | 4 |  | NIU ** |  | 4 |  | SMS |  | _____ (3-4) |  | SMR |  | _____ (3-16) |  | DES * |  | 3 |  | MSB7 |  | 3 |  | TM/MTM/DRAM |  | 1 |  | EDRAM/CTM |  | _____ (0-5) |  | Spare: |  |  |  | Total of Column D _____ |  |  |  |
| Column A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Column B                                                 | Column C              | Column D                      |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| Peripheral Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Number of Peripherals                                    | Speech Lks/Peripheral | Total Links (Col C) x (Col B) |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| LM (2 port)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                          | 2                     |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| LM (3 port)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                          | 3                     |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| LM (4 port)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                          | 4                     |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| DCM/DCMR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                          | 4                     |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| NIU **                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                          | 4                     |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| SMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                          | _____ (3-4)           |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| SMR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                          | _____ (3-16)          |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| DES *                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                          | 3                     |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| MSB7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                          | 3                     |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| TM/MTM/DRAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                          | 1                     |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| EDRAM/CTM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                          | _____ (0-5)           |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| Spare:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                          |                       |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| Total of Column D _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                          |                       |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| * Digital Echo Suppressor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                          |                       |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |
| ** Unit 0 of NIU requires 4 ports on ENET plane 0 and unit 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                          |                       |                               |          |          |          |                 |                       |                       |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |             |  |     |  |              |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |             |  |        |  |  |  |                         |  |  |  |

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0 | WORKSHEET # 1 Continued |  
0 +-----+0  
0 +-----+-----+-----+-----+  
0 | Step | Procedure | Answer |  
0 +-----+-----+-----+-----+  
0 | 2 | Determine the total number of copper(DS30) message channels | \_\_\_\_\_ |  
0  
0 +-----+-----+-----+-----+  
0 | Column A | Column B | Column C | Column D |  
0 | Peripheral Type | Number of Peripherals | Channels/Peripheral | Total Channels (Col C) x (Col B) |  
0 | LM (2 port) | | 1 | |  
0 | LM (3 port) | | 1 | |  
0 | LM (4 port) | | 1 | |  
0 | DCM | | 1 | |  
0 | DCMR | | 1 | |  
0 | DES | | 1 | |  
0 | SMS | | 2 | |  
0 | SMR | | 2 | |  
0 | MSB7 | | 2 | |  
0 | TM | | 1 | |  
0 | MTM | | 1 | |  
0 | DRAM | | 1 | |  
0 | Spare: | | 1 or 2 | |  
0  
0 | Total of Column D | | | \_\_\_\_\_ |  
0 +-----+-----+-----+-----+

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0 +-----+  
0 | WORKSHEET # 1 Continued |  
0 +-----+0 +-----+  
0 | Step | Procedure | Answer |  
0 +-----+  
0 | 3 | Determine the total number of fiber(DS512) speech | \_\_\_\_\_ |  
0 | links |  
0 |  
0 | +-----+ +-----+ +-----+ +-----+ |  
0 | | Column A | Column B | Column C | Column D |  
0 | | Peripheral | Number of | Speech lks/ | Total Links |  
0 | | Type | Peripherals | Peripheral | (Col C) x (Col B) |  
0 | |-----|-----|-----|-----|  
0 | | LGC/LGCI | | 1 | |  
0 | |-----|-----|-----|-----|  
0 | | LTC/LTCI | | 1 | |  
0 | |-----|-----|-----|-----|  
0 | | SMU/SMUI | | 1 | |  
0 | |-----|-----|-----|-----|  
0 | | SMS | | 1 | |  
0 | |-----|-----|-----|-----|  
0 | | DTC/DTCI | | 1 | |  
0 | |-----|-----|-----|-----|  
0 | | Spare | | 1 | |  
0 | |-----|-----|-----|-----|  
0 | | Total of Column D | | \_\_\_\_\_ |  
0 | +-----+ +-----+ +-----+ +-----+ |  
0 | | | | | |  
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0  
0 +-----+  
0 | WORKSHEET # 1 Continued |  
0 +-----+0  
0 +-----+  
0 | Step | Procedure | Answer |  
0 +-----+  
0 | 4 | Determine the total number of fiber(DS512) message |  
0 | channels | \_\_\_\_\_ |  
0 |  
0 | +-----+ +-----+ +-----+ +-----+ |  
0 | | Column A | Column B | Column C | Column D |  
0 | | Peripheral | Number of | Channels/ | Total Channels |  
0 | | Type | Peripherals | Peripheral | (Col C) x (Col B) |  
0 | +-----+ +-----+ +-----+ +-----+ |  
0 | | LGC/LGCI | | 2 | |  
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0 +-----+0 For INITIAL ENET installations continue WORKSHEET #1 to end & skip  
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| Step                                                                       | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Answer                                                                                    |    |                                                                                           |       |    |                                                                                         |       |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------|-------|----|-----------------------------------------------------------------------------------------|-------|
| 5                                                                          | <p>Determine the number of DS-512/DS-30 I/F Assy's required for DS30's. (Round up to an integer)<br/>Take the greater of :</p> <table> <tr> <td> <div> <div>Step 1</div> <div>-----</div> <div>=</div> <div>16</div> </div> </td><td>OR</td><td> <div> <div>Step 2</div> <div>-----</div> <div>=</div> <div>15</div> </div> </td></tr> </table>                                                                                                                                       | <div> <div>Step 1</div> <div>-----</div> <div>=</div> <div>16</div> </div>                | OR | <div> <div>Step 2</div> <div>-----</div> <div>=</div> <div>15</div> </div>                | _____ |    |                                                                                         |       |
| <div> <div>Step 1</div> <div>-----</div> <div>=</div> <div>16</div> </div> | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div> <div>Step 2</div> <div>-----</div> <div>=</div> <div>15</div> </div>                |    |                                                                                           |       |    |                                                                                         |       |
| 6                                                                          | <p>Determine the number of DS-512/DS-30 I/F Assy's required. (Round up to an integer)<br/>Take the lesser of :</p> <table> <tr> <td> <div> <div>Step 3</div> <div>-----</div> <div>=</div> <div>3</div> </div> </td><td>OR</td><td> <div> <div>Step 5</div> <div>-----</div> <div>=</div> <div></div> </div> </td></tr> </table>                                                                                                                                                      | <div> <div>Step 3</div> <div>-----</div> <div>=</div> <div>3</div> </div>                 | OR | <div> <div>Step 5</div> <div>-----</div> <div>=</div> <div></div> </div>                  | _____ |    |                                                                                         |       |
| <div> <div>Step 3</div> <div>-----</div> <div>=</div> <div>3</div> </div>  | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div> <div>Step 5</div> <div>-----</div> <div>=</div> <div></div> </div>                  |    |                                                                                           |       |    |                                                                                         |       |
| 7                                                                          | <p>Determine the number of Quad DS-512 Fiber I/F Assy's required. (Round up to an integer)<br/>Take the greater of :</p> <table> <tr> <td> <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div> </td><td>OR</td><td> <div> <div>Step 3 - (Step 6 x3)</div> <div>-----</div> <div>=</div> <div>4</div> </div> </td></tr> </table>                                                                                                                                | <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div>                | OR | <div> <div>Step 3 - (Step 6 x3)</div> <div>-----</div> <div>=</div> <div>4</div> </div>   | _____ |    |                                                                                         |       |
| <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div> | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div> <div>Step 3 - (Step 6 x3)</div> <div>-----</div> <div>=</div> <div>4</div> </div>   |    |                                                                                           |       |    |                                                                                         |       |
| 8                                                                          | <p>Determine the number of DS-30 Interface Asmbly's required. (Round up to an integer)<br/>Take the greater of :</p> <table> <tr> <td> <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div> </td><td>OR</td><td> <div> <div>Step 2 - (Step 6 x15)</div> <div>-----</div> <div>=</div> <div>15</div> </div> </td></tr> <tr> <td></td><td>OR</td><td> <div> <div>Step 1 - (Step 6 x16)</div> <div>-----</div> <div>=</div> <div></div> </div> </td></tr> </table> | <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div>                | OR | <div> <div>Step 2 - (Step 6 x15)</div> <div>-----</div> <div>=</div> <div>15</div> </div> |       | OR | <div> <div>Step 1 - (Step 6 x16)</div> <div>-----</div> <div>=</div> <div></div> </div> | _____ |
| <div> <div>Zero (0)</div> <div>-----</div> <div>=</div> <div></div> </div> | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div> <div>Step 2 - (Step 6 x15)</div> <div>-----</div> <div>=</div> <div>15</div> </div> |    |                                                                                           |       |    |                                                                                         |       |
|                                                                            | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div> <div>Step 1 - (Step 6 x16)</div> <div>-----</div> <div>=</div> <div></div> </div>   |    |                                                                                           |       |    |                                                                                         |       |

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| Step                                 | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Answer                               |                                |         |  |    |       |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------|---------|--|----|-------|--|----|----|--|----|----|--|----|----|--|----|----|--|----|----|--|----|----|--|
| 11                                   | <p>Determine the number of Crosspoint CP's (NT9X35BA) required:</p> <table> <tr> <th>If<br/>Step 6 +<br/>Step 7 +<br/>Step 8</th><th>is equal to<br/>or<br/>less than</th><th>Provide</th></tr> <tr> <td></td><td>16</td><td>0-12*</td></tr> <tr> <td></td><td>24</td><td>18</td></tr> <tr> <td></td><td>32</td><td>24</td></tr> <tr> <td></td><td>40</td><td>30</td></tr> <tr> <td></td><td>48</td><td>36</td></tr> <tr> <td></td><td>56</td><td>42</td></tr> <tr> <td></td><td>64</td><td>48</td></tr> </table> <p>* These are provisioned in pairs, so if the total of Step 6+7+8 is an odd number, add 1 to it. Let that quantity be Y. The number of Crosspoint CP's to provide is equal to Y-4</p> | If<br>Step 6 +<br>Step 7 +<br>Step 8 | is equal to<br>or<br>less than | Provide |  | 16 | 0-12* |  | 24 | 18 |  | 32 | 24 |  | 40 | 30 |  | 48 | 36 |  | 56 | 42 |  | 64 | 48 |  |
| If<br>Step 6 +<br>Step 7 +<br>Step 8 | is equal to<br>or<br>less than                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Provide                              |                                |         |  |    |       |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |
|                                      | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0-12*                                |                                |         |  |    |       |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |
|                                      | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 18                                   |                                |         |  |    |       |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |
|                                      | 32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 24                                   |                                |         |  |    |       |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |
|                                      | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30                                   |                                |         |  |    |       |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |
|                                      | 48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 36                                   |                                |         |  |    |       |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |
|                                      | 56                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 42                                   |                                |         |  |    |       |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |
|                                      | 64                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 48                                   |                                |         |  |    |       |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |    |    |  |

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 0 | Determine the Number of Enhanced Network (ENET) Shelves & Cards Req'd |  
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| Step                            | Procedure                                                                                                                                                                                                                                                                                                                                                                                                     | Answer                          |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------|----------|----------|-----------|-----------------|----------------|-----------------------------|---------------------|--|----|--|-----------------------|--|----|--|-------------------|--|--|-------|--|
| 1                               | Determine the DS30 speech link capacity of the installed cards.                                                                                                                                                                                                                                                                                                                                               | _____                           |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
|                                 | <table><tr><th>Column A</th><th>Column B</th><th>Column C</th><th>Column D</th></tr><tr><th>Card Type</th><th>Number of Cards</th><th>Spch Lks/ Card</th><th>Total Links (Col B)x(Col C)</th></tr><tr><td>DS512 DS30 I/F Assy</td><td></td><td>16</td><td></td></tr><tr><td>DS30 Interface Asmbly</td><td></td><td>16</td><td></td></tr><tr><td colspan="3">Total of Column D</td><td>_____</td></tr></table> | Column A                        | Column B                    | Column C | Column D | Card Type | Number of Cards | Spch Lks/ Card | Total Links (Col B)x(Col C) | DS512 DS30 I/F Assy |  | 16 |  | DS30 Interface Asmbly |  | 16 |  | Total of Column D |  |  | _____ |  |
| Column A                        | Column B                                                                                                                                                                                                                                                                                                                                                                                                      | Column C                        | Column D                    |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| Card Type                       | Number of Cards                                                                                                                                                                                                                                                                                                                                                                                               | Spch Lks/ Card                  | Total Links (Col B)x(Col C) |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| DS512 DS30 I/F Assy             |                                                                                                                                                                                                                                                                                                                                                                                                               | 16                              |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| DS30 Interface Asmbly           |                                                                                                                                                                                                                                                                                                                                                                                                               | 16                              |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| Total of Column D               |                                                                                                                                                                                                                                                                                                                                                                                                               |                                 | _____                       |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| 2                               | Determine the additional DS30 speech link capacity required.                                                                                                                                                                                                                                                                                                                                                  | _____                           |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
|                                 | <table><tr><td>Step 1 of WS1 - Step 1 of WS2 =</td></tr></table>                                                                                                                                                                                                                                                                                                                                              | Step 1 of WS1 - Step 1 of WS2 = |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| Step 1 of WS1 - Step 1 of WS2 = |                                                                                                                                                                                                                                                                                                                                                                                                               |                                 |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| 3                               | Determine the DS30 message channel capacity of the installed cards.                                                                                                                                                                                                                                                                                                                                           | _____                           |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
|                                 | <table><tr><th>Column A</th><th>Column B</th><th>Column C</th><th>Column D</th></tr><tr><th>Card Type</th><th>Number of Cards</th><th>Msg Chnl/ Card</th><th>Total Links (Col B)x(Col C)</th></tr><tr><td>DS512 DS30 I/F Assy</td><td></td><td>15</td><td></td></tr><tr><td>DS30 Interface Asmbly</td><td></td><td>15</td><td></td></tr><tr><td colspan="3">Total of Column D</td><td>_____</td></tr></table> | Column A                        | Column B                    | Column C | Column D | Card Type | Number of Cards | Msg Chnl/ Card | Total Links (Col B)x(Col C) | DS512 DS30 I/F Assy |  | 15 |  | DS30 Interface Asmbly |  | 15 |  | Total of Column D |  |  | _____ |  |
| Column A                        | Column B                                                                                                                                                                                                                                                                                                                                                                                                      | Column C                        | Column D                    |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| Card Type                       | Number of Cards                                                                                                                                                                                                                                                                                                                                                                                               | Msg Chnl/ Card                  | Total Links (Col B)x(Col C) |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| DS512 DS30 I/F Assy             |                                                                                                                                                                                                                                                                                                                                                                                                               | 15                              |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| DS30 Interface Asmbly           |                                                                                                                                                                                                                                                                                                                                                                                                               | 15                              |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |
| Total of Column D               |                                                                                                                                                                                                                                                                                                                                                                                                               |                                 | _____                       |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |       |  |

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| Step     | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Answer               |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--|---------|----------|----|----------------------|-------|--|-------|----|--|----|---------|--|---------|-------|
| 7        | <p>Determine the additional number of DS-512 DS-30 I/F Assy's required for DS30's. (Round up to an integer)<br/>NOTE: complete this step only if step 2 or step 4 is 1 or more. If both step 2 &amp; 4 are zero or negative, enter 0 in step 7.</p> <p>Take the greater of :</p> <table> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> <tr> <td>  Step 2  </td><td>OR</td><td>  Step 4  </td></tr> <tr> <td>  -----  </td><td></td><td>  -----  </td></tr> <tr> <td>  16  </td><td></td><td>  15  </td></tr> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> </table> | +-----+              |  | +-----+ | Step 2   | OR | Step 4               | ----- |  | ----- | 16 |  | 15 | +-----+ |  | +-----+ | _____ |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| Step 2   | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Step 4               |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| -----    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -----                |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| 16       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15                   |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| 8        | <p>Determine the additional number of DS-512 DS-30 I/F Assy's required. (Round up to an integer)</p> <p>Take the lesser of :</p> <table> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> <tr> <td>  Step 6  </td><td>OR</td><td>  Step 7  </td></tr> <tr> <td>  -----  </td><td></td><td>  -----  </td></tr> <tr> <td>  3  </td><td></td><td>   </td></tr> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> </table>                                                                                                                                                     | +-----+              |  | +-----+ | Step 6   | OR | Step 7               | ----- |  | ----- | 3  |  |    | +-----+ |  | +-----+ | _____ |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| Step 6   | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Step 7               |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| -----    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -----                |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| 3        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| 9        | <p>Determine the additional number of Quad DS-512 Fiber I/F's required. (Round up to an integer)</p> <p>Take the greater of :</p> <table> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> <tr> <td>  Zero (0)  </td><td>OR</td><td>  Step 6 - (Step 8 x3)  </td></tr> <tr> <td>  -----  </td><td></td><td>  -----  </td></tr> <tr> <td>   </td><td></td><td>  4  </td></tr> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> </table>                                                                                                                                    | +-----+              |  | +-----+ | Zero (0) | OR | Step 6 - (Step 8 x3) | ----- |  | ----- |    |  | 4  | +-----+ |  | +-----+ | _____ |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| Zero (0) | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Step 6 - (Step 8 x3) |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| -----    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -----                |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4                    |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |  |       |    |  |    |         |  |         |       |

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| Step | Procedure                                                                                                                                                                                                                                                                                                                                                               | Answer |
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| 10   | <p>Determine the additional number of DS-30 Interface Asmbly's required. (Round up to an integer)<br/>Take the greater of :</p> <p>+-----+<br/>  Zero (0)  <br/>+-----+</p> <p>OR</p> <p>+-----+<br/>  Step 4 - (Step 8 x15)  <br/>  ----- =  <br/>  15  <br/>+-----+</p> <p>OR</p> <p>+-----+<br/>  Step 2 - (Step 8 x16)  <br/>  ----- =  <br/>  16  <br/>+-----+</p> | _____  |
| 11   | <p>Determine the total number of DS512 DS30 I/F Assy's required.</p> <p>+-----+<br/>  Step 8 + exist DS512 DS30 I/F Assy's  <br/>  (see step 1)  <br/>+-----+</p>                                                                                                                                                                                                       | _____  |
| 12   | <p>Determine the total number of Quad DS-512 Fiber I/F's required.</p> <p>+-----+<br/>  Step 9 + exist Quad DS512 Fiber I/F's  <br/>  (see step 5)  <br/>+-----+</p>                                                                                                                                                                                                    | _____  |
| 13   | <p>Determine the total number of DS-30 Interface Asmbly's required.</p> <p>+-----+<br/>  Step 10 + exist DS30 Interface Asmbly's  <br/>  (see step 1)  <br/>+-----+</p>                                                                                                                                                                                                 | _____  |

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| Step | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Answer |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 14   | Determine the number of ENET Shelf Assemblies required. (Round up to an integer)<br>+-----+<br>  (Step 11 + Step 12 + Step 13) / 15 =  <br>+-----+                                                                                                                                                                                                                                                                                                                        | _____  |
| 15   | Determine the number of Term Crosspoint CP's req.<br>+-----+<br>  If Steps   is equal to   Provide  <br>  (11+12+13)   or less than  <br>+-----+<br>    16   4  <br>    24   6  <br>    32   8  <br>    40   10  <br>    48   12  <br>    56   14  <br>    64   16  <br>+-----+                                                                                                                                                                                           | _____  |
| 16   | Determine the number of Crosspoint CP's required.<br>+-----+<br>  If Steps   is equal to   Provide  <br>  (11+12+13)   or less than  <br>+-----+<br>    16   0-12*  <br>    24   18  <br>    32   24  <br>    40   30  <br>    48   36  <br>    56   42  <br>    64   48  <br>+-----+<br>* These are provisioned in pairs, so if the total of Steps 6+7+8 is an odd number, add 1 to it. Let that quantity be Y. The number of Crosspoint CP's to provide is equal to Y-4 | _____  |

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0 | WORKSHEET # 2, End |  
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0 | Determine the Number of Enhanced Network (ENET) Shelves & Cards Req'd |  
0 +-----+  
0 | to Extend an Existing ENET - for Both Plane 0 & 1 |  
0 +-----+

| Step                    | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Answer         |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------|------------------------|-------------------|-------------------------|-------------------|----------------|-------------------|---------------------|--------------|-----------------------|--------------|----------------------|---------------|--------------------|---------------|---------------|---------------|-------------------------|-------------------|--|
| 17                      | <table><tr><th>Equipment Item</th><th>Provide</th></tr><tr><td>48 DS30/DS512 Bulkhead</td><td>see section 2.4.4</td></tr><tr><td>112 DS30/DS512 Bulkhead</td><td>see section 2.4.4</td></tr><tr><td>Fiber Bulkhead</td><td>see section 2.4.4</td></tr><tr><td>DS512 DS30 I/F Assy</td><td>Step 8 X 2 =</td></tr><tr><td>DS30 Interface Asmbly</td><td>Step 9 X 2 =</td></tr><tr><td>Quad DS512 Fiber I/F</td><td>Step 10 X 2 =</td></tr><tr><td>Term Crosspoint CP</td><td>Step 16 X 2 =</td></tr><tr><td>Crosspoint CP</td><td>Step 17 X 2 =</td></tr><tr><td>ISN Cable Structure Cab</td><td>See section 2.4.5</td></tr></table> <p>The Single Cabinet ENET is always equipped with two (2) NT9X0801 Enhanced Network assembly in position in 39 and 13.</p> | Equipment Item | Provide | 48 DS30/DS512 Bulkhead | see section 2.4.4 | 112 DS30/DS512 Bulkhead | see section 2.4.4 | Fiber Bulkhead | see section 2.4.4 | DS512 DS30 I/F Assy | Step 8 X 2 = | DS30 Interface Asmbly | Step 9 X 2 = | Quad DS512 Fiber I/F | Step 10 X 2 = | Term Crosspoint CP | Step 16 X 2 = | Crosspoint CP | Step 17 X 2 = | ISN Cable Structure Cab | See section 2.4.5 |  |
| Equipment Item          | Provide                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| 48 DS30/DS512 Bulkhead  | see section 2.4.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| 112 DS30/DS512 Bulkhead | see section 2.4.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| Fiber Bulkhead          | see section 2.4.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| DS512 DS30 I/F Assy     | Step 8 X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| DS30 Interface Asmbly   | Step 9 X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| Quad DS512 Fiber I/F    | Step 10 X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| Term Crosspoint CP      | Step 16 X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| Crosspoint CP           | Step 17 X 2 =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |
| ISN Cable Structure Cab | See section 2.4.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |         |                        |                   |                         |                   |                |                   |                     |              |                       |              |                      |               |                    |               |               |               |                         |                   |  |

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| Step | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Answer |           |                   |   |  |  |   |   |   |   |   |                                                                              |   |  |  |  |   |                                                               |  |  |  |  |   |                                                              |  |  |  |  |   |                                                       |  |  |  |  |   |                                                         |  |  |  |  |  |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------|-------------------|---|--|--|---|---|---|---|---|------------------------------------------------------------------------------|---|--|--|--|---|---------------------------------------------------------------|--|--|--|--|---|--------------------------------------------------------------|--|--|--|--|---|-------------------------------------------------------|--|--|--|--|---|---------------------------------------------------------|--|--|--|--|--|
| 1    | <p>Assign I/F cards to ENET shelves:</p> <p>Note: 1. Shelf 0 must be filled prior to assigning on to Shelf 1; Shelf 1 filled prior to assigning on to Shelf 2, etc.</p> <p>2. Maximum cards per shelf = 15 (excluding the AP MS Link card).</p> <p>3. On extensions, do not reassign existing cards to new locations.</p> <table><tr><th rowspan="2">Item</th><th rowspan="2">Card Type</th><th colspan="4">ENET Shelf Number</th></tr><tr><th>0</th><th>1</th><th>2</th><th>3</th></tr><tr><td>1</td><td>MS Link card (1 per shelf is always required in slot 8R in each Shelf Assy.)</td><td>1</td><td></td><td></td><td></td></tr><tr><td>2</td><td>DS-512 DS-30 I/F Assy<br/>(Step 6 WS-1 ) or<br/>(Step 11 WS-2 )</td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td>Quad DS-512 Fiber I/F<br/>(Step 7 WS-1) or<br/>(Step 12 WS-2 )</td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td>DS-30 I/F Assy<br/>(Step 8 WS-1) or<br/>(Step 13 WS-2 )</td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td>Total (Item 1+2+3+4)<br/>(Max=16 including MS Link card)</td><td></td><td></td><td></td><td></td></tr></table> | Item   | Card Type | ENET Shelf Number |   |  |  | 0 | 1 | 2 | 3 | 1 | MS Link card (1 per shelf is always required in slot 8R in each Shelf Assy.) | 1 |  |  |  | 2 | DS-512 DS-30 I/F Assy<br>(Step 6 WS-1 ) or<br>(Step 11 WS-2 ) |  |  |  |  | 3 | Quad DS-512 Fiber I/F<br>(Step 7 WS-1) or<br>(Step 12 WS-2 ) |  |  |  |  | 4 | DS-30 I/F Assy<br>(Step 8 WS-1) or<br>(Step 13 WS-2 ) |  |  |  |  | 5 | Total (Item 1+2+3+4)<br>(Max=16 including MS Link card) |  |  |  |  |  |
| Item | Card Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |           | ENET Shelf Number |   |  |  |   |   |   |   |   |                                                                              |   |  |  |  |   |                                                               |  |  |  |  |   |                                                              |  |  |  |  |   |                                                       |  |  |  |  |   |                                                         |  |  |  |  |  |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0      | 1         | 2                 | 3 |  |  |   |   |   |   |   |                                                                              |   |  |  |  |   |                                                               |  |  |  |  |   |                                                              |  |  |  |  |   |                                                       |  |  |  |  |   |                                                         |  |  |  |  |  |
| 1    | MS Link card (1 per shelf is always required in slot 8R in each Shelf Assy.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1      |           |                   |   |  |  |   |   |   |   |   |                                                                              |   |  |  |  |   |                                                               |  |  |  |  |   |                                                              |  |  |  |  |   |                                                       |  |  |  |  |   |                                                         |  |  |  |  |  |
| 2    | DS-512 DS-30 I/F Assy<br>(Step 6 WS-1 ) or<br>(Step 11 WS-2 )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |           |                   |   |  |  |   |   |   |   |   |                                                                              |   |  |  |  |   |                                                               |  |  |  |  |   |                                                              |  |  |  |  |   |                                                       |  |  |  |  |   |                                                         |  |  |  |  |  |
| 3    | Quad DS-512 Fiber I/F<br>(Step 7 WS-1) or<br>(Step 12 WS-2 )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |           |                   |   |  |  |   |   |   |   |   |                                                                              |   |  |  |  |   |                                                               |  |  |  |  |   |                                                              |  |  |  |  |   |                                                       |  |  |  |  |   |                                                         |  |  |  |  |  |
| 4    | DS-30 I/F Assy<br>(Step 8 WS-1) or<br>(Step 13 WS-2 )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |           |                   |   |  |  |   |   |   |   |   |                                                                              |   |  |  |  |   |                                                               |  |  |  |  |   |                                                              |  |  |  |  |   |                                                       |  |  |  |  |   |                                                         |  |  |  |  |  |
| 5    | Total (Item 1+2+3+4)<br>(Max=16 including MS Link card)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |           |                   |   |  |  |   |   |   |   |   |                                                                              |   |  |  |  |   |                                                               |  |  |  |  |   |                                                              |  |  |  |  |   |                                                       |  |  |  |  |   |                                                         |  |  |  |  |  |

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| Step                        | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Answer            |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---|---------------------------|---|-------------|--|-----------------------------|--|---|---|---|---|---|------------------------|--|--|--|--|---|------------------------|--|--|--|--|---|------------------|--|--|--|--|--|
| 2                           | <p>Calculate the number of DS512 message ports required per ENET shelf:</p> <table><tr><th>Item</th><th></th><th colspan="4">ENET Shelf Number</th></tr><tr><th></th><th></th><th>0</th><th>1</th><th>2</th><th>3</th></tr><tr><td>1</td><td>Step 1 Item 2 X 6</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td>Step 1 Item 3 X 8</td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td>Total (Item 1+2)</td><td></td><td></td><td></td><td></td></tr></table>          | Item              |   | ENET Shelf Number         |   |             |  |                             |  | 0 | 1 | 2 | 3 | 1 | Step 1 Item 2 X 6      |  |  |  |  | 2 | Step 1 Item 3 X 8      |  |  |  |  | 3 | Total (Item 1+2) |  |  |  |  |  |
| Item                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ENET Shelf Number |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0                 | 1 | 2                         | 3 |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 1                           | Step 1 Item 2 X 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 2                           | Step 1 Item 3 X 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 3                           | Total (Item 1+2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 3                           | <p>Calculate the average number of DS30 message channels per DS30 I/F card.</p> <p>For Initial ENET's:</p> <table><tr><td colspan="2">Step 2 WS-1</td></tr><tr><td colspan="2">Step 6 WS-1 + Step 8 WS-1</td></tr></table> <p>For ENET Extensions:</p> <table><tr><td colspan="2">Step 2 WS-1</td></tr><tr><td colspan="2">Step 11 WS-2 + Step 13 WS-2</td></tr></table>                                                                                                                       | Step 2 WS-1       |   | Step 6 WS-1 + Step 8 WS-1 |   | Step 2 WS-1 |  | Step 11 WS-2 + Step 13 WS-2 |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| Step 2 WS-1                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| Step 6 WS-1 + Step 8 WS-1   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| Step 2 WS-1                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| Step 11 WS-2 + Step 13 WS-2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 4                           | <p>Calculate the number of DS30 message ports required per ENET shelf:</p> <table><tr><th>Item</th><th></th><th colspan="4">ENET Shelf Number</th></tr><tr><th></th><th></th><th>0</th><th>1</th><th>2</th><th>3</th></tr><tr><td>1</td><td>Step 1 Item 2 X Step 3</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td>Step 1 Item 4 X Step 3</td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td>Total (Item 1+2)</td><td></td><td></td><td></td><td></td></tr></table> | Item              |   | ENET Shelf Number         |   |             |  |                             |  | 0 | 1 | 2 | 3 | 1 | Step 1 Item 2 X Step 3 |  |  |  |  | 2 | Step 1 Item 4 X Step 3 |  |  |  |  | 3 | Total (Item 1+2) |  |  |  |  |  |
| Item                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ENET Shelf Number |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0                 | 1 | 2                         | 3 |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 1                           | Step 1 Item 2 X Step 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 2                           | Step 1 Item 4 X Step 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |
| 3                           | Total (Item 1+2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |   |                           |   |             |  |                             |  |   |   |   |   |   |                        |  |  |  |  |   |                        |  |  |  |  |   |                  |  |  |  |  |  |



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| +-----+                                  |                                                                         |                                            |  |  |  |                   |   |   |        |
| WORKSHEET # 3 cont'd                     |                                                                         |                                            |  |  |  |                   |   |   |        |
| +-----+                                  |                                                                         |                                            |  |  |  |                   |   |   |        |
| Determine the Size of the MS Port Groups |                                                                         |                                            |  |  |  |                   |   |   |        |
| +-----+                                  |                                                                         |                                            |  |  |  |                   |   |   |        |
| +-----+                                  |                                                                         |                                            |  |  |  |                   |   |   |        |
| Step                                     | Procedure                                                               |                                            |  |  |  |                   |   |   | Answer |
| +-----+                                  |                                                                         |                                            |  |  |  |                   |   |   |        |
| 5                                        | Calculate the total number of message ports<br>required per ENET shelf: |                                            |  |  |  |                   |   |   |        |
| +-----+                                  |                                                                         |                                            |  |  |  |                   |   |   |        |
|                                          | Item                                                                    |                                            |  |  |  | ENET Shelf Number |   |   |        |
|                                          |                                                                         |                                            |  |  |  | 0                 | 1 | 2 | 3      |
| +-----+                                  |                                                                         |                                            |  |  |  |                   |   |   |        |
|                                          | 1                                                                       | MS Link message ports<br>Step 1 Item 1 X 1 |  |  |  | 1                 |   |   |        |
|                                          | 2                                                                       | Total DS512 message ports<br>Step 2 Item 3 |  |  |  |                   |   |   |        |
|                                          | 3                                                                       | Total DS30 message ports<br>Step 4 Item 3  |  |  |  |                   |   |   |        |
| +-----+                                  |                                                                         |                                            |  |  |  |                   |   |   |        |
|                                          | 4                                                                       | Total (Item 1+2+3)                         |  |  |  |                   |   |   |        |
| +-----+                                  |                                                                         |                                            |  |  |  |                   |   |   |        |
| +-----+                                  |                                                                         |                                            |  |  |  |                   |   |   |        |

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0 | Worksheet # 3 End |

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0 | Determine the Quantity of Supernode ENET I/F Cards |  
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| Step                                                             | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Answer          |                   |   |                   |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------|---|-------------------|--|-------------------|--|---|---|---|---|--|------------------|--|--|--|--|--|------------------|--|--|--|--|--|----------------|--|--|--|--|--|------------------------------------------------------------------|---------|--------|--------------------|----------|---------------------------------------------|-----------|-----------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------|--|
| 6                                                                | <div>Calculate the total number of ENET I/F cards required.</div> <table><thead><tr><th>I/F Card Type *</th><th colspan="4">ENET Shelf Number</th><th>Total of Shlf 0-3</th></tr><tr><th></th><th>0</th><th>1</th><th>2</th><th>3</th><th></th></tr></thead><tbody><tr><td>Initial ENET I/F</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Intermediate I/F</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Final ENET I/F</td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table> <div>* Provide Cards according to table below:</div> <table><thead><tr><th>If # of Message Ports per ENET shelf (WS-3 Step 5 item 4) equals</th><th>Provide</th></tr></thead><tbody><tr><td>1 - 64</td><td>1 Initial ENET I/F</td></tr><tr><td>65 - 128</td><td>1 Initial ENET I/F plus<br/>1 Final ENET I/F</td></tr><tr><td>129 - 192</td><td>1 Initial ENET I/F plus<br/>1 Intermediate ENET I/F plus<br/>1 Final ENET I/F</td></tr><tr><td>193 - 256</td><td>1 Initial ENET I/F plus<br/>2 Intermediate ENET I/F plus<br/>1 Final ENET I/F</td></tr></tbody></table> | I/F Card Type * | ENET Shelf Number |   |                   |  | Total of Shlf 0-3 |  | 0 | 1 | 2 | 3 |  | Initial ENET I/F |  |  |  |  |  | Intermediate I/F |  |  |  |  |  | Final ENET I/F |  |  |  |  |  | If # of Message Ports per ENET shelf (WS-3 Step 5 item 4) equals | Provide | 1 - 64 | 1 Initial ENET I/F | 65 - 128 | 1 Initial ENET I/F plus<br>1 Final ENET I/F | 129 - 192 | 1 Initial ENET I/F plus<br>1 Intermediate ENET I/F plus<br>1 Final ENET I/F | 193 - 256 | 1 Initial ENET I/F plus<br>2 Intermediate ENET I/F plus<br>1 Final ENET I/F |  |
| I/F Card Type *                                                  | ENET Shelf Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |                   |   | Total of Shlf 0-3 |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
|                                                                  | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1               | 2                 | 3 |                   |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| Initial ENET I/F                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                   |   |                   |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| Intermediate I/F                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                   |   |                   |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| Final ENET I/F                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                   |   |                   |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| If # of Message Ports per ENET shelf (WS-3 Step 5 item 4) equals | Provide                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 |                   |   |                   |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| 1 - 64                                                           | 1 Initial ENET I/F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                   |   |                   |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| 65 - 128                                                         | 1 Initial ENET I/F plus<br>1 Final ENET I/F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                   |   |                   |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| 129 - 192                                                        | 1 Initial ENET I/F plus<br>1 Intermediate ENET I/F plus<br>1 Final ENET I/F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                   |   |                   |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |
| 193 - 256                                                        | 1 Initial ENET I/F plus<br>2 Intermediate ENET I/F plus<br>1 Final ENET I/F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                   |   |                   |  |                   |  |   |   |   |   |  |                  |  |  |  |  |  |                  |  |  |  |  |  |                |  |  |  |  |  |                                                                  |         |        |                    |          |                                             |           |                                                                             |           |                                                                             |  |

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Important rules.

0 1)Provide two (2) NT9X17DA MS 64-Port CP and two (2) NT9X20BB  
0 DS-512 ENET/MS Fiber interface PB to interface with an ENET  
0 shelf. An NT9X17DA/NT9X20BB pair is required per MS (per plane)  
0 for each link.

0 2)The NT9X17DA used only with ENET and it requires BCS31 or  
0 higher.

0 3)If the number of message ports required for interfacing with  
0 ENET is greater than 64, provide additional NT9X17DA MS 64-Port  
0 CP in successive higher numbered slots. For each additional  
0 NT9X17DA except the last, provide one (1) NT9X25AA MS Port  
0 Expander PB; for the last NT9X17DA, provide one (1) NT9X25BA MS  
0 Port Terminator PB.

0 In MS Port Group, assign the ENET ports to the lowest numbered MS  
0 slots in ascending order starting from slot 12 (i.e. slots 12,  
0 13, etc.). However, the SAEs and EAEs should anticipate and  
0 plan all future growth on each ENET shelf and provision the MS  
0 cards accordingly, by leaving a spare slot for future expansion  
0 if necessary.

0 Also refer to ECM 627 and ECM 626 for more detail information.

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0 NORTHERN TELECOM  
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PRACTICE 297-1001-450

0 CIRCUITS PER CARD

0  
0 Not applicable

0 DISCRIMINATION NUMBERING

0  
0 Not applicable

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0 3.1.3 PROVISIONING CONSIDERATIONS

0

## 0 CABINET MODEL

0  
0 NT9X05AD Enhanced Network Cabinet (ENC)

0 The 64K ENET will be engineered and provisioned the same as the  
0 current 128K ENET, with the exception that the system can config-  
0 ured with the single cabinet for both planes. The shelf position  
0 39 and 26 are Plane 0 and the shelf position 13 and 00 are Plane  
0 1.

0 New Designation Labels have been developed for the ENET Cabinet  
0 (ENC) and ENET Shelf (ENET) to be applied to the Cabinet and the  
0 PDC as follows: This is for the 64K Enhanced Network product.

0 The Exterior Cabinet Door Label will be as follows :  
0 P0735379 - Exterior Door Label (ENET Brown)  
0 P0735380 - Exterior Door Label (ENET Grey)  
0 P0735381 - Exterior Door Label (ENET Blue)

0 The format of this label is as follows:

0 ENC <cabinet number> , eg. ENC 0  
0 cabinet number = 0

0 ENET Shelf Designation Label  
0 P0735382 - ENET Shelf ID Label

0 Locate label beside the Frame Supervisory Panel (FSP). The label  
0 format includes Cabinet Name, Plane, Number, Location, PEC, and  
0 Shelf Name is as follows:

0 - Cabinet Name (ENC) <cabinet number>  
0 eg. ENC 0

0 where cabinet number = 0

0 - Location :aann eg. A03, BA34

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0  
0 where aa = one or two letters from A through Z,  
0 excluding I and O, and AA through ZZ,  
0 excluding II and OO.

0 nn = two digits from 01 through 49

0 - PEC Code : NT9X05AD

0 - Shelf Name : ENET <Plane> <Shelf>,  
0 eg. ENET 0 00, ENET 1 01  
0 where Plane = 0 or 1  
0 Shelf = 00 through 01

0 The Power Distribution Centre Labels will be as follows:

0 P0735383 - The Power Distribution Centre Label

0 - NAME ABBREVIATION <Plane> <Shelf, Cabinet> <Function>

0 Where NAME ABBREVIATION = ENC or ENET

0 Plane = 0 or 1  
0 Shelf = 00 through 01  
0 Cabinet = 0  
0 Function = ABS, and B1 through B4

0 where ABS = Alarm Battery Supply  
0 B = Blower Fan

0 eg. ENC 0 00 B1  
0 ENET 0 00  
0 ENC 0 00 ABS

## 0 ENHANCED NETWORK (ENET) SHELF PROVISIONING

0  
0 Network shelves are provisioned based on Speech Link PB needs.  
0 One shelf is required per plane for every 15 Speech Link PB. Each  
0 Single Cabinet Enhanced Network can be equipped with up to four  
0 (4) Enhanced Network (ENET) Shelf assemblies NT9X0801, as re-  
0 quired. The Single Cabinet Enhanced network is always equipped  
0 with two (2) NT9X0801 enhanced network assembly in position 39

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0 and 13. The additional shelves are to be mounted on the cabinet  
0 in position 26 and 00 as required. A fully equipped Single Cab-  
0 net Enhanced Network has the capacity of up to 64K channels.

0 The ENET Shelf assembly does not have a common circuit pack fill.  
0 All circuit packs are provisionable.

0 ENET Shelf Provisioning is dependent on the quantity and types of  
0 peripherals to be interfaced. The assumption is made that pe-  
0 ripherals and IOC are first provisioned according to existing en-  
0 gineering rules. ENET rules relate to one plane only.

0 ENET provisioning is not sensitive to traffic or real time and  
0 therefore is provisioned based on terminations only.

0 NT9X40BB Quad DS-512 Fiber Interface Paddle Board

0 - one (1) required per ENET shelf assembly to interface MS links  
0 (i.e. card slot 8R of ENET shelf).

0 - one (1) required per four (4) DS-512 speech links. One (1)  
0 NT9X40BB can accommodate four (4) fiber XPMs (FXPMs).

0 NT9X41BA DS-30 Interface Paddle Board

0 - one (1) required per 16 DS-30 links. No messaging ports can be  
0 assigned to link #1 (when counting from link #0 up).

0 NT9X45BA 16DS-30/3DS-512 Interface Paddle Board

0 The DS-30/DS-512 PB is a new peripheral interface paddle board  
0 can be used on the Single Cabinet Enhanced NETwork. This pack can  
0 interface 3 DS-512 fiber links and 16 DS-30 copper links. It com-  
0 bines the functionality of existing NT9X41BA and NT9X40BB packs.  
0 The NT9X40BB (4 DS-512) fully utilize the ENET's channel handling  
0 capacity. But, it does not provide copper links. On the other  
0 hand, the NT9X41BA (16 DS-30) pack does not fully utilize ENET's  
0 channel handling capacity(only 25% utilization of crosspoints).  
0 Using an NT9X45BA results in a 100% utilization of ENET cross-  
0 points and providing both copper and fiber links. For example an  
0 ENET currently equipped with 4 NT9X41BAs and 3 NT9X40BBs requires  
0 7 Crosspoints. This could be reconfigured with 4 NT9X45BAs and  
0 only 4 Crosspoints a savings of 3 Crosspoints

0 NT9X35CA 16K x 16K Channel Terminating Cross-point CP

0 - Used to terminate Horizontal bus (H-bus).

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- 0 - Minimum 2 per Network Shelf. Maximum 4 per Network Shelf.
- 0 - The first Network Shelf always requires four (4) CP.
- 0 - One CP, slot 9F, required for MS to Network Shelf messaging.  
0 Slot 9R cannot be equipped with a PB and is therefore not  
0 available for speech links to peripherals.
- 0 - Other 3 CPs used for speech link interface to peripherals may  
0 be used with DS-30 or DS-512 PB.
- 0 NT9X35BA 16K x 16K Channel Cross-point CP
- 0 - One required for each speech link interface PB.
- 0 - Maximum 12 per Network Shelf.
- 0 - Provisioned in pairs (4K-CH) for the first shelf per plane  
0 and in groups of six CP (12K-CH) for the second shelf.
- 0 NT9X13FA CPU CP
- 0 - One (1) required per shelf assembly.
- 0 NT9X30AA +5V 80A Power Converter
- 0 - Two (2) required per shelf assembly.
- 0 NT9X31AA -5V 20A Power Converter
- 0 - Two (2) required per shelf assembly.
- 0 NT9X26AB Remote Terminal Interface
- 0 - One (1) required per shelf assembly.
- 0 NT9X36BA Network Clock & Message Interface Circuit Pack
- 0 - Used to interface peripheral Message Channel to the Message  
0 Switch
- 0 - One (1) required per shelf assembly.
- 0 NT9X0530 V-Bus Cables
- 0 - 16 V-Bus cables are required between shelf 0 and shelf 1 on  
0 Plane 0 (i.e. between shelf position 39 and 26).



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0 - 16 V-Bus cables are required between shelf 0 and shelf 1 on  
0 Plane 1 (i.e. between shelf position 13 and 00).

0 It is not permissible to have V-Bus cables between shelf posi-  
0 tion 26 and shelf position 13.

0 NT9X0520 DS-30 Cable Assemblies

0 - One (1) is required for each NT9X41BA equipped to extend the  
0 DS-30 Speech links to the Bulkhead from the Paddle Board.

0 NT9X19AA Filler Face Plate

0 - Eight (8) are required per shelf assembly.  
0 - Provide as needed for other unequipped card slots.

0 NT9X19BA Filler Face Plate Paddle Board

0 - Nine (9) are required per shelf assembly.  
0 - Provide as needed for other unequipped PB slots.

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0 See the figure below for a depiction of a fully utilized ENET  
0 shelf.

|   |                                   |     |                      |
|---|-----------------------------------|-----|----------------------|
| 0 | 9X31AA -5V 20A Pwr Converter      | 1F  |                      |
| 0 |                                   |     |                      |
| 0 | 9X30AA +5V 80A Pwr Converter      | 4F  |                      |
| 0 |                                   |     |                      |
| 0 | 9X13FA CPU CP                     | 7F  | 7R 9X26AB            |
| 0 | 9X36BA Network Clock & MSG CP     | 8F  | 8R 9X40BB            |
| 0 | 9X35CA 16K x 16K Chan Term Xpt CP | 9F  | 9R 9X19BA            |
| 0 | 9X35CA 16K x 16K Chan Term Xpt CP | 10F | 10R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 11F | 11R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 12F | 12R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 13F | 13R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 14F | 14R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 15F | 15R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 16F | 16R 9X40BB/41BA/45BA |
| 0 | 9X19AA Filler Face Plate          | 17F | 17R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 18F | 18R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 19F | 19R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 20F | 20R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 21F | 21R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 22F | 22R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 23F | 23R 9X19BA           |
| 0 | 9X19AA Filler Face Plate          | 24F | 24R 9X19BA           |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 25F | 25R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 26F | 26R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 27F | 27R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 28F | 28R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 29F | 29R 9X40BB/41BA/45BA |
| 0 | 9X35BA 16K x 16K Chan Xpt CP      | 30F | 30R 9X40BB/41BA/45BA |
| 0 | 9X35CA 16K x 16K Chan Term Xpt CP | 31F | 31R 9X40BB/41BA/45BA |
| 0 | 9X35CA 16K x 16K Chan Term Xpt CP | 32F | 32R 9X40BB/41BA/45BA |
| 0 |                                   |     |                      |
| 0 | 9X31AA -5V 20A Power Converter    | 33F |                      |
| 0 |                                   |     |                      |
| 0 | 9X30AA +5V 80A Power Converter    | 36F |                      |

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## 0 SPEECH LINK ASSIGNMENT RULES

0  
0 Reallocation of normal grades of service across system components  
0 taking into account the new switching architecture, may result in  
0 improvements to stated capacities of other traffic sensitive com-  
0 ponents. This area requires further study.

0 As previously stated, no rigorous port spreading rules apply to  
0 speech links and respreading is not carried out during exten-  
0 sions. Indeed in ENET offices, no SLC is provided to facilitate  
0 such activity. Peripherals will be cabled directly to the ENET  
0 Shelf only if fewer than seven (7) NT9X41BA/45BA PBs are on the  
0 ENET Shelf.

0 If there are seven (7) or more NT9X41BA/45BA PBs on the ENET  
0 Shelf, Speech Link Connector (SLC) frames, Peripheral Speech Link  
0 (PSL) panels, and Network Speech Link (NSL) panels will be engi-  
0 neered as appropriate. In such a case, if there is room on an  
0 existing SLC frame, the new PSL and NSL panels can be assigned  
0 onto it. Otherwise, new SLC frames will have to be provided.

0 When SLC Frames/Panels are required, provision PECs and quanti-  
0 ties exactly as documented for JNETs.

0 The NT9X6530 (i.e. left bulkhead panel provides access for 0 to  
0 112 DS-30s) is required, if there are four (4) to seven (7)  
0 NT9X41BA and or 45BA PBs per the corresponding left half of the  
0 shelf (i.e. between card slots 32R-25R). The NT9X6531 (i.e.  
0 right bulkhead panel provides access for 0 to 112 DS-30s) is re-  
0 quired, if there are four (4) to seven (7) NT9X41BA and or 45BA  
0 PBs per the corresponding right half of the shelf (i.e. between  
0 card slots 10R-16R). The DS-30 speech links terminating on the  
0 either half of the shelf will be cross connected at an SLC.

0 If any of the above bulkhead panel is used, the number of NSLs  
0 can be calculated using,

0 # of NSLs = { #of NT9X41BA/45BAs in one half of the shelf / 4 }  
0 to be rounded to next higher integer.

0 It is a requirement that each ENET Shelf be fully equipped with  
0 X-Point CPs before another is started. Each X-Point CP need not  
0 have a PB behind it.

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## 0 ISN CABLING STRUCTURE(ICS) CABINET

0  
0 The NT0X35CC (ICS) mounts on the left and/or right side of a ENC  
0 or S/N cabinet. The ICS provides a larger cabling area for cables  
0 connected between cabinets and frames. Cable is intended to run  
0 down (or up) this cabinet, and enter the large holes in the side  
0 of the SuperNode, ENC, etc. cabinet to reach the connector  
0 bulkheads.

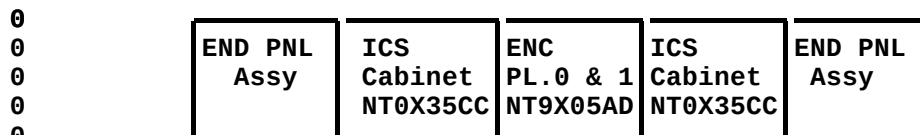
0 The NT0X35CC MUST be provisioned for ALL 64K and 128K ENET in-  
0 stallations. Richardson applications do not require the cabling  
0 cabinets on both 64K and 128K ENET installations.

0 The number of cabling cabinets required for 64K ENET (NT9X05AD)  
0 must be 2(See figure below).

0 From 64K ENET to 128K ENET upgrade refer to ECM 627.

0 If not initially installed with ENET, ICS Cabinets cannot be  
0 added at a later date.

0 Rear



0 Front

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0 3.1.4 OFFICE LAYOUT INFORMATION

0  
0 The S/DMS cabinet will be shipped with the doors, shelves, circuit  
0 packs, FSP, and cooling unit installed. The bus bar will be in-  
0 stalled and appropriate connections will be made at the factory.  
0 The bulkheads form part of the EMC cage around the equipment and  
0 provide a place to mount filter PCBs and optional power filters.  
0 The rear of the cabinet is equipped with two removeable bulkhead  
0 panels near the bottom of the cabinet. When these panels are re-  
0 moved, the cabinet can be installed in, or removed from, a lineup  
0 equipped with horizontal cabling. The cabinet may be slid "FOR-  
0 WARD" only.

0 Refer to ECM 627 for office layout restrictions when this cabinet  
0 is applied in a stand alone lineup.

0 Refer to ECM 600 for office layout restrictions when this cabinet  
0 is applied in a Streamline lineup.

0 3.1.5 TRAFFIC TABLES

0  
0 Not applicable.

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0 3.2 PRODUCT/SYSTEM SPECIFICATION

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0 3.2.1 PHYSICAL CHARACTERISTICS

0

0 POWER/HEAT DISSIPATION

0

0 The following describes the characteristics of the 64K ENET  
0 (NT9X05AD) cabinet:

0 The following values are the typical power dissipation figures  
0 for a fully equipped 64K ENET single cabinet:

0 One (1) ENET Shelf Dissipation ..... 1073W  
0 Four (4) ENET Shelves Dissipation (1073 X 4) . 4293W (approx.)  
0 Fan Consumption ..... 300W  
0 ENC Cabinet Dissipation (4293 + 300) ..... 4593W

0 Refer to CA0X04 issue 01 20 and later for power cable informa-  
0 tion.

0 PDC feeds are connected to the cabinet via EMI feed through  
0 capacitors at the top of the frame. Cable and Drop Length shall  
0 be job engineered.

0

0 3.2.2 EMI/EARTHQUAKE INFORMATION

0

0 End panels are required to complete the EMC enclosure for cabi-  
0 nets located at the end of a lineup. In earthquake installa-

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0 tions, the S/DMS cabinet must be bolted to the floor in four(4)  
0 places through anchor holes provided in the base of the cabinet.  
0 The cooling unit must be removed for access to the bolts. When  
0 the cabinet is bolted in place, the optional leveling feet must  
0 not be installed. Leveling will be accomplished through the use  
0 of non-conductive shims. The bolts must be tightened with a  
0 torque wrench to ensure adequate pretension.

0 For raised floor installations, a sub-structure support between  
0 the concrete sub-floor and the raised floor will be required. A  
0 qualified seismic engineer should be consulted regarding the re-  
0 quired additional bracing.

### 0 3.2.3 SPARING INFORMATION

0  
0 For U.S. applications use standard sparing algorithms.

0 For Canadian and other applications the following may be used.

0 a) Version 2, C42 Cooling Unit:  
0 -----

0 Blowers 660,000 hrs MTBF in its useful life of 10 years.  
0 MTM cards 4,700,000 hrs MTBF  
0 Relay 100,000,000 hrs MTBF

0 Note that the blower's useful life is about 10 years. Around that  
0 time, failures are to be expected. Good practice might dictate  
0 replacement of operating blowers around that time (analagous to  
0 replacing your car's engine belts before they break).

0 The spare fiber cables should be as long as the longest job spec-  
0 ified cable, with a breakout length also equal to the longest  
0 length used in the office.  
0 (eg. NT0X97AK, NT0X97AJ Fiber Cables )

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0 3.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Each shelf has four (4) power converters, two at either side of  
0 the shelf, mounted from the front.

0 Logic power distribution to the shelf electronics is from each  
0 power module to the corresponding half of the shelf.

0 Fuses are required as follows for NT9X05AC.

0 For powering from a standard 7' PDC

0 -----  
0 2 - 20 Amp fuses (for each ENET Shelve)  
0 2 - 10 Amp fuses (for C42 cooling blowers)  
0 1 - 10 Amp Fuse (Alarm Battery Supply (ABS))

0 For powering from a CPDC

0 -----  
0 2 - 30 Amp fuses (for each ENET Shelve)  
0 2 - 10 Amp fuses (for C42 cooling blowers)  
0 1 - 10 Amp Fuse (Alarm Battery Supply (ABS))

0 Plane 0 cabinets are powered from A feed while plane 1 cabinets  
0 are powered from B feed.

0 Refer to CA0X04 issue 01 20 and later for power cable informa-  
0 tion.

0 PDC feeds are connected to the cabinet via EMI feed through  
0 capacitors at the top of the frame. Cable and Drop Length shall  
0 be job engineered.

0 3.2.5 CURRENT DRAIN INFORMATION

0  
0 Input Voltage.....-48VDC



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0 Power Consumption.....4432 watts (+/- 10%) fully equipped  
0 Current Drain.....92.0Amps

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0 3.3 SOFTWARE PROVISIONING

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0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The software developed for the 128K ENET and packaged in NTXE01AA  
0 will be utilized in 64K ENET. For further information refer to  
0 ECM 627.

0 3.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 The 64K ENET requires software release BCS-33 or higher.  
0  
0 Offices equipped with NT9X45BA must have at least BCS33 Load  
0  
0 Offices equipped with NT9X40BB must have at least BCS33 Load

0 3.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

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0 3.4 REAL TIME IMPACT

0 Not applicable.

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#### 0 4.0 Building Block Engineering - DSNE

0 The purpose of this ECM is to document the provisioning of the  
0 DSNE by the use of Building Block Engineering techniques.

0 The Double Shelf Network building block concept deals with a  
0 higher level of Product Engineering Code (PEC) ordering and sim-  
0 plifies the engineering process. The DSNE is the switching hub  
0 of the DMS-100F switching system and a network has 1920 ports or  
0 64 DS-30 ports providing connections through the DMS-100. The  
0 DSNE frame contains up to two (2) Networks and comes equipped  
0 with the Frame Supervisory Panel, DC Cooling Unit, and Network  
0 module shelf assembly. The Network Common Circuit Packs (CP) and  
0 Double Shelf Network assembly will be provided on an as need ba-  
0 sis.

#### 0 NTZZ07AA (Double Shelf Network Equipment Frame)

0 The NTZZ07AA includes the frame and one (1) Network Module shelf  
0 assembly, Frame Supervisory Panel, and DC Cooling Unit. The frame  
0 is also ISG compliant and contains earthquake framework. Options  
0 to NTZZ07AA include an additional Network Shelf Assembly, up to  
0 two (2) Network Common CP, and interface circuit packs to either  
0 the NT-40 or SuperNode.

0 NTZZ07BA (Network Common Circuit Packs) The NTZZ07BA contains the  
0 common circuit packs required for a Network which is housed in  
0 the DSNE frame. Each NTZZ07BA contains Network Port CP's, Test  
0 Code cp's, Network Control Processor, Network P-side Message  
0 Processor, and Power Converter. This PEC provides a full comple-  
0 ment of network ports circuit packs which allows junctoring at  
0 the DNI.

0 NTZZ07QA (Double Shelf Network W/O Network Ports) The NTZZ07QA  
0 contains the common circuit packs required for a Network which is  
0 housed in the DSNE frame. Each NTZZ07QA contains Test Code cp's,  
0 Network Control Processor, Network P-side Message Processor, and  
0 Power Converter. Network Port circuit packs are provisionable.

0 NTZZ41PA (International Double Shelf Network) The NTZZ41PA con-  
0 tains the common circuit packs required for a Network which is  
0 housed in the DSNE frame. Each NTZZ41PA contains Test Code cp's,  
0 Network Control Processor, Network P-side Message Processor, and  
0 Power Converter. This PEC provides a full complement of network  
0 port circuit packs which allows junctoring at the DNI.

#### 0 NTZZ07CA NT-40 Network Clock Interface

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0 The NTZZ07CA contains the circuit pack to provide the interface  
0 from the DSNE to the NT-40. Each NTZZ07CA contains two (2) CP's  
0 (one (1) per Network Plane) and designation labels.

0 NTZZ07DA SuperNode Network Clock Interface

0 The NTZZ07DA contains the circuit pack to provide the interface  
0 from the DSNE to the SuperNode. Each NTZZ07DA contains two (2)  
0 CP's (one (1) per Network Plane) and designation labels.

0 NTZZ07EA (Double Shelf Network Equipment Frame (US))

0 | The NTZZ07EA is MDed and replaced by NTZZ07AA.

0 The NTZZ07EA includes the frame and one (1) Network Module shelf  
0 assembly, Frame Supervisory Panel, and DC Cooling Unit. The frame  
0 is also ISG compliant. Options to NTZZ07EA include an additional  
0 Network Shelf Assembly, up to two (2) Network Common CP, and  
0 interface circuit packs to either the NT-40 or Supernode. This  
0 frame is for US applications only.

0 NTZZ07MA (Network Port CP)

0 The NTZZ07MA includes a quantity of four network port circuit  
0 packs. This PEC is used to equip a NTZZ07NA DSN Common CP for a  
0 two DSN module only (non-DNI) office. This PEC is also used to  
0 extend an office with only one or two DSN modules not junctored  
0 at the DNI. Please note that offices with three or more network  
0 modules of the same vintage, or two or more network modules of  
0 different vintages must be junctored at the DNI.

0 NTZZ07NA (DSN Common CP)

0 The NTZZ07NA does not include any network port circuit packs.  
0 This PEC can be used to provide a single DSN module in a non-DNI  
0 office or two DSN modules in a non-DNI office when equipped with  
0 NTZZ07MA.

0 NTZZ07PA (Earthquake DSNE Frame (US))

0 | The NTZZ07PA is MDed and replaced by NTZZ07AA.

0 The NTZZ07PA includes the frame and one (1) Network Module shelf  
0 assembly, Frame Supervisory Panel, and DC Cooling Unit. The frame  
0 is also ISG compliant. Options to NTZZ07EA include an additional  
0 Network Shelf Assembly, up to two (2) Network Common CP, and

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0 interface circuit packs to either the NT-40 or Supernode. This  
0 frame is for US earthquake applications only.

0 4.1 HARDWARE PROVISIONING

0

0 4.1.1 Hardware Usage Restrictions

0  
0 Not Applicable.

0 4.1.2 Hardware Dependencies

0  
0 Not Applicable.

0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable

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0 CIRCUITS PER CARD

0  
0 Not applicable

0 DISCRIMINATION NUMBERING

0  
0 Not applicable

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0 4.1.3 Provisioning Considerations

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0 QUESTIONNAIRE

0 (A) Will the DSNE interface to SuperNode ? (yes/no) \_\_\_\_\_

## 0 (B) REQUIRED NETWORK MODULES (Physical):

0 (The Customer is only required to fill in the total SPARE PORTS.  
0 All other quantities have been calculated in their respective  
0 documents.)

| PERIPHERAL MODULE                           | QTY |   | PORTS/<br>UNIT | TOTAL<br>PORTS | NOTES |
|---------------------------------------------|-----|---|----------------|----------------|-------|
| 16 PORT LGC - PERIPHERAL PORTS              |     |   |                |                |       |
| 20 PORT LGC - PERIPHERAL PORTS              |     |   |                |                |       |
| SUBSCRIBER MODULE FOR SLC-96 (SMS)          |     | X | 4              |                |       |
| SMR<br>(SP LINKS PER SMR _____ X 24)/ 30 ** |     |   | XXXX           |                |       |
| SMU<br>(SP LINKS PER SMU _____ X 24)/ 30 ** |     |   | XXXX           |                |       |
| MESSAGE SWITCH & BUFFER FR (MS6E)           |     |   |                |                |       |
| TOPS MESSAGE SWITCH                         |     |   |                |                |       |
| MESSAGE SIGNALLING 7 EQUIP (MS7E)           |     | X | 3              |                |       |
| DIGITAL CARRIER MODULE (DCM)                |     | X | 4              |                |       |
| DIGITAL TRUNK CARRIER (DTC)                 |     | X | 16             |                |       |
| LTC - PERIPHERAL PORTS                      |     |   |                |                |       |
| PAGE TOTALS                                 |     |   | XXXX           |                | XXXX  |



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## 0 (B) REQUIRED NETWORK MODULES (Physical) (cont'd):

| PERIPHERAL MODULE                          | QTY | PORTS/<br>UNIT | TOTAL<br>PORTS | NOTES |
|--------------------------------------------|-----|----------------|----------------|-------|
| TOTALS FROM PRECEEDING PAGE                | XXX | XXXX           |                | XXXX  |
| MAINTENANCE TRUNK MODULE<br>(MTM, DRA MTM) |     | X 1            |                |       |
| TRUNK MODULE (TM)                          |     | X 1            |                |       |
| 20 PORT IAC - PRIMARY RATE ACCESS          |     |                |                |       |
| COMMON PERIPHERAL EQUIP. - ISDN            |     |                |                |       |
| 20 PORT IAC - PERIPHERAL PORTS             |     |                |                |       |
| FIBER ISDN I/F - HLE                       |     |                |                |       |
|                                            |     |                |                |       |
|                                            |     |                |                |       |
|                                            |     |                |                |       |
| SPARE PORTS                                | XXX | XXXX           |                | XXXX  |
| TOTAL PORTS FOR ALL MODULES                |     | XXXX           |                | XXXX  |

0 NOTE: Include ports to support wired capacity if required.

0 \*\* Calculate requirements for each controller, round up, and  
0 sum for TOTAL PORTS. (minimum 3 ports per controller)

0 (C) For U.S. offices, is earthquake protection  
0 required? \_\_\_\_\_

0 CALCULATIONS

0 (NETWORK MODULES PER PLANE (Physical))

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- 0  
0 (1) Quantity of Network Module Common CP = \_\_\_\_\_  
0 {TOTAL PORTS / 64}  
0 (NTZZ07BA/NTZZ41PA or NTZZ07NA)  
  
0 NTZZ07NA may be selected for non-DNI offices  
0 of one or two network modules.
- 0  
0 (2) Quantity of DSNE frames = \_\_\_\_\_  
0 {Item (1) / 2} Round up  
0 NTZZ07AA
- 0  
0 (3) Quantity of Double Shelf Network Assemblies = \_\_\_\_\_  
0 (NT8X11AB)  
0 If Item (1) is Even no., {Enter Item (2)}  
0 If Item (1) is Odd no., {Enter Item (2) - 1}  
  
0 (For DSNE frames equipped with two (2)  
0 Network Modules.)
- 0  
0 (4) Quantity of NT-40 Interface Circuit Packs = \_\_\_\_\_  
0 {Item (1) if question A is answered no}  
0 (NTZZ07CA)
- 0  
0 (5) Quantity of SuperNode Interface Circuit Packs = \_\_\_\_\_  
0 {Item (1) if question A is answered yes}  
0 (NTZZ07DA)
- 0  
0 (6) Quantity of Filler Panels = \_\_\_\_\_  
0 {Item ((2) - (3)) x 2}  
0 (P0575239)
- 0  
0 (7) Quantity of Network Port CP \_\_\_\_\_  
0 {If Item 1 = Qty 1 of NTZZ07NA then  
0 NTZZ07MA = 0 else if Item 1 = Qty 2  
0 NTZZ07NA then NTZZ07MA = 2. If Item 1  
0 = any Qty NTZZ07BA then NTZZ07MA = 0.

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0 4.1.4 Office Layout Information

0  
0 Not Applicable.

0 4.1.5 Traffic Tables

0  
0 Not Applicable.

0 4.2 Product/System Specification

0 Not Applicable.

0 4.2.1 Physical Characteristics

0  
0 Not Applicable.

0 4.2.2 EMI/Earthquake Information

0  
0 Not Applicable.

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0 4.2.3 Sparing Information

0  
0 Not Applicable.

0 4.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 The following fuses and feeds are required:

0 Each shelf of DSNE requires a 10 amp fuse. Each shelf is con-  
0 nected alternately to the A and B feeds.

0 4.2.5 CURRENT DRAIN INFORMATION

0  
0 Current Drain for each DSNE shelf is 3.5 amps.

0 4.3 Software Provisioning

0 Not Applicable.

0 4.3.1 Required Software Packages and Interdependencies

0  
0 Not Applicable.

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0 4.3.2 Software Usage Restrictions

0  
0 Not Applicable.

0 4.3.3 Memory Provisioning

0  
0 Not Applicable.

0 4.4 Real Time Impact

0 Not Applicable.

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0 5.0 Single Bay Network (NT0X48)

0 Each single bay frame of the NT0X48 network frame contains one  
0 (1) Network Module. Each network plane, therefore, requires from  
0 1 to 32 frames to accommodate a complete set of Network Modules.

0 5.1 HARDWARE PROVISIONING

0

0 5.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 5.1.2 HARDWARE DEPENDENCIES

0  
0 Not applicable.

0 5.1.3 PROVISIONING CONSIDERATIONS

0  
0 ( i) Each Network Module can terminate up to sixty-four  
0 (64) speech links from peripheral modules.

0 ( ii) Each Network Module is configured as eight (8) Network  
0 Subgroups (NSG) each having eight (8) ports for terminat-  
0 ing speech links.

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0 5.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 5.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 5.2 PRODUCT/SYSTEM SPECIFICATION

0

0 5.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 5.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 5.2.3 SPARING INFORMATION

0  
0 Not applicable.

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0 5.3 SOFTWARE PROVISIONING

0

0 5.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Not applicable.

0 5.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 5.3.3 MEMORY PROVISIONING

0

0 Not applicable.

0 5.4 REAL TIME IMPACT

0 Not applicable.

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## 0 6.0 DMS SuperNode SE

0 The DMS SuperNode SE(SNSE) is an alternative provisioning option to  
0 the traditional SuperNode, Enhanced Network (ENET) and Link Peripheral  
0 Processor (LPP).

0 The selection of the DMS SuperNode SE is recommended where the appli-  
0 cation's projected growth will not exceed any of the following charac-  
0 teristics:

0 ! 20 FXPM or 80 DS30 network interfaces for Peripherals  
0 Mod.

0 ! 3 Link Peripheral Processors(LPP).

0 ! 2 Application / File Processors(AP/FP).

0 It is normally recommended that applications that exceed these  
0 parameters use the standard SuperNode.

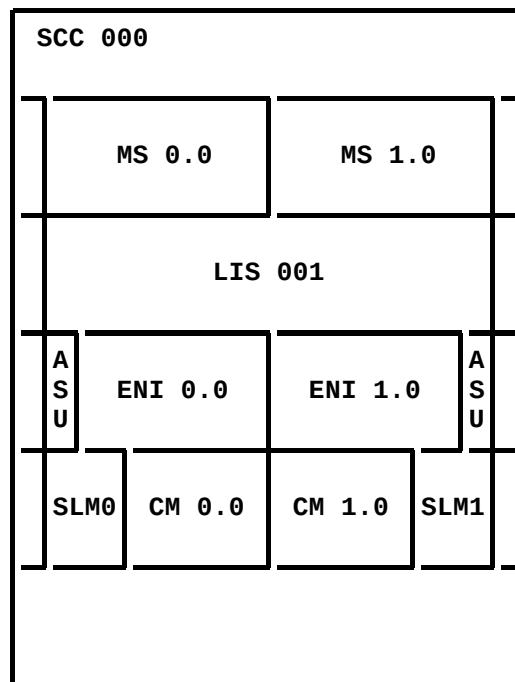
0 The SNSE is intended for end-offices that require an initial ca-  
0 pacity of up to 13,000 subscriber lines. The network can provide  
0 growth potential of 20,000 to 40,000 subscriber lines or 12,000  
0 trunks, depending on the traffic and service mix of an applica-  
0 tion and the required peripheral configuration.

0 The SNSE platform is defined as containing the CM/SLM  
0 functionality, DMS-Bus functionality, LIS and Network  
0 functionality. In essence, SuperNode SE provides DMS-Core,  
0 DMS-Bus, ENET 16K Channels, and a Link Interface Shelf(LIS) in a  
0 single cabinet.

0 The ENET 16K channels provides an effective network switching ca-  
0 pacity of upto 6,000 Erlang (216,000 CCS). The network can be  
0 configured to support a maximum of 27 DS-512 and 16 DS-30 inter-  
0 faces through to 22 DS-512 and 96-DS30 interfaces. The use of an  
0 external SLC allows 21 DS-512 and 112 DS-30 interfaces. The 16K  
0 channel ENET is recommended for all initial SuperNode SE based  
0 offices. In NT-40 retrofit applications requiring JNET or DSN,  
0 the ENET portion of the SNSE is not required. In this case, the  
0 JNET or DSN is located in a separate frame or frames. Up to 7  
0 Network Modules (NM) can normally be provisioned with SNSE. Note  
0 that, existing offices with JNETs are supported for NT40 to  
0 SuperNode SE retrofits.

0 The LIS provides capacity for twelve (12) Application Specific  
0 Units (ASUs) and the Enhanced Network and Interface Unit

The following diagram gives a pictorial representation of this cabinet using both ENET and LIS:



## DMS SuperNode SE Cabinet

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0 6.1 HARDWARE PROVISIONING

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0 6.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The SuperNode SE can support either ENET or JNET configurations.  
0 It cannot support mixed ENET and JNET configurations, because  
0 JNET cannot interwork with ENET.

0 On the SuperNode SE, IMLs can only be provided using DS-30 links.

0 JNET requires two (2) adjacent link interface cards per MS side.

0 LPP requires two (2) link interface cards per MS side.

0 IOC 0, IOC 1, and IMLs must always be on the MS physical card  
0 slot 10 for plane 0 & slot 29 for plane 1.

0 NT9X14DB and NT9X14EA WILL NOT be supported in a mixed configura-  
0 tion.

0 | The memory load image (100% PS + typically 60% DS) CANNOT exceed  
0 50% of the SLM drive capacity (150MB for SLM1A). The memory load  
0 image said above includes MS load memory also.

0 In BCS36, the Ethernet Interface Unit (EIU) will be available for  
0 provisioning on the LIS and ENI shelves.

## 0 Hardware Upgrades

0

0 SuperNode SE will support the following upgrades:

0 FROMTO

0 NT40 Core

SuperNode SE (without ENET)

0 SuperNode SE/JNET

SuperNode SE/16K ENET

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0 SuperNode SE/MSB7 SuperNode SE/LIU  
0 NT40/DSN/MSB7 SuperNode SE/16K ENET/LIU

0 Upgrade procedures for the above configurations are very similar  
0 to established SuperNode upgrade procedures.

0 The following upgrade procedures will be documented and verified  
0 in the BCS35 timeframe.

| 0 | <u>FROM</u>               | <u>TO</u>                  |
|---|---------------------------|----------------------------|
| 0 | SuperNode SE with LIU/LIS | SuperNode SE with LIU/LIS+ |
| 0 |                           | external SSLPP             |
| 0 | SuperNode SE with         | SuperNode SE with          |
| 0 | LIU/LIS/external SSLPP    | LIU/LIS/external SSLPP+LPP |
| 0 | DMS-10                    | SNSE                       |
| 0 | RSC                       | SNSE                       |

0 The following upgrade procedures will be documented and verified  
0 in the 1994 timeframe.

| 0 | <u>FROM</u>       | <u>TO</u>             |
|---|-------------------|-----------------------|
| 0 | SuperNode SE      | Full SuperNode        |
| 0 | SuperNode SE ENET | SuperNode SE with     |
| 0 |                   | external ENET cabinet |

#### 0 6.1.2 HARDWARE DEPENDENCIES

0  
0 When using "Universal" Loads on the SNSE the Compute Module must  
0 be provisioned with the 96 Meg memory (NT9X14EA).

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0 P AND C SIDE PORT REQUIREMENTS

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0 Not applicable

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## 0 DMS BUS PORT REQUIREMENTS

0 Message Switch Configurations

0 The range of port cards and paddle boards that are supported by  
0 the SuperNode SE allows it to be configured with up to 8  
0 Input/Output Controllers (IOC), 2 mandatory Inter-Message-Links  
0 (IML), upto 3 Link Peripheral Processors (LPP), and either a  
0 fully equipped 16K channel Enhanced Network (ENET) or upto 7  
0 junctored Network Modules (JNET/NMs). Note that MSL Cabinet  
0 packaged systems can support upto 10 NMs. Where ENET 16K is  
0 used, the message switch also provides two slots for interfaces  
0 to Application/File Processors(AP/FP) and or Single Shelf LPPs  
0 (SSLPP or FLIS) external to the SNSE cabinet.

|                                               |                                                                | ENET                                                  | ENET                                                  | JNET                                             | JNET                                               |
|-----------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------|----------------------------------------------------|
|                                               | MS<br>SLOTS                                                    | MS P-side<br>ports<br>< than or<br>equal to<br>128    | MS P-side<br>ports ><br>than 128<br>but < than<br>256 | 1 - 4<br>Network<br>Modules                      | 5 - 7<br>Net. Mod.<br>OR<br>10NMs for<br>MSL appl. |
| 2 IMLs<br>2 IOCs<br>&<br>0 LPP<br>& 1<br>FLIS | 10 & 29<br>11 & 28<br>12 & 27<br>13 & 26<br>14 & 25<br>15 & 24 | 17AD/23AA<br><br>17AD/62BA<br>*17xx/25BA<br>17xx/62CA | 17AD/23AA<br><br>17AD/62BA<br>17CA/62CA<br>17CA/62CA  | 17AD/23AA<br>17AD/23AA<br>17AD/23AA<br>17AD/62BA | 17AD/23AA<br>17BB/69BA<br>17BB/69BA<br>17AD/62BA   |
| 2 IMLs<br>upto<br>8 IOcs<br>& 0<br>LPPs       | 10 & 29<br>11 & 28<br>12 & 27<br>13 & 26<br>14 & 25<br>15 & 24 | 17BB/69BA<br><br>*17xx/25BA<br>17xx/62CA              | 17BB/69BA<br><br>17CA/62CA<br>17CA/62CA               | 17BB/69BA<br>17AD/23AA<br>17AD/23AA              | 17BB/69BA<br>17BB/69BA<br>17BB/69BA                |
| 2 IMLs<br>upto<br>8 IOcs<br>& 3<br>LPPs       | 10 & 29<br>11 & 28<br>12 & 27<br>13 & 26<br>14 & 25            | 17BB/69BA<br>17BB/69BA<br><br>*17xx/25BA              | 17BB/69BA<br>17BB/69BA<br><br>17CA/62CA               | 17BB/69BA<br>17BB/69BA<br>17BB/69BA              | 17BB/69BA<br>17BB/69BA<br>17BB/69BA                |

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|   |  |         |           |           |  |  |
|---|--|---------|-----------|-----------|--|--|
| 0 |  | 15 & 24 | 17xx/62CA | 17CA/62CA |  |  |
|---|--|---------|-----------|-----------|--|--|

0 | \* See next table.

0 Note that the SuperNode SE can support either ENET or JNET con-  
0 figurations. It cannot support mixed ENET and JNET configura-  
0 tions, because JNET cannot interwork with ENET.

0 | The single MS port card configuraion for ENET are recommended at  
0 initial office deployment, and two card configurations for subse-  
0 quent growth.

0 | The ENET interface provisioning is determined by the number of  
0 peripheral message channels required per ENET plane and is shown  
0 below.

| P-side<br>ports/<br>MS<br>Plane | P-Side<br>Peripheral<br>Msg channels<br>per ENET Pl. | slot 15 & 24        |              | slot 14 & 25   |              |
|---------------------------------|------------------------------------------------------|---------------------|--------------|----------------|--------------|
|                                 |                                                      | Front<br>Front      | Rear<br>Rear | Front<br>Front | Rear<br>Rear |
| 32                              | < or = 15                                            | 17BB                | 62CA         | -              | -            |
| 64                              | < or = 31                                            | 17DA                | 62CA         | -              | -            |
| 96                              | < or = 47                                            | 17DA                | 62CA         | 17BB           | 25BA         |
| 128                             | < or = 63                                            | 17DA<br>OR<br>*17CA | 62CA<br>62CA | 17DA<br>-      | 25BA<br>-    |
| 256                             | < or = 127                                           | *17CA               | 62CA         | *17CA          | 62CA         |

0 | \* The NT9X17CA is a 128 port card that is available in BCS35 for  
0 Verification Offices(VOs) and ramp offices. The circuit pack will  
0 attain General Availability(GA) in BCS36.

0 | If the number of message channels required for interfacing with  
0 ENET is less than or equal to 15 provision NT9X17BB MS 32-Port  
0 CP in slot 15. If the number of message channels required for  
0 interfacing with ENET is less than or equal to 31 then, provide  
0 NT9X17BB MS 32-Port CP in slot 14, in addition to the NT9X17BB  
0 provisioned in slot 15

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0  
0 (OR)

0 Provision one (1) NT9X17DA in slot 15.

0 If the number of message channels required for interfacing with  
0 ENET is less than or equal to 47, provide the NT9X17DA MS 64-Port  
0 CPs in slot 15 and provide NT9X17BB MS 32-Port CP in slot 14.

0 If the number of message channels required for interfacing with  
0 ENET is less than or equal to 63, provide the NT9X17DA MS 64-Port  
0 CPs in two consecutive slots or one (1) NT9X17CA in slot 15.

0 If the number of message channels required for interfacing with  
0 ENET is less than or equal to 127, provide NT9X17CA MS 128-Port  
0 CPs in two consecutive slots. Note that NT9X62CA must always be  
0 provisioned in slots 15R and 14R for this scenario.

0 To Provision Message Switch for internal LIS interface, equip  
0 slots 8F and 31F with NT9X73BA(Rate Adapter CP) and 8R and 31R  
0 with NT9X79BA, F-Bus Extender Paddle Board.

0 To provision Message Switch for up to four (4) JNET modules,  
0 equip slots 11F, 12F, 28F, and 27F with NT9X17AD(4 Port MS Inter-  
0 face card) port cards and 11R, 12R, 28R, and 27R with NT9X23AA (4  
0 Link DS-30 Paddle Boards).

0 To provision Message Switch for up to seven (7) JNET modules in  
0 DMS, and up to ten (10) JNET Modules in MSL applications, equip  
0 slots 11F, 12F, 28F, and 27F with NT9X17BB(32 Port MS Interface  
0 card) port cards and 11R, 12R, 28R, and 27R with NT9X69BA(16 Link  
0 DS-30 Paddle Boards).

#### 0 Synchronization

0 The DMS SuperNode SE supports the following clock configurations:

0 Stratum III  
0 Stratum 2.5  
0 Stratum II

0 The DMS SuperNode SE supports external clock sources such as  
0 Stratum II and Stratum 2.5 with the use of a Remote Oscillator  
0 Shelf (ROS), in the identical manner to SuperNode. For software,  
0 cabling and other related information, refer to ECM-626 DMS  
0 SuperNode(section 1.1.2 - Message Switch).



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0 The composite clock for LIS is terminated in the Message Switch  
0 and extended to the LIS via the FBus Cable.

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0 NORTHERN TELECOM  
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PRACTICE 297-1001-450

0 CIRCUITS PER CARD

0  
0 Not applicable

0 DISCRIMINATION NUMBERING

0  
0 Not applicable

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0 6.1.3 PROVISIONING CONSIDERATIONS

0

## 0 Message Switch Provisioning

0

0 See the figure below for a Combined Message Switch Shelf in a  
0 typical configuration. NT9X0470 is the MS Shelf Assembly.

|   |                                  |     |     |                  |
|---|----------------------------------|-----|-----|------------------|
| 0 | 9X31AA -5V 20A Pwr Converter     | 1F  |     |                  |
| 0 | 9X30AA +5V 80A Pwr Converter     | 4F  |     |                  |
| 0 |                                  |     |     |                  |
| 0 | 9X49CC TBus Terminator CP        | 7F  | 7R  | 9X19BA           |
| 0 | 9X19AA CP Filler Pack            | 8F  | 8R  | 9X19BA           |
| 0 | 9X15AA Mapper Circuit Pack       | 9F  | 9R  | 9X19BA           |
| 0 | 9X17AD or 9X17BB                 | 10F | 10R | 9X23AA or 9X69BA |
| 0 | 9X19AA CP Filler Pack            | 11F | 11R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack            | 12F | 12R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack            | 13F | 13R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack            | 14F | 14R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack            | 15F | 15R | 9X19BA           |
| 0 | 9X17AD 4 Port Circuit Pack       | 16F | 16R | 9X62CA           |
| 0 | 9X13NA MS Processor w 16M memory | 17F | 17R | 9X26AB           |
| 0 | 9X53AC System Clock Circuit Pack | 18F | 18R | 9X54AC           |
| 0 | 9X52AA T-Bus Access Circuit Pack | 19F | 19R | 9X19BA           |
| 0 |                                  |     |     |                  |
| 0 | 9X52AA T-Bus Access Circuit Pack | 20F | 20R | 9X19BA           |
| 0 | 9X53AC System Clock Circuit Pack | 21F | 21R | 9X54AC           |
| 0 | 9X13NA MS Processor w 16M memory | 22F | 22R | 9X26AB           |
| 0 | 9X17AD 4 Port Circuit Pack       | 23F | 23R | 9X62CA           |
| 0 | 9X19AA CP Filler Pack            | 24F | 24R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack            | 25F | 25R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack            | 26F | 26R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack            | 27F | 27R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack            | 28F | 28R | 9X19BA           |
| 0 | 9X17AD or 9X17BB                 | 29F | 29R | 9X23AA or 9X69BA |
| 0 | 9X15AA Mapper Circuit Pack       | 30F | 30R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack            | 31F | 31R | 9X19BA           |

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|                                |     |     |        |
|--------------------------------|-----|-----|--------|
| 9X49CC TBus Terminator CP      | 32F | 32R | 9X19BA |
| 9X31AA -5V 20A Power Converter | 33F |     |        |
| 9X30AA +5V 80A Power Converter | 36F |     |        |

DS30 link assignments are shown below when more than 2 IOC's or LPP capability is provided or mixed JNET/LPP is required.

| LINK | Pos.10R/29R | Pos.11R/28R | Pos.12R/27R | NOTES |
|------|-------------|-------------|-------------|-------|
| 0    | IOC 0       | JNET 0,0    | JNET 1,0    | 1     |
| 1    | IOC 1       | JNET 0,1    | JNET 1,1    | 2     |
| 2    | IML 0       | JNET 0,2    | JNET 1,2    | 2     |
| 3    | IML 1       | JNET 0,3    | JNET 1,3    | 2     |
| 4    | IOC 2       | JNET 0,4    | JNET 1,4    | 2     |
| 5    | IOC 3       | JNET 0,5    | JNET 1,5    | 2     |
| 6    | IOC 4       | JNET 0,6    | JNET 1,6    | 2     |
| 7    | IOC 5       | JNET 0,7    | JNET 1,7    | 2     |
| 8    | IOC 6       | JNET 0,8    | JNET 1,8    | 2     |
| 9    | IOC 7       | JNET 0,9    | JNET 1,9    | 2     |
| 10   | LPP 0,0     | LPP 1,0     |             | 3     |
| 11   | LPP 0,0     | LPP 1,0     |             | 3     |
| 12   | LPP 0,1     | LPP 1,1     |             | 3     |
| 13   | LPP 0,1     | LPP 1,1     |             | 3     |
| 14   | LPP 0,2     | LPP 1,2     |             | 3     |
| 15   | LPP 0,2     | LPP 1,2     |             | 3     |

```
0 Each LPP requires total of four ports. Two ports out of 4 ports
0 must be on each slot. Note that, Side 0 and Side 1 of the LPP are
0 in 2 different slots.
```

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## 0 Link Interface Shelf(LIS) Provisioning

0  
0 For all markets, the LIS shelf (NT9X7204) must be provided with  
0 the SuperNode SE cabinet because the LIS shelf cannot be  
0 retrofitted in a working SuperNode SE office. There are no ex-  
0 ceptions to this rule. If not used, provision NT9X01FB.

0 See the figure below for the Link Interface Shelf that is  
0 equipped with 4 LIU7.

|   |                                |     |     |                  |
|---|--------------------------------|-----|-----|------------------|
| 0 | 9X19EA Filler Power            | 1F  |     |                  |
| 0 | 9X30AA +5V 80A Pwr Converter   | 4F  |     |                  |
| 0 |                                |     |     |                  |
| 0 | 9X74CA FBus Repeater CP        | 7F  | 7R  | 9X79AA/BA        |
| 0 | EX22BA ASU (LIU7) Processor CP | 8F  | 8R  | EX20BA           |
| 0 | 9X76AA ASU Interface CP        | 9F  | 9R  | 9X77AA/78AA/78BA |
| 0 | EX22BA ASU (LIU7) Processor CP | 10F | 10R | 9X19BA           |
| 0 | 9X76AA ASU Interface CP        | 11F | 11R | 9X77AA/78AA/78BA |
| 0 | 9X19AA CP Filler Pack          | 12F | 12R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 13F | 13R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 14F | 14R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 15F | 15R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 16F | 16R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 17F | 17R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 18F | 18R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 19F | 19R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 20F | 20R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 21F | 21R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 22F | 22R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 23F | 23R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 24F | 24R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 25F | 25R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 26F | 26R | 9X19BA           |
| 0 | 9X19AA CP Filler Pack          | 27F | 27R | 9X19BA           |
| 0 | EX22BA ASU (LIU7) Processor CP | 28F | 28R | 9X19BA           |
| 0 | 9X76AA ASU Interface CP        | 29F | 29R | 9X77AA/78AA/78BA |
| 0 | EX22BA ASU (LIU7) Processor CP | 30F | 30R | EX20AA           |
| 0 | 9X76AA ASU Interface CP        | 31F | 31R | 9X77AA/78AA/78BA |
| 0 | 9X74CA FBus Repeater CP        | 32F | 32R | 9X79AA/BA        |

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|   |                                |     |
|---|--------------------------------|-----|
| 0 |                                |     |
| 0 | 9X19EA Filler Power            | 33F |
| 0 |                                |     |
| 0 | 9X30AA +5V 80A Power Converter | 36F |
| 0 |                                |     |
| 0 |                                |     |

0 Provision NT9X79AAs in slots 7R and 32R in the LIS shelf, if ENI shelf  
0 is provided and equipped with the two LIU7s. Otherwise, provision with  
0 NT9X79BAs with two left FBUS cables NT9X7211 and with two right FBUS  
0 cables NT9X7213.

0 The LIS provides capacity for twelve (12) Application Specific Units  
0 (ASUs) and the Enhanced Network and Interface Unit shelf(ENI) can sup-  
0 port an additional two (2) LIU7s or EIU. The SNSE MS will support an  
0 external SSLPP in addition to the internal LIS. With such a configura-  
0 tion, the number of CCS7 ASUs(LIU7) cannot exceed 24, regardless of  
0 the availability of the 2 LIU7 slots in the ENI shelf. This scenario  
0 is for LIU applications only and any additional ASUs that are consid-  
0 ered for mixing must be factored using the F-BUS, T-BUS and LINK load  
0 factor calculations.

0 For capacity beyond 24 LIUs, external LPP frames must be provided. A  
0 maximum of three (3) LPP frames can be supported by the SuperNode SE.

0 The only Application Specific Unit (ASU) supported in BCS34 is the  
0 LIU7. In BCS36, the Ethernet Interface Unit (EIU) will be available  
0 for provisioning on the LIS and ENI shelves. The NIU will be available  
0 on SNSE's LIS from BCS36.

0 Each Link Interface Unit (LIU) is composed of two circuit packs and  
0 one paddleboard. The first circuit pack is the NTEX22BA IPF Processor  
0 and F-Bus Interface and is provisioned in an even-numbered slot from  
0 8F to 30F. The second circuit pack is the NT9X76AA STP Signalling Ter-  
0 minal and is provisioned in the next highest (odd-numbered) slot (from  
0 9F to 31F). The paddleboard is either an NT9X77AA V.35 Interface or an  
0 NT9X78AA/BA/CA Enhanced DS0A Interface and is provisioned behind the  
0 NT9X76AA (in an odd-numbered slot from 9R to 31R).

0 Up to twelve (12) LIUs may be provisioned per LIS shelf, with the  
0 left-most LIU occupying slots 8F, 9F and 9R, and the right-most LIU  
0 occupying slots 30F, 31F and 31R.

0 Provisioning of LIUs within LIS shelves should be done as follows:

0 LIUs forming a pair should be provisioned in different halves of the  
0 shelf with LIUs being assigned from the sides towards the middle.

0 Refer to Figure.





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## 0 Enhanced Network Shelf(ENI) Shelf Provisioning

0  
0 See the figure below for a Enhanced Network Shelf(ENI) Shelf in a  
0 4K ENET configuration without the ASU(LIU7 or EIU).

|   |                                |     |                      |               |
|---|--------------------------------|-----|----------------------|---------------|
| 0 | 9X31AA -5V 20A Pwr Converter   | 1F  |                      |               |
| 0 |                                |     |                      |               |
| 0 | 9X30AA +5V 80A Pwr Converter   | 4F  |                      |               |
| 0 |                                |     |                      |               |
| 0 | 9X19AA Filler Face Plate       | 7F  | 7R 9X19BA            | OPTION<br>LIU |
| 0 | 9X19AA Filler Face Plate       | 8F  | 8R 9X19BA            |               |
| 0 | 9X19AA Filler Face Plate       | 9F  | 9R 9X19BA            |               |
| 0 | 9X13FA ENET Processor CP       | 10F | 10R 9X26AB           |               |
| 0 | 9X36BA ENET Clock & Message CP | 11F | 11R 9X40BB --> to MS |               |
| 0 | 9X35FA 4K x 8K Chan Xpt CP     | 12F | 12R 9X19BA           |               |
| 0 | 9X35FA 4K x 8K Chan Xpt CP     | 13F | 13R 9X45BA           |               |
| 0 | 9X19AA Filler Face Plate       | 14F | 14R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 15F | 15R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 16F | 16R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 17F | 17R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 18F | 18R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 19F | 19R 9X19BA           |               |
| 0 |                                |     |                      |               |
| 0 | 9X13FA ENET Processor CP       | 20F | 20R 9X26AB           |               |
| 0 | 9X36BA ENET Clock & Message CP | 21F | 21R 9X40BB --> to MS |               |
| 0 | 9X35FA 4K x 8K Chan Xpt CP     | 22F | 22R 9X19BA           |               |
| 0 | 9X35FA 4K x 8K Chan Xpt CP     | 23F | 23R 9X45BA           |               |
| 0 | 9X19AA Filler Face Plate       | 24F | 24R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 25F | 25R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 26F | 26R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 27F | 27R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 28F | 28R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 29F | 29R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 30F | 30R 9X19BA           | OPTION<br>LIU |
| 0 | 9X19AA Filler Face Plate       | 31F | 31R 9X19BA           |               |
| 0 | 9X19AA Filler Face Plate       | 32F | 32R 9X19BA           |               |
| 0 |                                |     |                      |               |
| 0 | 9X31AA -5V 20A Power Converter | 33F |                      |               |

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|                                  |       |
|----------------------------------|-------|
| 0 9X30AA +5V 80A Power Converter | 0 36F |
|----------------------------------|-------|

0 For all markets, the ENI shelf (NT9X0810) must be provided with  
0 the SuperNode SE cabinet because the ENI shelf cannot be  
0 retrofitted in a working SuperNode SE office. If it is not cur-  
0 rently used, it is to be engineered with filler circuit packs.

0 The ENET is provisionable in 4K, 8K, 12K and 16K channel config-  
0 urations. Note that 2K channels are reserved for peripheral and  
0 network control processor messaging in all configurations. There-  
0 fore, the number of channels available for subscriber traffic in  
0 all configurations is 2K, 6K, 10K and 14K channels respectively.

### 0 Peripheral Module Interfaces

0 Three basic types of paddleboard are available:

- 0 \* DS-30 (NT9X41BA, copper links only)
- 0 \* DS-512 (NT9X40BB, fiber links only)
- 0 \* DS-30/DS-512 (NT9X45BA, both copper and fiber links).

0 The DS-512 PB has four (4) DS-512 inputs (i.e. 0.5K Channels per  
0 input) which are utilized on fiber XPMs.

0 The DS-30 PB combines 16 DS-30 copper speech links which are uti-  
0 lized on Series I Peripherals and non fiber XPMs. The NT9X41BA  
0 has 16-Ports numbered 0-15. All ports except port #1 may be used  
0 for Voice or Messaging Links. Port #1 is valid for Voice Links  
0 only. This is a S/W restriction on the hardware.

0 The DS-30/DS-512 PB is a new peripheral interface paddle board  
0 which can interface 3 DS-512 fiber links and 16 DS-30 copper  
0 links. It combines the functionality of two existing packs. The  
0 NT9X45BA has 16 DS-30 ports numbered 0-15 and 3 DS-512 ports. All  
0 DS-30 ports except port #1 may be used for Voice or Messaging  
0 Links. Port #1 is valid for Voice Links only. This is a S/W re-  
0 striction on the hardware.

0 The NT9X40BB (4 DS-512) fully utilize the ENET's channel handling  
0 capacity. But, it does not provide copper links. On the other  
0 hand, the NT9X41BA (16 DS-30) pack does not fully utilize ENET's

0 channel handling capacity(only 25% utilization of crosspoints).  
0 Using an NT9X45BA results in a 100% utilization of ENET cross-  
0 points and providing both copper and fiber links.

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## 0 ENET Capacity

0 Series II Peripheral Modules (XPMs) MUST be fiberized to achieve  
0 full usage of the ENET capacity. Although up to 192 DS0 messag-  
0 ing is allocated to the ENET-PM ports per plane, the available  
0 card slots in the ENET 16K for the use of the PMs are limited to  
0 maximum of 7 paddle boards in each plane (i.e. 13R-19R in Plane 0  
0 and 23R-29R in Plane 1). Refer table below.

| 16K ENET Maximum PM Port Capacities<br>(per ENET plane) |    |    |    |    |    |    |     |
|---------------------------------------------------------|----|----|----|----|----|----|-----|
| DS512 ports                                             | 27 | 26 | 25 | 24 | 23 | 22 | 21  |
| DS30 ports                                              | 16 | 32 | 48 | 64 | 80 | 96 | 112 |
| NT9X45s                                                 | 1  | 2  | 3  | 4  | 5  | 6  | 7   |
| NT9X40s                                                 | 6  | 5  | 4  | 3  | 2  | 1  | 0   |

0 NOTE:

0 The NT9X40BB is a must in slot 11R for Plane 0 and 21R for Plane  
0 1, if ENI shelf is provisioned. This is not included in the above  
0 table.

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## 0 WORK SHEETS

0 +-----+  
0 | WORKSHEET # 1 |

0 +-----+  
0 | Determine the Number of Cards required for Plane 0 for ENET Shelve |  
0 +-----+

| Step                      | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Answer                 |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------|----------|----------|-----------------|-----------------------|------------------------|-------------------------------|-------------|--|---|--|-------------|--|---|--|-------------|--|---|--|----------|--|---|--|--------|--|---|--|-----|--|------------|--|-----|--|-------------|--|-------|--|---|--|------|--|---|--|-------------|--|---|--|-----------|--|------------|--|--------|--|--|--|-------------------|--|--|-------|--|
| 1                         | Determine the total number of copper(DS30) speech links.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | _____                  |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| +-----+-----+-----+-----+ |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
|                           | <table><tr><th>Column A</th><th>Column B</th><th>Column C</th><th>Column D</th></tr><tr><th>Peripheral Type</th><th>Number of Peripherals</th><th>Speech Lks/ Peripheral</th><th>Total Links (Col C) x (Col B)</th></tr><tr><td>LM (2 port)</td><td></td><td>2</td><td></td></tr><tr><td>LM (3 port)</td><td></td><td>3</td><td></td></tr><tr><td>LM (4 port)</td><td></td><td>4</td><td></td></tr><tr><td>DCM/DCMR</td><td></td><td>4</td><td></td></tr><tr><td>NIU **</td><td></td><td>4</td><td></td></tr><tr><td>SMS</td><td></td><td>____ (3-4)</td><td></td></tr><tr><td>SMR</td><td></td><td>____ (3-16)</td><td></td></tr><tr><td>DES *</td><td></td><td>3</td><td></td></tr><tr><td>MSB7</td><td></td><td>3</td><td></td></tr><tr><td>TM/MTM/DRAM</td><td></td><td>1</td><td></td></tr><tr><td>EDRAM/CTM</td><td></td><td>____ (0-5)</td><td></td></tr><tr><td>Spare:</td><td></td><td></td><td></td></tr><tr><td colspan="3">Total of Column D</td><td>_____</td></tr></table> | Column A               | Column B                      | Column C | Column D | Peripheral Type | Number of Peripherals | Speech Lks/ Peripheral | Total Links (Col C) x (Col B) | LM (2 port) |  | 2 |  | LM (3 port) |  | 3 |  | LM (4 port) |  | 4 |  | DCM/DCMR |  | 4 |  | NIU ** |  | 4 |  | SMS |  | ____ (3-4) |  | SMR |  | ____ (3-16) |  | DES * |  | 3 |  | MSB7 |  | 3 |  | TM/MTM/DRAM |  | 1 |  | EDRAM/CTM |  | ____ (0-5) |  | Spare: |  |  |  | Total of Column D |  |  | _____ |  |
| Column A                  | Column B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Column C               | Column D                      |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| Peripheral Type           | Number of Peripherals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Speech Lks/ Peripheral | Total Links (Col C) x (Col B) |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| LM (2 port)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2                      |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| LM (3 port)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3                      |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| LM (4 port)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4                      |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| DCM/DCMR                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4                      |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| NIU **                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4                      |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| SMS                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ____ (3-4)             |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| SMR                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ____ (3-16)            |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| DES *                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3                      |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| MSB7                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3                      |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| TM/MTM/DRAM               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                      |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| EDRAM/CTM                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ____ (0-5)             |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| Spare:                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |                               |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |
| Total of Column D         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        | _____                         |          |          |                 |                       |                        |                               |             |  |   |  |             |  |   |  |             |  |   |  |          |  |   |  |        |  |   |  |     |  |            |  |     |  |             |  |       |  |   |  |      |  |   |  |             |  |   |  |           |  |            |  |        |  |  |  |                   |  |  |       |  |

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| Step              | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Answer              |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------|----------|----------|-----------------|-----------------------|---------------------|----------------------------------|-------------|--|---|--|-------------|--|---|--|-------------|--|---|--|-----|--|---|--|------|--|---|--|-----|--|---|--|-----|--|---|--|-----|--|---|--|------|--|---|--|----|--|---|--|-----|--|---|--|------|--|---|--|--------|--|--------|--|-------------------|--|--|--|--|
| 2                 | Determine the total number of copper(DS30) message channels                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | _____               |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
|                   | <table><tr><th>Column A</th><th>Column B</th><th>Column C</th><th>Column D</th></tr><tr><th>Peripheral Type</th><th>Number of Peripherals</th><th>Channels/Peripheral</th><th>Total Channels (Col C) x (Col B)</th></tr><tr><td>LM (2 port)</td><td></td><td>1</td><td></td></tr><tr><td>LM (3 port)</td><td></td><td>1</td><td></td></tr><tr><td>LM (4 port)</td><td></td><td>1</td><td></td></tr><tr><td>DCM</td><td></td><td>1</td><td></td></tr><tr><td>DCMR</td><td></td><td>1</td><td></td></tr><tr><td>DES</td><td></td><td>1</td><td></td></tr><tr><td>SMS</td><td></td><td>2</td><td></td></tr><tr><td>SMR</td><td></td><td>2</td><td></td></tr><tr><td>MSB7</td><td></td><td>2</td><td></td></tr><tr><td>TM</td><td></td><td>1</td><td></td></tr><tr><td>MTM</td><td></td><td>1</td><td></td></tr><tr><td>DRAM</td><td></td><td>1</td><td></td></tr><tr><td>Spare:</td><td></td><td>1 or 2</td><td></td></tr><tr><td colspan="4">Total of Column D</td></tr></table> | Column A            | Column B                         | Column C | Column D | Peripheral Type | Number of Peripherals | Channels/Peripheral | Total Channels (Col C) x (Col B) | LM (2 port) |  | 1 |  | LM (3 port) |  | 1 |  | LM (4 port) |  | 1 |  | DCM |  | 1 |  | DCMR |  | 1 |  | DES |  | 1 |  | SMS |  | 2 |  | SMR |  | 2 |  | MSB7 |  | 2 |  | TM |  | 1 |  | MTM |  | 1 |  | DRAM |  | 1 |  | Spare: |  | 1 or 2 |  | Total of Column D |  |  |  |  |
| Column A          | Column B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Column C            | Column D                         |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| Peripheral Type   | Number of Peripherals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Channels/Peripheral | Total Channels (Col C) x (Col B) |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| LM (2 port)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| LM (3 port)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| LM (4 port)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| DCM               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| DCMR              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| DES               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| SMS               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| SMR               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| MSB7              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| TM                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| MTM               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| DRAM              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                   |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| Spare:            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 or 2              |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |
| Total of Column D |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                     |                                  |          |          |                 |                       |                     |                                  |             |  |   |  |             |  |   |  |             |  |   |  |     |  |   |  |      |  |   |  |     |  |   |  |     |  |   |  |     |  |   |  |      |  |   |  |    |  |   |  |     |  |   |  |      |  |   |  |        |  |        |  |                   |  |  |  |  |

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| Step                                                                       | Procedure                                                                                                                                                                                                                                                                                                                                                                                                         | Answer                                                                             |    |                                                                                    |       |  |                                                                      |       |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------|-------|--|----------------------------------------------------------------------|-------|
| 5                                                                          | <p>Determine the number of DS-512/DS-30 I/F Assy's required for DS30's. (Round up to an integer)<br/>Take the greater of :</p> <table> <tr> <td> <div> <div>Step 1</div> <div>-----</div> <div>=</div> <div>16</div> </div> </td><td>OR</td><td> <div> <div>Step 2</div> <div>-----</div> <div>=</div> <div>15</div> </div> </td></tr> </table>                                                                   | <div> <div>Step 1</div> <div>-----</div> <div>=</div> <div>16</div> </div>         | OR | <div> <div>Step 2</div> <div>-----</div> <div>=</div> <div>15</div> </div>         | _____ |  |                                                                      |       |
| <div> <div>Step 1</div> <div>-----</div> <div>=</div> <div>16</div> </div> | OR                                                                                                                                                                                                                                                                                                                                                                                                                | <div> <div>Step 2</div> <div>-----</div> <div>=</div> <div>15</div> </div>         |    |                                                                                    |       |  |                                                                      |       |
| 6                                                                          | <p>Determine the number of DS-512/DS-30 I/F Assy's required. (Round up to an integer)<br/>Take the lesser of :</p> <table> <tr> <td> <div> <div>[Step 3/3] - 1</div> </div> </td><td>OR</td><td> <div> <div>(Step 5) - 1</div> </div> </td></tr> </table> <p>Note that one NT9X45BA is always provided in slots 13R for Plane 0 and 23R for Plane 1.</p>                                                          | <div> <div>[Step 3/3] - 1</div> </div>                                             | OR | <div> <div>(Step 5) - 1</div> </div>                                               | _____ |  |                                                                      |       |
| <div> <div>[Step 3/3] - 1</div> </div>                                     | OR                                                                                                                                                                                                                                                                                                                                                                                                                | <div> <div>(Step 5) - 1</div> </div>                                               |    |                                                                                    |       |  |                                                                      |       |
| 7                                                                          | <p>Determine the number of Quad DS-512 Fiber I/F Assy's required. (Round up to an integer)<br/>Take the greater of :</p> <table> <tr> <td> <div> <div>Zero (0)</div> </div> </td><td>OR</td><td> <div> <div>Step 3 - ((Step 6 +1) x 3)</div> <div>-----</div> <div>4</div> </div> </td></tr> </table>                                                                                                             | <div> <div>Zero (0)</div> </div>                                                   | OR | <div> <div>Step 3 - ((Step 6 +1) x 3)</div> <div>-----</div> <div>4</div> </div>   | _____ |  |                                                                      |       |
| <div> <div>Zero (0)</div> </div>                                           | OR                                                                                                                                                                                                                                                                                                                                                                                                                | <div> <div>Step 3 - ((Step 6 +1) x 3)</div> <div>-----</div> <div>4</div> </div>   |    |                                                                                    |       |  |                                                                      |       |
| 8                                                                          | <p>Determine the number of DS-30 Interface Asmbly's required. (Round up to an integer)<br/>Take the greater of :</p> <table> <tr> <td> <div> <div>Zero (0)</div> </div> </td><td>OR</td><td> <div> <div>Step 2 - ((Step 6 +1) x 15)</div> <div>-----</div> <div>15</div> </div> </td></tr> <tr> <td>OR</td><td></td><td> <div> <div>Step 1 - ((Step 6 +1) x 16)</div> <div>-----</div> </div> </td></tr> </table> | <div> <div>Zero (0)</div> </div>                                                   | OR | <div> <div>Step 2 - ((Step 6 +1) x 15)</div> <div>-----</div> <div>15</div> </div> | OR    |  | <div> <div>Step 1 - ((Step 6 +1) x 16)</div> <div>-----</div> </div> | _____ |
| <div> <div>Zero (0)</div> </div>                                           | OR                                                                                                                                                                                                                                                                                                                                                                                                                | <div> <div>Step 2 - ((Step 6 +1) x 15)</div> <div>-----</div> <div>15</div> </div> |    |                                                                                    |       |  |                                                                      |       |
| OR                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                   | <div> <div>Step 1 - ((Step 6 +1) x 16)</div> <div>-----</div> </div>               |    |                                                                                    |       |  |                                                                      |       |

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WORKSHEET # 2

Determine the Number of Cards required for to Extend an Existing ENET

Plane 0

| Step                            | Procedure                                                                                                                                                                                                                                                                                                                                                                                       | Answer                          |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------|----------|----------|-----------|-----------------|----------------|-----------------------------|---------------------|--|----|--|-----------------------|--|----|--|-------------------|--|--|--|-------|
| 1                               | Determine the DS30 speech link capacity of the installed cards.                                                                                                                                                                                                                                                                                                                                 | _____                           |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
|                                 | <table><tr><th>Column A</th><th>Column B</th><th>Column C</th><th>Column D</th></tr><tr><th>Card Type</th><th>Number of Cards</th><th>Spch Lks/ Card</th><th>Total Links (Col B)x(Col C)</th></tr><tr><td>DS512 DS30 I/F Assy</td><td></td><td>16</td><td></td></tr><tr><td>DS30 Interface Asmbly</td><td></td><td>16</td><td></td></tr><tr><td colspan="4">Total of Column D</td></tr></table> | Column A                        | Column B                    | Column C | Column D | Card Type | Number of Cards | Spch Lks/ Card | Total Links (Col B)x(Col C) | DS512 DS30 I/F Assy |  | 16 |  | DS30 Interface Asmbly |  | 16 |  | Total of Column D |  |  |  | _____ |
| Column A                        | Column B                                                                                                                                                                                                                                                                                                                                                                                        | Column C                        | Column D                    |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| Card Type                       | Number of Cards                                                                                                                                                                                                                                                                                                                                                                                 | Spch Lks/ Card                  | Total Links (Col B)x(Col C) |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| DS512 DS30 I/F Assy             |                                                                                                                                                                                                                                                                                                                                                                                                 | 16                              |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| DS30 Interface Asmbly           |                                                                                                                                                                                                                                                                                                                                                                                                 | 16                              |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| Total of Column D               |                                                                                                                                                                                                                                                                                                                                                                                                 |                                 |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| 2                               | Determine the additional DS30 speech link capacity required.                                                                                                                                                                                                                                                                                                                                    | _____                           |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
|                                 | <table><tr><td>Step 1 of WS1 - Step 1 of WS2 =</td></tr></table>                                                                                                                                                                                                                                                                                                                                | Step 1 of WS1 - Step 1 of WS2 = |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| Step 1 of WS1 - Step 1 of WS2 = |                                                                                                                                                                                                                                                                                                                                                                                                 |                                 |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| 3                               | Determine the DS30 message channel capacity of the installed cards.                                                                                                                                                                                                                                                                                                                             | _____                           |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
|                                 | <table><tr><th>Column A</th><th>Column B</th><th>Column C</th><th>Column D</th></tr><tr><th>Card Type</th><th>Number of Cards</th><th>Msg Chnl/ Card</th><th>Total Links (Col B)x(Col C)</th></tr><tr><td>DS512 DS30 I/F Assy</td><td></td><td>15</td><td></td></tr><tr><td>DS30 Interface Asmbly</td><td></td><td>15</td><td></td></tr><tr><td colspan="4">Total of Column D</td></tr></table> | Column A                        | Column B                    | Column C | Column D | Card Type | Number of Cards | Msg Chnl/ Card | Total Links (Col B)x(Col C) | DS512 DS30 I/F Assy |  | 15 |  | DS30 Interface Asmbly |  | 15 |  | Total of Column D |  |  |  |       |
| Column A                        | Column B                                                                                                                                                                                                                                                                                                                                                                                        | Column C                        | Column D                    |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| Card Type                       | Number of Cards                                                                                                                                                                                                                                                                                                                                                                                 | Msg Chnl/ Card                  | Total Links (Col B)x(Col C) |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| DS512 DS30 I/F Assy             |                                                                                                                                                                                                                                                                                                                                                                                                 | 15                              |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| DS30 Interface Asmbly           |                                                                                                                                                                                                                                                                                                                                                                                                 | 15                              |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |
| Total of Column D               |                                                                                                                                                                                                                                                                                                                                                                                                 |                                 |                             |          |          |           |                 |                |                             |                     |  |    |  |                       |  |    |  |                   |  |  |  |       |

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| Step     | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Answer               |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--|---------|----------|----|----------------------|-------|----|-------|----|--|----|---------|--|---------|-------|
| 7        | <p>Determine the additional number of DS-512 DS-30 I/F Assy's required for DS30's. (Round up to an integer)<br/>NOTE: complete this step only if step 2 or step 4 is 1 or more. If both step 2 &amp; 4 are zero or negative, enter 0 in step 7.</p> <p>Take the greater of :</p> <table> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> <tr> <td>  Step 2  </td><td></td><td>  Step 4  </td></tr> <tr> <td>  -----  </td><td>OR</td><td>  -----  </td></tr> <tr> <td>  16  </td><td></td><td>  15  </td></tr> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> </table> | +-----+              |  | +-----+ | Step 2   |    | Step 4               | ----- | OR | ----- | 16 |  | 15 | +-----+ |  | +-----+ | _____ |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| Step 2   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Step 4               |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| -----    | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -----                |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| 16       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15                   |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| 8        | <p>Determine the additional number of DS-512 DS-30 I/F Assy's required. (Round up to an integer)</p> <p>Take the lesser of :</p> <table> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> <tr> <td>  Step 6  </td><td></td><td>  Step 7  </td></tr> <tr> <td>  -----  </td><td>OR</td><td>  -----  </td></tr> <tr> <td>  3  </td><td></td><td>   </td></tr> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> </table>                                                                                                                                                     | +-----+              |  | +-----+ | Step 6   |    | Step 7               | ----- | OR | ----- | 3  |  |    | +-----+ |  | +-----+ | _____ |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| Step 6   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Step 7               |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| -----    | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -----                |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| 3        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| 9        | <p>Determine the additional number of Quad DS-512 Fiber I/F's required. (Round up to an integer)</p> <p>Take the greater of :</p> <table> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> <tr> <td>  Zero (0)  </td><td>OR</td><td>  Step 6 - (Step 8 x3)  </td></tr> <tr> <td>  -----  </td><td></td><td>  -----  </td></tr> <tr> <td>   </td><td></td><td>  4  </td></tr> <tr> <td>+-----+</td><td></td><td>+-----+</td></tr> </table>                                                                                                                                    | +-----+              |  | +-----+ | Zero (0) | OR | Step 6 - (Step 8 x3) | ----- |    | ----- |    |  | 4  | +-----+ |  | +-----+ | _____ |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| Zero (0) | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Step 6 - (Step 8 x3) |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| -----    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -----                |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4                    |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |
| +-----+  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +-----+              |  |         |          |    |                      |       |    |       |    |  |    |         |  |         |       |



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| Step | Procedure                                                                                                                                                                                                                                                                                                                                                               | Answer |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 10   | <p>Determine the additional number of DS-30 Interface Asmbly's required. (Round up to an integer)<br/>Take the greater of :</p> <p>+-----+<br/>  Zero (0)  <br/>+-----+</p> <p>OR</p> <p>+-----+<br/>  Step 4 - (Step 8 x15)  <br/>  ----- =  <br/>  15  <br/>+-----+</p> <p>OR</p> <p>+-----+<br/>  Step 2 - (Step 8 x16)  <br/>  ----- =  <br/>  16  <br/>+-----+</p> | _____  |
| 11   | <p>Determine the total number of DS512 DS30 I/F Assy's required.</p> <p>+-----+<br/>  Step 8 + exist DS512 DS30 I/F Assy's  <br/>  (see step 1)  <br/>+-----+</p>                                                                                                                                                                                                       | _____  |
| 12   | <p>Determine the total number of Quad DS-512 Fiber I/F's required.</p> <p>+-----+<br/>  Step 9 + exist Quad DS512 Fiber I/F's  <br/>  (see step 5)  <br/>+-----+</p>                                                                                                                                                                                                    | _____  |
| 13   | <p>Determine the total number of DS-30 Interface Asmbly's required.</p> <p>+-----+<br/>  Step 10 + exist DS30 Interface Asmbly's  <br/>  (see step 1)  <br/>+-----+</p>                                                                                                                                                                                                 | _____  |

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0 Speech Link Assignment Rules

0 DS-30 Speech links (Series I Peripherals)

0 Distribute speech links with messaging from each peripheral type  
0 (i.e. MTM, LM, TM, DCM, DES) as evenly as possible over the  
0 available DS-30 PBs. Note that Series I peripherals require 1  
0 messaging link per peripheral.

0 Distribute the remaining speech links by peripheral types as  
0 evenly as possible over PBs. Note that Series I peripherals re-  
0 quire from 1 to 4 speech links.

0 DS-30 Speech links (Series II Peripherals)

0 Distribute speech links with messaging from each peripheral type  
0 as evenly as possible over the available DS-30 PBs. Distribute  
0 the remaining speech links by peripheral types as evenly as pos-  
0 sible over PBs.

0 DS-512 Speech links

0 Distribute speech links with messaging from each peripheral type  
0 as evenly as possible over the available DS-512 PBs.

0 The telephone company may review and if necessary re-assign the  
0 emergency services to ensure that where possible, all essential  
0 services are not located on the same peripherals which are on the  
0 same Paddle Board. The peripherals with emergency  
0 services(police,hospital,fire,etc..) must be evenly distributed  
0 where possible in paddle boards.

0 ASU Provisioning on ENI Shelf.

0 Note that LIU or EIU can ONLY be provisioned on ENI Shelf, only  
0 if ENET is provisioned on SNSE.

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0 Speech Link Connecting Frame Provisioning.

0 SuperNode SE can be used with existing external SLC if previously  
0 installed (i.e. NT-40 retrofit). When cabinetized SMSs are used  
0 with SNSE, then SLC is recommended.

0 Peripherals can be cabled directly to the ENET Shelf, only if  
0 fewer than seven (7) NT9X41BA and or NT9X45BA PBs are on the ENET  
0 Shelf.

0 If there are seven (7) NT9X41BA and or NT9X45BA PBs on the ENET  
0 Shelf, Peripheral Speech Link (PSL) panels and Network Speech  
0 Link (NSL) panels will be engineered as appropriate. In such a  
0 case, if there is room on an existing SLC frame, the new PSL and  
0 NSL panels can be assigned onto it. Otherwise, new SLC frames  
0 will have to be provided.

0 Note that Streamline application may not require the SLC.

0 The NT9X6530 (i.e. left bulkhead panel provides access for 0 to  
0 112 DS-30s) is required, if there are four (4) to seven (7)  
0 NT9X41BA and or NT9X45BA PBs per the corresponding left half of  
0 the shelf (i.e. between card slots 29R-21R). The NT9X6531 (i.e.  
0 right bulkhead panel provides access for 0 to 112 DS-30s) is re-  
0 quired, if there are four (4) to seven (7) NT9X41BA and or  
0 NT9X45BA PBs per the corresponding right half of the shelf (i.e.  
0 between card slots 11R-19R). The DS-30 speech links terminating  
0 on the either half of the shelf will be cross connected at an  
0 SLC. For more information, refer to Bulkhead Provisioning Rules.

0 If any of the above bulkhead panel is used, the number of NSLs  
0 can be calculated using,

0 #of NSLs = {#of NT9X41BA & or 45BAs in one half of the shelf/4}  
0 to be rounded to next higher integer.

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## 0 Bulkhead Provisioning Rules

0 Another factor influences, where NT9X41BA/45BA CPs are placed on  
0 the shelf. As with the DMS-SuperNode, all copper switchboard ca-  
0 bles leaving the cabinet route via filter bulkheads. Fiber leads  
0 pass through holes in the bulkheads. Each bulkhead serves the  
0 nearest half shelf.

- 0 1) NT9X6520 Filter Bulkhead Panel Left 48 DS-30  
0 NT9X6521 Filter Bulkhead Panel Right 48 DS-30

- 0 - Each provides filtering and connectivity for DS-30 speech
- 0 links for up to 3 NT9X41BA/45BA (3 X 16 = 48 DS-30).
- 0 - Each provides 13 holes with grommet to access fiber
- 0 connections
- 0 - Dedicated cabling to individual peripheral modules
- 0 - Intended for use in normal ENET applications

- 0 2) NT9X6553 CM/SLM Bulkhead Assemblies

- 0 - The NT9X6553 CM/SLM bulkheads have no DS30 connection
- 0 capability.
- 0 - The Bulkhead NT9X6553 is the common CM/SLM bulkhead for
- 0 non-cabinetized, Meridian and cabinetized(Streamline)
- 0 applications.
- 0 - The NT9X6520/21 pair always require the NT9X6553 CM/SLM
- 0 bulkhead for 1 to 48 DS30 links.

- 0 3) NT9X6552 CM/SLM Bulkhead Assemblies

- 0 - The NT9X6552 CM/SLM bulkheads have extra DS30 connection
- 0 capability.
- 0 - The NT9X6520/21 pair always require the NT9X6552 CM/SLM
- 0 bulkhead for 49 to 96 DS30 links.

- 0 4) NT9X6530 Filter Bulkhead Panel Left, 112 DS-30  
0 NT9X6531 Filter Bulkhead Panel Right, 112 DS-30

- 0 - Each provides filtering and connectivity for DS-30 speech
- 0 links for up to 7 NT9X41BA/45BA
- 0 - Each provides 13 holes with grommet to access fiber
- 0 connections
- 0 - Group cabling to peripherals via SLC and normal speech link
- 0 cable group facilities
- 0 - Intended for use where high concentrations of DS-30 result

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0 in more than six (6) NT9X41BA/45BA PBs per ENET shelf.  
0 (e.g. BOC offices with lots of SLC-96s or ENET retrofits  
0 involving significant quantities of Series I  
0 Peripherals).

0 - The NT9X6530/31 pair always require the NT9X6553 CM/SLM  
0 bulkhead assemblies.

0 Selection of bulkhead types should be based on projected  
0 NT9X41BA/45BA requirement of fully equipped shelves. If the  
0 projected number of NT9X41BA/45BA per shelf exceeds six (6) then  
0 NT9X6530/31 are required else NT9X6520/21 are recommended. In the  
0 majority of new applications the average number of NT9X41BA and  
0 or NT9X45BA per fully equipped shelf is expected to range between  
0 two (2) and four (4).

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## 0 CM/SLM Shelf Provisioning

0  
0 See the figure below for a Combined CM/SLM Shelf in a typical  
0 configuration. NT9X0610 is the CM/SLM Shelf Assembly.

|   |          |                          |     |     |        |
|---|----------|--------------------------|-----|-----|--------|
| 0 | 9X91AA   | +5V/+12V Pwr Converter   | 1F  |     |        |
| 0 | DX15AA   | +5V/-5V Pwr Converter    | 4F  |     |        |
| 0 |          |                          |     |     |        |
| 0 |          |                          | 7F  | 7R  | 9X46AA |
| 0 | SLM1A    |                          | 8F  | 8R  | 9X19BA |
| 0 | NT9X44AC |                          | 9F  | 9R  | 9X19BA |
| 0 |          |                          | 10F | 10R | 9X19BA |
| 0 |          |                          | 11F | 11R | 9X19BA |
| 0 | 9X14DB   | 24Meg Memory             | 12F | 12R | 9X21AB |
| 0 | 9X14DB   | 24Meg Memory             | 13F | 12R | 9X19BA |
| 0 | 9X14DB   | 24Meg Memory             | 14F | 12R | 9X19BA |
| 0 | 9X14DB   | 24Meg Memory             | 15F | 12R | 9X19BA |
| 0 | 9X14DB   | 24Meg Memory             | 16F | 12R | 9X19BA |
| 0 | 9X12AC   | Message Interface        | 17F | 17R | 9X46AA |
| 0 | 9X86AA   | Dual Port Msg Controller | 18F | 18R | 9X62AA |
| 0 | 9X13MA   | Proceesor                | 19F | 19R | 9X26AB |
| 0 |          |                          |     |     |        |
| 0 | 9X13MA   | Proceesor                | 20F | 20R | 9X26AB |
| 0 | 9X86AA   | Dual Port Msg Controller | 21F | 21R | 9X62AA |
| 0 | 9X12AC   | Message Interface        | 22F | 22R | 9X46AA |
| 0 | 9X14DB   | 24Meg Memory             | 23F | 23R | 9X19BA |
| 0 | 9X14DB   | 24Meg Memory             | 24F | 24R | 9X19BA |
| 0 | 9X14DB   | 24Meg Memory             | 25F | 25R | 9X19BA |
| 0 | 9X14DB   | 24Meg Memory             | 26F | 26R | 9X19BA |
| 0 | 9X14DB   | 24Meg Memory             | 27F | 27R | 9X21AB |
| 0 |          |                          | 28F | 28R | 9X46AA |
| 0 |          |                          | 29F | 29R | 9X19BA |
| 0 | SLM1A    |                          | 30F | 20R | 9X19BA |
| 0 | NT9X44AC |                          | 31F | 31R | 9X19BA |
| 0 |          |                          | 32F | 32R | 9X19BA |
| 0 |          |                          |     |     |        |
| 0 | DX15AA   | +5V/-5V Pwr Converter    | 33F |     |        |
| 0 | 9X91AA   | +5V/+12V Pwr Converter   | 36F |     |        |



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0 The CM/SLM functions are realized by integrating SuperNode type  
0 CM's and SLM's on a single shelf. The SLM provides the mass stor-  
0 age media for SNSE in terms of Hard Disk and Streaming tape. The  
0 SLM used is the 5 slot SLM1A. This SLM1A is supplied with a  
0 300MByte formatted hard disk drive. The tape drive is the same as  
0 the SuperNode SLMII, having a capacity of 150MBytes.

0 The Computing Module consists of the CPU and the Memory CPs as  
0 used for SuperNode. Normally, the duplicated CPU's are running in  
0 the "sync match" mode of operation. The controlling CPU is called  
0 the "Active" and the mate is called the "Inactive". Each CM CPU  
0 connects to both MS's directly via fiber CMIC links. The memory  
0 size is specific to customer requirements.

0 Provision two NT9X13MA processors to support the CM section of  
0 the SuperNode SE. The NT9X13MA supports 24Mb memory only. The  
0 NT9X14DB 24Mb circuit boards are supported from BCS34. The 24Mb  
0 circuit boards do not function in burst mode.

0 For new jobs at BCS35 and higher, provide the NT9X13MB processor  
0 circuit boards. The NT9X13MB Processor provides ability to func-  
0 tion with either NT9X14EA (96 Meg memory) or NT9X14DB (24 Meg  
0 memory), but not both. That is NT9X14DB and NT9X14EA WILL NOT be  
0 supported in a mixed configuration. Check availability prior to  
0 ordering NT9X14EA.

0 The 96 Meg memory cards are the recommended option on SNSE ini-  
0 tials from BCS35 onwards. The 24 Meg memory will only be avail-  
0 able on SNSE extensions.

0 The NT9X14EA memory boards have the capability to function in  
0 burst mode. Burst mode memory is required to fully utilize the  
0 Series 60 BRISC processor (BRISC not available until BCS36). The  
0 new RTIF NT9X26DB will have to be provisioned with this BRISC  
0 processor.

0 Provision memory circuit packs in pairs, in slots in the follow-  
0 ing order:

- 0 1) 16F and 23F;  
0 2) 15F and 24F;  
0 3) 14F and 25F;  
0 4) 13F and 26F;  
0 5) 12F and 27F.

0 The number of pairs to be provisioned depends on the memory re-  
0 quirement for the office.

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0 The DMS SuperNode SE provides card sparing and block sparing ca-  
0 pabilities for memory. Card sparing uses an entire memory circuit  
0 pack for backup; block sparing uses an 8M block, on a circuit  
0 pack for backup. Hence, with 24 Mb memory cards the maximum usa-  
0 ble memory is 96 Mb with card sparing, and 112 Mb with block  
0 sparing.

0 The block sparing capability is recommended for SNSE.

0 The office must be equipped with two (2) RTIF terminals connected  
0 to the NT9X26AB paddleboards on the CM shelf. The RTIF  
0 paddleboards are also required for performing the out-of-band re-  
0 set function between the CM/MS and ENET on the SuperNode SE.

0 | The DEC VT420 terminal in dual mode has been sucessfully tested  
0 as a combined RTIF/MAP terminal, with SNSE.

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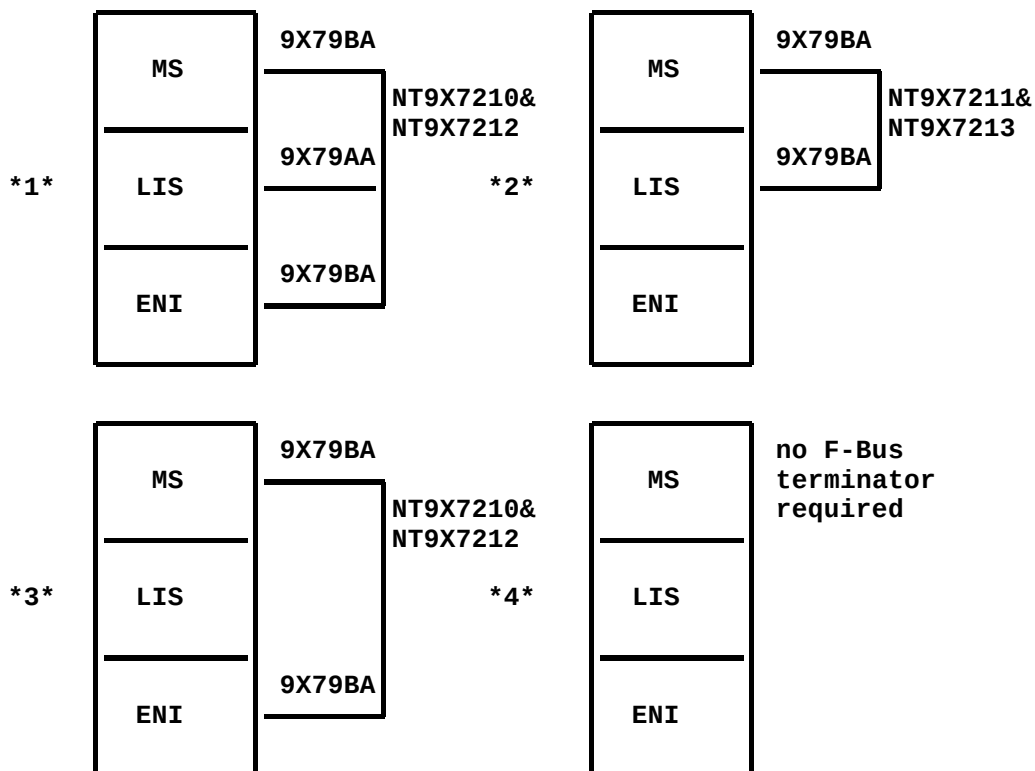
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## 0 FBus Provisioning

0  
0 There are four possible F-Bus configurations available on the  
0 SuperNode SE:

- 0 1) MS to LIS to ENI (with ASU in ENI Shelf)
- 
- 0 2) MS to LIS (with LIS only in SNSE)
- 
- 0 3) MS to ENI (with ASU in ENI and no LIS in SNSE)
- 
- 0 4) MS only (no ASU in ENI and LIS is not equipped in SNSE)

0 All possible configurations and associated paddleboards are shown  
0 in the following diagrams.0 There are two rules that must be adhered to when provisioning F-  
0 Bus paddleboards:

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- 0 1) Both physical ends of the F-Bus must be terminated with a  
0 NT9X79BA F-Bus Ext with Terminations paddleboard.
- 0 2) Intermediate extensions require a NT9X79AA F-Bus Extender  
0 paddleboard.

## 0 Inter-MS Link Provisioning

0 To improve the reliability of the DMS-BUS (Message Switch), MS  
0 Inter-links are now a basic provisioning requirement for  
0 SuperNode SE.

0 The Inter-links require the provisioning of two ports for each MS  
0 plane (MS0 and MS1) to be inter-connected to provide a path for  
0 re-routing of FTS (Frame Transport System) messages if normal  
0 messaging paths are blocked due to hardware failure.

0 The links may be setup only as DS30 links for SuperNode SE.

0 This restriction applies in order to maximize the number of  
0 fiber ports for other external connections.

0 For an explanation of the datafill required and the functionality  
0 provided by this feature, refer to NTP-297-1001-451 Table  
0 MSILINV.

0 Two DS-30 IMLs are provided on SuperNode SE between MS0 and MS1  
0 from slot 10 (MS0 card 10) to slot 29 (MS1 card 10). Note that,  
0 on the SuperNode SE, IMLs can only be provided using DS-30 links.

0 IML 0: (MS0 : card 10 port 2 -> MS1 : card 10 port 2)

0 IML 1: (MS0 : card 10 port 3 -> MS1 : card 10 port 3)

0 The SuperNode SE differs from the standard SuperNode in that the  
0 IMLs are in a fixed location. These ports are fixed in order to  
0 simplify the engineering of IMLs and also to fully utilize the  
0 ports on the provisioned NT9X23 or NT9X69 card in MS card slots  
0 10 and 29.

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## 0 LIU External Timing Source Generator Provisioning

0  
0 When V.35 paddle boards (NT9X77AA) are used on LIUs, a Timing  
0 Source Generator (TSG) system is not required.

0 When DS-0 paddle boards (NT9X78AA/BA/CA) are used on LIUs, a Tim-  
0 ing Source Generator (TSG) system is required.

0 The DS-0 paddleboards require a timing signal that is supplied by  
0 a Timing Source Generator (TSG). The TSG must be located in or  
0 near the channel bank frame. Each Timing Output Card provides ten  
0 (10) ports. The following TSG equipment is required:

| Description                    | Part Number  |
|--------------------------------|--------------|
| -----                          | -----        |
| DCD-400 Shelf Assembly         | 990-40000-01 |
| Fuse & Alarm Card              | 990-40014-01 |
| Clock Input Card               | 990-40010-01 |
| Stratum 3 Clock                | 990-40013-01 |
| Timing Output Card             | 990-40011-01 |
| Timing Output Card (Hot Spare) | 990-40011-01 |
| Matrix Control Card            | 990-40015-01 |

0 These equipment manufactured by Telecom Solutions.

0 For U.S. applications, the TSG is supplied by the operating com-  
0 pany.

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0 C42(S/DMS) Cabinet Provisioning

0  
0 The SNSE is housed in C42 (S/DMS) Cabinet. The S/DMS cabinet is  
0 very similar to the existing cabinet, items such as packs, shelf  
0 assemblies, interconnect cables, and bulkhead packs do not  
0 change. The differences from the previous Supernode type cabinet  
0 are listed below.

0 1) The Cabinet changes from NT9X0113 to NT9X95AA.

0 2) The Kick plate is not required with the S/DMS cabinet.

0 3) Power wiring is optional. If the cabinet is in a Cabine-  
0 tized lineup, the cables will be equipped to take advantage  
0 of "horizontal" cabling. If the cabinet is in a  
0 non-Cabinetized lineup, power cables will be similar to  
0 existing power cables, so filters will have to be  
0 provisioned.

0 Provide one (1) NT9X9532 stand-alone Cabling Interface Kit when  
0 powering the NT9X01MB cabinet in a non-Cabinetized lineup. This  
0 kit includes power cables, filters, and miscellaneous mounting  
0 hardware. Twenty-two (22) white boots are included in the  
0 NT9X9532 stand-alone Cabling Interface Kit.

0 Provide one (1) NT9X9531 Horizontal Power Cabling Interface Kit  
0 when powering the NT9X01MB cabinet in a Cabinetized lineup. This  
0 kit includes power cables, terminal blocks, and miscellaneous  
0 mounting hardware. Always provide two (2) EMI contact  
0 strips(P0714698) when providing the NT9X9531 Horizontal Power Ca-  
0 bling Interface Kit.

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0 6.1.4 OFFICE LAYOUT INFORMATION

0  
0 The S/DMS cabinet will be shipped with the doors, shelves, circuit  
0 packs, FSP, and cooling unit installed. The bus bar will be in-  
0 stalled and appropriate connections will be made at the factory.  
0 The bulkheads form part of the Electromagnetic Compatibility(EMC)  
0 cage around the equipment and provide a place to mount filter  
0 PCBs and optional power filters. The rear of the cabinet is  
0 equipped with two removeable bulkhead panels near the bottom of  
0 the cabinet. When these panels are removed, the cabinet can be  
0 installed in, or removed from, a lineup equipped with horizontal  
0 cabling. The cabinet may be slid "FORWARD" only.

0 FLOOR LAYOUT

0 Aisle dimensions are derived to meet the requirements of central  
0 office environment for floor loading and heat dissipation.

0 - An installation which requires multiple cabinet line-ups has  
0 six foot maintenance aisles.

0 - Maintenance aisles between a cabinet line-up and a frame  
0 line-up are 4.5 feet wide.

0 Installations requiring a cabinet to be integrated into a frame  
0 line-up:

0 - Can only be applied to the front most or rear most line-up

0 - Cabinets and frames are aligned to be flush at the rear

0 Note that a mixed frame/cabinet configuration is in violation of  
0 NEBS. The Telco should confer with the Building Studies and In-  
0 stallation departments to confirm that the building floor can  
0 sustain the weight differential and to insure there is sufficient  
0 cooling available to cool the DMS office.

0 Refer to ECM600 for office layout restrictions when this cabinet  
0 is applied in a Cabinetized DMS lineup.

0 Note that, Richardson and other markets floor layout may be dif-  
0 ferent.

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0 6.1.5 TRAFFIC TABLES

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0 For detailed ASU capacity provisioning, refer to,  
0 SEB 92-02-001 LPP and SSLPP Mixed Application Provisioning Rules.

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0 6.2 PRODUCT/SYSTEM SPECIFICATION

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0 6.2.1 PHYSICAL CHARACTERISTICS

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0 The dimensions of the SuperNode SE cabinet are as follows:

0 \* Footprint: 42 in (1067 mm) wide  
0 23 in (584 mm) deep (base)  
0 28 in (712 mm) deep (with doors)

0 \* Overall: 72 in (1829 mm) high  
0 42 in (1067 mm) wide  
0 28.5 in (724 mm) deep

0 6.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Earthquake framework for the SuperNode SE frame must always be  
0 provided for all MSL market jobs.

0 6.2.3 SPARING INFORMATION

0

0 One Spare Storage Cabinet (SSC) NTRX49AA can hold up to four  
0 Spares Shelves. The spares cabinet has one (1) always provided  
0 Spares Shelf (NT0X25AY); thus three (3) shelves are  
0 provisionable. One Spares Shelf (NT0X25AY) can hold 26 CPs and 4  
0 Power Modules, as well as 26 Paddle Boards.

0 For ALL applications the following may be used.

0



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0 Fusing Requirements

0 The SuperNode SE can be powered from a standard PDC or a  
0 Cabinetized PDC. The rules are as follows:

0 Standard PDC

0 Eight (8) - 20A fuses, two for each shelf (MS,LIS,ENI,CM/SLM)  
0 Two (2) - 10A fuses, one for each power feed to the cooling  
0 unit.

0 Cabinetized PDC(CPDC)

0 Eight (8) - 30A fuses, two for each shelf (MS,LIS,ENI,CM/SLM)  
0 Two (2) - 10A fuses, one for each power feed to the cooling  
0 unit.

0 6.2.5 CURRENT DRAIN INFORMATION

0  
0 \* Full Size card slot: 0.5 Amps avg, 0.6 Amps max  
0 \* Paddle board slot: 0.15 Watts avg, 0.20 Watts max  
0 \* CM/SML1A Shelf: 14 Amps, A plus B feed maximum  
0 \* MS Shelf: 20 Amps, A plus B feed maximum  
0 \* LIS Shelf: 20 Amps, A plus B feed maximum  
0 \* ENET/LIU Shelf: 20 Amps, A plus B feed maximum  
0 \* Cooling Unit: 6 Amps, A plus B feed maximum

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0 6.3 SOFTWARE PROVISIONING

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0 6.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 The DMS SuperNode SE (SNSE) software packaging is as follows:

0

| SuperNode SE                                  | Package No | Description                       | SuperNode Equivalent                                                               |
|-----------------------------------------------|------------|-----------------------------------|------------------------------------------------------------------------------------|
| for any SuperNode SE                          | NTXD88AA   | DMS SuperNode SE (Series 20) Base | NTX960AD SuperNode Series 20                                                       |
| for ENET 16K                                  | NTXC21AA   | Enhanced Network '16K'            | NTXE01AA Enhanced Network                                                          |
| for JNET                                      | NTXP10AA   | Network Modules                   | NTXP10AA Network Modules                                                           |
| for LIS in SuperNode SE Combined Core Cabinet | NTXQ53AA   | MS Resident, LIS Controller       | NONE                                                                               |
| for SSLPP (alias FLIS)                        | NTXQ53AA   | MS Resident, LIS Controller       | NTXD87AA Master Pkg. LIS Resident, LIS Controller is Available if used with SSLPP. |
| for external LPP                              | NTXD44AA   | LPP on DMS                        | NTXD44AA LPP on DMS                                                                |

0 All other feature and service packages are added in the same way  
0 as they are for DMS SuperNode.

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0 | Prior to BCS34, the JNET s/w is part of NTX001AA which is a Com-  
0 | mon Basic Software package. From BCS34 onwards, the JNET s/w has  
0 | been separated into a new software package called NTXP10AA.

0 | For all ENET UPGRADE jobs provision the software packages  
0 | NTXP10AA and NTXC21AA effective BCS34 and higher BCSs. It is  
0 | recommended that NTXP10AA be removed in the subsequent BCS up-  
0 | grade following the network Upgrade.

0 | Example: If an office running with pre BCS34 s/w, with JNET, For  
0 | SNSE with 16K ENET UPGARDE, These steps must be done.

- 0 | 1) NTXP10AA must be ordered for JNET to work.  
0 | 2) NTXC21AA must be ordered for 16K ENET.  
0 | 3) NTXF71AB must be ordered for SuperNode Enhanced Messaging.

0 | Note that, NTXP10AA can be removed in the subsequent BCS upgrade  
0 | following the network Upgrade.

0 | As an alternative to the selection of the individual software  
0 | packages for the DMS SuperNode SE, the following "Universal"  
0 | loads are available as an alternative option, with BCS35:

0 | For the U.S., either of:  
0 | NTXC57AA DMS100 BCS35 S/W LOAD FOR SNSE ENET SERIES 20  
0 | NTXC58AA DMS100/200 BCS35 S/W LOAD FOR SNSE SERIES 20  
0 | NTXC59AA DMS200 BCS35 S/W LOAD FOR SNSE SERIES 20

0 | For Canada, either of:  
0 | NTXC63AA SMART MANAGEMENT SNSE SERIES 20  
0 | NTXC64AA UNIVERSAL S/W SNSE SERIES 20 FOR TOLL

0 | Note that, when using "Universal" loads on the SuperNode SE, the  
0 | Compute Module must be provisioned with NT9X14EA 96MByte memory  
0 | cards.

0 | The SNSE also require the following software package for the CCS7  
0 | jobs.

0 | NTXN19AA - LIU7 for LPP Based CCS7 Applications (if supported)

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0 6.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

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0 6.3.3 MEMORY PROVISIONING

0  
0 Provision memory circuit packs in pairs, in slots in the follow-  
0 ing order:

- 0 1) 16F and 23F;  
0 2) 15F and 24F;  
0 3) 14F and 25F;  
0 4) 13F and 26F;  
0 5) 12F and 27F.

0 The number of pairs to be provisioned depends on the memory re-  
0 quirement for the office.

0 The DMS SuperNode SE provides card sparing and block sparing ca-  
0 pabilities for memory. Card sparing uses an entire memory circuit  
0 pack for backup; block sparing uses an 8M block, on a circuit  
0 pack for backup. Hence, with 24 Mb memory cards the maximum usa-  
0 ble memory is 96 Mb with card sparing, and 112 Mb with block  
0 sparing.

0 The block sparing capability is recommended for SNSE.

0 6.4 REAL TIME IMPACT

0 Real time performance information is available from System Engi-  
0 neering, Product Performance group.

0 Series 60 BRISC for SNSE is projected to provide  
0 approximately 2.5 X Series 20 Capacity.

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## 0 7.0 DMS Building Block - DNI Engineering

0 This ECM provides references to the existing documentation for DNI  
0 equipment. Since this equipment has been orderable for many years, no  
0 effort to describe product function will be made.

0 7.1 HARDWARE PROVISIONING

0

0 7.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 7.1.2 HARDWARE DEPENDENCIES

0

0 Not applicable.

## 0 P AND C SIDE PORT REQUIREMENTS

0

0 Not applicable.

## 0 DMS BUS PORT REQUIREMENTS

0

0 Not applicable.

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## 0 CIRCUITS PER CARD

0  
0 Not applicable.

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable.

0 7.1.3 PROVISIONING CONSIDERATIONS

0  
0 The following DNI Building Blocks are available:

0 | NTZZ20AA: DNI Frame for U.S. and Canadian applications. This  
0 | Building Block provides the DNI with the NT0X25AH Universal  
0 | framework.

0 | NTZZ20BA: Declared Manufacture Discontinued (MD). Refer to Engi-  
0 | neering Manual section for Retired Building Blocks (EMC3-05-002)  
0 | for reference information.

0 | NTZZ20DA: Declared Manufacture Discontinued (MD). Refer to Engi-  
0 | neering Manual section for Retired Building Blocks (EMC3-05-003)  
0 | for reference information.

0 7.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

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0 7.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 7.2 PRODUCT/SYSTEM SPECIFICATION

0

0 7.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 7.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 7.2.3 SPARING INFORMATION

0  
0 Not applicable.

0 7.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not applicable.

0  
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0 7.2.5 CURRENT DRAIN INFORMATION

0  
0 Not applicable.

0 7.3 SOFTWARE PROVISIONING

0

0 7.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not applicable.

0 7.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 7.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

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0 7.4 REAL TIME IMPACT

0 Not applicable.

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0 8.0 DMS Building Block - SLC Engineering

0 This ECM provides references to the existing documentation for SLC  
0 equipment. Since this equipment has been orderable for many years, no  
0 effort to describe product function will be made.

0 8.1 HARDWARE PROVISIONING

0

0 8.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 8.1.2 HARDWARE DEPENDENCIES

0

0 Not applicable.

0 P AND C SIDE PORT REQUIREMENTS

0

0 Not applicable.

0 DMS BUS PORT REQUIREMENTS

0

0 Not applicable.

0

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## 0 CIRCUITS PER CARD

0  
0 Not applicable.

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable.

0 8.1.3 PROVISIONING CONSIDERATIONS

0  
0 The following SLC Building Blocks are available:

0 NTZZ21AA: SLC Frame for U.S. and Canadian applications. This  
0 Building Block provides the SLC with the NT0X25AH Universal  
0 framework.

0 NTZZ21BA: SLC Frame for U.S. applications. This Building Block  
0 has been declared Manufacture Discontinued due to the MD status  
0 of the NT0X25AA framework. NTZZ21BA is replaced by NTZZ21AA. Re-  
0 fer to section EMC3-05-004 of the Engineering Manual for refer-  
0 ence information.

0 NTZZ21DA: EQ Frame SLC Building Block. This Building Block has  
0 been declared Manufacture Discontinued since it duplicates the  
0 NTZZ21AA Building Block. NTZZ21DA is replaced by NTZZ21AA. Refer  
0 to section EMC3-05-005 of the Engineering Manual for reference  
0 information.

0 The NT0X25AV framework is A&M and it is replaced by NT0X25AH.

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0 8.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 8.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 8.2 PRODUCT/SYSTEM SPECIFICATION

0

0 8.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 8.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 8.2.3 SPARING INFORMATION

0  
0 Not applicable.

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0 8.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not applicable.

0 8.2.5 CURRENT DRAIN INFORMATION

0  
0 Not applicable.

0 8.3 SOFTWARE PROVISIONING

0

0 8.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not applicable.

0 8.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 8.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

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0 8.4 REAL TIME IMPACT

0 Not applicable.

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## 0 9.0 DMS-100 Standard DF Terminal Blocks

0 This document defines the Distributing Frame Terminal Blocks (DFTB)  
0 provisionable from the RTP approved sources (i.e. Northern Telecom  
0 Outside Plant Division (OPD) and Telzon ) and relates those products  
0 to specific applications.

0 9.1 HARDWARE PROVISIONING

0

0 9.1.1 HARDWARE USAGE RESTRICTIONS

0

0 A Connectorized Terminal Block (CTB) 8X32 can only be used for  
0 Line and Trunk Module 8-Wire (TM8) applications. Non-  
0 connectorized Terminal Block 8x32 can be used for Line, Trunk  
0 Module 8-Wire (TM8) and Miscellaneous applications.

0 9.1.2 HARDWARE DEPENDENCIES

0

0 Not Applicable

## 0 P AND C SIDE PORT REQUIREMENTS

0

0 Not Applicable

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

## 0 CIRCUITS PER CARD

0  
0 Not Applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0 9.1.3 PROVISIONING CONSIDERATIONS

0  
0 Distribution frame terminal blocks are intended for use as a ter-  
0 minating device on Central Office or PBX distributing frames. A  
0 Terminal Block (TB) has two terminating sides, the Equipment Side  
0 (Termination of DMS-100 equipment) and the Cross Connect Side  
0 (Termination of incoming lines, trunks and miscellaneous cir-  
0 cuits).

## 0 EQUIPMENT SIDE TERMINATION TYPE

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0 Terminations on the Equipment Side can be made by using terminal  
0 pins (NON-CONNECTORIZED) or interlocking connectors  
0 (CONNECTORIZED). Connectorized Terminal Blocks (CTB) can be used  
0 with Northern Telecom's DMS-100 connectorized cables for quick  
0 installation. Customers have realized a full 75 to 95% reduction  
0 in installation labor costs. It should be noted CTB'S are used  
0 for lines and trunks (TM8) applications only.

0 CROSS CONNECT TERMINATION TYPE

0  
0 Terminations on the Cross Connect Side are made by using only  
0 terminal pins.

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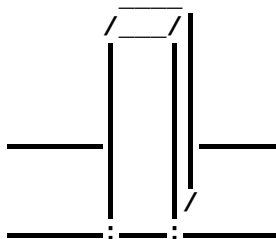
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0 TERMINAL PIN TYPE

0  
0 There are (3) terminal pin types : Single Post Wire-Wrap (SP),  
0 Bifurcated Wire-Wrap (BIF) and Insulation Displacement Bifurcated  
0 (IDV) also called Quick Connect (QC).

0 SINGLE POST WIRE-WRAP terminal pin is rectangular in shape and  
0 extends from the face of the terminal field for connection of 22  
0 to 26 AWG wire.

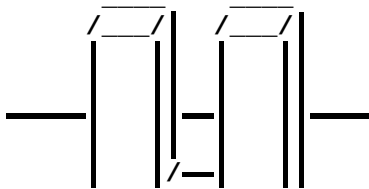
0 Single Post Wire-Wrap



0 Front View of Terminal

0  
0 BIFURCATED WIRE-WRAP terminal pin is "U" in shape and extends  
0 from the face of the terminal field for convenient connection of  
0 22 to 26 AWG wire.

0 Bifurcated Wire-Wrap

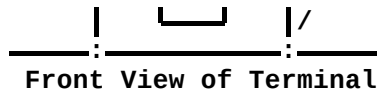


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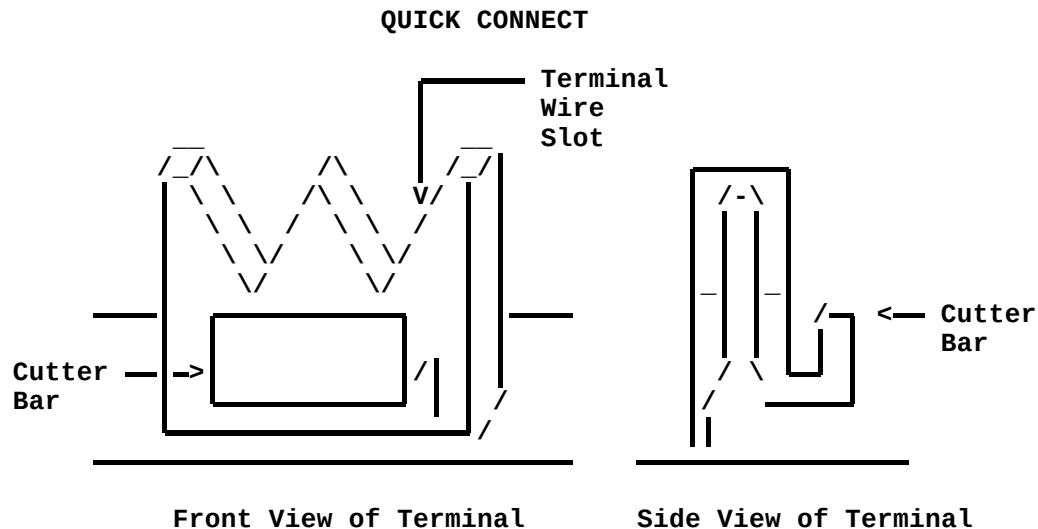
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0 INSULATION DISPLACEMENT BIFURCATED (IDV) OR QUICK CONNECT

0 (QC) terminal pin is "W" in shape. Although this terminal is or-  
0 dered less than 6% of the time it automatically strips, termi-  
0 nates, and cuts to length the wire applied to it. When a wire is  
0 inserted into the termination slot, the insulation is displaced  
0 and the exposed conductor is wedged into an electrical connection  
0 with the terminal. Simultaneously, the strain relief connection  
0 is made and the cutter bar shears the wire to the correct length.  
0 IDV or QC terminals can be used with 22 or 24 AWG wire.



0 CONNECTOR TYPE

0 Up to four interlocking 32 pair TRW or AMP male (plug) ribbon  
0 connectors are telephone industry standard offerings on both OPD  
0 and TELZON 8X32 CTB'S. The male (plug) connectors are designed to  
0 engage spring clips on female (receptable) connectors (standard  
0 on Northern Telecom's connectorized line cables). These connec-  
0 tors may be disconnected by using a pointed object and de-  
0 pressing the metal spring of the connector and pulling them apart



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0 on at least one end. This latching arrangement eliminates the need  
0 for additional locking hardware and safeguards against accidental  
0 uncoupling.

0 Each connector is wired for 32 circuits. When used with Line  
0 equipment, one connector represents one Line Sub Group (LSG) or  
0 one half of a Line Drawer. A standard CTB with four (4) connec-  
0 tors will then terminate four (4) LSG'S or two (2) Line Drawers.

0 For Trunk Module 8-Wire (TM8) equipment, one connector represents  
0 4 of 16 wires required for each card slot on a TM8 shelf. A  
0 standard CTB with four connectors will then terminate all 16  
0 wires required for each card slot for a total of 240 wires for 15  
0 slots per shelf.

#### 0 QUANTITY OF TERMINAL BLOCKS

0  
0 The quantity of Terminal Blocks (TB) for an office (D) is deter-  
0 mined by the sum of blocks required for Trunk Cards (A), Lines  
0 (B) and Miscellaneous (C):  $(A + B + C) = (D)$ .

#### 0 QUANTITY OF TERMINAL BLOCKS FOR TRUNK CARDS

0  
0 An estimate of required terminal blocks for Trunk Cards mounted  
0 in Maintenance Trunk Module (MTM) Shelves and/or Remote Mainte-  
0 nance Module (RMM) can be made by using the TRUNK CARD PIN ROW  
0 REQUIREMENT CALCULATION TABLES.

0  
0 ---  
0 Enter the Quantity of Trunk Cards mounted in MTM and/or RMM  
0 shelves which require MDF terminations in column (A).

0  
0 ---  
0 Select the Block Type Ordered in column (B) (6X, 8X, or  
0 10X..etc). The numbers in the columns represent the Pin Rows  
0 required for each card type per the Contract Drafting Depart-  
0 ment 3424.

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0  
0 Determine the Total Number of Pin Rows Required for Cards ---  
0 and/or Modules in column (C) by multiplying the Quantity of  
0 Trunk Cards and/or Modules in column (A) by the number of Pin  
0 Rows required in column (B):(A X B)=C.

0  
0 Determine the Total Number of Pin Rows Required for all Trunk ---  
0 Cards and/or Modules (D) by adding the Total Number of Pin  
0 Rows Required for each card type and/or Modules together in  
0 column (C).

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TRUNK CARD PIN ROW REQUIREMENT CALCULATION TABLE  
FOR DETAIL ENGINEERING

| TRUNK<br>CARD | (A)<br>QTY<br>OF<br>CARDS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>CARD BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|---------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|               |                           | 6X                                                                            | 8X | 10X |                                                                |
|               |                           |                                                                               |    |     |                                                                |
| NT0X10AA      |                           | 5                                                                             | 4  | 4   |                                                                |
| NT1X54AA      |                           | 2                                                                             | 1  | 1   |                                                                |
| NT2X01AA      |                           | 4                                                                             | 4  | 4   |                                                                |
| NT2X10AB      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X10AC      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X10BA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X57AA      |                           | 5                                                                             | 4  | 4   |                                                                |
| NT2X57AB      |                           | 5                                                                             | 4  | 4   |                                                                |
| NT2X66AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X67AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X72AA      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT2X72AB      |                           | 3                                                                             | 2  | 2   |                                                                |
| NT2X81AA      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT2X81AB      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT2X82AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X83AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X88AA      |                           | 4                                                                             | 2  | 2   |                                                                |
| NT2X90AD      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT2X92AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT2X98AA      |                           | 2                                                                             | 1  | 1   |                                                                |
| NT2X98AB      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT3X05AA      |                           | 1                                                                             | 1  | 1   |                                                                |
| NT3X09AA      |                           | 13                                                                            | 12 | 12  | SEE NOTE 1                                                     |
| NT3X09BA      |                           | 13                                                                            | 12 | 12  | SEE NOTE 1                                                     |
| NT5X03AA      |                           | 3                                                                             | 2  | 2   |                                                                |
| NT5X04AA      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT5X06AA      |                           | 2                                                                             | 2  | 2   |                                                                |
| NT5X30AA      |                           | 1                                                                             | 1  | 1   |                                                                |

TOTAL NUMBER OF PIN  
ROWS REQUIRED FOR  
CARDS (D)

**○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○**

RELEASE 28.01  
93 12 03TRUNK CARD PIN ROW REQUIREMENT CALCULATION TABLE  
FOR BUILDING BLOCK ENGINEERING

| (A)                          |                    | (B)                                                                    |    |     | (C)                                                     |
|------------------------------|--------------------|------------------------------------------------------------------------|----|-----|---------------------------------------------------------|
| TRUNK<br>CARDS OR<br>MODULAR | QTY<br>OF<br>UNITS | NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>CARD BASED ON<br>BLOCK TYPE |    |     | (A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|                              |                    | 6X                                                                     | 8X | 10X |                                                         |
| 1ST PAGE TOTALS              |                    |                                                                        |    |     |                                                         |
| NTZZ12BA                     |                    | 29                                                                     | 25 | 25  | SEE NOTE 01                                             |
| NTZZ12FA                     |                    | 36                                                                     | 31 | 31  | SEE NOTE 01                                             |
| NTZZ16AA                     |                    | 20                                                                     | 17 | 17  | SEE NOTE 01                                             |
| NTZZ16AB                     |                    | 20                                                                     | 17 | 17  | SEE NOTE 01                                             |
| NTZZ16BA                     |                    | 39                                                                     | 33 | 33  | SEE NOTE 01                                             |
| NTZZ06DA                     |                    | 1                                                                      | 1  | 1   |                                                         |
| NTZZ06EA                     |                    | 1                                                                      | 1  | 1   |                                                         |

TOTAL NUMBER OF PIN  
ROWS REQUIRED FOR  
ALL ITEMS (D)

NOTE 1 Provide at least 1 Dedicated Block for NT3X09AA/BA cards  
which are part of the stock list for these part numbers.  
The result should be rounded up to the next whole number.

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0

0 Determine the Number of Pin Rows on the Type of Block Ordered  
0 (E) ( See Example ).

0 Example:

0

0 Terminal Block

0

0 8 X 32

0 10 X 30

Number of Pin  
Rows on Block

32

30

0

0 Terminal Blocks for Trunk Cards and Modules (F) can be deter-  
0 mined by using the formula below:

0 Total Number of Pin Rows Required  
0 for Trunk Cards and/or Modules (D)

0 Number of Pin Rows on the Type of  
0 Block Ordered (E)

==== Terminal Blocks  
for Trunk Cards  
and/or Modules  
(F)

0 The result of the formula should be rounded up to the next  
0 whole number.

# 0 QUANTITY OF TERMINAL BLOCKS FOR LINES

0

0 An estimate of required terminal blocks for Lines (LSG'S) can be  
0 made by using the LINE SUB GROUP PER BLOCK CALCULATION TABLE.

0

LINE SUB GROUP PER BLOCK CALCULATION TABLE

0

|                                     | (A)<br>TERMINAL BLOCK TYPE |      |      |       |
|-------------------------------------|----------------------------|------|------|-------|
|                                     | 8X24                       | 8X30 | 8X32 | 10X30 |
| QUANTITY OF LSG'S<br>PER BLOCK TYPE | 3                          | 3    | 4    | 4     |

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|--|--|--|--|--|--|
|  |  |  |  |  |  |
|--|--|--|--|--|--|

0 --- Select the Block Type Ordered in column (A). The numbers  
0 in the columns represent the quantity of LSG'S which can be  
0 terminated on one block per the Contract Drafting Department  
0 3424.

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0 --- Determine the Total Number of Line Sub Groups required  
0 for a Detail Engineered office by multiplying the Total Num-  
0 ber of Line Draws (NT6X05AA or NTB32BA) ordered by (2):

0  
0 
$$\left[ \begin{array}{l} \text{Required number of} \\ \text{NT6X05AA or NTB32BA} \end{array} \right] \times 2 \quad \text{====} \quad \begin{array}{l} \text{Total Number of} \\ \text{Line Sub Groups} \end{array}$$
  
0

0 --- Determine the Total Number of Line Sub Groups required  
0 for a Building Block Engineered office by the following ta-  
0 ble:

0 NUMBER OF LINE SUB GROUPS FOR BUILDING BLOCK PECS  
0

| BUILDING<br>BLOCK PART<br>NUMBER | NUMBER OF<br>LSG'S |
|----------------------------------|--------------------|
| LCM NTZZ08BA                     | 20                 |
| ISDN 2B1Q LCM NTZZ17HA           | 16                 |

0 --- Terminal Blocks for Lines can be determined by using the  
0 formulas below:

0  
0 
$$\frac{\begin{array}{l} \text{Total Number of Line Sub Group} \\ \text{requirement for office} \end{array}}{\begin{array}{l} \text{Number of Line Sub Groups per} \\ \text{Block Type Ordered} \end{array}} \quad \text{====} \quad \begin{array}{l} \text{Terminal Blocks} \\ \text{For Lines} \end{array}$$
  
0

0 The result of the formula should be rounded up to the  
0 next whole number.

0

0



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## 0 QUANTITY OF TERMINAL BLOCKS FOR MISCELLANEOUS

0  
0 An estimate of required terminal blocks for Miscellaneous items  
0 can be made by using the MISCELLANEOUS PIN ROW REQUIREMENT CALCU-  
0 LATION TABLES.

0 --- Enter the Quantity of Miscellaneous items which require  
0 MDF terminations in column (A).

0 --- Select the Block Type Ordered in column (B) (6X, 8X, or  
0 10X..etc). The numbers in the columns represent the Pin Rows  
0 required for each item type per the Contract Drafting Depart-  
0 ment 3424.

0 --- Determine the Total Number of Pin Rows Required for each  
0 item type in column (C) by multiplying the Quantity of Items  
0 in column (A) by the number of Pin Rows required in column  
0 (B):  $(A \times B) = C$ .

0 --- Determine the Total Number of Pin Rows Required for all  
0 Miscellaneous Items (D) by adding the Total Number of Pin  
0 Rows Required for each item type together in column (C).

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MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE  
FOR DETAIL AND BUILDING BLOCK ENGINEERING

| MISCELLANEOUS<br>ITEM    | (A)<br>QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|--------------------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                          |                           | 6X                                                                            | 8X | 10X |                                                                |
| TM8 SH. NT2X52AK         | 1                         | -                                                                             | 30 | 30  | SEE NOTE 1                                                     |
| NTZZ06RA                 | 1                         | -                                                                             | 30 | 30  | SEE NOTE 1                                                     |
| EXIT ALARM PANEL         |                           |                                                                               |    |     |                                                                |
| NT0X64AA                 |                           | -                                                                             | 5  | 5   |                                                                |
| AXU ALARM                |                           |                                                                               |    |     |                                                                |
| NT3X89AA                 |                           | -                                                                             | 15 | 15  |                                                                |
| DATA SHELF               |                           |                                                                               |    |     |                                                                |
| NT4X25BH                 |                           | -                                                                             | 12 | 12  |                                                                |
| NT4X25DH                 |                           | -                                                                             | 12 | 12  |                                                                |
| NTZZ24BA                 |                           | -                                                                             | 12 | 12  |                                                                |
| BSAC NT4X09BA            |                           | 6                                                                             | 5  | 5   |                                                                |
| HIGH TONE GEN.           |                           |                                                                               |    |     |                                                                |
| NT5X52AA                 |                           | 1                                                                             | 1  | 1   |                                                                |
| BD TO BD TEST            |                           |                                                                               |    |     |                                                                |
| UNIT NT5X73AA            |                           | -                                                                             | 8  | 6   |                                                                |
| NT5X73AB                 |                           | -                                                                             | 8  | 6   |                                                                |
| UNIV. CAMA CKT.          |                           |                                                                               |    |     |                                                                |
| NT5X74AA                 |                           | 2                                                                             | 1  | 1   |                                                                |
| AUX CAMA CKT.            |                           |                                                                               |    |     |                                                                |
| NT5X75AA                 |                           | 2                                                                             | 2  | 2   |                                                                |
| NT5X75AB                 |                           | 2                                                                             | 2  | 2   |                                                                |
| BOARD TO BOARD           |                           |                                                                               |    |     |                                                                |
| TEST NT5X79AA            |                           | 2                                                                             | 2  | 2   |                                                                |
| ABBT APPLIQUE SP1        |                           |                                                                               |    |     |                                                                |
| NT5X88AA                 |                           | 1                                                                             | 1  | 1   |                                                                |
| COM AUDIBLE ALARM        |                           |                                                                               |    |     |                                                                |
| PANEL NT5X92AA           |                           | 1                                                                             | 1  | 1   |                                                                |
| ALARM EXTENSION          |                           |                                                                               |    |     |                                                                |
| PANEL NT5X92AB           |                           | 9                                                                             | 7  | 7   |                                                                |
| COIN STATION LINE        |                           |                                                                               |    |     |                                                                |
| APPLIQUE NT5X93AA        |                           | 2                                                                             | 2  | 2   |                                                                |
| DTH ROTL NT7F18AB        |                           | -                                                                             | 15 | 15  |                                                                |
| TOTAL NUMBER OF PIN ROWS |                           |                                                                               |    |     |                                                                |

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0 REQUIRED FOR ITEMS  
0 PAGE TOTALS (D) \_\_\_\_\_

0 --- Note 1: Provide at least (1) Dedicated Block for Trunk  
0 Modules. The result should be rounded up to the next whole num-  
0 ber.

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MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM | (A)<br>QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|-----------------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                       |                           | 6X                                                                            | 8X | 10X |                                                                |
| 1ST PAGE TOTALS       |                           |                                                                               |    |     |                                                                |
| COOK DRA              |                           |                                                                               |    |     |                                                                |
| 1-CH. NT7M00CC        |                           | 2                                                                             | 2  | 2   |                                                                |
| NT7M00CR              |                           | 2                                                                             | 2  | 2   |                                                                |
| NT7M00DB              |                           | 2                                                                             | 2  | 2   |                                                                |
| NT7M00DC              |                           | 2                                                                             | 2  | 2   |                                                                |
| COOK DRA              |                           |                                                                               |    |     |                                                                |
| 4-CH. NT7M25CV        |                           | 5                                                                             | 5  | 5   |                                                                |
| NT7M25DG              |                           | 5                                                                             | 5  | 5   |                                                                |
| NT7M25DH              |                           | 5                                                                             | 5  | 5   |                                                                |
| NT7M25DN              |                           | 5                                                                             | 5  | 5   |                                                                |
| NT7M25DP              |                           | 5                                                                             | 5  | 5   |                                                                |
| NT7M25EA              |                           | 5                                                                             | 5  | 5   |                                                                |
| NT7M25EB              |                           | 5                                                                             | 5  | 5   |                                                                |
| NT7M25FM              |                           | 5                                                                             | 5  | 5   |                                                                |
| COOK DPP UNIT         |                           |                                                                               |    |     |                                                                |
| NT8X48AD              |                           | 1                                                                             | 1  | 1   |                                                                |
| NTZZ09LA              |                           | 1                                                                             | 1  | 1   |                                                                |
| NTZZ32CA              |                           | 1                                                                             | 1  | 1   |                                                                |
| NTZZ32DA              |                           | 1                                                                             | 1  | 1   |                                                                |
| COOK BMC              |                           |                                                                               |    |     |                                                                |
| REDUNDANT UNIT        |                           |                                                                               |    |     |                                                                |
| NT8M04AA              |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BA              |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04CA              |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04AC              |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BC              |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04CC              |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04AD              |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BD              |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04CD              |                           | 1                                                                             | 1  | 1   |                                                                |

TOTAL NUMBER OF PIN ROWS  
REQUIRED FOR ITEMS  
PAGE TOTALS (D)

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MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM           | (A)<br>QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|---------------------------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                                 |                           | 6X                                                                            | 8X | 10X |                                                                |
| 2ST PAGE TOTALS                 |                           |                                                                               |    |     |                                                                |
| COOK BMC<br>REDUNDANT UNIT      |                           |                                                                               |    |     |                                                                |
| NT8M04AE                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BE                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04CE                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04DE                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04AF                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BF                        |                           | 1                                                                             | 1  | 1   |                                                                |
| REDUNDANT UNIT<br>COOK DRA      |                           |                                                                               |    |     |                                                                |
| NT8M04CF                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04AJ                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04BJ                        |                           | 1                                                                             | 1  | 1   |                                                                |
| NT8M04CJ                        |                           | 1                                                                             | 1  | 1   |                                                                |
| COOK BMC DEUCE                  |                           |                                                                               |    |     |                                                                |
| NT8M04AG                        |                           | 3                                                                             | 2  | 2   |                                                                |
| NT8M04BG                        |                           | 3                                                                             | 2  | 2   |                                                                |
| LIU DS0A NT9X78AA               |                           | 2                                                                             | 1  | 1   |                                                                |
| NTZZ11BA                        |                           | 2                                                                             | 1  | 1   |                                                                |
| NTZZ30BA                        |                           | 2                                                                             | 1  | 1   |                                                                |
| NT9X78AB                        |                           | 2                                                                             | 1  | 1   |                                                                |
| NTZZ11DA                        |                           | 2                                                                             | 1  | 1   |                                                                |
| NTZZ30DA                        |                           | 2                                                                             | 1  | 1   |                                                                |
| LIU V.35 NT9X77AA               |                           | 3                                                                             | 2  | 2   |                                                                |
| NTZZ11DA                        |                           | 3                                                                             | 2  | 2   |                                                                |
| NTZZ30DA                        |                           | 3                                                                             | 2  | 2   |                                                                |
| DIX ETHERNET                    |                           |                                                                               |    |     |                                                                |
| NT9X85AA                        |                           | 2                                                                             | 1  | 1   |                                                                |
| AT&T DAS UNIT<br>TELCO PROVIDED |                           |                                                                               |    |     |                                                                |
| 1-J1P056A-1_l3                  |                           | 10                                                                            | 7  | 7   |                                                                |

TOTAL NUMBER OF PIN ROWS

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0 REQUIRED FOR ALL ITEMS (D) \_\_\_\_\_

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MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM                | (A)<br>QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|--------------------------------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                                      |                           | 6X                                                                            | 8X | 10X |                                                                |
| 3RD PAGE TOTALS                      |                           |                                                                               |    |     |                                                                |
| UDS RM16M SHELF<br>62005220          | 1                         | -                                                                             | 30 | 30  | SEE NOTE 2                                                     |
| UDS STANDALONE<br>108 61035119       |                           | 1                                                                             | 1  | 1   |                                                                |
| 201BC/AS 62015186                    |                           | 1                                                                             | 1  | 1   |                                                                |
| 202S/D 62025199                      |                           | 1                                                                             | 1  | 1   |                                                                |
| 202S/T 62025201                      |                           | 1                                                                             | 1  | 1   |                                                                |
| 202T/R 62025232                      |                           | 1                                                                             | 1  | 1   |                                                                |
| 208A/B 62085064                      |                           | 1                                                                             | 1  | 1   |                                                                |
| 212 62245030                         |                           | 1                                                                             | 1  | 1   |                                                                |
| 212A 62125069                        |                           | 1                                                                             | 1  | 1   |                                                                |
| T212AL1A/2<br>62125068               |                           | 1                                                                             | 1  | 1   |                                                                |
| 19.2K 64565005                       |                           | 1                                                                             | 1  | 1   |                                                                |
| 56K 61035119                         |                           | 1                                                                             | 1  | 1   |                                                                |
| CASE/DATATEL 4200<br>MODEM SHELF     |                           |                                                                               |    |     |                                                                |
| DC 905-5222-003                      | 1                         | -                                                                             | 32 | 32  | SEE NOTE 2                                                     |
| AC 905-5222-001                      | 1                         | -                                                                             | 32 | 32  | SEE NOTE 2                                                     |
| CASE STANDALONE<br>4201 905-5220-001 |                           | 1                                                                             | 1  | 1   |                                                                |
| 4202 905-5185-001                    |                           | 1                                                                             | 1  | 1   |                                                                |
| 4208 905-5227-001                    |                           | 1                                                                             | 1  | 1   |                                                                |
| 4212 905-5223-001                    |                           | 1                                                                             | 1  | 1   |                                                                |
| 4222 905-5230-011                    |                           | 1                                                                             | 1  | 1   |                                                                |
| 4229 905-5224-001                    |                           | 2                                                                             | 2  | 2   |                                                                |
| 4296 905-5191-001                    |                           | 1                                                                             | 1  | 1   |                                                                |

TOTAL NUMBER OF PIN ROWS  
REQUIRED FOR ALL ITEMS (D)

--- Note 2: Provide (1) Dedicated Block for each modem shelf.

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## MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM         | (A)<br>QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|-------------------------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                               |                           | 6X                                                                            | 8X | 10X |                                                                |
| 4TH PAGE TOTALS               |                           |                                                                               |    |     |                                                                |
| 3703-03 LOCAL<br>TEST CABINET |                           |                                                                               |    |     |                                                                |
| 4-TRK NT0J62BA                |                           | 4                                                                             | 3  | 3   |                                                                |
| 4-TRK NT0J63BA                |                           | 4                                                                             | 3  | 3   |                                                                |
| 16-TRK NT0J64BA               |                           | 16                                                                            | 8  | 8   |                                                                |
| DRTU I/F NT0J04ED             |                           | 2                                                                             | 1  | 1   |                                                                |
| DRTU NT0J04EA                 |                           | 2                                                                             | 1  | 1   |                                                                |
| NT0J04EB                      |                           | 2                                                                             | 1  | 1   |                                                                |
| MLT NT3J00BA                  |                           | -                                                                             | 20 | 20  |                                                                |
| TOPS MP NTNX57AC              | 1                         | -                                                                             | 32 | 32  | SEE NOTE 3                                                     |
| TOPS MP NTNX60AA              | 1                         | -                                                                             | 32 | 32  | SEE NOTE 3                                                     |
| FR RELAY T1<br>NTEX30AA       |                           | 4                                                                             | 4  | 4   |                                                                |
| LIU ALARM<br>NT4G46BK         |                           | 6                                                                             | 5  | 5   |                                                                |
| LIU 4110<br>NT4G46CA          |                           | 1                                                                             | 1  | 1   |                                                                |
| TOPS MPX<br>NTNX5103          | 1                         | -                                                                             | 30 | 30  | SEE NOTE 3                                                     |
| VSN MODEMS<br>NT1M41BA        |                           | -                                                                             | 9  | 9   |                                                                |
| NORSTAR KEY SYS.<br>NTZX18AB  | 1                         | -                                                                             | 32 | 32  | SEE NOTE 3                                                     |
| TELLABS 292 SYS.<br>292BR-1   |                           | -                                                                             | 20 | 20  |                                                                |
| NTZZ18FA                      |                           | -                                                                             | 20 | 20  |                                                                |
| 292DR                         |                           | -                                                                             | 12 | 12  |                                                                |
| NTZX18GA                      |                           | -                                                                             | 12 | 12  |                                                                |
| 8108                          |                           | 1                                                                             | 1  | 1   |                                                                |

TOTAL NUMBER OF PIN ROWS  
REQUIRED FOR ALL ITEMS (D)



0 --- Note 3: Provide (1) Dedicated Block for each unit.

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## MISCELLANEOUS PIN ROW REQUIREMENT CALCULATION TABLE (Continued)

| MISCELLANEOUS<br>ITEM | (A)<br>QTY<br>OF<br>ITEMS | (B)<br>NUMBER OF PIN ROWS<br>REQUIRED FOR EACH<br>ITEM BASED ON<br>BLOCK TYPE |    |     | (C)<br>(A)X(B)= (C)<br>TOTAL NUMBER<br>OF PIN<br>ROWS REQUIRED |
|-----------------------|---------------------------|-------------------------------------------------------------------------------|----|-----|----------------------------------------------------------------|
|                       |                           | 6X                                                                            | 8X | 10X |                                                                |
| 5TH PAGE TOTALS       |                           |                                                                               |    |     |                                                                |
| 1A2 KEY SYSTEM        |                           |                                                                               |    |     |                                                                |
| TCS1800AA-1L1         |                           | -                                                                             | 12 | 12  |                                                                |
| NTZZ14GA              |                           | -                                                                             | 12 | 12  |                                                                |
| TELTREND SHELF        |                           |                                                                               |    |     |                                                                |
| TELCO PROVIDE         |                           |                                                                               |    |     |                                                                |
| USD23-120             |                           | -                                                                             | 12 | 12  |                                                                |
| IAU EMULATOR          |                           |                                                                               |    |     |                                                                |
| TELCO PROVIDE         |                           |                                                                               |    |     |                                                                |
| 2216                  |                           | 4                                                                             | 6  | 6   |                                                                |
| MINI-RESPONDER        |                           |                                                                               |    |     |                                                                |
| 1056A                 |                           | 2                                                                             | 1  | 1   |                                                                |
| 4-WIRE MINI-          |                           |                                                                               |    |     |                                                                |
| RESPONDER 1056B       |                           | 2                                                                             | 2  | 2   |                                                                |
| UNIV. DATA CON-       |                           |                                                                               |    |     |                                                                |
| VERTER 8448           |                           | 1                                                                             | 1  | 1   |                                                                |
| TERMINAL BLOCK        |                           |                                                                               |    |     |                                                                |
| NT3X25BA              | 1                         | -                                                                             | 32 | 32  | SEE NOTE 4                                                     |

TOTAL NUMBER OF PIN ROWS  
REQUIRED FOR ALL ITEMS (D)

--- Note 4: Provide (1) Dedicated Block for each unit.

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0 --- Determine the Number of Pin Rows on the Type of Block Or-  
0 dered (E) ( See example in section 2.4.6).

0 --- Terminal Blocks for Miscellaneous Items (F) can be deter-  
0 mined by using the formula below:

|   |                                   |                        |
|---|-----------------------------------|------------------------|
| 0 | Total Number of Pin Rows Required |                        |
| 0 | for all Miscellaneous Items (D)   | Terminal Blocks        |
| 0 | <hr/>                             | ==== for Miscellaneous |
| 0 | Number of Pin Rows on the Type of | Items (F)              |
| 0 | Block Ordered (E)                 |                        |

0 The result of the formula should be rounded up to the next  
0 whole number.

0

0 9.1.4 PIN CONFIGURATION FOR CONNECTORIZED TERMINAL BLOCKS

0

0 Approved sources for connectorized terminal blocks offer four (4)  
0 standard telephone pin configurations. Each pin configuration has  
0 a specific application for Trunks (TM8) and or Line circuits  
0 only.

0 Figures A-F show each configuration's unique pin layout, circuit  
0 and connector number growth patterns. Figures A-D can be used for  
0 line circuit applications and Figures E-F are only to be used for  
0 Trunk (TM8) applications.

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## 0 LINE CIRCUIT APPLICATIONS

0  
0 For line application the circuits for each connector are numbered  
0 (00)-(31) representing 32 line circuits. Circuit number growth  
0 patterns can be Top to Bottom (See Figure A) or Bottom to Top  
0 (See Figure B), with all patterns growing Left to Right (See Fig-  
0 ures A-D).

0 Connectors and Line Sub Groups (LSG) can be grouped horizontally  
0 in rows (See Figures C & D), with a growth pattern Bottom to Top  
0 (See Figure C) or Top to Bottom (See Figure D). Also, they can be  
0 grouped vertically in columns, with a growth pattern Left to  
0 Right (See Figures A & B).

0 The Ring and Tip configuration for each CTB is unique to the  
0 internal wiring and can not be changed. Configurations can be  
0 Ring below Tip (See Figures A & D) or Ring above Tip (See Figures  
0 B & C).

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0 9.2 A LINE APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "A" for Lines. Note: Ring below Tip pin pat-  
0 tern, with Line Sub Group (LSG) growth is form Left to  
0 Right and Top to Bottom Circuit number growth.

0 Line Application (LSG)

| Block Pin Row numbers for 8X32 CTB |   |         |         |   |         |         |   |         |         |   |         |
|------------------------------------|---|---------|---------|---|---------|---------|---|---------|---------|---|---------|
| 1                                  | - | 8       | 9       | - | 16      | 17      | - | 24      | 25      | - | 32      |
| T<br>00                            |   |         | T<br>00 |   |         | T<br>00 |   |         | T<br>00 |   |         |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>01                            |   |         | T<br>01 |   |         | T<br>01 |   |         | T<br>01 |   |         |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>02                            |   |         | T<br>02 |   |         | T<br>02 |   |         | T<br>02 |   |         |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>03                            |   | T<br>31 | T<br>03 |   | T<br>31 | T<br>03 |   | T<br>31 | T<br>03 |   | T<br>31 |
| R                                  |   | R       | R       |   | R       | R       |   | R       | R       |   | R       |

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|   |           |           |           |           |
|---|-----------|-----------|-----------|-----------|
| 0 | CONNECTOR | CONNECTOR | CONNECTOR | CONNECTOR |
| 0 | A         | B         | C         | D         |
| 0 | LSG AA    | LSG BB    | LSG CC    | LSG DD    |
| 0 |           |           |           |           |

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0 9.3 B LINE APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "B" for Lines. Note: Ring above Tip pin pat-  
0 tern, with Line Sub Group (LSG) growth is form Left to  
0 Right and Bottom to Top Circuit number growth.

Line Application (LSG)

| Block Pin Row numbers for 8X32 CTB |   |         |         |   |         |         |   |         |         |   |         |
|------------------------------------|---|---------|---------|---|---------|---------|---|---------|---------|---|---------|
| 1                                  | - | 8       | 9       | - | 16      | 17      | - | 24      | 25      | - | 32      |
| R                                  |   | R       | R       |   | R       | R       |   | R       | R       |   | R       |
| T<br>03                            |   | T<br>31 | T<br>03 |   | T<br>31 | T<br>03 |   | T<br>31 | T<br>03 |   | T<br>31 |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>02                            |   |         | T<br>02 |   |         | T<br>02 |   |         | T<br>02 |   |         |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>01                            |   |         | T<br>01 |   |         | T<br>01 |   |         | T<br>01 |   |         |
| R                                  |   |         | R       |   |         | R       |   |         | R       |   |         |
| T<br>00                            |   |         | T<br>00 |   |         | T<br>00 |   |         | T<br>00 |   |         |

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|   |           |           |           |           |
|---|-----------|-----------|-----------|-----------|
| 0 | CONNECTOR | CONNECTOR | CONNECTOR | CONNECTOR |
| 0 | A         | B         | C         | D         |
| 0 | LSG AA    | LSG BB    | LSG CC    | LSG DD    |
| 0 |           |           |           |           |

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0 9.4 C LINE APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "C" for Lines. Note: Ring above Tip pin pat-  
0 tern, with Line Sub Group (LSG) growth is form Bottom  
0 to Top and Left to Right Circuit number growth.

| Line Application (LSG)             |         |  |  |  |  |         |  |  |  |  |  |         |
|------------------------------------|---------|--|--|--|--|---------|--|--|--|--|--|---------|
| Block Pin Row numbers for 8X32 CTB |         |  |  |  |  |         |  |  |  |  |  |         |
| 1 - - - - 16 - - - - 32            |         |  |  |  |  |         |  |  |  |  |  |         |
| CONNECTOR D<br>LSG DD              | R       |  |  |  |  | R       |  |  |  |  |  | R       |
|                                    | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
| CONNECTOR C<br>LSG CC              | R       |  |  |  |  | R       |  |  |  |  |  | R       |
|                                    | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
| CONNECTOR B<br>LSG BB              | R       |  |  |  |  | R       |  |  |  |  |  | R       |
|                                    | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
| CONNECTOR A<br>LSG AA              | R       |  |  |  |  | R       |  |  |  |  |  | R       |
|                                    | T       |  |  |  |  | T       |  |  |  |  |  | T       |

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0 9.5 D LINE APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "D" for Lines. Note: Ring below Tip pin pat-  
0 tern, with Line Sub Group (LSG) growth is form Top to  
0 Bottom and Left to Right Circuit number growth.

| Line Application (LSG)             |         |  |  |  |  |         |  |  |  |  |  |         |
|------------------------------------|---------|--|--|--|--|---------|--|--|--|--|--|---------|
| Block Pin Row numbers for 8X32 CTB |         |  |  |  |  |         |  |  |  |  |  |         |
| 1 - - - - 16 - - - - 32            |         |  |  |  |  |         |  |  |  |  |  |         |
| CONNECTOR A<br>LSG AA              | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
|                                    | R       |  |  |  |  | R       |  |  |  |  |  | R       |
| CONNECTOR B<br>LSG BB              | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
|                                    | R       |  |  |  |  | R       |  |  |  |  |  | R       |
| CONNECTOR C<br>LSG CC              | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
|                                    | R       |  |  |  |  | R       |  |  |  |  |  | R       |
| CONNECTOR D                        | T<br>00 |  |  |  |  | T<br>15 |  |  |  |  |  | T<br>31 |
|                                    | R       |  |  |  |  | R       |  |  |  |  |  | R       |

|   |        |   |  |  |  |  |   |  |  |  |  |   |
|---|--------|---|--|--|--|--|---|--|--|--|--|---|
| 0 | LSG DD |   |  |  |  |  |   |  |  |  |  |   |
| 0 |        | R |  |  |  |  | R |  |  |  |  | R |
| 0 |        |   |  |  |  |  |   |  |  |  |  |   |
| 0 |        |   |  |  |  |  |   |  |  |  |  |   |
| 0 |        |   |  |  |  |  |   |  |  |  |  |   |

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## 0 TRUNK (TM8) APPLICATIONS

0  
0 For Trunk application the circuits for each connector are number  
0 (00)-(29) representing 30 circuits. Circuit number growth pattern  
0 will always to Left to Right.

0 Connectors for Trunks are grouped horizontally in rows, with a  
0 growth pattern Top to Bottom (See Figure F) or Bottom to Top (See  
0 Figure E).

0 The Ring and Tip Configuration for Trunks can be Ring below Tip  
0 (See Figure F) or Ring above Tip (See Figure E).

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0 9.6 E TRUNK (TM8) APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "E" for TM8'S. Note: Ring above Tip pin pat-  
0 tern, with Connector number growth is form Bottom to  
0 Top and Left to Right Circuit number growth.

|                                    |          |  |  |  |  |  |  |  |  |          |  |  |
|------------------------------------|----------|--|--|--|--|--|--|--|--|----------|--|--|
| Trunk TM8 Application              |          |  |  |  |  |  |  |  |  |          |  |  |
| Block Pin Row numbers for 8X32 CTB |          |  |  |  |  |  |  |  |  |          |  |  |
| 1 - - - - - - - - - 30 31 32       |          |  |  |  |  |  |  |  |  |          |  |  |
| CONNECTOR D                        | -/<br>MB |  |  |  |  |  |  |  |  | -/<br>MB |  |  |
|                                    | -/<br>MA |  |  |  |  |  |  |  |  | -/<br>MA |  |  |
| CONNECTOR C                        | M/<br>EB |  |  |  |  |  |  |  |  | M/<br>EB |  |  |
|                                    | E/<br>EA |  |  |  |  |  |  |  |  | E/<br>EA |  |  |
| CONNECTOR B                        | R1       |  |  |  |  |  |  |  |  | R1       |  |  |
|                                    | T1       |  |  |  |  |  |  |  |  | T1       |  |  |
| CONNECTOR A                        | R        |  |  |  |  |  |  |  |  | R        |  |  |
|                                    | T        |  |  |  |  |  |  |  |  | T        |  |  |

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0 9.7 F TRUNK (TM8) APPLICATION

0 Provision OPD or Telzon CTBs with a block layout as per  
0 Figure "F" for TM8'S. Note: Ring below Tip pin pat-  
0 tern, with Connector number growth is form Top to Bot-  
0 tom and Left to Right Circuit number growth.

|                                    |                      |
|------------------------------------|----------------------|
| Trunk TM8 Application              |                      |
| Block Pin Row numbers for 8X32 CTB |                      |
|                                    | 1 - - - - - 30 31 32 |
| CONNECTOR A                        | T<br>00              |
|                                    | R                    |
| CONNECTOR B                        | T1                   |
|                                    | R1                   |
| CONNECTOR C                        | E/<br>EA             |
|                                    | M/<br>EB             |
| CONNECTOR D                        | -/<br>MA             |
|                                    | -/                   |

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0 9.7.1 PIN CONFIGURATION FOR NON-CONNECTORIZED TERMINAL BLOCKS

0

0 Approved sources for Non-Connectorized Terminal Blocks  
0 (Non-CTB'S) offer many standard terminal pair configurations. A  
0 Non-CTB has no pin configuration restrictions like the CTB.

0 These blocks are generally used for terminating miscellaneous  
0 circuits; however, the connectorized 8X32 layout (Figures A thru  
0 F) for Lines and Trunks may be provisioned in conjunction with  
0 this block.

0

0 9.7.2 ORDERING TABLE FOR APPROVED BLOCKS

0

0 The following tables have been designed to define block ordering  
0 options for each vendor's blocks.

| 0 COLUMN HEADING | DESCRIPTION                                                                                                                                                                                                           |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 PEC            | Vendors manufacturers part number.                                                                                                                                                                                    |
| 0 BLOCK SIZE     | Terminal pin field array.                                                                                                                                                                                             |
| 0 EQT. SIDE      | Equipment Side, Block side which DMS-100<br>0 Equipment is terminated. Terminations can be<br>0 made by 32 pair male connectors (CONN),<br>0 Bifurcated Wire Wrap pins (BIF) or Single<br>0 Post Wire Wrap pins (SP). |
| 0 X-CON SIDE     | Cross Connect Side, Block side which incoming<br>0 circuits to the office are terminated. Termi-<br>0 nations can be made by Bifurcated Wire Wrap<br>0 pins (BIF), Single Post Wire Wrap pins (SP)                    |

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0 or Quick Connect Wire Wrap pins (QC) only ap-  
0 plicable for Telzon Blocks.

0 FUNCTION Block application termination functions. Line  
0 Sub Group terminations (LINES), Trunk Module  
0 terminations (TRUNKS) and Miscellaneous ter-  
0 minations (MISC).

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| 0 | COLUMN HEADING   | DESCRIPTION                                                                                                                                                                                                                                                                                                                                    |
|---|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | TERMINAL PATTERN | Four factors define a unique terminal pattern: Frame mount (Horizontal or Vertical), Ring to Tip relationship, LSG or connector growth, and circuit number growth. Each terminal pattern is identified by the letter P followed by a number from 1 to 10. All of the terminal patterns (P1 thru P10) are described below. For NON-CTB's (N/A). |
| 0 | .....P1          | Horizontal Mount.....<br>Ring Below Tip.....<br>LSG growth Left to Right.....<br>Circuit growth Top to Bottom.....                                                                                                                                                                                                                             |
| 0 | .....P2          | Horizontal Mount.....<br>Ring Below Tip.....<br>LSG growth Top to Bottom.....<br>Circuit growth Left to Right.....                                                                                                                                                                                                                             |
| 0 | .....P3          | Horizontal Mount.....<br>Ring Above Tip.....<br>LSG growth Bottom to Top.....<br>Circuit growth Left to Right.....                                                                                                                                                                                                                             |
| 0 | .....P4          | Horizontal Mount.....<br>Ring Above Tip.....<br>LSG growth Left to Right.....<br>Circuit growth Bottom to Top.....                                                                                                                                                                                                                             |
| 0 | .....P5          | Vertical mount.....<br>Ring Left of Tip.....<br>LSG growth Top to Bottom.....<br>Circuit growth Right to Left.....                                                                                                                                                                                                                             |
| 0 | .....P6          | Vertical mount.....<br>Ring Left of Tip.....<br>LSG growth Right to Left.....<br>Circuit growth Top to Bottom.....                                                                                                                                                                                                                             |
| 0 | .....P7          | Vertical mount.....<br>Ring Right of Tip.....<br>LSG growth Left to Right.....<br>Circuit growth Top to Bottom.....                                                                                                                                                                                                                            |

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0 .....P8 Vertical mount.....  
0 Ring Right of Tip.....  
0 LSG growth Top to Bottom.....  
0 Circuit growth Left to Right.....

0 .....P9 Canadian applications only.....  
0 Vertical mount.....  
0 Ring Above Tip.....  
0 LSG growth Bottom to Top.....  
0 Circuit growth Left to Right.....

0 .....P10 Canadian applications only.....  
0 Horizontal mount.....  
0 Ring Above Tip.....  
0 LSG growth Bottom to Top.....  
0 Circuit growth Left to Right.....

0 HOUSING SIZE Telzon blocks are made with a 6.0 inch (6.0)  
0 or 4.3/4 inch (4.75) housing. OPD blocks only  
0 have one housing size (N/A).

0 FANNING STRIP Telzon blocks can be order with Fanning Strip  
0 numbering 00-31 (0) or 01-32 (1). OPD blocks  
0 can not be ordered with Fanning Strip number-  
0 ing (N/A).

0 FRAME MOUNT How the block is mounted on the MDF Frame  
0 Horizontal (HOR) or Vertical (VERT).

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## 0 OPD VERSABLOCK APPROVED PARTS LIST

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0 The HOUSING SIZE and FANNING STRIP Terminal Block Attributes are  
0 not applicable to the OPD VERSABLOCKS.

| PEC             | BLOCK<br>SIDE | EQT.<br>SIDE | X-CON<br>SIDE | FUNCTION | TERMINAL<br>PATTERN | FRAME<br>MOUNT |
|-----------------|---------------|--------------|---------------|----------|---------------------|----------------|
| 130-A4128L001   | 08X32         | CONN         | BIF           | LINES    | P1                  | HOR            |
| 130-A4128W001   | 08X32         | CONN         | SP            | LINES    | P1                  | HOR            |
| 130-A4128L001   | 08X32         | CONN         | BIF           | LINES    | P5                  | VERT           |
| 130-A4128W001   | 08X32         | CONN         | SP            | LINES    | P5                  | VERT           |
| 130-A4128L002   | 08X32         | CONN         | BIF           | LINES    | P2                  | HOR            |
| 130-A4128L002   | 08X32         | CONN         | BIF           | TRUNKS   | P2                  | HOR            |
| 130-A4128W002   | 08X32         | CONN         | SP            | LINES    | P2                  | HOR            |
| 130-A4128W002   | 08X32         | CONN         | SP            | TRUNKS   | P2                  | HOR            |
| 130-A4128L002   | 08X32         | CONN         | BIF           | LINES    | P6                  | VERT           |
| 130-A4128L002   | 08X32         | CONN         | BIF           | TRUNKS   | P6                  | VERT           |
| 130-A4128W002   | 08X32         | CONN         | SP            | LINES    | P6                  | VERT           |
| 130-A4128W002   | 08X32         | CONN         | SP            | TRUNKS   | P6                  | VERT           |
| 130-A4128L003   | 08X32         | CONN         | BIF           | LINES    | P3                  | HOR            |
| 130-A4128L003   | 08X32         | CONN         | BIF           | TRUNKS   | P3                  | HOR            |
| 130-A4128W003   | 08X32         | CONN         | SP            | LINES    | P3                  | HOR            |
| 130-A4128W003   | 08X32         | CONN         | SP            | TRUNKS   | P3                  | HOR            |
| 130-A4128L003   | 08X32         | CONN         | BIF           | LINES    | P7                  | VERT           |
| 130-A4128L003   | 08X32         | CONN         | BIF           | TRUNKS   | P7                  | VERT           |
| 130-A4128W003   | 08X32         | CONN         | SP            | LINES    | P7                  | VERT           |
| 130-A4128W003   | 08X32         | CONN         | SP            | TRUNKS   | P7                  | VERT           |
| 130-A4128L011   | 08X32         | CONN         | BIF           | LINES    | P4                  | HOR            |
| 130-A4128W011   | 08X32         | CONN         | SP            | LINES    | P4                  | HOR            |
| 130-A4128L011   | 08X32         | CONN         | BIF           | LINES    | P8                  | VERT           |
| 130-A4128W011   | 08X32         | CONN         | SP            | LINES    | P8                  | VERT           |
| QBB66QP096SG336 | 08X24         | CONN         | BIF           | LINES    | P9                  | VERT           |
| QBB66QP096SG336 | 08X24         | CONN         | BIF           | LINES    | P10                 | HOR            |
| 130-N0128L001   | 08X32         | BIF          | BIF           | MISC     | N/A                 | HOR            |
| 130-N0128W001   | 08X32         | BIF          | SP            | MISC     | N/A                 | HOR            |
| 130-N0128L001   | 08X32         | BIF          | BIF           | MISC     | N/A                 | VERT           |
| 130-N0128W001   | 08X32         | BIF          | SP            | MISC     | N/A                 | VERT           |
| 130-N0100L012   | 08X25         | BIF          | BIF           | MISC     | N/A                 | HOR            |
| 130-N0100W012   | 08X25         | BIF          | SP            | MISC     | N/A                 | HOR            |

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|   |               |       |     |     |      |     |      |
|---|---------------|-------|-----|-----|------|-----|------|
| 0 | 130-N0100L012 | 08X25 | BIF | BIF | MISC | N/A | VERT |
| 0 | 130-N0100W012 | 08X25 | BIF | SP  | MISC | N/A | VERT |
| 0 | 130-N0120W020 | 08X30 | BIF | SP  | MISC | N/A | HOR  |
| 0 | 130-N0120W020 | 08X30 | BIF | SP  | MISC | N/A | VERT |
| 0 | 130-N0120L005 | 08X30 | BIF | BIF | MISC | N/A | HOR  |
| 0 | 130-N0120L005 | 08X30 | BIF | BIF | MISC | N/A | VERT |
| 0 |               |       |     |     |      |     |      |

0 NOTE: The QBB66QP096SG336 is provisionable in the Canadian market only  
0 and its wiring pattern is incompatible with the US wiring patterns for  
0 lines.

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## 0 TELZON TERMINAL BLOCK APPROVED PARTS LIST

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| PEC          | BLOCK<br>SIDE | EQT.<br>SIDE | X-CON<br>SIDE | FUNCTION | TERMINAL<br>PATTERN | HOUSING<br>SIZE | FANNING<br>STRIP | FRAME<br>MOUNT |
|--------------|---------------|--------------|---------------|----------|---------------------|-----------------|------------------|----------------|
| 400-0010-000 | 10X30         | SP           | SP            | MISC     | N/A                 | 6.0             | 1                | HOR            |
| 400-0010-000 | 10X30         | SP           | SP            | MISC     | N/A                 | 6.0             | 1                | VERT           |
| 400-0010-040 | 10X30         | SP           | SP            | MISC     | N/A                 | 4.75            | 1                | HOR            |
| 400-0010-040 | 10X30         | SP           | SP            | MISC     | N/A                 | 4.75            | 1                | VERT           |
| 482-0000-000 | 08X32         | SP           | SP            | MISC     | N/A                 | 6.0             | 1                | HOR            |
| 482-0000-000 | 08X32         | SP           | SP            | MISC     | N/A                 | 6.0             | 1                | VERT           |
| 482-0000-040 | 08X32         | SP           | SP            | MISC     | N/A                 | 4.75            | 1                | HOR            |
| 482-0000-040 | 08X32         | SP           | SP            | MISC     | N/A                 | 4.75            | 1                | VERT           |
| 482-1004-301 | 08X32         | CONN         | SP            | LINE     | P2                  | 6.0             | 1                | HOR            |
| 482-1004-301 | 08X32         | CONN         | SP            | TRUNK    | P2                  | 6.0             | 1                | HOR            |
| 482-1004-301 | 08X32         | CONN         | SP            | LINE     | P6                  | 6.0             | 1                | VERT           |
| 482-1004-301 | 08X32         | CONN         | SP            | TRUNK    | P6                  | 6.0             | 1                | VERT           |
| 482-1004-341 | 08X32         | CONN         | SP            | LINE     | P2                  | 4.75            | 1                | HOR            |
| 482-1004-341 | 08X32         | CONN         | SP            | TRUNK    | P2                  | 4.75            | 1                | HOR            |
| 482-1004-341 | 08X32         | CONN         | SP            | LINE     | P6                  | 4.75            | 1                | VERT           |
| 482-1004-341 | 08X32         | CONN         | SP            | TRUNK    | P6                  | 4.75            | 1                | VERT           |
| 482-1064-301 | 08X32         | CONN         | SP            | LINE     | P3                  | 6.0             | 1                | HOR            |
| 482-1064-301 | 08X32         | CONN         | SP            | TRUNK    | P3                  | 6.0             | 1                | HOR            |
| 482-1064-301 | 08X32         | CONN         | SP            | LINE     | P7                  | 6.0             | 1                | VERT           |
| 482-1064-301 | 08X32         | CONN         | SP            | TRUNK    | P7                  | 6.0             | 1                | VERT           |
| 482-1064-341 | 08X32         | CONN         | SP            | LINE     | P3                  | 4.75            | 1                | HOR            |
| 482-1064-341 | 08X32         | CONN         | SP            | TRUNK    | P3                  | 4.75            | 1                | HOR            |
| 482-1064-341 | 08X32         | CONN         | SP            | LINE     | P7                  | 4.75            | 1                | VERT           |
| 482-1064-341 | 08X32         | CONN         | SP            | TRUNK    | P7                  | 4.75            | 1                | VERT           |
| 482-1064-345 | 08X32         | CONN         | SP            | LINE     | P3                  | 4.75            | 0                | HOR            |
| 482-1064-345 | 08X32         | CONN         | SP            | TRUNK    | P3                  | 4.75            | 0                | HOR            |
| 482-1064-345 | 08X32         | CONN         | SP            | LINE     | P7                  | 4.75            | 0                | VERT           |
| 482-1064-345 | 08X32         | CONN         | SP            | TRUNK    | P7                  | 4.75            | 0                | VERT           |
| 482-2004-301 | 08X32         | CONN         | SP            | LINE     | P1                  | 6.0             | 1                | HOR            |
| 482-2004-301 | 08X32         | CONN         | SP            | LINE     | P5                  | 6.0             | 1                | VERT           |
| 482-2004-341 | 08X32         | CONN         | SP            | LINE     | P1                  | 4.75            | 1                | HOR            |
| 482-2004-341 | 08X32         | CONN         | SP            | LINE     | P5                  | 4.75            | 1                | VERT           |
| 482-2064-301 | 08X32         | CONN         | SP            | LINE     | P4                  | 6.0             | 1                | HOR            |
| 482-2064-301 | 08X32         | CONN         | SP            | LINE     | P8                  | 6.0             | 1                | VERT           |
| 482-2064-341 | 08X32         | CONN         | SP            | LINE     | P4                  | 4.75            | 1                | HOR            |
| 482-2064-341 | 08X32         | CONN         | SP            | LINE     | P8                  | 4.75            | 1                | VERT           |

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## 0 TELZON TERMINAL BLOCK APPROVED PARTS LIST

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| 0 | 0            | 0             | 0            | 0             | 0        | 0                   | 0               | 0                | 0              |
|---|--------------|---------------|--------------|---------------|----------|---------------------|-----------------|------------------|----------------|
| 0 | PEC          | BLOCK<br>SIDE | EQT.<br>SIDE | X-CON<br>SIDE | FUNCTION | TERMINAL<br>PATTERN | HOUSING<br>SIZE | FANNING<br>STRIP | FRAME<br>MOUNT |
| 0 | 582-0000-000 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 6.0             | 1                | HOR            |
| 0 | 582-0000-000 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 6.0             | 1                | VERT           |
| 0 | 582-0000-040 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 4.75            | 1                | HOR            |
| 0 | 582-0000-040 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 4.75            | 1                | VERT           |
| 0 | 582-0000-045 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 4.75            | 0                | HOR            |
| 0 | 582-0000-045 | 08X32         | BIF          | BIF           | MISC     | N/A                 | 4.75            | 0                | VERT           |
| 0 | 582-1004-301 | 08X32         | CONN         | BIF           | LINE     | P2                  | 6.0             | 1                | HOR            |
| 0 | 582-1004-301 | 08X32         | CONN         | BIF           | TRUNK    | P2                  | 6.0             | 1                | HOR            |
| 0 | 582-1004-301 | 08X32         | CONN         | BIF           | LINE     | P6                  | 6.0             | 1                | VERT           |
| 0 | 582-1004-301 | 08X32         | CONN         | BIF           | TRUNK    | P6                  | 6.0             | 1                | VERT           |
| 0 | 582-1004-341 | 08X32         | CONN         | BIF           | LINE     | P2                  | 4.75            | 1                | HOR            |
| 0 | 582-1004-341 | 08X32         | CONN         | BIF           | TRUNK    | P2                  | 4.75            | 1                | HOR            |
| 0 | 582-1004-341 | 08X32         | CONN         | BIF           | LINE     | P6                  | 4.75            | 1                | VERT           |
| 0 | 582-1004-341 | 08X32         | CONN         | BIF           | TRUNK    | P6                  | 4.75            | 1                | VERT           |
| 0 | 582-1004-345 | 08X32         | CONN         | BIF           | LINE     | P2                  | 4.75            | 0                | HOR            |
| 0 | 582-1004-345 | 08X32         | CONN         | BIF           | TRUNK    | P2                  | 4.75            | 0                | HOR            |
| 0 | 582-1004-345 | 08X32         | CONN         | BIF           | LINE     | P6                  | 4.75            | 0                | VERT           |
| 0 | 582-1004-345 | 08X32         | CONN         | BIF           | TRUNK    | P6                  | 4.75            | 0                | VERT           |
| 0 | 582-1064-301 | 08X32         | CONN         | BIF           | LINE     | P3                  | 6.0             | 1                | HOR            |
| 0 | 582-1064-301 | 08X32         | CONN         | BIF           | TRUNK    | P3                  | 6.0             | 1                | HOR            |
| 0 | 582-1064-301 | 08X32         | CONN         | BIF           | LINE     | P7                  | 6.0             | 1                | VERT           |
| 0 | 582-1064-301 | 08X32         | CONN         | BIF           | TRUNK    | P7                  | 6.0             | 1                | VERT           |
| 0 | 582-1064-341 | 08X32         | CONN         | BIF           | LINE     | P3                  | 4.75            | 1                | HOR            |
| 0 | 582-1064-341 | 08X32         | CONN         | BIF           | TRUNK    | P3                  | 4.75            | 1                | HOR            |
| 0 | 582-1064-341 | 08X32         | CONN         | BIF           | LINE     | P7                  | 4.75            | 1                | VERT           |
| 0 | 582-1064-341 | 08X32         | CONN         | BIF           | TRUNK    | P7                  | 4.75            | 1                | VERT           |
| 0 | 582-1064-345 | 08X32         | CONN         | BIF           | LINE     | P3                  | 4.75            | 0                | HOR            |
| 0 | 582-1064-345 | 08X32         | CONN         | BIF           | TRUNK    | P3                  | 4.75            | 0                | HOR            |
| 0 | 582-1064-345 | 08X32         | CONN         | BIF           | LINE     | P7                  | 4.75            | 0                | VERT           |
| 0 | 582-1064-345 | 08X32         | CONN         | BIF           | TRUNK    | P7                  | 4.75            | 0                | VERT           |
| 0 | 582-2004-301 | 08X32         | CONN         | BIF           | LINE     | P1                  | 6.0             | 1                | HOR            |
| 0 | 582-2004-301 | 08X32         | CONN         | BIF           | LINE     | P5                  | 6.0             | 1                | VERT           |
| 0 | 582-2004-341 | 08X32         | CONN         | BIF           | LINE     | P1                  | 4.75            | 1                | HOR            |
| 0 | 582-2004-341 | 08X32         | CONN         | BIF           | LINE     | P5                  | 4.75            | 1                | VERT           |
| 0 | 582-2064-301 | 08X32         | CONN         | BIF           | LINE     | P4                  | 6.0             | 1                | HOR            |
| 0 | 582-2064-301 | 08X32         | CONN         | BIF           | LINE     | P8                  | 6.0             | 1                | VERT           |

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|   |              |       |      |     |      |    |      |   |      |
|---|--------------|-------|------|-----|------|----|------|---|------|
| 0 | 582-2064-341 | 08X32 | CONN | BIF | LINE | P4 | 4.75 | 1 | HOR  |
| 0 | 582-2064-341 | 08X32 | CONN | BIF | LINE | P8 | 4.75 | 1 | VERT |
| 0 |              |       |      |     |      |    |      |   |      |

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0 9.8 PRODUCT/SYSTEM SPECIFICATION

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0 9.8.1 PHYSICAL CHARACTERISTICS

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## 0 OPD VERSABLOCK

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## 0 MECHANICAL DIMENSIONS

0 Height..... 3 7/8" (98.4mm)  
0 Width..... 7 7/8" (200mm)  
0 Depth..... 4 3/4" (121mm)  
0 Weight..... 3.0 lbs

## 0 TECHNICAL SPECIFICATIONS

0 Plastic Materials..... Noryl and Polycarbonate  
0 Colors Available..... Beige and White.  
0 Dielectric Strength..... 2,000 Vdc  
0 Insulation Resistance..... > 500 Megohms

## 0 TEMPERATURE CHARACTERISTICS

0 SAE Measurements..... - 4 to + 113 degrees Fahrenheit  
0 Metric Measurements..... - 20 to + 45 degrees Celsius

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## 0 OPD ROTATING BLOCK

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0 MECHANICAL DIMENSIONS

0 Height..... 3 7/8" (98.4mm)  
0 Width..... 7 7/8" (200mm)  
0 Depth..... 3 5/8" (92mm)  
0 Weight..... 1.0 lb 12 oz.

## 0 TECHNICAL SPECIFICATIONS

0 Plastic Materials..... Polycarbonate  
0 Color Available..... White.  
0 Dielectric Strength..... 1500 Vdc and 100 Vac at 50-60 hz  
0 for 2 minutes  
0 Insulation Resistance..... > 30 Megohms at 1000 Vdc

## 0 TEMPERATURE CHARACTERISTICS

0 SAE Measurements..... 32 to 122 degrees Fahrenheit  
0 Metric Measurements..... 0 to 50 degrees Celsius

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## 0 TELZON TERMINAL BLOCK

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0 MECHANICAL DIMENSIONS FOR STANDARD BLOCK

0 Height..... 3.99" (101.3mm)  
0 Width..... 7.95" (201.9mm)  
0 Depth..... 5.96" (151.4mm)  
0 Weight..... 4.0 lbs

## 0 MECHANICAL DIMENSIONS FOR COMPACT BLOCK

0 Height..... 3.99" (101.3mm)  
0 Width..... 7.95" (201.9mm)  
0 Depth..... 4.71" (119.6mm)  
0 Weight..... 3.5 lbs

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## 0 TECHNICAL SPECIFICATIONS

0 Plastic Materials..... Polycarbonate  
0 Colors Available..... Gray and White.  
0 Dielectric Strength..... 85,000 Vdc Minimum  
0 Insulation Resistance..... > 10,000 Megohms Minimum (500 Vdc)

## 0 TEMPERATURE CHARACTERISTICS

0 SAE Measurements..... 32 to 122 degrees Fahrenheit  
0 Metric Measurements..... 0 to 50 degrees Celsius

0 9.8.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not Applicable

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0 9.8.3 SPARING INFORMATION

0  
0 Not Applicable

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0 9.8.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not Applicable

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0 9.8.5 CURRENT DRAIN INFORMATION

0  
0 Not Applicable

0 9.9 SOFTWARE PROVISIONING

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0 9.9.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not Applicable

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0 9.9.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not Applicable

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0 9.9.3 MEMORY PROVISIONING

0  
0 Not Applicable

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0 9.10 REAL TIME IMPACT

0 Not Applicable

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0 10.0 Network Port Spread

0 This document provides rules for balancing ports of peripheral modules  
0 across all non-ENET networks in both initial and extension offices.

0 The non-ENET networks are:

0 NT8X10AA Double Shelf Network Equipment Frame

0 NT5X13AA/BA Network Frame Planes Combined (retired)

0 NT0X48AA/AG Network Frame - Full (MD'd)

0 NT0X48AB/AH Network Frame - Half (MD'd)

0 NT0X48AC/AJ Network Frame - Quarter (MD'd)

0 10.1 HARDWARE PROVISIONING

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0 10.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 10.1.2 HARDWARE DEPENDENCIES

0  
0 Not applicable.

0 10.1.3 PROVISIONING CONSIDERATIONS

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- 0 1. BALANCE the ports of each individual peripheral across all net-  
0 works and network subgroups (NSGs).
- 0 2. BALANCE the total number of ports for each peripheral type across  
0 all networks and NSGs.
- 0 3. BALANCE the total number of MESSAGE PORTS across all networks and  
0 NSGs.
- 0 4. BALANCE the total number of MESSAGE PORTS for each peripheral  
0 type across all networks and NSGs.
- 0 5. The two MESSAGE PORTS of an XPM must be on different networks in  
0 offices with more than one network, or on different NSGs in of-  
0 fices with only one network.
- 0 6. The MESSAGE PORTS of the two LM bays in the same LME must be on  
0 different networks in offices with more than one network, or on  
0 different NSGs in offices with only one network.
- 0 7. If the office has spare ports, spread the spare ports between the  
0 NSGs with DRA/EDRA MTMs, to a maximum of 2 spare ports per NSG  
0 with a DRA/EDRA. BALANCE the remaining spare ports across all  
0 networks and NSGs.
- 0 Note: DRAs (or any other circuit which employs Network  
0 Broadcast) can magnify the traffic on the C-side of  
0 the NM. See DRAM Network Deloading Table in NTP  
0 297-1001-450.
- 0 8. BALANCE A and B powered ports across all networks and NSGs on in-  
0 itial jobs.
- 0 Consider the following additional rules for PM redistributions on  
0 extensions:
- 0 9. Minimize port moves on an extension.
- 0 10. If the links of an MSB7 (NT6X32) are already BALANCED, then its  
0 links must not be moved.
- 0 Note: Because of nailed up connections, MSB7 links are dif-  
0 ficult to move without traffic interruption. Avoid  
0 moving them.
- 0 11. If the links of an MSB6 (NT6X07) are already BALANCED, then its  
0 links must not be moved.

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0 Note: Because of nailed up connections, MSB6 links are dif-  
0 ficult to move without traffic interruption. Avoid  
0 moving them.

0 12. When balancing MESSAGE PORTS, it is preferred to only move MES-  
0 SAGE PORTS of XPMs. Avoid moving MESSAGE PORTS for the purpose  
0 of balancing other port types.

0 Note: Speech links on XPMs require much less installer ef-  
0 fort to move.

0 13. Attempt to BALANCE A and B powered ports across all networks and  
0 NSGs, but do not move any port solely for the purpose of balanc-  
0 ing A and B powers.

0 Note: One plane of the network is A powered and the other  
0 is B powered. If one complete power feed fails, it  
0 doesn't matter what the spread of failed PMs is  
0 across the networks. A spread of powers is not a  
0 problem on initial offices, but on extensions it is  
0 not desirable to introduce extra moves to balance  
0 powers.

0 Note to software writer: This may be easier to implement  
0 using a balancing criterion of, for  
0 example, 10.

0 14. When all other rules have been followed, and an equal choice  
0 still exists between a number of links, then it is preferable to  
0 move a link on a PM which already has other links being moved,  
0 rather than moving a link on a PM that has not yet been involved  
0 in the PM redistribution.

0 15. Secondary to Rule 14, it is preferred to move an XPM speech link  
0 rather than other link types.

0 Note: In some cases a PM has to be "busied" to be worked  
0 on. Thus, it is best to minimize the number of PMs  
0 to be worked on.

0 16. The port spreading program provides a user interface which allows  
0 him to specify specific links which he prefers not to move. The  
0 port spreading program will then only relocate these links if it  
0 is absolutely necessary to reach BALANCE, subject to the above  
0 rules.

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0 Note: Nailed up connections as specified in customer tables  
0 (IPML, Speccon etc.) are difficult to move without  
0 causing an interruption of service. This user inter-  
0 face will give the spec writer an opportunity to  
0 avoid such moves.

0 17. If the links of an ISDN Peripheral (residing in frame NT6X01AB)  
0 are already BALANCED, then its links must not be moved.

0 Note: ISDN links may ONLY be relocated with service inter-  
0 ruption.

0 Note: The software written to implement Rules 17, 10, and  
0 11 (restricting unnecessary moves for difficult-to-  
0 move links) should be flexible enough to accept new  
0 PECs as they are identified (i.e., Streamline may  
0 create some new PECs for repackaging of existing pro-  
0 ducts).

0  
0 The word "BALANCED" as used in the above rules means the follow-  
0 ing:

0 (i) On Initials:

0 The network/NSG with the most number of ports minus the  
0 network/NSG with the least number of ports is less than  
0 or equal to one (1).

0 (ii) On Extensions:

0 The network/NSG with the most number of ports minus the  
0 network/NSG with the least number of ports is less than  
0 or equal to:

0 - two (2) for speech ports

0 - one (1) for MESSAGE PORTS

0 - one (1) for OAUs, MTMs (controlling and standby  
0 alarms)

0 - one (1) for DRA/EDRA (circuits which employ Network  
0 Broadcast)

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0 Note: On initials there is no problem to balance an office  
0 within 1. However, on extensions, every port moved  
0 costs NT and the Customer in installation hours. The  
0 idea of reducing the balancing on extensions to  
0 within two ports is to significantly reduce the num-  
0 ber of moves. This will not reduce the redundancy or  
0 operation of the office significantly because if  
0 there is a failure of an NSG or Network in one plane,  
0 the other plane is the main provision for redundancy.

0 The only case where balancing across NSGs has an ef-  
0 fect on operation is when an NSG on an 0X48 is fully  
0 provisioned. Time switching is performed more effec-  
0 tively if the NSG is not full. However, even if they  
0 are full, operation is within design constraints of  
0 the network. Therefore this does not hinder us from  
0 using a balancing criterion of 2.

0 Series 1 or first generation peripherals have a sin-  
0 gle message channel on Port 0 Channel 0.

0 Series II or XPM or second generation peripherals  
0 have two messaging channels to the network for reli-  
0 ability; i.e., XPM message channels are Port 0 Chan-  
0 nel 0 and Port 2 Channel 0.

0

0 10.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 10.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0

0 10.2 PRODUCT/SYSTEM SPECIFICATION

0

0 10.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 10.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 10.2.3 SPARING INFORMATION

0  
0 Not applicable.

0 10.3 SOFTWARE PROVISIONING

0

0 10.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not applicable.

0

0 10.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 10.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 10.4 REAL TIME IMPACT

0 Not applicable.

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## 0 11.0 DMS-SuperNode

0 The DMS-SuperNode is a technology upgrade for the DMS-100 family of  
0 digital switches. The DMS-SuperNode consists of DMS-Core and DMS-Bus  
0 subsystems. The Central Control Subsystem is superseded by these sub-  
0 systems, designed to give enhanced performance and functionality.

0 The DMS-Core provides the call management and system control functions  
0 of the DMS-SuperNode. This is a duplicated device working in synchro-  
0 nous mode.

0 - It consists of a duplex Computing Module(CM) and a duplex  
0 System Load Module(SLM). SLM is a mass storage system which  
0 will be used to store office images and from which new loads,  
0 or stored images can be booted into the CM.

0 The DMS-Bus is a high speed transaction switch which supports messag-  
0 ing between the DMS-Core, Application processors, Peripheral process-  
0 ors and other elements of the DMS-SuperNode. The DMS-Bus is a  
0 duplicated device working in a loadsharing mode.

0 - It consists of a pair of Message Switches(MS) that provides an  
0 interface to all components.

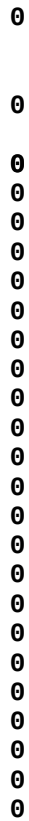
0 In order to support the higher bandwidths and increased functional  
0 density of the DMS-Core components, optical fiber is utilized to carry  
0 messages between the subsystems. A new fiber based DMS internal link  
0 protocol, DS-512, is introduced to interconnect the DMS-Core CM and  
0 MS.

0 The DMS-SuperNode employs a new cabinet based packaging system. The  
0 C42(S/DMS) SuperNode cabinet is a cost and functionally enhanced ver-  
0 sion of the existing SuperNode cabinet. The S/DMS cabinet is 42 inches  
0 wide compared with Cabinetized DMS's width of 28 inches. This new cab-  
0 inet supports features such as modified framework based on Cabinetized  
0 DMS, "horizontal"(through line-up) cabling, and "hot slide" capabil-  
0 ity. "Horizontal" cabling meaning, cables running through a hole in  
0 the side of a cabinet and into the next cabinet(s) in the same lineup.  
0 "Hot slide" is the process of moving an operating cabinet into an ex-  
0 isting lineup of equipment. The SuperNode incorporates a Frame Super-  
0 visory Panel (FSP), cooling Unit and accommodates four (4) equipment  
0 shelves. The following diagram gives a pictorial representation of  
0 this cabinet:

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0 11.1 HARDWARE PROVISIONING

0

0 11.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The DMS-SuperNode supports the same termination capacity as the  
0 CCC (i.e. up to 32 NM's per plane and up to 6 IOC's).

0 The NT9X54AC or NT9X54AD Clock Interface PB is compatible with  
0 NT9X54AB but NOT NT9X54AA. If an existing MS shelf is equipped  
0 with NT9X54AA for an internal clock reference application, this  
0 must be removed and replaced with NT9X54AC/AD, if the mate MS  
0 shelf is being equipped with NT9X54AC/AD.

0 Cabinetized DMS has a port restriction of forty (40) connections  
0 per MS shelf (twenty (20) single port access per bulkhead). In  
0 otherwords, Cabinetized DMS is restricted to 40 Ports per MS  
0 shelf. Therefore the maximum number of NT9X17AA/ADs is 10 per MS  
0 Shelf for Cabinetized(streamline) DMS only.

0 The NT9X62BA will be available for Inter-MS-Link (IML) feature in  
0 BCS35

0 The NT9X10AA 33 MHz 88000 BRISC CPU Circuit Pack does not support  
0 the NT9X14BB 6MB Memory.

0 11.1.2 HARDWARE DEPENDENCIES

0

0 P AND C SIDE PORT REQUIREMENTS

0

0 Not applicable

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable

## 0 CIRCUITS PER CARD

0  
0 Not applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable

## 0 NT40 Upgrade

0  
0 Commissioning Engineering is to supply an IOE frame equipped with  
0 an MTD, IOC, Term-CP and Terminal, to be used when upgrading an  
0 NT40 office to DMS-SuperNode.

0 For U.S. offices, Isolated System Grounding (ISG) will be pro-  
0 vided for all offices receiving a DMS-SuperNode. To be consistent  
0 with the evolving Industry Standards (TA-EOP-000295), it is re-  
0 commended that all DMS-SuperNode office upgrades include ISG. See  
0 ECM-289 for provisioning rules on ISG for initial offices.

0 All DMS-SuperNode offices must be upgraded to BCS 26 S/W and BCS  
0 26 Gating H/W (Reference ECM510 Gating H/W).

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## 0 BRISC

- 0  
0 The prerequisites for BRISC are as follows:
- 0 - NT9X12AC (NT9X12AB on CM, SLM must be replaced)
  - 0 - NT9X14DB (NT9X14BB on CM must be replaced)
  - 0 - NT9X44AB (NT9X44AA must be replaced)
  - 0 - The NT9X26DA is required with the NT9X10AA BRISC CPU.
  - 0 - 250MB tape (DC6250) for scratch purposes.

0  
0 Power and Ground Cabling

0  
0 The power and ground cabling of the S/DMS cabinet depends on the  
0 site configuration. Installations that do not utilize horizontal  
0 cabling, require the power cables entering the cabinet to be fed  
0 through EMC filters. On the other hand, use of S/DMS cabinet in a  
0 Cabinetized DMS lineup do not need the power filters.

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0 11.1.3 PROVISIONING CONSIDERATIONS

0  
0 DMS-SuperNode is provisioned to support the office configuration  
0 in four (4) major respects:

- 0 - the DS-30 message links required for NMs, IOCs and LIMs
- 0 - the CM memory required
- 0 - the processor required for the office configuration
- 0 - the SLM required to support storage capacity requirements

0 The Network frame must be modified for use with the  
0 DMS-SuperNode. See ECM261 for provisioning rules on connection  
0 of Network Modules to the DMS-SuperNode.

0 The Input Output Controller (IOC) Modules must be modified for  
0 use with the DMS-SuperNode. See ECM 316 for IOC provisioning  
0 rules. Initial DMS-SuperNode offices must provision IOC shelves  
0 on IOE frames.

0 For office upgrades to the DMS-SupeNode that are currently uti-  
0 lizing the Message Device and Controller (MDC) module for I/O re-  
0 quirements, external (i.e. IOE/MTC) mounted IOC shelves must be  
0 provisioned.

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## 0 MS Port Provisioning

0  
0 The MS occupies two (2) planes and two (2) shelves on a  
0 DMS-SuperNode. Message port requirements are calculated as fol-  
0 lows:

0 When provisioning ports on a Message Switch Shelf, a number of  
0 factors need to be considered. (Note that both MS Shelves must  
0 be equipped in exactly the same way.)

0 There are 18 slots available for Network, IOC/EIOC, and LIM con-  
0 nections on each MS Shelf. Note during the upgrade, the Network  
0 slots must be shared between the existing NMs and the new ENET.

0 \* Each NM requires two (2) ports (each must be on an adja-  
0 cent card).

0 \* Each IOC requires one (1) port.

0 \* Each EIOC requires two (2) ports (each must be on a sepa-  
0 rate card).

0 \* Each LIM requires four (4) ports (each pair must be on a  
0 separate card).

0 As an example, for an office that has 5 networks, 3 IOC and 2  
0 LIMs:

0 The number of MS ports req. per plane =  $(5 \times 2) + 3 + (2 \times 4)$   
0 = 21 ports

0 Remember that port circuit packs are provisioned in pairs per MS  
0 plane (i.e. in multiples of four) as noted in section 1.2.2. This  
0 allows Network Module links from the two planes to terminate on  
0 physically different port cards.

0 Each MS 4 Port CP (NT9X17AA/AD) can connect up to four (4) mes-  
0 sage ports.

0 The NT9X17AD is essentially the same circuit pack as NT9X17AA,  
0 and it provides full bandwidth capability and can be used in all  
0 present applications. The NT9X17AD card is based on the existing  
0 NT9X17AA design and is used with the NT9X62BA, SR-512 interface  
0 paddleboard in FLIS applications.

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0 With the introduction of ENET, the requirement for MS ports  
0 greatly increases. Therefore, a 64 port CP (NT9X17DA) is intro-  
0 duced. The 4 port CP (NT9X17AA/AD) is retained for use with IOC,  
0 CM, NM and LIM. MS port assignments are first provisioned for  
0 IOCs. This will normally amount to two NT9X17AA/AD and two  
0 NT9X23AA per plane assigned to the highest numbered slots on the  
0 MS shelf. Unused ports from these cannot be used for ENET. How-  
0 ever, the unused ports can be used for Inter-MS -Links.

0 The NT9X17CA, 128 port card is the continuous evolution of the  
0 SuperNode product that provides double the NT9X17DA (64 port  
0 card) capacity. This evolution increases the total number of  
0 ports that can be supported using the DMS-Bus shelf and allows a  
0 much greater fan-out from the DMS-Bus. The NT9X17CA is fully com-  
0 patible with its predecessors in terms of functionality. They can  
0 be inter-changed and co-exist in the Message Switch with proper  
0 commissioning procedures.

0 The NT9X17CA provides 128 independent ports on a single CP. Each  
0 port acts as an independent entity on the T-Bus, being able to  
0 transmit and receive messages identified by its own unique port  
0 address. Each port represents a bi-directional messaging path,  
0 with the T-Bus providing a routing mechanism.

0 The NT9X17CA can be used to support applications which require  
0 more than 64 messaging ports. In situations, where more than 64  
0 ports but less than 128 ports are required, the NT9X17CA can be  
0 used in lieu of the NT9X17DA and therefore eliminate the require-  
0 ment to chain two 9X17DAs. This will reduce the requirement of  
0 the MS port Expander card and hence free up slots on the MS.

#### 0 ENET Interface

0 The following equipment is the minimum requirement in the Message  
0 Switch (MS) to interface with the ENET. The NT9X25AA and NT9X25BA  
0 are required, only if a chain of 17DAs is required.

- 0 - NT9X13DC, MS CPU Processor CP (4 Megabytes)
- 0 - NT9X17DA, MS 64 Port CP
- 0 - NT9X20BB, ENET/MS Fiber Interface PB
- 0 - NT9X25AA, MS Port Expander PB
- 0 - NT9X25BA, MS Port Expander/Terminator PB
- 0 - NT9X49CB, MS P-Bus Terminator CP (Tracer Card)

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0 To interface with ENET, the MS requires 10 Megabytes of memory.  
0 This is achieved in the following ways:

| QTY                                                                                                     | PEC             | QTY | PEC              | Application     | NOTE |
|---------------------------------------------------------------------------------------------------------|-----------------|-----|------------------|-----------------|------|
| 2                                                                                                       | NT9X13DC (4 MB) | 2   | NT9X14BB (6 MB)  | Canadian & U.S. |      |
| 1) PM Note: New SN DPCCs should not be provided with the NT9X14BB MS memory for BCS-31 and above loads. |                 |     |                  |                 |      |
| 2                                                                                                       | NT9X13DB (1 MB) | 2   | NT9X14DB (24 MB) | Richardson      | 1    |

0 NOTE:

0 1 This configuration is non-standard and will not be supported by the formal design documentation. Earlier releases of NT9X13DB are not compatible with NT9X25AA/BA, later releases are. Release numbers are transparent to our documentation and process. Hence, Richardson will be responsible for keeping track of the proper type of NT9X13DB CPs for their offices.

0 Existing Offices With NT9X01BA/JA

0 Product Change Kit (PC Kit) NT9X04AY converts the MS to the minimum level required to interface the ENET. It removes NT9X49CA and makes slot position 32F provisionable. It can be applied to NT9X04AG in order to upgrade the MS to NT9X04AH which is the minimum level required to interface the ENET. Other existing PC Kits can be applied to existing MS Common CP Fills in order to bring them up to the necessary level.

|    | Existing Level | PC Kit Required | New Common CP Level |
|----|----------------|-----------------|---------------------|
| MS | - NT9X04AA     | NT9X04AD        | NT9X04AB            |
| MS | - NT9X04AB     | NT9X04AF        | NT9X04AE            |
| MS | - NT9X04AE     | * NT9X04AZ      | NT9X04AG            |
| MS | - NT9X04AG     | * NT9X04AY      | NT9X04AH            |

0 \* NT9X04AE may be upgraded directly to NT9X04AH by applying NT9X04AY if the external clock interface is not required.

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## 0 MS Port Group (Chain)

0 A MS Port Group is a set of one (1) or more adjacent MS Port  
0 cards, DS-512 Interface Paddleboards, and MS Port  
0 Expander/Terminator Paddleboards that are required to support the  
0 DS-512 link to an ENET shelf.

0 One MS Port Group is required per MS for each ENET shelf (per  
0 plane). Because there are two (2) ENET planes, therefore two port  
0 groups are associated with each ENET shelf. Both port groups are  
0 located on MS 0 and, on MS 1.

0 Each MS port group is provisioned as a sum of the following:

0 - 1 port for the ENET Shelf Processor

0 - 1 port for each active message channel Processor associated  
0 with a speech link that terminates on the shelf (i.e. each Series  
0 I peripheral has one (1) Message Channel Processor, Each Series  
0 II peripheral has two (2) Message Channel Processors).

0 Each port group must be assigned a contiguous group of CP slots  
0 on the MS shelf. In order to size the MS Port Group, the distrib-  
0 ution of peripheral types (i.e. Series I \* II) over the ENET  
0 shelf pairs must be known.

0 NOTE: If the DMS office will require more than one (1) equipped  
0 ENET shelf (per plane), the assignment of the NT9X40BA, NT9X41BA,  
0 and the NT9X45BA Paddleboards (PBs) on the ENET shelves will di-  
0 rectly affect the size of each MS Port Group. Hence, to optimize  
0 the size of the MS Port Group, it may be necessary to reassign  
0 the quantity of NT9X40BA, NT9X41BA and the NT9X45BA PBs from one  
0 ENET shelf to another in order to avoid crossing the boundary of  
0 message ports which would necessitate the addition of an MS 64  
0 Port Card NT9X17DA and the associated paddleboards. (This card  
0 and the associated paddleboards are explained later in this sec-  
0 tion.) Note that any reassignments would only pertain to new  
0 equipment (i.e. initial offices or new equipment being added into  
0 an existing office). Existing paddleboards on an ENET shelf must  
0 not be reassigned during an extension.

0 For reasons previously discussed consideration should be given to  
0 making allowances for the future growth requirements of the last  
0 incomplete network shelf. Reserve slots on the MS for the  
0 projected future requirements of partially equipped ENET shelves.

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0 An MS Port Group will consist of the following types of hardware:

- 0 - NT9X17DA MS 64 Port CP or NT9X17CA MS 128 Port CP
- 0 - NT9X20BB ENET/MS Fiber Interface PB
- 0 - NT9X25AA MS Port Expander PB
- 0 - NT9X25BA MS Port Expander/Terminator PB

0 ENET will utilize MS 64 Port CP or MS 128 Port CP for network and  
0 peripheral message port assignments.

0 NT9X17DA, MS 64 PORT CP

- 0 - One can connect up to 64 message ports.

0 NT9X17CA, MS 128 PORT CP

- 0 - One can connect up to 128 message ports.

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0 The following PBs are required to complete each port group.

0 NT9X20BB, ENET/MS Fiber Interface PB

- 0 - One required per plane behind the first NT9X17DA CP or NT9X17CA
- 0 CP of each port group.
- 0 - Interfaces the message link from the Enhanced Network Shelf.

0 NT9X25AA, MS PORT EXPANDER PB

- 0 - One required per plane behind the middle NT9X17DA CP of each
- 0 port group if equipped.
- 0 - Expands the bus to accommodate a larger port group beyond
- 0 64 channels.

0 NT9X25BA, MS PORT EXPANDER/TERMINATOR PB

- 0 - One required per plane behind the last NT9X17DA CP or NT9X17CA
- 0 of each port group if equipped.
- 0 - Terminates the bus.

0 Cable Length from MS Shelf to ENET Shelf

0 All fibre optic cables from both MS Shelves (i.e. plane 0 & 1 to  
0 any ENET shelf (on either plane) must not deviate in length from  
0 each other by more than 25 feet.

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0 Examples of MS Port Groups

|            | Front    | Rear     |
|------------|----------|----------|
| 0 64 Ports | NT9X17DA | NT9X20BB |

|          |           |                                                                                                       |          |          |          |          |    |                                                            |          |          |
|----------|-----------|-------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----|------------------------------------------------------------|----------|----------|
| 0        | 128 Ports | <table><tr><td>NT9X17DA</td><td>NT9X20BB</td></tr><tr><td>NT9X17DA</td><td>NT9X25BA</td></tr></table> | NT9X17DA | NT9X20BB | NT9X17DA | NT9X25BA | OR | <table><tr><td>NT9X17CA</td><td>NT9X20BB</td></tr></table> | NT9X17CA | NT9X20BB |
| NT9X17DA |           |                                                                                                       | NT9X20BB |          |          |          |    |                                                            |          |          |
| NT9X17DA |           |                                                                                                       | NT9X25BA |          |          |          |    |                                                            |          |          |
| NT9X17CA |           |                                                                                                       | NT9X20BB |          |          |          |    |                                                            |          |          |
| 0        |           |                                                                                                       |          |          |          |          |    |                                                            |          |          |
| 0        |           |                                                                                                       |          |          |          |          |    |                                                            |          |          |
| 0        |           |                                                                                                       |          |          |          |          |    |                                                            |          |          |
| 0        |           |                                                                                                       |          |          |          |          |    |                                                            |          |          |

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192 Ports

|          |          |
|----------|----------|
| NT9X17DA | NT9X20BB |
| NT9X17DA | NT9X25AA |
| NT9X17DA | NT9X25BA |

OR

|          |          |
|----------|----------|
| NT9X17CA | NT9X20BB |
| NT9X17DA | NT9X25BA |

|   |           |          |          |    |          |          |
|---|-----------|----------|----------|----|----------|----------|
| 0 | 256 Ports | NT9X17DA | NT9X20BB | OR | NT9X17CA | NT9X20BB |
| 0 |           | NT9X17DA | NT9X25AA |    | NT9X17CA | NT9X25BA |
| 0 |           | NT9X17DA | NT9X25AA |    |          |          |
| 0 |           | NT9X17DA | NT9X25BA |    |          |          |
| 0 |           |          |          |    |          |          |
| 0 |           |          |          |    |          |          |
| 0 |           |          |          |    |          |          |
| 0 |           |          |          |    |          |          |

0 The front card of each MS Port Group is always an NT9X17DA or  
0 NT9X17CA CP. Behind the MS 64 or MS 128 Port CP in each group,  
0 an NT9X20BB PB is provisioned to allow the physical connection of  
0 the fiber link from the MS Shelf to the ENET. For multiple card  
0 groups, an NT9X25BA PB (to terminate the port group) is located  
0 behind the last card, and an NT9X25AA PB (to extend the port  
0 group) behind any intervening MS 64 or MS 128 Port CPs in the  
0 group.

0 Note that a duplicate port group is provisioned for the other  
0 ENET plane.

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0 Provisioning of MS Shelf (DMS-BUS) Slots

0 When provisioning MS shelf slots, refer to the appropriate  
0 scenario:

0 1. ENET Initial:

0 Use rules A and C below.

0 2. ENET Extension:

0 Use rule C below.

0 3. ENET Retrofit (Upgrade) Without MS Port Concentration:

0 Use rule C below.

0 4. ENET Retrofit (Upgrade) With MS Port Concentration:

0 Use rules A, B and C below.

0 Rule A: Assign IOCs, EIOCs and LPPs to the highest numbered MS  
0 slots in descending order starting from slot 29 (i.e. slots 29,  
0 28, etc.). These slots will contain 4-port cards (NT9X17AA/AD)  
0 in the front and 4-port DS-30 interface paddleboards (NT9X23AA  
0 for IOCs and EIOCs; NT9X23BA for LPPs) in the rear.

0 Rule B: Assign the existing network ports to the next highest  
0 available MS slots in descending order. These slots will contain  
0 64-port cards (NT9X17DA) in the front and 16-port DS-30 interface  
0 paddleboards (NT9X69AA) in the rear.

0 Rule C: Assign the ENET ports to the lowest numbered MS slots in  
0 ascending order starting from slot 12 (i.e. slots 12, 13, etc.).  
0 These slots will contain 64-port cards (NT9X17DA) in the front  
0 and fibre interface or port expander or port terminator  
0 paddleboards (NT9X20BB or NT9X25AA or NT9X25BA) in the rear.

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## 0 ENET Retrofit (Upgrade)

0 An ENET retrofit (upgrade) occurs when the switching network of  
0 an existing inservice DMS-SuperNode office changes from a Network  
0 Module (NM) implementation to an Enhanced Network(ENET) implemen-  
0 tation. During the upgrade, the Network slots must be shared be-  
0 tween the existing NMs and the new ENET.

0 In network upgrade situations, the existing MS 4 Port CPs  
0 (NT9X17AA/AD) will be used to connect to existing IOC/EIOCs, NMs,  
0 and LIMs. The MS 64 Port CPs (NT9X17DA) will be required to be  
0 provisioned for connection to ENET.

0 It is important to note that for a time during the retrofit, the  
0 MS must interface all IOC/EIOCs, all NM, all LIMs, plus both  
0 planes of the ENET.

### 0 MS Port Concentration

0 Each MS shelf (or DMS-Bus) must have a sufficient number of va-  
0 cant slots to allow the addition of enough 64 port cards to sup-  
0 port both planes of the ENET. If this is not the case, the  
0 existing NM ports must be "concentrated" onto higher density port  
0 cards. This process may involve the relocation of NM, IOC/EIOC,  
0 and LIM ports.

### 0 Addition of Sixteen Port Cards to the MS

0 This procedure replaces some of the MS 4 Port cards and the DS-30  
0 Interface Paddleboards with MS 64 Port cards and 16 DS-30 Port  
0 Interface Paddleboards.

0 Specifically, two or four NT9X17AA/ADs (MS 4 Port CP) and two or  
0 four NT9X23AAs (Four DS-30 Port Interface Paddleboards) are re-  
0 placed with an equivalent number of NT9X17DAs (MS 64 Port CP) and  
0 NT9X69AAs (Sixteen DS-30 Port Interface Paddleboards). Four  
0 sixteen-port slots are sufficient to support both planes of 32  
0 NMs.

0 These sixteen-port packs are considered retrofit packs, and are  
0 removed during the Post-Cutover phase.

0 For Canadian Offices:

0 The SAE/EAE will determine if an MS Port Concentration is re-  
0 quired and the quantity of NT9X17DAs and NT9X69AAs required (but

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0 will not order this hardware). He will inform the Job Supervisor  
0 accordingly. The Job Supervisor will obtain this hardware from  
0 the Installation Tool Room as required.

0 For U.S. Offices:

0 The requirement for an MS port concentration will be reported to  
0 installation via the order capture process. Installation will  
0 provide the required NT9X17DA and NT9X69AA.

0 The following contains information on provisioning the MS Shelf  
0 slots, and provides the necessary formula to determine whether  
0 enough vacant slots exist to support an ENET. The number of MS  
0 ports in each of the MS Port Groups is determined as follows:

0 \* one (1) port for the ENET shelf

0 \* one (1) port for each Series I peripheral connected to  
0 that ENET shelf

0 \* two (2) ports for each Series II peripheral connected to  
0 that ENET shelf

0 \* extra ports must also be allocated for any anticipated  
0 future growth.

0 One (1) MS shelf card slot is required for every 64 ports in a  
0 group. One MS 64 Port CP (NT9X17DA) can connect up to 64 message  
0 ports. For an ENET shelf, the longest group required is four (4)  
0 MS 64 Port cards long as shown in previous section.

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0 MS Shelf Slot Requirement Calculation

0 \* Total the number of slots required by each MS Port Group.

0 \* Total the number of slots required to support the exist-  
0 ing NMs, IOC/EIOCs, and LPPs (assuming only MS 4 Port cards).

0 \* If the sum of these two (2) numbers is greater than 18,  
0 then an MS Port Concentration must be performed.

0 Example 1: A Small Office

0 Note that the calculations are done based on one (MS shelf) plane  
0 only.

0 An office contains the following equipment:

0 NM: 12  
0 IOC: 2  
0 EIOC: 1  
0 LPP: 1  
0 FXPM: 40 (Fiberized Series II Peripherals)  
0 PM: 40

0 Assume that ENET shelf 0 supports the 40 FXPMs, and ENET shelf 1  
0 supports the 40 PMs. The number of MS Shelf slots required to  
0 support this equipment using both NMs and ENET is as follows:

0 NM:{12 X 1/4} rounding up to the next integer X 2 slots  
0 = 6 Slots

0 Each NM requires total of two ports. Each port must be on an ad-  
0 jacent slot.(one port out of 4 ports from each slot)

0 IOC:2 port out of 4 ports X 1 slot  
0 = 1/2 Slot

0 Each IOC requires one port out of four ports.

0 EIOC:{1 X 1/4} rounding up to the next integer X 2 slots  
0 = 2 Slots

0 Each EIOC requires total of two ports. Each port must be on an  
0 adjacent slot.(one port out of 4 ports from each slot)

0 LPP:{1 X 2/4} rounding up to the next integer X 2 slots  
0 = 2 Slots

0 Each LPP requires total of four ports. Two ports out of 4 ports  
0 must be on each slot.



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0 ENET MS Port Group 0 Pl 0, Sh 0: 2 {ports = 1 + (2 X 40) = 81}  
0 ENET MS Port Group 1 Pl 0, Sh 1: 1 {ports = 1 + (1 X 40) = 41}

0 Two (2) slots can support both IOCs, the EIOC, and the LPP. The  
0 total number of slots required in each MS Shelf to support NM,  
0 IOC, EIOC, LPP and ENET is:  
0 = (existing) + (ENET)  
0 = (6 + 2) + (2 X (2 + 1))  
0 = (8) + (6)  
0 = 14

0 This number is less than 18, so an MS Port Concentration is NOT  
0 required.

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0 Example 2: A Large Office

0 An office contains the following equipment:

0 NM: 28  
0 IOC: 4  
0 EIOC: 1  
0 LPP: 1  
0 FXPM: 100 (Fiberized Series II Peripherals)  
0 PM: 80

0 Assume that ENET shelf 0 supports 60 FXPMs, and ENET shelf 1 supports 40 FXPMs and 80 PMs. The number of MS Shelf slots required to support this equipment using both NMs and ENET is as follows:

0 NM:{28 X 1/4} rounding up to the next integer X 2 slots  
0 = 14 Slots

0 Each NM requires total of two ports. Each port must be on an adjacent slot.(one port out of 4 ports from each slot)

0 IOC:4 port out of 4 ports X 1 slot  
0 = 1 Slot

0 Each IOC requires one port out of four ports.

0 EIOC:{1 X 1/4} rounding up to the next integer X 2 slots  
0 = 2 Slots

0 Each EIOC requires total of two ports. Each port must be on an adjacent slot.(one port out of 4 ports from each slot)

0 LPP:{1 X 2/4} rounding up to the next integer X 2 slots  
0 = 2 Slots

0 Each LPP requires total of four ports. Two ports out of 4 ports must be on each slot.

0 ENET MS Port Group 0 plane 0, Shelf 0: 2  
0 {ports = 1 + (2 X 60) = 121}

0 ENET MS Port Group 1 plane 0, Shelf 1: 3  
0 {ports = 1 + (2 X 40 + 1 X 80) = 161}

0 Two (2) slots can support the EIOC, the LPP, and up to two (2) IOCs. A third card must be provisioned to support the other two (2) IOCs. The total number of slots required in each MS Shelf to support NM, IOCs, EIOC, LPP and ENET is:

0 = (existing) + (ENET)  
0 = (14 + 2 + 1) + (2 X (2 + 3))  
0 = (17) + (10)

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0 = 27

0 This number is greater than 18, so an MS Port Concentration IS  
0 required.

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0 Job Drawings

0 For Canadian Offices:

0 If an MS Port Concentration is required, the SAE/EAE shall pre-  
0 pare D610 job drawings such that one will show the interim MS  
0 Port configuration and another drawing will show the final MS  
0 Port configuration for the DMS office. Notes should be added to  
0 the drawings distinguishing the interim and final configurations.

0 For U.S. Offices:

0 If an MS Port Concentration is required, the EAE shall add a note  
0 to the 1001 Specification that will show the slot and port as-  
0 signments of the NT9X17DA and NT9X69AA required for MS port con-  
0 centration.

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## 0 CM Provisioning

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0 A CM consists of a NT9X0605 Computing Module Shelf Assembly,  
0 NT9X06AF CM Processor Shelf Circuit Packfill, memory circuit  
0 packs, and message links to the MS.

0 Memory provisioning is carried out in a similar fashion for CCC  
0 and DMS-Core. However separate memory is not defined for Program  
0 Store and Data Store. A single memory store expressed in Mega-  
0 bytes (M-bytes) is defined for the CM.

0 The MEMCALC memory sizing tool is available for evaluating CM  
0 memory requirements.

0 In addition to the operational memory provisioned, one extra mem-  
0 ory CP per circuit pack type (i.e. a spare 6 and a 24 Mbyte CP  
0 for mixed memory applications) must be provided per plane to be  
0 assigned as a reliability spare.

0 For retrofits and upgrades, refer to Change Application Procedure  
0 (CAP) 1351.

0 Bulkheads for CM

0 For all applications, provision one (1) NT9X6539 CM Bulkhead  
0 (Right) and one (1) NT9X6540 CM Bulkhead (Left).

0 BRISC

0 The NT9X10AA BRISC CPU will provide a real-time performance gain  
0 of 2.5 times over the NT9X13BC CPU. The NT9X10AA may replace ex-  
0 isting 68020 and 68030 processor cards, provided the correspond-  
0 ing paddleboard is also replaced and a BRISC software load is  
0 utilized.

0 For BRISC offices, provision two (2) NT9X10AA 33 MHz 88000 BRISC  
0 CPU Circuit Packs per SuperNode Computing Module (CM) in shelf  
0 position 13 in slots 19F and 20F, and provision two (2) NT9X26DA  
0 BRISC RTIF Paddleboards per SuperNode Computing Module (CM) in  
0 shelf position 13 in slots 19R and 20R.

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## 0 SLM Provisioning

0  
0 SLM II units are a requirement of all offices whose image is ex-  
0 pected to exceed 30 M-bytes during the engineered interval. Since  
0 provisioning SLM II units in an office would impact its IOC based  
0 mass storage needs, it is recommended that for new offices, the  
0 need for SLM II units be established based on image requirements  
0 forecasted out 5 years where possible. In smaller offices SLMs  
0 are considered to be a customer requested option.

0 For U.S. applications, SEB 88-01-002 may be referenced. It con-  
0 tains a detailed formula for calculation of Supernode image size.  
0 The MEMCALC tool also will calculate office image requirements.

0 When the SLM is required, provide two (2) NT9X44AB System Load  
0 Module II per NT9X01JA/JB Dual Plane Combined Core Cabinet  
0 (DPCC). Also provision the associated NT9X07AC SLM Common CP and  
0 NT9X12AB/AC CPU Port CP. SLM II units are provisioned on a SLM  
0 shelf and interfaced to the CM via orderable CM bus extender pad-  
0 dle boards.

0 When SLM is not required, provide one (1) NT9X01FB Filler  
0 Packfill to satisfy cabinet cooling airflow requirements.

0 Device Independent Recording Package(DIRP) is a supported func-  
0 tion on SLM II. The following are the known application using  
0 DIRP and should be supported by SLM II:

0 AMA, CDR, SMDR, OM, JF, KT, TTRF

0 METBCKP, OOS, MS7, DLOG, CRS

0 For the disk storage provisioning for DMS-STP in support of data  
0 access by Signalling Engineering and Administration System(SEAS)  
0 IOC DDUs must be provisioned.

0 The engineering of data storage requirement for SLM II should in-  
0 clude the storage requirement for all office operation, adminis-  
0 tration and maintenance data. In particular, the provisioning of  
0 storage capacity for AMA/CDR data should take into the consider-  
0 ation of busy hour traffic rate, data polling or transfer rate if  
0 applicable, as well as data retention requirement.

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0 If additional DDU(s) is required, either SLM or DDU but not both  
0 may be used for recording the same DIRP subsystem data (such as  
0 AMA/CDR). This is to avoid performance fluctuation.

0 In the case of parallel recording, the use of IOC DDUs are recom-  
0 mended over tape drives. This is for better performance in terms  
0 of through-put and storage capacity. Note that the overall  
0 through-put performance using concurrent parallel recording will  
0 be limited to the IOC DDU through-put performance, even though the  
0 SLM II performance is superior.

0 SLM HANDLING CONSIDERATIONS

0 When SLM I is equipped in an office, the combined CM and MS soft-  
0 ware load (image) must be delivered to site in DC 600A compatible  
0 tape cartridges. This would also apply to any commissioning  
0 loads that are supplied.

0 When SLM II is equipped in an office, the combined CM and MS  
0 software load (image) must be delivered to site in DC 600XTD com-  
0 patible tape cartridges. This would also apply to any commis-  
0 sioning loads that are supplied.

0 Blank cartridges must also be provided for scratch purposes. The  
0 different CPC number, Manufacturing part number and the sizes are  
0 given below:

0 CPC A0314597; Manufacturing Part # DC600A; 60MB  
0 CPC A0369779; Manufacturing Part # DC6150; 150MB  
0 CPC A0368760; Manufacturing Part # DC6250; 250MB

0 However Field Commissioning Tapes, Non-Resident Software Tapes  
0 and Peripheral Processor Software tapes must be delivered on the  
0 usual 9 track magnetic tapes. The specification process will au-  
0 tomatically call up the appropriate tape medium when the SLM  
0 software feature package is specified.

0 For Universal Software Load the SLM II is a must for offices run-  
0 ning with BCS33 and later.

0 For non-Universal Software Load the SLM II is required for,

- 0 -- offices running with BRISC Processor.
- 0 -- offices exceeds the SLM I tape capacity of 62Mb.
- 0 -- offices with planned capacity upgrdae.

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0 -- etc..

0 Since SLM I is MD'd, new offices will receive SLM II even if they  
0 do not have Universal Software Load.

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## 0 Reset Terminal Provisioning

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0 Two (2) compatible terminals must be provided in the maintenance  
0 area to serve as local reset terminals. These could be located  
0 close to MAP:00. Suitable furniture must be provided to accommo-  
0 date these terminals. Terminals are powered from inverters which  
0 may be located on the MIS frame.

0 The Reset Terminal Interface (RTIF) (NT9X26AA) of the CM provides  
0 two terminal interfaces. One is a RS-232C and is intended for  
0 local applications while the other supports either RS-232C or  
0 RS-422 and is intended for interfacing to remotely located termi-  
0 nals. Local RTIF terminals connected to an initial DMS-Core must  
0 be connected through back-to-back modems (9600 Baud asynchronous  
0 modem), or approved Current Loop converters. These isolation  
0 methods are required to satisfy ISG requirements, provide power  
0 fault isolation and and prevent cross-linking of terminal grounds  
0 with DMS equipment grounds.

0 The Enhanced Remote Terminal Interface (RTIF) CP (NT9X26AB), of-  
0 fers all the features of the existing NT9X26AA (ie. One RS-232C  
0 terminal interface port and one RS-232C / RS-422 interface port),  
0 plus:

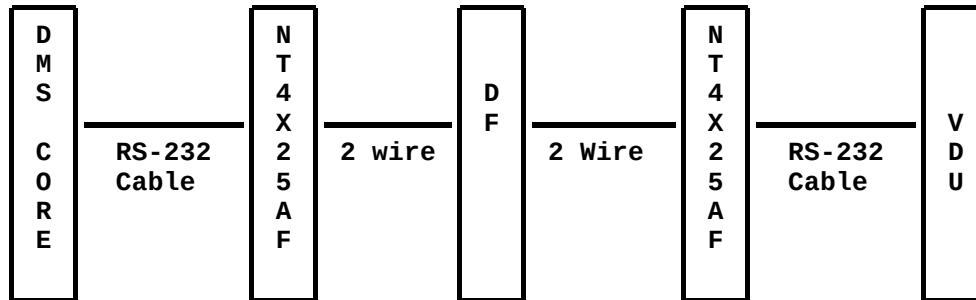
- 0 - 20mA current loop terminal interface port
- 0 - Status lamps indicating processor inactivity and sync

0 Approved VDU terminals, operating in current loop mode, can be  
0 connected directly to the NT9X26AB Enhanced RTIF CP at the cabi-  
0 net bulkhead. In this mode, the back-to-back data units, modems  
0 or Rad current loop converters, which were needed for Isolated  
0 System Ground (ISG) compliance, power fault isolation and pre-  
0 ventation of cross-linking of terminal grounds with DMS equipment  
0 are no longer required.

0 The NT9X26DA RTIF Paddleboard is required for BRISC.

0 An ISG compliant office may be using back to back modems con-  
0 nected to the RS232 connector on a NT9X26AA RTIF paddleboard. If  
0 the NT9X26AA is being changed to a NT9X26AB (or '26DA), it is re-  
0 commended to get rid of the back to back modems and provide a  
0 current loop cable for the RTIF Terminal being used in the of-  
0 fice.

The Low Speed Data Unit with Elastomer Keypad (NT4X25AF) may be used in a non switched arrangement (back-to-back) with the RTIF. Refer to ECM 346 for provisioning details. Since the data unit connects directly to the RTIF in the CM, type D line cards are NOT required for this application. The following figure depicts this arrangement:



## Data Unit

|                 |              |                    |
|-----------------|--------------|--------------------|
| <b>Settings</b> | <b>Baud</b>  | <b>9600</b>        |
|                 | <b>Mode</b>  | <b>Async</b>       |
|                 | <b>SW1</b>   | <b>Slave</b>       |
|                 | <b>SW2-1</b> | <b>Off</b>         |
|                 | <b>SW2-2</b> | <b>Off (slave)</b> |
|                 | <b>SW2-3</b> | <b>Off</b>         |
|                 | <b>SW2-4</b> | <b>Off</b>         |

## Data Unit

```
9600
Async
Slave
Off
(master)
Off
Off
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0 Option 2 (U.S. Applications Only)

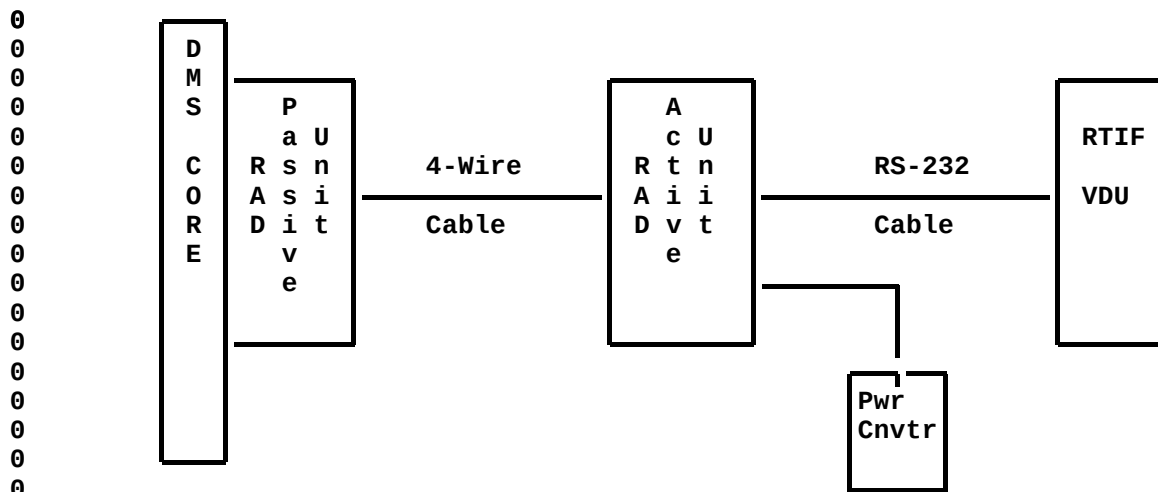
0 Current Loop converters from Rad Data Communication have been ap-  
0 proved for compliancy with ISG to interface from the SuperNode  
0 with the RTIF.

0 Note - A spare set of converters and power converters must be  
0 provisioned for each site.

0 A Passive RS-232 to Current Loop converter is plugged directly  
0 into the SuperNode bulkhead. This device is connected to an Ac-  
0 tive RS-232 to Current Loop converter by a two (2) pair 20 ma  
0 loop cable. The Active unit (located near the RTIF) is connected  
0 to the RTIF by a short connectorized (female on RAD end, female  
0 on RTIF end) RS-232 cable.

0 The Active unit is powered by a plug in Power Converter which  
0 converts 120V AC to 12V DC.

0 The following figure depicts this arrangement:



|   |              |          |                |
|---|--------------|----------|----------------|
| 0 | Description  | NT CPC   | RAD Part No.   |
| 0 | Active Unit  | A0354166 | MIC-24/CL/A-NF |
| 0 | Passive Unit | A0354167 | MIC-24/CL/P-NF |
| 0 | Power Convtr | A0354168 | MIC-P          |

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0 See ECM-289 for Isolated System Grounding (ISG) provisioning  
0 guidelines.

0 When required, two additional reset terminals can be equipped at  
0 a remote location and interface to the RTIF via modems and secure  
0 dedicated lines. This equipment must be RS-232C compatible.

0 When required, the RTIF can interface to AT&T E2A equipment asso-  
0 ciated with a Switching Control Centre System (SSC) (US applica-  
0 tions only).

0 The Remote RTIF will be configured as 1200 baud RS232 to a modem  
0 or as 2400 baud RS422 connection to a Data Auxillary Shelf (DAS)  
0 for E2A. The Baud rate is set at initial power up via in-  
0 structions received from the NT9X26-- firmware to either 1200  
0 baud if the E2A Software is not present or 2400 baud if the E2A  
0 Software is present. The Remote RTIF CANNOT be used for BOTH a  
0 remote modem connection, and a DAS connection.

0 Refer to the appropriate VDU ECM for approved RTIF terminals.

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## 0 Inter-MS Link Provisioning

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0 The two inter-MS links (IMLs) are provisioned if required to connect MS plane 0 to MS plane 1 and provide a path for messages in event of a failure. These links utilize DS-30 links and should be provisioned as follows:

0 For applications NOT using Cabinetized DMS cabinets, and where DS-30 inter-MS links are required, provision two (2) NTEX5022 Inter-MS DS-30 Cable Assemblies. (one NTEX5022 cable per IML)

0 For Cabinetized DMS cabinet applications where DS-30 inter-MS links are required, provision two (2) NTEX5023 Inter-MS DS-30 Cable Assemblies. (one NTEX5023 cable per IML)

0 For applications requiring Inter-MS links, each DS-30 IML can be provisioned on any un-used DS-30 port on either an NT9X23AA or an NT9X23BA or an NT9X69BA paddleboard subject to the following restrictions:

0 The DS-30 ports selected for the two links must be on different paddleboards. That is, if the only free DS-30 ports are on the same paddleboard they cannot both be used for the IMLs; another port must be freed up on another paddleboard in order to equip the second link.

0 The paddleboards and ports selected must be the same on each MS. For example, if port 3 on paddleboards in slots 16 and 17 are selected in MS 0, then port 3 on paddleboards in slots 16 and 17 in MS 1 must be used. The paddleboards and ports selected can be in any slot or port in which DS-30 paddleboards are allowed except port 0 on paddleboards in slots 28 and 29.

0 Provisioning of DS-30 IMLs is currently limited to the SuperNode in non-Cabinetized or Cabinetized DMS cabinets. No requirements have been identified for the support of IMLs on the SL100 products. Hence, this is not currently supported.

0 For Meridian Cabinet applications the IML requirements can be met with a NTNX36AR cable to connector "A" and another to "B" on the NT9X6558 bulkhead if THOSE CONNECTORS ARE NOT BEING UTILIZED. If these connectors are in use, then use the first available "four port" connector on either the left or right bulkhead AND PROVIDE DS30 PADDLE BOARDS, PORT CARDS, AND CABLES AS REQUIRED. The other

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0 end of this cable is connected to the same connector designation  
0 on the other plane of the message switch. When using a four port  
0 bulkhead connector, only one NTN36AR cable is needed.

0 Note that, IMLs must be used when NIUs are provisioned on an LPP.

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## 0 C42(S/DMS) Cabinet Provisioning

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0 The DMS-SuperNode in C42(S/DMS) cabinet is a cost and func-  
0 tionally enhanced version of the existing SuperNode type cabinet.  
0 The S/DMS cabinet is very similar to the existing cabinet, items  
0 such as packs, shelf assemblies, interconnect cables, and  
0 bulkhead packs do not change. The differences from the existing  
0 Supernode cabinet are listed below.

0 1) The Cabinet changes from NT9X0113 to NT9X95AA

0 2) The Kick plate is not required with the S/DMS cabinet.

0 3) Power wiring is optional. If the cabinet is in a Stream-  
0 line lineup, the cables will be equipped to take advantage  
0 of "horizontal" cabling. If the cabinet is in a  
0 non-Cabinetized lineup, power cables will be similar to  
0 existing power cables, so filters will have to be  
0 provisioned.

0 The NT9X01JB has been approved for all applications. All new ini-  
0 tial SuperNode offices will specify the NT9X01JB Cabinet. The  
0 NT9X01JA PEC will be A&M and will remain for all existing of-  
0 fices.

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## 0 SuperNode Building Block Definition

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0 The SuperNode building block concept deals with a higher level of  
0 Product Engineering Code (PEC) ordering. The memory quantities,  
0 processor series and Network Interface can be selected depending  
0 on the telco desired specifications.

### 0 NTZZ01RA (SuperNode in S/DMS Cabinet)

0 NTZZ01RA contains the SuperNode cabinet NT9X01JB, Frame  
0 Supervisory panel, Cooling Unit, Common Circuit Packfills,  
0 bulkheads, and miscellaneous items that are always provided for a  
0 SuperNode. The existing NTZZ01AA, NTZZ97BA, NTZZ01TA, NTZZ97CA,  
0 NTZZ01AM, and NTZZ97BH will be A&M (Additions and Maintenance)  
0 and are replaced by NTZZ01RA. This NTZZ01RA BB pec is ONLY APPLI-  
0 CABLE to -48V powered installations. CHECK AVAILABILITY PRIOR TO  
0 ORDERING.

### 0 NTZZ01BA (System Load Module (SLM) common CP)

0 The NTZZ01BA contains all the circuit packs and miscellaneous  
0 items that are always provided to the SLM. The SLM II is required  
0 for offices where the office image is greater than 75 MB.  
0 NTZZ97BG will be A&M (Additions and Maintenance) and replaced by  
0 NTZZ01BA. This NTZZ01BA BB is ONLY APPLICABLE to -48V powered in-  
0 stallations.

### 0 NTZZ01CA (4 Port Network and IOC interface)

0 The NTZZ01CA contains the circuit packs for the SuperNode inter-  
0 face to the network modules and the Input/Output Controller mod-  
0 ules (IOC). These circuits will be used for DMS-100F  
0 applications. The NTZZ01CA contains 4 interface circuit  
0 packs.(i.e. 2 for each Message Switch). The NTZZ01CA is used in  
0 Supernode for non-Cabinetized application.

### 0 NTZZ01CB (4 Port Network and IOC interface)

0 The NTZZ01CB is similar to the ZZ01CA, except it has the new  
0 9X17AD 4-Port CP and it must be provisioned on all initial jobs  
0 for BCS34 and above.

### 0 NTZZ01DA (STP Interface)



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0 The NTZZ01DA contains the circuit packs for the SuperNode inter-  
0 face to the Link Interface Units (LIU). These circuits will be  
0 used for STP applications. The NTZZ01DA contains 4 interface  
0 circuit packs. (i.e. 2 for each Message Switch). The NTZZ01DA is  
0 used in Supernode for non-Cabinetized application.

0 NTZZ01DB (STP Interface)

0 The NTZZ01DB is similar to the ZZ01DA, except it has the new  
0 9X17AD 4-Port CP and it must be provisioned on all initial jobs  
0 for BCS34 and above.

0 NTZZ01UA (Cabinetized DMS 4 Port & IOC Interface)

0 The NTZZ01UA contains the circuit packs for the SuperNode inter-  
0 face to the network modules and the Input/Output Controller mod-  
0 ules (IOC). These circuits will be used for DMS-100F  
0 applications. The NTZZ01UA contains 4 interface circuit  
0 packs. (i.e. 2 for each Message Switch). The NTZZ01UA is used in  
0 SuperNode for Cabinetized DMS application.

0 NTZZ01UB (Cabinetized DMS 4 Port & IOC Interface)

0 The NTZZ01UB is similar to the ZZ01UA, except it has the new  
0 9X17AD 4-Port CP and it must be provisioned on all initial jobs  
0 for BCS34 and above.

0 NTZZ01VA (Cabinetized 4 Port LIM/LPP Interface)

0 The NTZZ01VA contains the circuit packs for the SuperNode inter-  
0 face to the Link Interface Units (LIU). These circuits will be  
0 used for STP applications. The NTZZ01VA contains 4 interface  
0 circuit packs. (i.e. 2 for each Message Switch). The NTZZ01UA is  
0 used in SuperNode for Cabinetized DMS application.

0 NTZZ01VB (Cabinetized 4 Port LIM/LPP Interface)

0 The NTZZ01VB is similar to the ZZ01VA, except it has the new  
0 9X17AD 4-Port CP and it must be provisioned on all initial jobs  
0 for BCS34 and above.

0 NTZZ01EA (Filler Face Plate)

0 The NTZZ01EA contains the filler face plates required for forced  
0 air cooling when the message port circuit packs are not required.  
0 Each NTZZ01EA contains two (2) filler face plates and two (2) MS  
0 Bus Loader PBs.

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0 NTZZ01FA (Supernode Series 10 CPU)

0 The NTZZ01FA contains the SuperNode series 10 processor CP. The  
0 SN10 provides approximately 1.4 capacity gain over the NT40. Se-  
0 lection of SuperNode processor is determined by the use of  
0 QUICKCALC or RTCALC programs. New offices should not be engi-  
0 neered using this PEC. If an existing site is configured with a  
0 Series 10 processor, the customer is requested to contact the re-  
0 gional sales representative for details on how to upgrade to a  
0 Series 20 processor or higher for BCS-35 and above loads. See  
0 Section 4.1.2 ECM body for software packaging.

0 NTZZ01GA (Supernode Series 20 CPU)

0 The NTZZ01GA contains the Supernode series 20 processor CP. the  
0 SN20 provides 2.0 to 2.2 capacity gain over the NT40. Selection  
0 of SuperNode processor is determined by the use of QUICKCALC or  
0 RTCALC programs.

0 NTZZ01HA (Supernode Series 30 CPU)

0 The NTZZ01HA contains the SuperNode series 30 processor CP. The  
0 SN30 provides a 1.4 to 1.5 capacity gain over the SN20. Selection  
0 of SuperNode processor is determined by the use of QUICKCALC or  
0 RTCALC programs.

0 NTZZ01JA (Supernode Series 40 CPU)

0 The NTZZ01JA contains the SuperNode series 40 processor CP. The  
0 SN40 provides a 1.7 to 1.8 capacity gain over the SN20. Selection  
0 of SuperNode processor is determined by the use of QUICKCALC or  
0 RTCALC programs.

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0 NTZZ01SA (Supernode BRISC CPU)

0 The NTZZ01SA provides a real time performance gain of 2.5 times  
0 over the SN20. Selection of SuperNode processor is determined by  
0 the use of QUICKCALC or RTCALC programs.

0 NTZZ01KA (Six (6) MByte Memory)

0 The NTZZ01KA contains two (2) Six (6) MByte memory circuit packs  
0 and designation labels for the STP application. Memory require-  
0 ments are determined by use of Memquick or Memcalc programs.

0 NTZZ01LA (24 MByte Memory)

0 The NTZZ01LA contains two (2) 24 MB memory circuit pack and des-  
0 ignation labels for the DMS-100F application. Memory requirements  
0 are determined by use of Memquick or Memcalc programs.

0 NTZZ01MA (Filler Face Plate)

0 The NTZZ01MA contains two (2) Filler Face Plates and designation  
0 labels for the SuperNode Computing Module.

0 NTZZ01NA (Initial Enhanced Network Interface)

0 The NTZZ01NA contains the circuit packs for the initial interface  
0 of SuperNode to the Enhanced Network. Provide one (1) NTZZ01NA  
0 for each ENET shelf (i.e. port group) provisioned. The NTZZ01NA  
0 contains two (2) interface circuit packs.(i.e. 1 for each Message  
0 Switch).

0 NTZZ01PA (Intermediate Enhanced Network Interface)

0 The NTZZ01PA contains the circuit packs for the intermediate  
0 interface of SuperNode to the Enhanced Network. Provision  
0 NTZZ01PA per the worksheets provided in the ENET Building Block  
0 documents. The NTZZ01PA contains two (2) each interface circuit  
0 packs. (i.e. 1 for each Message Switch).

0 NTZZ01QA (Final Enhanced Network Interface)

0 The NTZZ01QA contains the circuit packs for the final interface  
0 of SuperNode to the Enhanced Network. Provide one (1) NTZZ01QA  
0 for each ENET shelf (i.e. port group) provisioned. The NTZZ01QA

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0 contains two (2) interface circuit packs.(i.e. 1 for each Message  
0 Switch).

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0 NTZZ01ZA (Link Interface for FLIS)

0 The NTZZ01ZA contains the circuit packs for the Supernode Cabinet  
0 that is used to Interface Message Switch (0 and 1) to the Single  
0 Shelf LPP(Fiberized LIS(FLIS)).

0 SuperNode Building Block Provisioning

0 NTZZ01CA/UA/CB/UB - 4 Port Network & IOC Interface

0 If NTZZ01CA/UA/CB/UB is required, then provide as follows,

0  $\#NTZZ01CA/UA/CB/UB = \{(\#NM/4) + (\#IOC/8)\}$   
0 to be rounded up to the next integer.  
0 Each NM requires total of two ports. Each port must  
0 be on an adjacent slot.(one port out of 4 ports from each slot)

0 Each IOC requires one port out of four ports.

0 NTZZ01DA/VA/DB/VB - 4 Port LIM/LPP Interface

0 If NTZZ01DA/VA/DB/VB is required, then provide as follows,

0  $\# NTZZ01DA/VA/DB/VB = \{\# \text{ Link Interface Module Cabinets } / 2 \}$   
0 to be rounded up to the next integer.

0 NTZZ01EA - Interface Filler Face Plate

0 Provide NTZZ01EA as follows,

0  $\# NTZZ01EA = 9 - (NTZZ01CA + NTZZ01DA)$

0 NTZZ01ZA Link Interface for FLIS

0 If Single Shelf LPP(Fiberized LIS(FLIS) is provisioned, then  
0 provide (1) one NTZZ01ZA. Also Provision the cables for  
0 Inter\_MS links.

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0 11.1.4 OFFICE LAYOUT INFORMATION

0  
0 The S/DMS cabinet will be shipped with the doors, shelves, circuit  
0 packs, FSP, and cooling unit installed. The bus bar will be in-  
0 stalled and appropriate connections will be made at the factory.  
0 The bulkheads form part of the Electromagnetic Compatibility(EMC)  
0 cage around the equipment and provide a place to mount filter  
0 PCBs and optional power filters. The rear of the cabinet is  
0 equipped with two removeable bulkhead panels near the bottom of  
0 the cabinet. When these panels are removed, the cabinet can be  
0 installed in, or removed from, a lineup equipped with horizontal  
0 cabling. The cabinet may be slid "FORWARD" only.

0 FLOOR LAYOUT

0 Aisle dimensions are derived to meet the requirements of central  
0 office environment for floor loading and heat dissipation.

0 - An installation which requires multiple cabinet line-ups has  
0 six foot maintenance aisles.

0 - Maintenance aisles between a cabinet line-up and a frame  
0 line-up are 4.5 feet wide.

0 Installations requiring a cabinet to be integrated into a frame  
0 line-up:

0 - Can only be applied to the front most or rear most line-up

0 - Cabinets and frames are aligned to be flush at the rear

0 Note that a mixed frame/cabinet configuration is in violation of  
0 NEBS. The Telco should confer with the Building Studies and In-  
0 stallation departments to confirm that the building floor can  
0 sustain the weight differential and to insure there is sufficient  
0 cooling available to cool the DMS office.

0 Refer to ECM600 for office layout restrictions when this cabinet  
0 is applied in a Cabinetized DMS lineup.

0 Note that, Richardson market floor layout may be different.

0 SWITCHBOARD CABLING RESTRICTIONS

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0 Cabling restrictions between the Message Switch and the IOC and  
0 Network frames remain unchanged at 200 feet maximum.

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0 INITIAL OFFICES

0 Cabinets and frames will not be mixed in the same line-up. The  
0 cabinets will occupy the front line-up. The second line-up will  
0 contain the IOE frames (and others as convenient) and will have  
0 fronts facing the front of the office.

0 Aisle spacing between the first (cabinet) and second (frame)  
0 line-ups is 4.5 feet.

0 The reset terminals will be located in the equipment room to the  
0 front of the office with convenient visual and physical access to  
0 the IOE equipment.

0 SuperNode Retrofit(Upgrade)

0 There are three possible physical installations in decreasing or-  
0 der of convenience:

0 i) If possible, within the guidelines mentioned for initials, a  
0 new front line-up for the cabinet(s) should be started.

0 ii) Alternatively the existing front line-up can be extended  
0 laterally with the cabinet.

0 iii) The cabinet is temporarily located close to the CCC for in-  
0 stallation and commissioning. Following a successful cutover the  
0 cabinet(s) are relocated into the space vacated by the CCC, MEX  
0 frames.

0 For mixed line-ups the cabinet and frames are aligned to be flush  
0 at the back of the front line-up and should utilize a single cab-  
0 inet only (Combined Core Cabinet).

0 For option (iii) care must be taken to ensure that the  
0 retrofitted frames vacate sufficient space for the DMS-Core cabi-  
0 nets. Note that MSS frames should be considered as relocatable  
0 along with the retrofitted CCC and MEX frames.

0 It is recommended that a per site survey of retrofit sites be  
0 carried out jointly by Building Studies and Installation groups  
0 to ensure a feasible configuration is engineered.

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0 11.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 11.2 PRODUCT/SYSTEM SPECIFICATION0 11.2.1 PHYSICAL CHARACTERISTICS

0  
0 The following describes the characteristics of the NT9X01JB  
0 SuperNode S/DMS cabinet:

0 The -60V version of the unit features the same packaging and  
0 performance as the -48V unit. Presently Germany, is the only coun-  
0 try that requires -60V units.

0 Input Voltage.....-48VDC  
0 Power Consumption.....3525 watts (+/- 10%) fully equipped  
0 Current Drain.....73.0Amps

0 The current drain for CM and MS shelves is 20 amps per shelf

0 Each SLM draws 12.9 amps while running, and 18.7 amps during  
0 spin-up to operating speed.

0 POWER/HEAT DISSIPATION

0 The fully loaded cabinet heat dissipation is up to 3500 watts.

0 MECHANICAL DIMENSIONS

0 Height 72in. Width 42in. Depth 28in.

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0 Weight 1400lbs. (Full)

0 11.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 End panels are required to complete the EMC enclosure for cabinets located at the end of a lineup. In earthquake installations, the S/DMS cabinet must be bolted to the floor in four(4) places through anchor holes provided in the base of the cabinet. The cooling unit must be removed for access to the bolts. When the cabinet is bolted in place, the optional leveling feet must not be installed. Leveling will be accomplished through the use of non-conductive shims. The bolts must be tightened with a torque wrench to ensure adequate pretension.

0 For raised floor installations, a sub-structure support between the concrete sub-floor and the raised floor will be required. A qualified seismic engineer should be consulted regarding the required additional bracing.

0 11.2.3 SPARING INFORMATION

0  
0 One Spare Storage Cabinet (SSC) NT9X01FA can hold up to four Spares Shelves. The spares cabinet has one (1) always provided Spares Shelf (NT0X25AY); thus three (3) shelves are provisionable. One Spares Shelf (NT0X25AY) can hold 26 CPs and 4 Power Modules, as well as 26 Paddle Boards. Note that NT9X01FA has a rate chane pending. Use NTRX49AA for new offices.

0 For U.S. applications use standard sparing algorithms.

0 For Canadian and other applications the following may be used.

0 a) Version 2, C42 Cooling Unit:  
0 -----

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0 Blowers 660,000 hrs MTBF in its useful life of 10 years.  
0 MTM cards 4,700,000 hrs MTBF  
0 Relay 100,000,000 hrs MTBF

0 Note that the blower's useful life is about 10 years. Around that  
0 time, failures are to be expected. Good practice might dictate  
0 replacement of operating blowers around that time (analagous to  
0 replacing your car's engine belts before they break).

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0 11.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Each shelf has four (4) power converters, two at either side of  
0 the shelf, mounted from the front.

0 Logic power distribution to the shelf electronics is from each  
0 power module to the corresponding half of the shelf.

0 Fuses are required as follows for NT9X01JB.

0 For powering from a standard 7' PDC

0 -----  
0 8 - 20 Amp fuses (MS,CM and SLM shelves)  
0 2 - 10 Amp fuses (for C42 cooling blowers)  
0 1 - 10 Amp Fuse (Alarm Battery Supply (ABS))

0 For powering from a CPDC

0 -----  
0 8 - 30 Amp fuses (MS,CM and SLM shelves)  
0 2 - 10 Amp fuses (for C42 cooling blowers)  
0 1 - 10 Amp Fuse (Alarm Battery Supply (ABS))

0 Refer to CA0X04 issue 01 20 and later for power cable informa-  
0 tion.

0 PDC feeds are connected to the cabinet via EMI feed through  
0 capacitors at the top of the frame. Cable and Drop Length shall  
0 be job engineered.

0 11.2.5 CURRENT DRAIN INFORMATION

0  
0 See Section, Physical Characteristics.

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0 11.3 SOFTWARE PROVISIONING

0 The existing DMS-100 software is being 'ported' to run on the  
0 DMS-Core. The availability of system features (e.g. toll, tops,  
0 local, IBN etc) is phased over several BCS releases. Each major  
0 system feature will have a DMS-Core Verification Office (V.O.).

0 11.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

## 0 SUPERNODE 20 PRODUCT COMPONENT PACKAGES AND FEATURES

0

0 NTX960AA - DMS SUPERNODE BASIC - Master Package rated MD BCS-28.

0 NTX960AB - DMS SUPERNODE BASIC - Master Package rated MD BCS-28.

0 NTX960AC - DMS SUPERNODE BASIC - Master Package which includes:

0 NTX940AA - COMPUTING MODULE BILGE  
0 NTX941AA - COMPUTING MODULE COMMON BASIC  
0 NTX942AA - SUPERNODE SYSTEM LOAD MODULE  
0 NTX950AA - MESSAGE SWITCH BILGE  
0 NTX951AA - MESSAGE SWITCH COMMON BASIC  
0 NTXF70AA - SUPERNODE SN-20 PROCESSOR

0 NTX960AC is ordered in addition to all other master and feature  
0 packages that would be ordered for an equivalent NT-40. For ex-  
0 ample NTX003AB and NTX960AC are ordered for a Local Enhanced of-  
0 fice equipped with DMS-Core.

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## 0 SUPERNODE SERIES 10 PRODUCT COMPONENT PACKAGES

0  
0 Offices provisioning the SuperNode Series 10 will require:

0 NTXD16AB - SuperNode (Series 10) Basic which contains packages

0 Note: The NTXD16AB and NTXF96AA (SN-10) packages are to be  
0 "Napped" (eg. cannot be ordered/delivered) in the BCS-35/36  
0 loads.

0 If an existing site is configured with a Series 10 processor, the  
0 customer is requested to contact the regional sales represen-  
0 tative for details on how to upgrade to a Series 20 processor or  
0 higher for BCS-35 and above loads.

0 NTXF96AA - Basic SuperNode (SN-10)Processor  
0 NTX940AA - Computing Module Bilge  
0 NTX941AA - Computing Module Basic  
0 NTX950AA - Message Switch Bilge  
0 NTX951AA - Message Switch Basic

0 Note - System Load Unit software must be ordered separately on  
0 SuperNode Series 10 Offices (SLM - NTX942AA).

## 0 SUPERNODE SERIES 30 PRODUCT COMPONENT PACKAGES

0  
0 Offices provisioning the SuperNode Series 30 will require:

0 NTXD17AB - DMSCore MC68030-33 MHz (Series 30) Processor Basic  
0 which contains packages

0 NTXF15AA - SuperNode MC68030-33MHz (Series 30)Processor  
0 NTX940AA - Computing Module Bilge  
0 NTX941AA - Computing Module Basic  
0 NTX942AA - SuperNode System Load Module  
0 NTX950AA - Message Switch Bilge  
0 NTX951AA - Message Switch Basic

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## 0 SUPERNODE SERIES 40 PRODUCT COMPONENT PACKAGES

0  
0 Offices provisioning the SuperNode Series 40 will require:

0 NTXD18AB - Series 40 Supernode-Basic which contains packages:

0 NTXF16AA - DMS-Core MC68030 40MHz Processor  
0 NTX940AA - Computing Module Bilge  
0 NTX941AA - Computing Module Basic  
0 NTX942AA - SuperNode System Load Module  
0 NTX950AA - Message Switch Bilge  
0 NTX951AA - Message Switch Basic

0 Note: For U.S. applications the SuperNode Series 40 is lim-  
0 ited for deployment and must have RTP Marketing approval prior to  
0 provisioning.

## 0 SUPERNODE SYNCHRONIZATION PACKAGES

0  
0 For offices requiring external clock synchronization to CCS or  
0 DCS standard, provide:

0 NTXF26AA - BITS Composite Master

0 NTXF27AA - Cesium, Loran Composite Master

0 For offices requiring external clock synchronization to  
0 Cesium/Rubidium Stratum I standard, provide the NTXF27AA package.  
0 Note that this package also supports Loran Composite Master clock  
0 source, but the necessary provisionable cable is not yet avail-  
0 able for the latter application.

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## 0 SYSTEM LOAD MODULE SOFTWARE

0  
0 SLM II requires software package NTXE54AA.

0 The Device Independent Recording Package(DIRP) on SLM is op-  
0 tional, and it is activated internally by the presence of package  
0 module DIRPSLM in NTXJ44AA - SLM File System.

## 0 BRISC

0  
0 The NT9X10AA 33 MHz 88000 BRISC CPU Circuit Pack is incompatible  
0 with the standard SuperNode BCS loads and requires a BCS load  
0 compiled for the BRISC card. The minimum software release that is  
0 required is BCS-BR33.

0 Software package NTXD25AA is required to support the NT9X10AA  
0 BRISC CPU.

## 0 AFFECTED SOFTWARE TABLES

0  
0 In general, initial office datafill will be accomplished in the  
0 same way for the DMS-Core as for the CCC. There are new data ta-  
0 bles associated with the CM and MS subsystems which are specific  
0 to the new hardware. Datafill of these tables will be detailed  
0 in the data schema associated with the CM and MS.

0 A dump and restore datatool will be available for core upgrades  
0 to transfer CCC data to a DMS-Core. Datatools will also be  
0 available to support DMS-Core to DMS-Core data transfer for BCS  
0 upgrades. Note that even with the CCC to DMS-Core datatools,  
0 some initial datafill of the new tables will be necessary.

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0 11.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 BCS33 and BCS34 DO NOT support the stand-alone STP. That is, it  
0 is limited to BCS32, and it will be supported with BCS35.

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0 11.3.3 MEMORY PROVISIONING0 MS Memory Configuration and Software Loads.

| SOFTWARE | DESCRIPTION                       | MS MEMORY REQUIREMENT |
|----------|-----------------------------------|-----------------------|
| MS-S     | MS LOAD FOR JNET                  | REQUIRES 7MB          |
| MS-E     | MS LOAD FOR JNET/ENET/SSLPP/PH    | REQUIRES 10MB         |
| MS-I     | MS LOAD FOR JNET/ENET/SSLPP/SCPII | REQUIRES 16MB         |

| HARDWARE  | SOFTWARE RELEASE |      |      |
|-----------|------------------|------|------|
|           | MS-S             | MS-E | MS-I |
| 13DB/14BB | YES              | NO   | NO   |
| 13DC/14BB | YES              | YES  | NO   |
| 13DC/14DB | YES              | YES  | YES  |
| 13DD      | YES              | YES  | YES  |

0 1) PM Note: New SN DPCCs should not be provided with the NT9X14BB  
0 MS memory for BCS-31 and above loads. Also, Offices with Base-04  
0 (CSP-03) or higher shall have a minimum of 16M of memory and  
0 there will be only one common MS load.

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0 Memory Provisioning in CM

0 24 MByte memory cards are generally available to any SuperNode  
0 office. Provisioning of six (6) MByte memory cards in the Comput-  
0 ing Module (CM) are only available to STP offices. That is The  
0 NT9X14DB must only be the memory card used on the CM, except for  
0 the SuperNode of a non-integrated STP. The non-integrated STP can  
0 use NT9X14BB Memory CP on the CM if the S/W load fits.

0 \* Mixed 6 & 24 MByte systems require a minimum of  
0 BCS 25 and the NT9X13BB Processor CP.

0 \* Pure 24 MByte systems require a minimum of BCS 26,  
0 and NT9X13BC, Processor CP.

0 Note for Mixed memory offices, once a 24 Mbyte CP has been provi-  
0 sioned, no additional 6 Mbyte CP will be provided. In U.S., ref-  
0 erence System Engineering Bulletin (S.E.B 88-01-002) "DMS-100F  
0 Memory Administration Document" for detailed memory provisioning.

0 All offices must equip Memory CP to the following algorithm.  
0 Starting with 24 MByte CP for mixed offices, 1st. Slots 16F and  
0 23F, 2nd. 15F and 24F, 3rd. 14F and 25F, 4th. 13F and 26F, 5th.  
0 12F and 27F, 6th. 11F and 28F, 7th. 10F and 29F, 8th. 9F and 30F,  
0 9th. 8F and 31F, 10th. 7F and 32F.

0 BCS 26 offices (pure 24 Mbyte CP) Memory requirements are rounded  
0 as follows:

- 0 - Round up Memcalc values for Program Store (PS) to the  
0 nearest 8 Mbyte multiple.
- 0 - Add four (4) Mbytes to the Memcalc DS and round up to the  
0 nearest 8 Mbyte multiple.
- 0 - Add the rounded PS + the rounded DS, and then round up to  
0 the nearest 24 Mbyte multiple to determine number of circuit  
0 packs requirement.

0 Note the CP quantities should include a 10% administrative spare  
0 additional to the unrounded Memcalc PS + DS figures. Be sure to  
0 include one (1) 24 Mbyte CP as a reliability spare.

0 BRISC

0 Use of the NT9X10AA BRISC CPU will cause an increase in program  
0 store requirements of about 1.6 times the existing amount for

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0 68020 and 68030 processors. Some of this increased requirement  
0 will be offset by the additional memory on the NT9X10AA BRISC CPU  
0 CP.

0 The NT9X10AA BRISC CPU does not support the NT9X14BB 6MB memory  
0 packs. Existing NT9X14BB memory packs must be replaced by an  
0 equivalent amount of memory using NT9X14DB 24MB memory packs.

0 MEMCALC for Series 40 should be used for BRISC offices with soft-  
0 ware loads less than BCS34. MEMCALC for Series 50 should be used  
0 for BRISC offices with software loads BCS34 and greater.

#### 0 11.4 REAL TIME IMPACT

0 The NT9X13JA CPU 68020 20 MHz CP provides from 1.2 to 1.4 times  
0 the capacity of the NT-40 at introduction based on current stand-  
0 ards of benchmarking criteria.

0 The NT9X13BC is the baseline offered MC68020 based circuit pack,  
0 which provides 2.0-2.2 times capacity of the Central Control Com-  
0 plex (NT-40) based on the current standards of benchmarking cri-  
0 teria.

0 The NT9X13GA CPU 68030 33 MHz CP provides 1.4 - 1.5 times the  
0 real time capacity of the current NT9X13BC CPU circuit pack or  
0 2.9 - 3.0 times the capacity of the NT-40 at introduction based  
0 on current standards of benchmarking criteria.

0 The NT9X13HB CPU 68030 40 MHz CP provides 1.7 - 1.8 times the  
0 real time capacity of the current NT9X13BC CPU CP or 3.4 -3.8  
0 times capacity of the NT-40 at introduction based on current  
0 standards of benchmarking criteria.

#### 0 BRISC

0 The NT9X10AA BRISC CPU will provide a real-time performance gain  
0 of 2.5 times over the NT9X13BC CPU. The NT9X10AA may replace ex-  
0 isting 68020 and 68030 processor cards, provided the correspond-  
0 ing paddleboard is also replaced and a BRISC software load is  
0 utilized.

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0 CHAPTER 22

0 HOST - CENTRAL CONTROL EQUIPMENT

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Host - Central Control Equipment  
Chapter 22

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0 HOST - CENTRAL CONTROL EQUIPMENT  
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0 1.0 DMS-SuperNode

0 The DMS-SuperNode is a technology upgrade for the DMS-100 family of  
0 digital switches. The DMS-SuperNode consists of DMS-Core and DMS-Bus  
0 subsystems. The Central Control Subsystem is superseded by these sub-  
0 systems, designed to give enhanced performance and functionality.

0 The DMS-Core provides the call management and system control functions  
0 of the DMS-SuperNode. This is a duplicated device working in synchro-  
0 nous mode.

0 - It consists of a duplex Computing Module(CM) and a duplex  
0 System Load Module(SLM). SLM is a mass storage system which  
0 will be used to store office images and from which new loads,  
0 or stored images can be booted into the CM.

0 The DMS-Bus is a high speed transaction switch which supports messag-  
0 ing between the DMS-Core, Application processors, Peripheral process-  
0 ors and other elements of the DMS-SuperNode. The DMS-Bus is a  
0 duplicated device working in a loadsharing mode.

0 - It consists of a pair of Message Switches(MS) that provides an  
0 interface to all components.

0 In order to support the higher bandwidths and increased functional  
0 density of the DMS-Core components, optical fiber is utilized to carry  
0 messages between the subsystems. A new fiber based DMS internal link  
0 protocol, DS-512, is introduced to interconnect the DMS-Core CM and  
0 MS.

0 The DMS-SuperNode employs a new cabinet based packaging system. The  
0 C42(S/DMS) SuperNode cabinet is a cost and functionally enhanced ver-  
0 sion of the existing SuperNode cabinet. The S/DMS cabinet is 42 inches  
0 wide compared with Cabinetized DMS's width of 28 inches. This new cab-  
0 inet supports features such as modified framework based on Cabinetized  
0 DMS, "horizontal"(through line-up) cabling, and "hot slide" capabil-  
0 ity. "Horizontal" cabling meaning, cables running through a hole in  
0 the side of a cabinet and into the next cabinet(s) in the same lineup.  
0 "Hot slide" is the process of moving an operating cabinet into an ex-  
0 isting lineup of equipment. The SuperNode incorporates a Frame Super-  
0 visory Panel (FSP), cooling Unit and accommodates four (4) equipment  
0 shelves. The following diagram gives a pictorial representation of  
0 this cabinet:

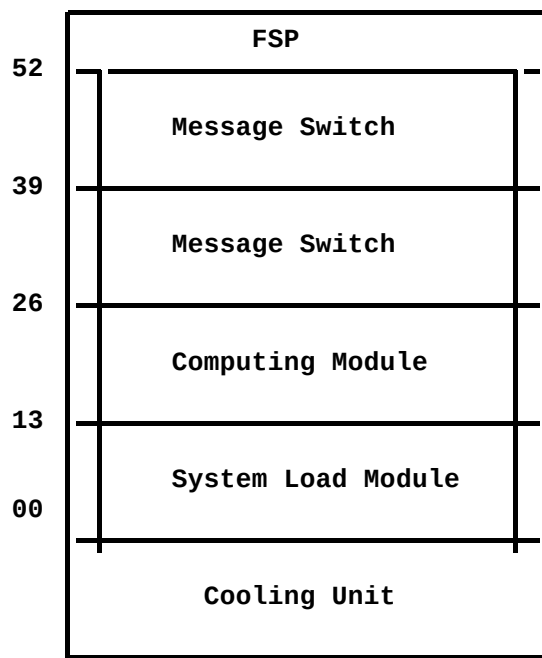
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DMS-SuperNode in C42 Cabinet

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0 1.1 HARDWARE PROVISIONING

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0 1.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The DMS-SuperNode supports the same termination capacity as the  
0 CCC (i.e. up to 32 NM's per plane and up to 6 IOC's).

0 The NT9X54AC or NT9X54AD Clock Interface PB is compatible with  
0 NT9X54AB but NOT NT9X54AA. If an existing MS shelf is equipped  
0 with NT9X54AA for an internal clock reference application, this  
0 must be removed and replaced with NT9X54AC/AD, if the mate MS  
0 shelf is being equipped with NT9X54AC/AD.

0 Cabinetized DMS has a port restriction of forty (40) connections  
0 per MS shelf (twenty (20) single port access per bulkhead). In  
0 otherwords, Cabinetized DMS is restricted to 40 Ports per MS  
0 shelf. Therefore the maximum number of NT9X17AA/ADs is 10 per MS  
0 Shelf for Cabinetized(streamline) DMS only.

0 The NT9X62BA will be available for Inter-MS-Link (IML) feature in  
0 BCS35

0 The NT9X10AA 33 MHz 88000 BRISC CPU Circuit Pack does not support  
0 the NT9X14BB 6MB Memory.

0 1.1.2 HARDWARE DEPENDENCIES

0

0 P AND C SIDE PORT REQUIREMENTS

0

0 Not applicable

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable

## 0 CIRCUITS PER CARD

0  
0 Not applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable

## 0 NT40 Upgrade

0  
0 Commissioning Engineering is to supply an IOE frame equipped with  
0 an MTD, IOC, Term-CP and Terminal, to be used when upgrading an  
0 NT40 office to DMS-SuperNode.

0 For U.S. offices, Isolated System Grounding (ISG) will be pro-  
0 vided for all offices receiving a DMS-SuperNode. To be consistent  
0 with the evolving Industry Standards (TA-EOP-000295), it is re-  
0 commended that all DMS-SuperNode office upgrades include ISG. See  
0 ECM-289 for provisioning rules on ISG for initial offices.

0 All DMS-SuperNode offices must be upgraded to BCS 26 S/W and BCS  
0 26 Gating H/W (Reference ECM510 Gating H/W).

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## 0 BRISC

- 0  
0 The prerequisites for BRISC are as follows:
- 0 - NT9X12AC (NT9X12AB on CM, SLM must be replaced)
  - 0 - NT9X14DB (NT9X14BB on CM must be replaced)
  - 0 - NT9X44AB (NT9X44AA must be replaced)
  - 0 - The NT9X26DA is required with the NT9X10AA BRISC CPU.
  - 0 - 250MB tape (DC6250) for scratch purposes.

0  
0 Power and Ground Cabling

0  
0 The power and ground cabling of the S/DMS cabinet depends on the  
0 site configuration. Installations that do not utilize horizontal  
0 cabling, require the power cables entering the cabinet to be fed  
0 through EMC filters. On the other hand, use of S/DMS cabinet in a  
0 Cabinetized DMS lineup do not need the power filters.

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0 1.1.3 PROVISIONING CONSIDERATIONS

0  
0 DMS-SuperNode is provisioned to support the office configuration  
0 in four (4) major respects:

- 0 - the DS-30 message links required for NMs, IOCs and LIMs
- 0 - the CM memory required
- 0 - the processor required for the office configuration
- 0 - the SLM required to support storage capacity requirements

0 The Network frame must be modified for use with the  
0 DMS-SuperNode. See ECM261 for provisioning rules on connection  
0 of Network Modules to the DMS-SuperNode.

0 The Input Output Controller (IOC) Modules must be modified for  
0 use with the DMS-SuperNode. See ECM 316 for IOC provisioning  
0 rules. Initial DMS-SuperNode offices must provision IOC shelves  
0 on IOE frames.

0 For office upgrades to the DMS-SupeNode that are currently uti-  
0 lizing the Message Device and Controller (MDC) module for I/O re-  
0 quirements, external (i.e. IOE/MTC) mounted IOC shelves must be  
0 provisioned.

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## 0 MS Port Provisioning

0  
0 The MS occupies two (2) planes and two (2) shelves on a  
0 DMS-SuperNode. Message port requirements are calculated as fol-  
0 lows:

0 When provisioning ports on a Message Switch Shelf, a number of  
0 factors need to be considered. (Note that both MS Shelves must  
0 be equipped in exactly the same way.)

0 There are 18 slots available for Network, IOC/EIOC, and LIM con-  
0 nections on each MS Shelf. Note during the upgrade, the Network  
0 slots must be shared between the existing NMs and the new ENET.

0 \* Each NM requires two (2) ports (each must be on an adjacent  
0 card).

0 \* Each IOC requires one (1) port.

0 \* Each EIOC requires two (2) ports (each must be on a separate  
0 card).

0 \* Each LIM requires four (4) ports (each pair must be on a  
0 separate card).

0 As an example, for an office that has 5 networks, 3 IOC and 2  
0 LIMs:

0 The number of MS ports req. per plane =  $(5 \times 2) + 3 + (2 \times 4)$   
0 = 21 ports

0 Remember that port circuit packs are provisioned in pairs per MS  
0 plane (i.e. in multiples of four) as noted in section 1.2.2. This  
0 allows Network Module links from the two planes to terminate on  
0 physically different port cards.

0 Each MS 4 Port CP (NT9X17AA/AD) can connect up to four (4) mes-  
0 sage ports.

0 The NT9X17AD is essentially the same circuit pack as NT9X17AA,  
0 and it provides full bandwidth capability and can be used in all  
0 present applications. The NT9X17AD card is based on the existing  
0 NT9X17AA design and is used with the NT9X62BA, SR-512 interface  
0 paddleboard in FLIS applications.



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0 With the introduction of ENET, the requirement for MS ports  
0 greatly increases. Therefore, a 64 port CP (NT9X17DA) is intro-  
0 duced. The 4 port CP (NT9X17AA/AD) is retained for use with IOC,  
0 CM, NM and LIM. MS port assignments are first provisioned for  
0 IOCs. This will normally amount to two NT9X17AA/AD and two  
0 NT9X23AA per plane assigned to the highest numbered slots on the  
0 MS shelf. Unused ports from these cannot be used for ENET. How-  
0 ever, the unused ports can be used for Inter-MS -Links.

0 The NT9X17CA, 128 port card is the continuous evolution of the  
0 SuperNode product that provides double the NT9X17DA (64 port  
0 card) capacity. This evolution increases the total number of  
0 ports that can be supported using the DMS-Bus shelf and allows a  
0 much greater fan-out from the DMS-Bus. The NT9X17CA is fully com-  
0 patible with its predecessors in terms of functionality. They can  
0 be inter-changed and co-existed in the Message Switch with proper  
0 commissioning procedures.

0 The NT9X17CA provides 128 independent ports on a single CP. Each  
0 port acts as an independent entity on the T-Bus, being able to  
0 transmit and receive messages identified by its own unique port  
0 address. Each port represents a bi-directional messaging path,  
0 with the T-Bus providing a routing mechanism.

0 The NT9X17CA can be used to support applications which require  
0 more than 64 messaging ports. In situations, where more than 64  
0 ports but less than 128 ports are required, the NT9X17CA can be  
0 used in lieu of the NT9X17DA and therefore eliminate the require-  
0 ment to chain two 9X17DAs. This will reduce the requirement of  
0 the MS port Expander card and hence free up slots on the MS.

#### 0 ENET Interface

0 The following equipment is the minimum requirement in the Message  
0 Switch (MS) to interface with the ENET. The NT9X25AA and NT9X25BA  
0 are required, only if a chain of 17DAs is required.

- 0 - NT9X13DC, MS CPU Processor CP (4 Megabytes)
- 0 - NT9X17DA, MS 64 Port CP
- 0 - NT9X20BB, ENET/MS Fiber Interface PB
- 0 - NT9X25AA, MS Port Expander PB
- 0 - NT9X25BA, MS Port Expander/Terminator PB
- 0 - NT9X49CB, MS P-Bus Terminator CP (Tracer Card)

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0 To interface with ENET, the MS requires 10 Megabytes of memory.  
0 This is achieved in the following ways:

| QTY                                                                                                     | PEC             | QTY | PEC              | Application     | NOTE |
|---------------------------------------------------------------------------------------------------------|-----------------|-----|------------------|-----------------|------|
| 2                                                                                                       | NT9X13DC (4 MB) | 2   | NT9X14BB (6 MB)  | Canadian & U.S. |      |
| 1) PM Note: New SN DPCCs should not be provided with the NT9X14BB MS memory for BCS-31 and above loads. |                 |     |                  |                 |      |
| 2                                                                                                       | NT9X13DB (1 MB) | 2   | NT9X14DB (24 MB) | Richardson      | 1    |

0 NOTE:

0 1 This configuration is non-standard and will not be supported  
0 by the formal design documentation. Earlier releases of NT9X13DB  
0 are not compatible with NT9X25AA/BA, later releases are. Release  
0 numbers are transparent to our documentation and process. Hence,  
0 Richardson will be responsible for keeping track of the proper  
0 type of NT9X13DB CPs for their offices.

0 Existing Offices With NT9X01BA/JA

0 Product Change Kit (PC Kit) NT9X04AY converts the MS to the mini-  
0 mum level required to interface the ENET. It removes NT9X49CA  
0 and makes slot position 32F provisionable. It can be applied to  
0 NT9X04AG in order to upgrade the MS to NT9X04AH which is the min-  
0 imum level required to interface the ENET. Other existing PC  
0 Kits can be applied to existing MS Common CP Fills in order to  
0 bring them up to the necessary level.

|      | Existing<br>Level | PC Kit<br>Required | New<br>Common CP<br>Level |
|------|-------------------|--------------------|---------------------------|
| MS - | NT9X04AA          | NT9X04AD           | NT9X04AB                  |
| MS - | NT9X04AB          | NT9X04AF           | NT9X04AE                  |
| MS - | NT9X04AE          | * NT9X04AZ         | NT9X04AG                  |
| MS - | NT9X04AG          | * NT9X04AY         | NT9X04AH                  |

0 \* NT9X04AE may be upgraded directly to NT9X04AH by applying  
0 NT9X04AY if the external clock interface is not required.

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## 0 MS Port Group (Chain)

0 A MS Port Group is a set of one (1) or more adjacent MS Port  
0 cards, DS-512 Interface Paddleboards, and MS Port  
0 Expander/Terminator Paddleboards that are required to support the  
0 DS-512 link to an ENET shelf.

0 One MS Port Group is required per MS for each ENET shelf (per  
0 plane). Because there are two (2) ENET planes, therefore two port  
0 groups are associated with each ENET shelf. Both port groups are  
0 located on MS 0 and, on MS 1.

0 Each MS port group is provisioned as a sum of the following:

0 - 1 port for the ENET Shelf Processor

0 - 1 port for each active message channel Processor associated  
0 with a speech link that terminates on the shelf (i.e. each Series  
0 I peripheral has one (1) Message Channel Processor, Each Series  
0 II peripheral has two (2) Message Channel Processors).

0 Each port group must be assigned a contiguous group of CP slots  
0 on the MS shelf. In order to size the MS Port Group, the distrib-  
0 ution of peripheral types (i.e. Series I \* II) over the ENET  
0 shelf pairs must be known.

0 NOTE: If the DMS office will require more than one (1) equipped  
0 ENET shelf (per plane), the assignment of the NT9X40BA, NT9X41BA,  
0 and the NT9X45BA Paddleboards (PBs) on the ENET shelves will di-  
0 rectly affect the size of each MS Port Group. Hence, to optimize  
0 the size of the MS Port Group, it may be necessary to reassign  
0 the quantity of NT9X40BA, NT9X41BA and the NT9X45BA PBs from one  
0 ENET shelf to another in order to avoid crossing the boundary of  
0 message ports which would necessitate the addition of an MS 64  
0 Port Card NT9X17DA and the associated paddleboards. (This card  
0 and the associated paddleboards are explained later in this sec-  
0 tion.) Note that any reassignments would only pertain to new  
0 equipment (i.e. initial offices or new equipment being added into  
0 an existing office). Existing paddleboards on an ENET shelf must  
0 not be reassigned during an extension.

0 For reasons previously discussed consideration should be given to  
0 making allowances for the future growth requirements of the last  
0 incomplete network shelf. Reserve slots on the MS for the  
0 projected future requirements of partially equipped ENET shelves.

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0 An MS Port Group will consist of the following types of hardware:

- 0 - NT9X17DA MS 64 Port CP or NT9X17CA MS 128 Port CP
- 0 - NT9X20BB ENET/MS Fiber Interface PB
- 0 - NT9X25AA MS Port Expander PB
- 0 - NT9X25BA MS Port Expander/Terminator PB

0 ENET will utilize MS 64 Port CP or MS 128 Port CP for network and  
0 peripheral message port assignments.

0 NT9X17DA, MS 64 PORT CP

- 0 - One can connect up to 64 message ports.

0 NT9X17CA, MS 128 PORT CP

- 0 - One can connect up to 128 message ports.

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0 The following PBs are required to complete each port group.

0 NT9X20BB, ENET/MS Fiber Interface PB

- 0 - One required per plane behind the first NT9X17DA CP or NT9X17CA
- 0 CP of each port group.
- 0 - Interfaces the message link from the Enhanced Network Shelf.

0 NT9X25AA, MS PORT EXPANDER PB

- 0 - One required per plane behind the middle NT9X17DA CP of each
- 0 port group if equipped.
- 0 - Expands the bus to accommodate a larger port group beyond
- 0 64 channels.

0 NT9X25BA, MS PORT EXPANDER/TERMINATOR PB

- 0 - One required per plane behind the last NT9X17DA CP or NT9X17CA
- 0 of each port group if equipped.
- 0 - Terminates the bus.

0 Cable Length from MS Shelf to ENET Shelf

0 All fibre optic cables from both MS Shelves (i.e. plane 0 & 1 to  
0 any ENET shelf (on either plane) must not deviate in length from  
0 each other by more than 25 feet.

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0 Examples of MS Port Groups

|            | Front    | Rear     |
|------------|----------|----------|
| 0 64 Ports | NT9X17DA | NT9X20BB |

|          |           |                                                                                                       |          |          |          |          |    |                                                            |          |          |
|----------|-----------|-------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----|------------------------------------------------------------|----------|----------|
| 0        | 128 Ports | <table><tr><td>NT9X17DA</td><td>NT9X20BB</td></tr><tr><td>NT9X17DA</td><td>NT9X25BA</td></tr></table> | NT9X17DA | NT9X20BB | NT9X17DA | NT9X25BA | OR | <table><tr><td>NT9X17CA</td><td>NT9X20BB</td></tr></table> | NT9X17CA | NT9X20BB |
| NT9X17DA |           |                                                                                                       | NT9X20BB |          |          |          |    |                                                            |          |          |
| NT9X17DA |           |                                                                                                       | NT9X25BA |          |          |          |    |                                                            |          |          |
| NT9X17CA |           |                                                                                                       | NT9X20BB |          |          |          |    |                                                            |          |          |
| 0        |           |                                                                                                       |          |          |          |          |    |                                                            |          |          |
| 0        |           |                                                                                                       |          |          |          |          |    |                                                            |          |          |
| 0        |           |                                                                                                       |          |          |          |          |    |                                                            |          |          |
| 0        |           |                                                                                                       |          |          |          |          |    |                                                            |          |          |

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192 Ports

|          |          |
|----------|----------|
| NT9X17DA | NT9X20BB |
| NT9X17DA | NT9X25AA |
| NT9X17DA | NT9X25BA |

OR

|          |          |
|----------|----------|
| NT9X17CA | NT9X20BB |
| NT9X17DA | NT9X25BA |

|   |           |          |          |    |          |          |
|---|-----------|----------|----------|----|----------|----------|
| 0 | 256 Ports | NT9X17DA | NT9X20BB | OR | NT9X17CA | NT9X20BB |
| 0 |           | NT9X17DA | NT9X25AA |    | NT9X17CA | NT9X25BA |
| 0 |           | NT9X17DA | NT9X25AA |    |          |          |
| 0 |           | NT9X17DA | NT9X25BA |    |          |          |
| 0 |           |          |          |    |          |          |
| 0 |           |          |          |    |          |          |
| 0 |           |          |          |    |          |          |
| 0 |           |          |          |    |          |          |

0 The front card of each MS Port Group is always an NT9X17DA or  
0 NT9X17CA CP. Behind the MS 64 or MS 128 Port CP in each group,  
0 an NT9X20BB PB is provisioned to allow the physical connection of  
0 the fiber link from the MS Shelf to the ENET. For multiple card  
0 groups, an NT9X25BA PB (to terminate the port group) is located  
0 behind the last card, and an NT9X25AA PB (to extend the port  
0 group) behind any intervening MS 64 or MS 128 Port CPs in the  
0 group.

0 Note that a duplicate port group is provisioned for the other  
0 ENET plane.

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0 Provisioning of MS Shelf (DMS-BUS) Slots

0 When provisioning MS shelf slots, refer to the appropriate  
0 scenario:

0 1. ENET Initial:

0 Use rules A and C below.

0 2. ENET Extension:

0 Use rule C below.

0 3. ENET Retrofit (Upgrade) Without MS Port Concentration:

0 Use rule C below.

0 4. ENET Retrofit (Upgrade) With MS Port Concentration:

0 Use rules A, B and C below.

0 Rule A: Assign IOCs, EIOCs and LPPs to the highest numbered MS  
0 slots in descending order starting from slot 29 (i.e. slots 29,  
0 28, etc.). These slots will contain 4-port cards (NT9X17AA/AD)  
0 in the front and 4-port DS-30 interface paddleboards (NT9X23AA  
0 for IOCs and EIOCs; NT9X23BA for LPPs) in the rear.

0 Rule B: Assign the existing network ports to the next highest  
0 available MS slots in descending order. These slots will contain  
0 64-port cards (NT9X17DA) in the front and 16-port DS-30 interface  
0 paddleboards (NT9X69AA) in the rear.

0 Rule C: Assign the ENET ports to the lowest numbered MS slots in  
0 ascending order starting from slot 12 (i.e. slots 12, 13, etc.).  
0 These slots will contain 64-port cards (NT9X17DA) in the front  
0 and fibre interface or port expander or port terminator  
0 paddleboards (NT9X20BB or NT9X25AA or NT9X25BA) in the rear.

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## 0 ENET Retrofit (Upgrade)

0 An ENET retrofit (upgrade) occurs when the switching network of  
0 an existing inservice DMS-SuperNode office changes from a Network  
0 Module (NM) implementation to an Enhanced Network(ENET) implemen-  
0 tation. During the upgrade, the Network slots must be shared be-  
0 tween the existing NMs and the new ENET.

0 In network upgrade situations, the existing MS 4 Port CPs  
0 (NT9X17AA/AD) will be used to connect to existing IOC/EIOCs, NMs,  
0 and LIMs. The MS 64 Port CPs (NT9X17DA) will be required to be  
0 provisioned for connection to ENET.

0 It is important to note that for a time during the retrofit, the  
0 MS must interface all IOC/EIOCs, all NM, all LIMs, plus both  
0 planes of the ENET.

### 0 MS Port Concentration

0 Each MS shelf (or DMS-Bus) must have a sufficient number of va-  
0 cant slots to allow the addition of enough 64 port cards to sup-  
0 port both planes of the ENET. If this is not the case, the  
0 existing NM ports must be "concentrated" onto higher density port  
0 cards. This process may involve the relocation of NM, IOC/EIOC,  
0 and LIM ports.

### 0 Addition of Sixteen Port Cards to the MS

0 This procedure replaces some of the MS 4 Port cards and the DS-30  
0 Interface Paddleboards with MS 64 Port cards and 16 DS-30 Port  
0 Interface Paddleboards.

0 Specifically, two or four NT9X17AA/ADs (MS 4 Port CP) and two or  
0 four NT9X23AAs (Four DS-30 Port Interface Paddleboards) are re-  
0 placed with an equivalent number of NT9X17DAs (MS 64 Port CP) and  
0 NT9X69AAs (Sixteen DS-30 Port Interface Paddleboards). Four  
0 sixteen-port slots are sufficient to support both planes of 32  
0 NMs.

0 These sixteen-port packs are considered retrofit packs, and are  
0 removed during the Post-Cutover phase.

0 For Canadian Offices:

0 The SAE/EAE will determine if an MS Port Concentration is re-  
0 quired and the quantity of NT9X17DAs and NT9X69AAs required (but



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0 will not order this hardware). He will inform the Job Supervisor  
0 accordingly. The Job Supervisor will obtain this hardware from  
0 the Installation Tool Room as required.

0 For U.S. Offices:

0 The requirement for an MS port concentration will be reported to  
0 installation via the order capture process. Installation will  
0 provide the required NT9X17DA and NT9X69AA.

0 The following contains information on provisioning the MS Shelf  
0 slots, and provides the necessary formula to determine whether  
0 enough vacant slots exist to support an ENET. The number of MS  
0 ports in each of the MS Port Groups is determined as follows:

0 \* one (1) port for the ENET shelf

0 \* one (1) port for each Series I peripheral connected to that  
0 ENET shelf

0 \* two (2) ports for each Series II peripheral connected to  
0 that ENET shelf

0 \* extra ports must also be allocated for any anticipated fu-  
0 ture growth.

0 One (1) MS shelf card slot is required for every 64 ports in a  
0 group. One MS 64 Port CP (NT9X17DA) can connect up to 64 message  
0 ports. For an ENET shelf, the longest group required is four (4)  
0 MS 64 Port cards long as shown in previous section.

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0 MS Shelf Slot Requirement Calculation

- 0 \* Total the number of slots required by each MS Port Group.
- 0 \* Total the number of slots required to support the existing  
0 NMs, IOC/EIOCs, and LPPs (assuming only MS 4 Port cards).
- 0 \* If the sum of these two (2) numbers is greater than 18, then  
0 an MS Port Concentration must be performed.

0 Example 1: A Small Office

0 Note that the calculations are done based on one (MS shelf) plane  
0 only.

0 An office contains the following equipment:

0 NM: 12  
0 IOC: 2  
0 EIOC: 1  
0 LPP: 1  
0 FXPM: 40 (Fiberized Series II Peripherals)  
0 PM: 40

0 Assume that ENET shelf 0 supports the 40 FXPMs, and ENET shelf 1  
0 supports the 40 PMs. The number of MS Shelf slots required to  
0 support this equipment using both NMs and ENET is as follows:

0 NM:{12 X 1/4} rounding up to the next integer X 2 slots  
0 = 6 Slots

0 Each NM requires total of two ports. Each port must be on an ad-  
0 jacent slot.(one port out of 4 ports from each slot)

0 IOC:2 port out of 4 ports X 1 slot  
0 = 1/2 Slot

0 Each IOC requires one port out of four ports.

0 EIOC:{1 X 1/4} rounding up to the next integer X 2 slots  
0 = 2 Slots

0 Each EIOC requires total of two ports. Each port must be on an  
0 adjacent slot.(one port out of 4 ports from each slot)

0 LPP:{1 X 2/4} rounding up to the next integer X 2 slots  
0 = 2 Slots

0 Each LPP requires total of four ports. Two ports out of 4 ports  
0 must be on each slot.

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0 ENET MS Port Group 0 Pl 0, Sh 0: 2 {ports = 1 + (2 X 40) = 81}  
0 ENET MS Port Group 1 Pl 0, Sh 1: 1 {ports = 1 + (1 X 40) = 41}

0 Two (2) slots can support both IOCs, the EIOC, and the LPP. The  
0 total number of slots required in each MS Shelf to support NM,  
0 IOC, EIOC, LPP and ENET is:  
0 = (existing) + (ENET)  
0 = (6 + 2) + (2 X (2 + 1))  
0 = (8) + (6)  
0 = 14

0 This number is less than 18, so an MS Port Concentration is NOT  
0 required.

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0 Example 2: A Large Office

0 An office contains the following equipment:

0 NM: 28  
0 IOC: 4  
0 EIOC: 1  
0 LPP: 1  
0 FXPM: 100 (Fiberized Series II Peripherals)  
0 PM: 80

0 Assume that ENET shelf 0 supports 60 FXPMs, and ENET shelf 1 supports 40 FXPMs and 80 PMs. The number of MS Shelf slots required to support this equipment using both NMs and ENET is as follows:

0 NM:{28 X 1/4} rounding up to the next integer X 2 slots  
0 = 14 Slots

0 Each NM requires total of two ports. Each port must be on an adjacent slot.(one port out of 4 ports from each slot)

0 IOC:4 port out of 4 ports X 1 slot  
0 = 1 Slot

0 Each IOC requires one port out of four ports.

0 EIOC:{1 X 1/4} rounding up to the next integer X 2 slots  
0 = 2 Slots

0 Each EIOC requires total of two ports. Each port must be on an adjacent slot.(one port out of 4 ports from each slot)

0 LPP:{1 X 2/4} rounding up to the next integer X 2 slots  
0 = 2 Slots

0 Each LPP requires total of four ports. Two ports out of 4 ports must be on each slot.

0 ENET MS Port Group 0 plane 0, Shelf 0: 2  
0 {ports = 1 + (2 X 60) = 121}

0 ENET MS Port Group 1 plane 0, Shelf 1: 3  
0 {ports = 1 + (2 X 40 + 1 X 80) = 161}

0 Two (2) slots can support the EIOC, the LPP, and up to two (2) IOCs. A third card must be provisioned to support the other two (2) IOCs. The total number of slots required in each MS Shelf to support NM, IOCs, EIOC, LPP and ENET is:

0 = (existing) + (ENET)  
0 = (14 + 2 + 1) + (2 X (2 + 3))  
0 = (17) + (10)

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0 = 27

0 This number is greater than 18, so an MS Port Concentration IS  
0 required.

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0 Job Drawings

0 For Canadian Offices:

0 If an MS Port Concentration is required, the SAE/EAE shall pre-  
0 pare D610 job drawings such that one will show the interim MS  
0 Port configuration and another drawing will show the final MS  
0 Port configuration for the DMS office. Notes should be added to  
0 the drawings distinguishing the interim and final configurations.

0 For U.S. Offices:

0 If an MS Port Concentration is required, the EAE shall add a note  
0 to the 1001 Specification that will show the slot and port as-  
0 signments of the NT9X17DA and NT9X69AA required for MS port con-  
0 centration.

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## 0 CM Provisioning

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0 A CM consists of a NT9X0605 Computing Module Shelf Assembly,  
0 NT9X06AF CM Processor Shelf Circuit Packfill, memory circuit  
0 packs, and message links to the MS.

0 Memory provisioning is carried out in a similar fashion for CCC  
0 and DMS-Core. However separate memory is not defined for Program  
0 Store and Data Store. A single memory store expressed in Mega-  
0 bytes (M-bytes) is defined for the CM.

0 The MEMCALC memory sizing tool is available for evaluating CM  
0 memory requirements.

0 In addition to the operational memory provisioned, one extra mem-  
0 ory CP per circuit pack type (i.e. a spare 6 and a 24 Mbyte CP  
0 for mixed memory applications) must be provided per plane to be  
0 assigned as a reliability spare.

0 For retrofits and upgrades, refer to Change Application Procedure  
0 (CAP) 1351.

0 Bulkheads for CM

0 For all applications, provision one (1) NT9X6539 CM Bulkhead  
0 (Right) and one (1) NT9X6540 CM Bulkhead (Left).

0 BRISC

0 The NT9X10AA BRISC CPU will provide a real-time performance gain  
0 of 2.5 times over the NT9X13BC CPU. The NT9X10AA may replace ex-  
0 isting 68020 and 68030 processor cards, provided the correspond-  
0 ing paddleboard is also replaced and a BRISC software load is  
0 utilized.

0 For BRISC offices, provision two (2) NT9X10AA 33 MHz 88000 BRISC  
0 CPU Circuit Packs per SuperNode Computing Module (CM) in shelf  
0 position 13 in slots 19F and 20F, and provision two (2) NT9X26DA  
0 BRISC RTIF Paddleboards per SuperNode Computing Module (CM) in  
0 shelf position 13 in slots 19R and 20R.

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## 0 SLM Provisioning

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0 SLM II units are a requirement of all offices whose image is ex-  
0 pected to exceed 30 M-bytes during the engineered interval. Since  
0 provisioning SLM II units in an office would impact its IOC based  
0 mass storage needs, it is recommended that for new offices, the  
0 need for SLM II units be established based on image requirements  
0 forecasted out 5 years where possible. In smaller offices SLMs  
0 are considered to be a customer requested option.

0 For U.S. applications, SEB 88-01-002 may be referenced. It con-  
0 tains a detailed formula for calculation of Supernode image size.  
0 The MEMCALC tool also will calculate office image requirements.

0 When the SLM is required, provide two (2) NT9X44AB System Load  
0 Module II per NT9X01JA/JB Dual Plane Combined Core Cabinet  
0 (DPCC). Also provision the associated NT9X07AC SLM Common CP and  
0 NT9X12AB/AC CPU Port CP. SLM II units are provisioned on a SLM  
0 shelf and interfaced to the CM via orderable CM bus extender pad-  
0 dle boards.

0 When SLM is not required, provide one (1) NT9X01FB Filler  
0 Packfill to satisfy cabinet cooling airflow requirements.

0 Device Independent Recording Package(DIRP) is a supported func-  
0 tion on SLM II. The following are the known application using  
0 DIRP and should be supported by SLM II:

0 AMA, CDR, SMDR, OM, JF, KT, TTRF

0 METBCKP, OOS, MS7, DLOG, CRS

0 For the disk storage provisioning for DMS-STP in support of data  
0 access by Signalling Engineering and Administration System(SEAS)  
0 IOC DDUs must be provisioned.

0 The engineering of data storage requirement for SLM II should in-  
0 clude the storage requirement for all office operation, adminis-  
0 tration and maintenance data. In particular, the provisioning of  
0 storage capacity for AMA/CDR data should take into the consider-  
0 ation of busy hour traffic rate, data polling or transfer rate if  
0 applicable, as well as data retention requirement.



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0 If additional DDU(s) is required, either SLM or DDU but not both  
0 may be used for recording the same DIRP subsystem data (such as  
0 AMA/CDR). This is to avoid performance fluctuation.

0 In the case of parallel recording, the use of IOC DDUs are recom-  
0 mended over tape drives. This is for better performance in terms  
0 of through-put and storage capacity. Note that the overall  
0 through-put performance using concurrent parallel recording will  
0 be limited to the IOC DDU through-put performance, even though the  
0 SLM II performance is superior.

0 SLM HANDLING CONSIDERATIONS

0 When SLM I is equipped in an office, the combined CM and MS soft-  
0 ware load (image) must be delivered to site in DC 600A compatible  
0 tape cartridges. This would also apply to any commissioning  
0 loads that are supplied.

0 When SLM II is equipped in an office, the combined CM and MS  
0 software load (image) must be delivered to site in DC 600XTD com-  
0 patible tape cartridges. This would also apply to any commis-  
0 sioning loads that are supplied.

0 Blank cartridges must also be provided for scratch purposes. The  
0 different CPC number, Manufacturing part number and the sizes are  
0 given below:

0 CPC A0314597; Manufacturing Part # DC600A; 60MB  
0 CPC A0369779; Manufacturing Part # DC6150; 150MB  
0 CPC A0368760; Manufacturing Part # DC6250; 250MB

0 However Field Commissioning Tapes, Non-Resident Software Tapes  
0 and Peripheral Processor Software tapes must be delivered on the  
0 usual 9 track magnetic tapes. The specification process will au-  
0 tomatically call up the appropriate tape medium when the SLM  
0 software feature package is specified.

0 For Universal Software Load the SLM II is a must for offices run-  
0 ning with BCS33 and later.

0 For non-Universal Software Load the SLM II is required for,

- 0 -- offices running with BRISC Processor.
- 0 -- offices exceeds the SLM I tape capacity of 62Mb.
- 0 -- offices with planned capacity upgrdae.

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0 -- etc..

0 Since SLM I is MD'd, new offices will receive SLM II even if they  
0 do not have Universal Software Load.

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## 0 Reset Terminal Provisioning

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0 Two (2) compatible terminals must be provided in the maintenance  
0 area to serve as local reset terminals. These could be located  
0 close to MAP:00. Suitable furniture must be provided to accommo-  
0 date these terminals. Terminals are powered from inverters which  
0 may be located on the MIS frame.

0 The Reset Terminal Interface (RTIF) (NT9X26AA) of the CM provides  
0 two terminal interfaces. One is a RS-232C and is intended for  
0 local applications while the other supports either RS-232C or  
0 RS-422 and is intended for interfacing to remotely located termi-  
0 nals. Local RTIF terminals connected to an initial DMS-Core must  
0 be connected through back-to-back modems (9600 Baud asynchronous  
0 modem), or approved Current Loop converters. These isolation  
0 methods are required to satisfy ISG requirements, provide power  
0 fault isolation and and prevent cross-linking of terminal grounds  
0 with DMS equipment grounds.

0 The Enhanced Remote Terminal Interface (RTIF) CP (NT9X26AB), of-  
0 fers all the features of the existing NT9X26AA (ie. One RS-232C  
0 terminal interface port and one RS-232C / RS-422 interface port),  
0 plus:

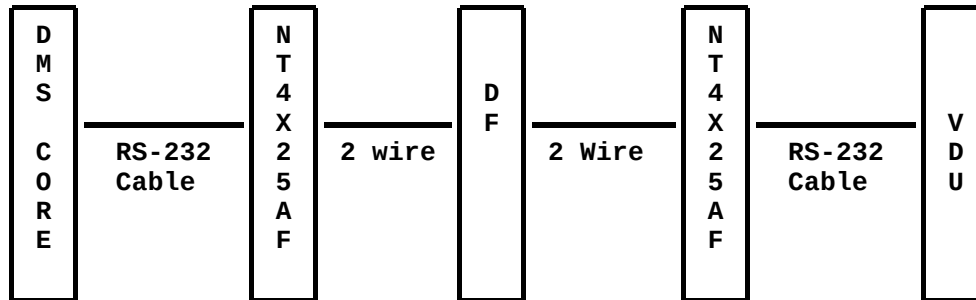
- 0 - 20mA current loop terminal interface port
- 0 - Status lamps indicating processor inactivity and sync

0 Approved VDU terminals, operating in current loop mode, can be  
0 connected directly to the NT9X26AB Enhanced RTIF CP at the cabi-  
0 net bulkhead. In this mode, the back-to-back data units, modems  
0 or Rad current loop converters, which were needed for Isolated  
0 System Ground (ISG) compliance, power fault isolation and pre-  
0 ventation of cross-linking of terminal grounds with DMS equipment  
0 are no longer required.

0 The NT9X26DA RTIF Paddleboard is required for BRISC.

0 An ISG compliant office may be using back to back modems con-  
0 nected to the RS232 connector on a NT9X26AA RTIF paddleboard. If  
0 the NT9X26AA is being changed to a NT9X26AB (or '26DA), it is re-  
0 commended to get rid of the back to back modems and provide a  
0 current loop cable for the RTIF Terminal being used in the of-  
0 fice.

The Low Speed Data Unit with Elastomer Keypad (NT4X25AF) may be used in a non switched arrangement (back-to-back) with the RTIF. Refer to ECM 346 for provisioning details. Since the data unit connects directly to the RTIF in the CM, type D line cards are NOT required for this application. The following figure depicts this arrangement:



## Data Unit

## Data Unit

|                 |              |                    |
|-----------------|--------------|--------------------|
| <b>Settings</b> | <b>Baud</b>  | <b>9600</b>        |
|                 | <b>Mode</b>  | <b>Async</b>       |
|                 | <b>SW1</b>   | <b>Slave</b>       |
|                 | <b>SW2-1</b> | <b>Off</b>         |
|                 | <b>SW2-2</b> | <b>Off (slave)</b> |
|                 | <b>SW2-3</b> | <b>Off</b>         |
|                 | <b>SW2-4</b> | <b>Off</b>         |

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9600
Async
Slave
Off
(master)
Off
Off
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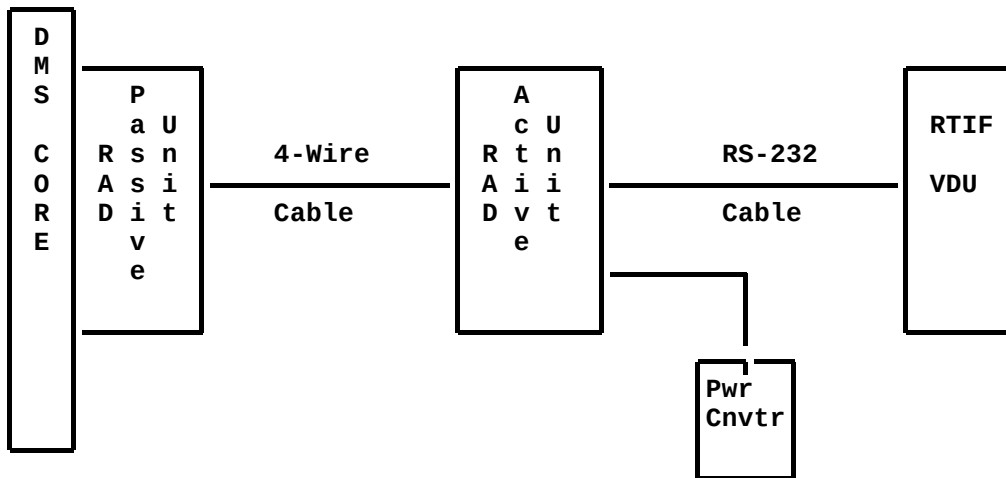
Current Loop converters from Rad Data Communication have been approved for compliancy with ISG to interface from the SuperNode with the RTIF.

Note - A spare set of converters and power converters must be provisioned for each site.

A Passive RS-232 to Current Loop converter is plugged directly into the SuperNode bulkhead. This device is connected to an Active RS-232 to Current Loop converter by a two (2) pair 20 ma loop cable. The Active unit (located near the RTIF) is connected to the RTIF by a short connectorized (female on RAD end, female on RTIF end) RS-232 cable.

The Active unit is powered by a plug in Power Converter which converts 120V AC to 12V DC.

The following figure depicts this arrangement:



| Description  | NT CPC   | RAD Part No.   |
|--------------|----------|----------------|
| Active Unit  | A0354166 | MIC-24/CL/A-NF |
| Passive Unit | A0354167 | MIC-24/CL/P-NF |
| Power Convtr | A0354168 | MIC-P          |

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0 See ECM-289 for Isolated System Grounding (ISG) provisioning  
0 guidelines.

0 When required, two additional reset terminals can be equipped at  
0 a remote location and interface to the RTIF via modems and secure  
0 dedicated lines. This equipment must be RS-232C compatible.

0 When required, the RTIF can interface to AT&T E2A equipment asso-  
0 ciated with a Switching Control Centre System (SSC) (US applica-  
0 tions only).

0 The Remote RTIF will be configured as 1200 baud RS232 to a modem  
0 or as 2400 baud RS422 connection to a Data Auxillary Shelf (DAS)  
0 for E2A. The Baud rate is set at initial power up via in-  
0 structions received from the NT9X26-- firmware to either 1200  
0 baud if the E2A Software is not present or 2400 baud if the E2A  
0 Software is present. The Remote RTIF CANNOT be used for BOTH a  
0 remote modem connection, and a DAS connection.

0 Refer to the appropriate VDU ECM for approved RTIF terminals.

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## 0 Inter-MS Link Provisioning

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0 The two inter-MS links (IMLs) are provisioned if required to connect MS plane 0 to MS plane 1 and provide a path for messages in event of a failure. These links utilize DS-30 links and should be provisioned as follows:

0 For applications NOT using Cabinetized DMS cabinets, and where DS-30 inter-MS links are required, provision two (2) NTEX5022 Inter-MS DS-30 Cable Assemblies. (one NTEX5022 cable per IML)

0 For Cabinetized DMS cabinet applications where DS-30 inter-MS links are required, provision two (2) NTEX5023 Inter-MS DS-30 Cable Assemblies. (one NTEX5023 cable per IML)

0 For applications requiring Inter-MS links, each DS-30 IML can be provisioned on any un-used DS-30 port on either an NT9X23AA or an NT9X23BA or an NT9X69BA paddleboard subject to the following restrictions:

0 The DS-30 ports selected for the two links must be on different paddleboards. That is, if the only free DS-30 ports are on the same paddleboard they cannot both be used for the IMLs; another port must be freed up on another paddleboard in order to equip the second link.

0 The paddleboards and ports selected must be the same on each MS. For example, if port 3 on paddleboards in slots 16 and 17 are selected in MS 0, then port 3 on paddleboards in slots 16 and 17 in MS 1 must be used. The paddleboards and ports selected can be in any slot or port in which DS-30 paddleboards are allowed except port 0 on paddleboards in slots 28 and 29.

0 Provisioning of DS-30 IMLs is currently limited to the SuperNode in non-Cabinetized or Cabinetized DMS cabinets. No requirements have been identified for the support of IMLs on the SL100 products. Hence, this is not currently supported.

0 For Meridian Cabinet applications the IML requirements can be met with a NTNX36AR cable to connector "A" and another to "B" on the NT9X6558 bulkhead if THOSE CONNECTORS ARE NOT BEING UTILIZED. If these connectors are in use, then use the first available "four port" connector on either the left or right bulkhead AND PROVIDE DS30 PADDLE BOARDS, PORT CARDS, AND CABLES AS REQUIRED. The other

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0 end of this cable is connected to the same connector designation  
0 on the other plane of the message switch. When using a four port  
0 bulkhead connector, only one NTN36AR cable is needed.

0 Note that, IMLs must be used when NIUs are provisioned on an LPP.

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0 C42(S/DMS) Cabinet Provisioning

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0 The DMS-SuperNode in C42(S/DMS) cabinet is a cost and func-  
0 tionally enhanced version of the existing SuperNode type cabinet.  
0 The S/DMS cabinet is very similar to the existing cabinet, items  
0 such as packs, shelf assemblies, interconnect cables, and  
0 bulkhead packs do not change. The differences from the existing  
0 Supernode cabinet are listed below.

0 1) The Cabinet changes from NT9X0113 to NT9X95AA

0 2) The Kick plate is not required with the S/DMS cabinet.

0 3) Power wiring is optional. If the cabinet is in a Stream-  
0 line lineup, the cables will be equipped to take advantage  
0 of "horizontal" cabling. If the cabinet is in a  
0 non-Cabinetized lineup, power cables will be similar to  
0 existing power cables, so filters will have to be  
0 provisioned.

0 The NT9X01JB has been approved for all applications. All new ini-  
0 tial SuperNode offices will specify the NT9X01JB Cabinet. The  
0 NT9X01JA PEC will be A&M and will remain for all existing of-  
0 fices.

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## 0 SuperNode Building Block Definition

0  
0 The SuperNode building block concept deals with a higher level of  
0 Product Engineering Code (PEC) ordering. The memory quantities,  
0 processor series and Network Interface can be selected depending  
0 on the telco desired specifications.

### 0 NTZZ01RA (SuperNode in S/DMS Cabinet)

0 NTZZ01RA contains the SuperNode cabinet NT9X01JB, Frame  
0 Supervisory panel, Cooling Unit, Common Circuit Packfills,  
0 bulkheads, and miscellaneous items that are always provided for a  
0 SuperNode. The existing NTZZ01AA, NTZZ97BA, NTZZ01TA, NTZZ97CA,  
0 NTZZ01AM, and NTZZ97BH will be A&M (Additions and Maintenance)  
0 and are replaced by NTZZ01RA. This NTZZ01RA BB pec is ONLY APPLI-  
0 CABLE to -48V powered installations. CHECK AVAILABILITY PRIOR TO  
0 ORDERING.

### 0 NTZZ01BA (System Load Module (SLM) common CP)

0 The NTZZ01BA contains all the circuit packs and miscellaneous  
0 items that are always provided to the SLM. The SLM II is required  
0 for offices where the office image is greater than 75 MB.  
0 NTZZ97BG will be A&M (Additions and Maintenance) and replaced by  
0 NTZZ01BA. This NTZZ01BA BB is ONLY APPLICABLE to -48V powered in-  
0 stallations.

### 0 NTZZ01CA (4 Port Network and IOC interface)

0 The NTZZ01CA contains the circuit packs for the SuperNode inter-  
0 face to the network modules and the Input/Output Controller mod-  
0 ules (IOC). These circuits will be used for DMS-100F  
0 applications. The NTZZ01CA contains 4 interface circuit  
0 packs.(i.e. 2 for each Message Switch). The NTZZ01CA is used in  
0 Supernode for non-Cabinetized application.

### 0 NTZZ01CB (4 Port Network and IOC interface)

0 The NTZZ01CB is similar to the ZZ01CA, except it has the new  
0 9X17AD 4-Port CP and it must be provisioned on all initial jobs  
0 for BCS34 and above.

### 0 NTZZ01DA (STP Interface)

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0 The NTZZ01DA contains the circuit packs for the SuperNode inter-  
0 face to the Link Interface Units (LIU). These circuits will be  
0 used for STP applications. The NTZZ01DA contains 4 interface  
0 circuit packs. (i.e. 2 for each Message Switch). The NTZZ01DA is  
0 used in Supernode for non-Cabinetized application.

0 NTZZ01DB (STP Interface)

0 The NTZZ01DB is similar to the ZZ01DA, except it has the new  
0 9X17AD 4-Port CP and it must be provisioned on all initial jobs  
0 for BCS34 and above.

0 NTZZ01UA (Cabinetized DMS 4 Port & IOC Interface)

0 The NTZZ01UA contains the circuit packs for the SuperNode inter-  
0 face to the network modules and the Input/Output Controller mod-  
0 ules (IOC). These circuits will be used for DMS-100F  
0 applications. The NTZZ01UA contains 4 interface circuit  
0 packs. (i.e. 2 for each Message Switch). The NTZZ01UA is used in  
0 SuperNode for Cabinetized DMS application.

0 NTZZ01UB (Cabinetized DMS 4 Port & IOC Interface)

0 The NTZZ01UB is similar to the ZZ01UA, except it has the new  
0 9X17AD 4-Port CP and it must be provisioned on all initial jobs  
0 for BCS34 and above.

0 NTZZ01VA (Cabinetized 4 Port LIM/LPP Interface)

0 The NTZZ01VA contains the circuit packs for the SuperNode inter-  
0 face to the Link Interface Units (LIU). These circuits will be  
0 used for STP applications. The NTZZ01VA contains 4 interface  
0 circuit packs. (i.e. 2 for each Message Switch). The NTZZ01UA is  
0 used in SuperNode for Cabinetized DMS application.

0 NTZZ01VB (Cabinetized 4 Port LIM/LPP Interface)

0 The NTZZ01VB is similar to the ZZ01VA, except it has the new  
0 9X17AD 4-Port CP and it must be provisioned on all initial jobs  
0 for BCS34 and above.

0 NTZZ01EA (Filler Face Plate)

0 The NTZZ01EA contains the filler face plates required for forced  
0 air cooling when the message port circuit packs are not required.  
0 Each NTZZ01EA contains two (2) filler face plates and two (2) MS  
0 Bus Loader PBs.

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0 NTZZ01FA (Supernode Series 10 CPU)

0 The NTZZ01FA contains the SuperNode series 10 processor CP. The  
0 SN10 provides approximately 1.4 capacity gain over the NT40. Se-  
0 lection of SuperNode processor is determined by the use of  
0 QUICKCALC or RTCALC programs. New offices should not be engi-  
0 neered using this PEC. If an existing site is configured with a  
0 Series 10 processor, the customer is requested to contact the re-  
0 gional sales representative for details on how to upgrade to a  
0 Series 20 processor or higher for BCS-35 and above loads. See  
0 Section 4.1.2 ECM body for software packaging.

0 NTZZ01GA (Supernode Series 20 CPU)

0 The NTZZ01GA contains the Supernode series 20 processor CP. the  
0 SN20 provides 2.0 to 2.2 capacity gain over the NT40. Selection  
0 of SuperNode processor is determined by the use of QUICKCALC or  
0 RTCALC programs.

0 NTZZ01HA (Supernode Series 30 CPU)

0 The NTZZ01HA contains the SuperNode series 30 processor CP. The  
0 SN30 provides a 1.4 to 1.5 capacity gain over the SN20. Selection  
0 of SuperNode processor is determined by the use of QUICKCALC or  
0 RTCALC programs.

0 NTZZ01JA (Supernode Series 40 CPU)

0 The NTZZ01JA contains the SuperNode series 40 processor CP. The  
0 SN40 provides a 1.7 to 1.8 capacity gain over the SN20. Selection  
0 of SuperNode processor is determined by the use of QUICKCALC or  
0 RTCALC programs.

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0 NTZZ01SA (Supernode BRISC CPU)

0 The NTZZ01SA provides a real time performance gain of 2.5 times  
0 over the SN20. Selection of SuperNode processor is determined by  
0 the use of QUICKCALC or RTCALC programs.

0 NTZZ01KA (Six (6) MByte Memory)

0 The NTZZ01KA contains two (2) Six (6) MByte memory circuit packs  
0 and designation labels for the STP application. Memory require-  
0 ments are determined by use of Memquick or Memcalc programs.

0 NTZZ01LA (24 MByte Memory)

0 The NTZZ01LA contains two (2) 24 MB memory circuit pack and des-  
0 ignation labels for the DMS-100F application. Memory requirements  
0 are determined by use of Memquick or Memcalc programs.

0 NTZZ01MA (Filler Face Plate)

0 The NTZZ01MA contains two (2) Filler Face Plates and designation  
0 labels for the SuperNode Computing Module.

0 NTZZ01NA (Initial Enhanced Network Interface)

0 The NTZZ01NA contains the circuit packs for the initial interface  
0 of SuperNode to the Enhanced Network. Provide one (1) NTZZ01NA  
0 for each ENET shelf (i.e. port group) provisioned. The NTZZ01NA  
0 contains two (2) interface circuit packs.(i.e. 1 for each Message  
0 Switch).

0 NTZZ01PA (Intermediate Enhanced Network Interface)

0 The NTZZ01PA contains the circuit packs for the intermediate  
0 interface of SuperNode to the Enhanced Network. Provision  
0 NTZZ01PA per the worksheets provided in the ENET Building Block  
0 documents. The NTZZ01PA contains two (2) each interface circuit  
0 packs. (i.e. 1 for each Message Switch).

0 NTZZ01QA (Final Enhanced Network Interface)

0 The NTZZ01QA contains the circuit packs for the final interface  
0 of SuperNode to the Enhanced Network. Provide one (1) NTZZ01QA  
0 for each ENET shelf (i.e. port group) provisioned. The NTZZ01QA

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0 contains two (2) interface circuit packs.(i.e. 1 for each Message  
0 Switch).

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0 NTZZ01ZA (Link Interface for FLIS)

0 The NTZZ01ZA contains the circuit packs for the Supernode Cabinet  
0 that is used to Interface Message Switch (0 and 1) to the Single  
0 Shelf LPP(Fiberized LIS(FLIS)).

0 SuperNode Building Block Provisioning

0 NTZZ01CA/UA/CB/UB - 4 Port Network & IOC Interface

0 If NTZZ01CA/UA/CB/UB is required, then provide as follows,

0  $\#NTZZ01CA/UA/CB/UB = \{(\#NM/4) + (\#IOC/8)\}$   
0 to be rounded up to the next integer.  
0 Each NM requires total of two ports. Each port must  
0 be on an adjacent slot.(one port out of 4 ports from each slot)

0 Each IOC requires one port out of four ports.

0 NTZZ01DA/VA/DB/VB - 4 Port LIM/LPP Interface

0 If NTZZ01DA/VA/DB/VB is required, then provide as follows,

0  $\# NTZZ01DA/VA/DB/VB = \{\# \text{ Link Interface Module Cabinets } / 2 \}$   
0 to be rounded up to the next integer.

0 NTZZ01EA - Interface Filler Face Plate

0 Provide NTZZ01EA as follows,

0  $\# NTZZ01EA = 9 - (NTZZ01CA + NTZZ01DA)$

0 NTZZ01ZA Link Interface for FLIS

0 If Single Shelf LPP(Fiberized LIS(FLIS) is provisioned, then  
0 provide (1) one NTZZ01ZA. Also Provision the cables for  
0 Inter\_MS links.

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0 1.1.4 OFFICE LAYOUT INFORMATION

0  
0 The S/DMS cabinet will be shipped with the doors, shelves, circuit  
0 packs, FSP, and cooling unit installed. The bus bar will be in-  
0 stalled and appropriate connections will be made at the factory.  
0 The bulkheads form part of the Electromagnetic Compatibility(EMC)  
0 cage around the equipment and provide a place to mount filter  
0 PCBs and optional power filters. The rear of the cabinet is  
0 equipped with two removeable bulkhead panels near the bottom of  
0 the cabinet. When these panels are removed, the cabinet can be  
0 installed in, or removed from, a lineup equipped with horizontal  
0 cabling. The cabinet may be slid "FORWARD" only.

0 FLOOR LAYOUT

0 Aisle dimensions are derived to meet the requirements of central  
0 office environment for floor loading and heat dissipation.

0 - An installation which requires multiple cabinet line-ups has  
0 six foot maintenance aisles.

0 - Maintenance aisles between a cabinet line-up and a frame  
0 line-up are 4.5 feet wide.

0 Installations requiring a cabinet to be integrated into a frame  
0 line-up:

0 - Can only be applied to the front most or rear most line-up

0 - Cabinets and frames are aligned to be flush at the rear

0 Note that a mixed frame/cabinet configuration is in violation of  
0 NEBS. The Telco should confer with the Building Studies and In-  
0 stallation departments to confirm that the building floor can  
0 sustain the weight differential and to insure there is sufficient  
0 cooling available to cool the DMS office.

0 Refer to ECM600 for office layout restrictions when this cabinet  
0 is applied in a Cabinetized DMS lineup.

0 Note that, Richardson market floor layout may be different.

0 SWITCHBOARD CABLING RESTRICTIONS



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0 Cabling restrictions between the Message Switch and the IOC and  
0 Network frames remain unchanged at 200 feet maximum.

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0 INITIAL OFFICES

0 Cabinets and frames will not be mixed in the same line-up. The  
0 cabinets will occupy the front line-up. The second line-up will  
0 contain the IOE frames (and others as convenient) and will have  
0 fronts facing the front of the office.

0 Aisle spacing between the first (cabinet) and second (frame)  
0 line-ups is 4.5 feet.

0 The reset terminals will be located in the equipment room to the  
0 front of the office with convenient visual and physical access to  
0 the IOE equipment.

0 SuperNode Retrofit(Upgrade)

0 There are three possible physical installations in decreasing or-  
0 der of convenience:

0 i) If possible, within the guidelines mentioned for initials, a  
0 new front line-up for the cabinet(s) should be started.

0 ii) Alternatively the existing front line-up can be extended  
0 laterally with the cabinet.

0 iii) The cabinet is temporarily located close to the CCC for in-  
0 stallation and commissioning. Following a successful cutover the  
0 cabinet(s) are relocated into the space vacated by the CCC, MEX  
0 frames.

0 For mixed line-ups the cabinet and frames are aligned to be flush  
0 at the back of the front line-up and should utilize a single cab-  
0 inet only (Combined Core Cabinet).

0 For option (iii) care must be taken to ensure that the  
0 retrofitted frames vacate sufficient space for the DMS-Core cabi-  
0 nets. Note that MSS frames should be considered as relocatable  
0 along with the retrofitted CCC and MEX frames.

0 It is recommended that a per site survey of retrofit sites be  
0 carried out jointly by Building Studies and Installation groups  
0 to ensure a feasible configuration is engineered.

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0 1.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 1.2 PRODUCT/SYSTEM SPECIFICATION0 1.2.1 PHYSICAL CHARACTERISTICS

0  
0 The following describes the characteristics of the NT9X01JB  
0 SuperNode S/DMS cabinet:

0 The -60V version of the unit features the same packaging and  
0 performance as the -48V unit. Presently Germany, is the only coun-  
0 try that requires -60V units.

0 Input Voltage.....-48VDC  
0 Power Consumption.....3525 watts (+/- 10%) fully equipped  
0 Current Drain.....73.0Amps

0 The current drain for CM and MS shelves is 20 amps per shelf

0 Each SLM draws 12.9 amps while running, and 18.7 amps during  
0 spin-up to operating speed.

0 POWER/HEAT DISSIPATION

0 The fully loaded cabinet heat dissipation is up to 3500 watts.

0 MECHANICAL DIMENSIONS

0 Height 72in. Width 42in. Depth 28in.

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0 Weight 1400lbs. (Full)

0 1.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 End panels are required to complete the EMC enclosure for cabinets located at the end of a lineup. In earthquake installations, the S/DMS cabinet must be bolted to the floor in four(4) places through anchor holes provided in the base of the cabinet. The cooling unit must be removed for access to the bolts. When the cabinet is bolted in place, the optional leveling feet must not be installed. Leveling will be accomplished through the use of non-conductive shims. The bolts must be tightened with a torque wrench to ensure adequate pretension.

0 For raised floor installations, a sub-structure support between the concrete sub-floor and the raised floor will be required. A qualified seismic engineer should be consulted regarding the required additional bracing.

0 1.2.3 SPARING INFORMATION

0  
0 One Spare Storage Cabinet (SSC) NT9X01FA can hold up to four Spares Shelves. The spares cabinet has one (1) always provided Spares Shelf (NT0X25AY); thus three (3) shelves are provisionable. One Spares Shelf (NT0X25AY) can hold 26 CPs and 4 Power Modules, as well as 26 Paddle Boards. Note that NT9X01FA has a rate chane pending. Use NTRX49AA for new offices.

0 For U.S. applications use standard sparing algorithms.

0 For Canadian and other applications the following may be used.

0 a) Version 2, C42 Cooling Unit:  
0 -----

0

0 Blowers 660,000 hrs MTBF in its useful life of 10 years.  
0 MTM cards 4,700,000 hrs MTBF  
0 Relay 100,000,000 hrs MTBF

0 Note that the blower's useful life is about 10 years. Around that  
0 time, failures are to be expected. Good practice might dictate  
0 replacement of operating blowers around that time (analagous to  
0 replacing your car's engine belts before they break).

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0 1.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Each shelf has four (4) power converters, two at either side of  
0 the shelf, mounted from the front.

0 Logic power distribution to the shelf electronics is from each  
0 power module to the corresponding half of the shelf.

0 Fuses are required as follows for NT9X01JB.

0 For powering from a standard 7' PDC  
0 -----

0 8 - 20 Amp fuses (MS,CM and SLM shelves)  
0 2 - 10 Amp fuses (for C42 cooling blowers)  
0 1 - 10 Amp Fuse (Alarm Battery Supply (ABS))

0 For powering from a CPDC  
0 -----

0 8 - 30 Amp fuses (MS,CM and SLM shelves)  
0 2 - 10 Amp fuses (for C42 cooling blowers)  
0 1 - 10 Amp Fuse (Alarm Battery Supply (ABS))

0 Refer to CA0X04 issue 01 20 and later for power cable informa-  
0 tion.

0 PDC feeds are connected to the cabinet via EMI feed through  
0 capacitors at the top of the frame. Cable and Drop Length shall  
0 be job engineered.

0 1.2.5 CURRENT DRAIN INFORMATION

0  
0 See Section, Physical Characteristics.

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0 1.3 SOFTWARE PROVISIONING

0 The existing DMS-100 software is being 'ported' to run on the  
0 DMS-Core. The availability of system features (e.g. toll, tops,  
0 local, IBN etc) is phased over several BCS releases. Each major  
0 system feature will have a DMS-Core Verification Office (V.O.).

0 1.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 SUPERNODE 20 PRODUCT COMPONENT PACKAGES AND FEATURES

0

0 NTX960AA - DMS SUPERNODE BASIC - Master Package rated MD BCS-28.

0 NTX960AB - DMS SUPERNODE BASIC - Master Package rated MD BCS-28.

0 NTX960AC - DMS SUPERNODE BASIC - Master Package which includes:

0 NTX940AA - COMPUTING MODULE BILGE  
0 NTX941AA - COMPUTING MODULE COMMON BASIC  
0 NTX942AA - SUPERNODE SYSTEM LOAD MODULE  
0 NTX950AA - MESSAGE SWITCH BILGE  
0 NTX951AA - MESSAGE SWITCH COMMON BASIC  
0 NTXF70AA - SUPERNODE SN-20 PROCESSOR

0 NTX960AC is ordered in addition to all other master and feature  
0 packages that would be ordered for an equivalent NT-40. For ex-  
0 ample NTX003AB and NTX960AC are ordered for a Local Enhanced of-  
0 fice equipped with DMS-Core.

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## 0 SUPERNODE SERIES 10 PRODUCT COMPONENT PACKAGES

0  
0 Offices provisioning the SuperNode Series 10 will require:

0 NTXD16AB - SuperNode (Series 10) Basic which contains packages

0 Note: The NTXD16AB and NTXF96AA (SN-10) packages are to be  
0 "Napped" (eg. cannot be ordered/delivered) in the BCS-35/36  
0 loads.

0 If an existing site is configured with a Series 10 processor, the  
0 customer is requested to contact the regional sales represen-  
0 tative for details on how to upgrade to a Series 20 processor or  
0 higher for BCS-35 and above loads.

0 NTXF96AA - Basic SuperNode (SN-10)Processor  
0 NTX940AA - Computing Module Bilge  
0 NTX941AA - Computing Module Basic  
0 NTX950AA - Message Switch Bilge  
0 NTX951AA - Message Switch Basic

0 Note - System Load Unit software must be ordered separately on  
0 SuperNode Series 10 Offices (SLM - NTX942AA).

## 0 SUPERNODE SERIES 30 PRODUCT COMPONENT PACKAGES

0  
0 Offices provisioning the SuperNode Series 30 will require:

0 NTXD17AB - DMSCore MC68030-33 MHz (Series 30) Processor Basic  
0 which contains packages

0 NTXF15AA - SuperNode MC68030-33MHz (Series 30)Processor  
0 NTX940AA - Computing Module Bilge  
0 NTX941AA - Computing Module Basic  
0 NTX942AA - SuperNode System Load Module  
0 NTX950AA - Message Switch Bilge  
0 NTX951AA - Message Switch Basic

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## 0 SUPERNODE SERIES 40 PRODUCT COMPONENT PACKAGES

0  
0 Offices provisioning the SuperNode Series 40 will require:

0 NTXD18AB - Series 40 Supernode-Basic which contains packages:

0 NTXF16AA - DMS-Core MC68030 40MHz Processor  
0 NTX940AA - Computing Module Bilge  
0 NTX941AA - Computing Module Basic  
0 NTX942AA - SuperNode System Load Module  
0 NTX950AA - Message Switch Bilge  
0 NTX951AA - Message Switch Basic

0 Note: For U.S. applications the SuperNode Series 40 is lim-  
0 ited for deployment and must have RTP Marketing approval prior to  
0 provisioning.

## 0 SUPERNODE SYNCHRONIZATION PACKAGES

0  
0 For offices requiring external clock synchronization to CCS or  
0 DCS standard, provide:

0 NTXF26AA - BITS Composite Master

0 NTXF27AA - Cesium, Loran Composite Master

0 For offices requiring external clock synchronization to  
0 Cesium/Rubidium Stratum I standard, provide the NTXF27AA package.  
0 Note that this package also supports Loran Composite Master clock  
0 source, but the necessary provisionable cable is not yet avail-  
0 able for the latter application.

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## 0 SYSTEM LOAD MODULE SOFTWARE

0  
0 SLM II requires software package NTXE54AA.

0 The Device Independent Recording Package(DIRP) on SLM is op-  
0 tional, and it is activated internally by the presence of package  
0 module DIRPSLM in NTXJ44AA - SLM File System.

## 0 BRISC

0  
0 The NT9X10AA 33 MHz 88000 BRISC CPU Circuit Pack is incompatible  
0 with the standard SuperNode BCS loads and requires a BCS load  
0 compiled for the BRISC card. The minimum software release that is  
0 required is BCS-BR33.

0 Software package NTXD25AA is required to support the NT9X10AA  
0 BRISC CPU.

## 0 AFFECTED SOFTWARE TABLES

0  
0 In general, initial office datafill will be accomplished in the  
0 same way for the DMS-Core as for the CCC. There are new data ta-  
0 bles associated with the CM and MS subsystems which are specific  
0 to the new hardware. Datafill of these tables will be detailed  
0 in the data schema associated with the CM and MS.

0 A dump and restore datatool will be available for core upgrades  
0 to transfer CCC data to a DMS-Core. Datatools will also be  
0 available to support DMS-Core to DMS-Core data transfer for BCS  
0 upgrades. Note that even with the CCC to DMS-Core datatools,  
0 some initial datafill of the new tables will be necessary.

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0 1.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 BCS33 and BCS34 DO NOT support the stand-alone STP. That is, it  
0 is limited to BCS32, and it will be supported with BCS35.

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0 1.3.3 MEMORY PROVISIONING0 MS Memory Configuration and Software Loads.

| SOFTWARE | DESCRIPTION                       | MS MEMORY REQUIREMENT |
|----------|-----------------------------------|-----------------------|
| MS-S     | MS LOAD FOR JNET                  | REQUIRES 7MB          |
| MS-E     | MS LOAD FOR JNET/ENET/SSLPP/PH    | REQUIRES 10MB         |
| MS-I     | MS LOAD FOR JNET/ENET/SSLPP/SCPII | REQUIRES 16MB         |

| HARDWARE  | SOFTWARE RELEASE |      |      |
|-----------|------------------|------|------|
|           | MS-S             | MS-E | MS-I |
| 13DB/14BB | YES              | NO   | NO   |
| 13DC/14BB | YES              | YES  | NO   |
| 13DC/14DB | YES              | YES  | YES  |
| 13DD      | YES              | YES  | YES  |

0 1) PM Note: New SN DPCCs should not be provided with the NT9X14BB  
0 MS memory for BCS-31 and above loads. Also, Offices with Base-04  
0 (CSP-03) or higher shall have a minimum of 16M of memory and  
0 there will be only one common MS load.

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0 Memory Provisioning in CM

0 24 MByte memory cards are generally available to any SuperNode  
0 office. Provisioning of six (6) MByte memory cards in the Comput-  
0 ing Module (CM) are only available to STP offices. That is The  
0 NT9X14DB must only be the memory card used on the CM, except for  
0 the SuperNode of a non-integrated STP. The non-integrated STP can  
0 use NT9X14BB Memory CP on the CM if the S/W load fits.

0 \* Mixed 6 & 24 MByte systems require a minimum of  
0 BCS 25 and the NT9X13BB Processor CP.

0 \* Pure 24 MByte systems require a minimum of BCS 26,  
0 and NT9X13BC, Processor CP.

0 Note for Mixed memory offices, once a 24 Mbyte CP has been provi-  
0 sioned, no additional 6 Mbyte CP will be provided. In U.S., ref-  
0 erence System Engineering Bulletin (S.E.B 88-01-002) "DMS-100F  
0 Memory Administration Document" for detailed memory provisioning.

0 All offices must equip Memory CP to the following algorithm.  
0 Starting with 24 MByte CP for mixed offices, 1st. Slots 16F and  
0 23F, 2nd. 15F and 24F, 3rd. 14F and 25F, 4th. 13F and 26F, 5th.  
0 12F and 27F, 6th. 11F and 28F, 7th. 10F and 29F, 8th. 9F and 30F,  
0 9th. 8F and 31F, 10th. 7F and 32F.

0 BCS 26 offices (pure 24 Mbyte CP) Memory requirements are rounded  
0 as follows:

- 0 - Round up Memcalc values for Program Store (PS) to the  
0 nearest 8 Mbyte multiple.
- 0 - Add four (4) Mbytes to the Memcalc DS and round up to the  
0 nearest 8 Mbyte multiple.
- 0 - Add the rounded PS + the rounded DS, and then round up to  
0 the nearest 24 Mbyte multiple to determine number of circuit  
0 packs requirement.

0 Note the CP quantities should include a 10% administrative spare  
0 additional to the unrounded Memcalc PS + DS figures. Be sure to  
0 include one (1) 24 Mbyte CP as a reliability spare.

0 BRISC

0 Use of the NT9X10AA BRISC CPU will cause an increase in program  
0 store requirements of about 1.6 times the existing amount for

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0 68020 and 68030 processors. Some of this increased requirement  
0 will be offset by the additional memory on the NT9X10AA BRISC CPU  
0 CP.

0 The NT9X10AA BRISC CPU does not support the NT9X14BB 6MB memory  
0 packs. Existing NT9X14BB memory packs must be replaced by an  
0 equivalent amount of memory using NT9X14DB 24MB memory packs.

0 MEMCALC for Series 40 should be used for BRISC offices with soft-  
0 ware loads less than BCS34. MEMCALC for Series 50 should be used  
0 for BRISC offices with software loads BCS34 and greater.

#### 0 1.4 REAL TIME IMPACT

0 The NT9X13JA CPU 68020 20 MHz CP provides from 1.2 to 1.4 times  
0 the capacity of the NT-40 at introduction based on current stand-  
0 ards of benchmarking criteria.

0 The NT9X13BC is the baseline offered MC68020 based circuit pack,  
0 which provides 2.0-2.2 times capacity of the Central Control Com-  
0 plex (NT-40) based on the current standards of benchmarking cri-  
0 teria.

0 The NT9X13GA CPU 68030 33 MHz CP provides 1.4 - 1.5 times the  
0 real time capacity of the current NT9X13BC CPU circuit pack or  
0 2.9 - 3.0 times the capacity of the NT-40 at introduction based  
0 on current standards of benchmarking criteria.

0 The NT9X13HB CPU 68030 40 MHz CP provides 1.7 - 1.8 times the  
0 real time capacity of the current NT9X13BC CPU CP or 3.4 -3.8  
0 times capacity of the NT-40 at introduction based on current  
0 standards of benchmarking criteria.

#### 0 BRISC

0 The NT9X10AA BRISC CPU will provide a real-time performance gain  
0 of 2.5 times over the NT9X13BC CPU. The NT9X10AA may replace ex-  
0 isting 68020 and 68030 processor cards, provided the correspond-  
0 ing paddleboard is also replaced and a BRISC software load is  
0 utilized.

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0 2.0 CCC Frames NT3X45EA and NT3X45EW

0 The CCC consists of a duplicated set of Central Processing Units  
0 (CPUs), Program Store (PS), Data Store (DS) and Central Message Control-  
0 lers (CMCs).

0 The duplicated MDC provided here is capable of interfacing all CPU pe-  
0 ripherals (NET & IOC) as CMC0:00 & CMC1:00. It can additionally  
0 interface directly to a limited number of I/O devices while function-  
0 ing as IOC:00 & IOC:01.

0 Caution: If used to interface Magnetic Tape Drive (MTD) as IOC:00 or  
0 IOC:01 then the CCC and MTC/IOE frames must be located adjacent to  
0 each other.

0 The duplicated CPM accommodates up to 7.75 M-Word of PS memory. No  
0 memory card is required for spare as a spare row of memory devices on  
0 the controller will serve as the "HOT" spare.

0 Program Store serves as a repository for the programs required for  
0 call processing, administration, maintenance, and the operating system.  
0 Data store contains the transient or per call information and the cus-  
0 tomer or office parameters.

0 2.1 HARDWARE PROVISIONING

0

0 2.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 2.1.2 HARDWARE DEPENDENCIES

0

0 Not applicable.

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0 2.1.3 PROVISIONING CONSIDERATIONS

0 The NT3X45EW is a double bay frame consisting of two (2) identical Central Control Complex (CCC) bays. Each CCC has the following shelf designations;

| CCC bay 0       | CCC bay 1       | shelf<br>pos |
|-----------------|-----------------|--------------|
| NT3X45EW        |                 |              |
| MDC0:00         | MDC0:00         | 65           |
| CPM0:00         | CPM1:00         | 51           |
| FSP             | FSP             | 45           |
| DS0:00          | DS1:00          | 32           |
| FILLER PANEL    | FILLER PANEL    | 18           |
| DC COOLING UNIT | DC COOLING UNIT | 04           |

0 The Central Message & I/O Device Controller, MDC module is located on shelf mounting position 65. The bare shelf assembly does not become an MDC until the CCC is equipped with one (1) NT3X45EV, CCC Common CP. There are two (2) MDC per CCC.

0 The Central Processor & Memory, CPM module is located on shelf mounting position 51. The bare shelf assembly does not become a CPM until the CCC is equipped with one (1) NT3X45EV, CCC Common CP. There are two (2) CPM per CCC.

0 The Data Store, DS module is located on shelf mounting position 32. The bare shelf assembly does not become a DS until the CCC is equipped with one (1) NT3X45EV, CCC Common CP. The DS in position 32 can provide up to 15.75 M-Word of DS memory.



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0 The following is a list of major provisionable circuit packs to  
0 the CCC.

0 CCC Common Circuit Packs - NT3X45EV  
0 Enhanced CPU Capacity Circuit Packs- NT3X45EH  
0 Enh Loadroute/CPU Capacity CP - NT3X45EK  
0 Processor 8KW ROM CP - NT1X46EA  
0 Synchronization - NT3X13BA, NT3X14BC, NT3X15BB/CA/DA  
0 Network Interface - NT1X36BB  
0 I/O Device Controller - See Engineering Manual  
0 Power Converter - NT2X70AE, NT2X70BA  
0 E2A Telemetry - NT1X42AA, NT1X48CA  
0 Program/Data Store Memory - NT4X80AA  
0 Refer to Attached Eng Man Sections for a complete list of provi-  
0 sioning criteria.

0 2.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 2.1.5 TRAFFIC TABLES

0  
0 Not applicable.

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0 2.2 PRODUCT/SYSTEM SPECIFICATION

0

0 2.2.1 PHYSICAL CHARACTERISTICS

0

0 The NT3X45EW is the latest vintage of CCC. All earlier versions  
0 of the CCC have been Manufactured Discontinued.

0 2.2.2 POWER/HEAT DISSIPATION

0

0 1720 Watts for the CCC.

0 2.2.3 CURRENT DRAIN

0

0 25 Amps for the CCC.

0 2.2.4 FUSING REQUIREMENTS

0

0 4 - 20 Amp fuses

0 2 - 5 Amp fuses

0

0

0 Host - Central Control Equipment  
0 Chapter 22

0 2.2.5 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 2.2.6 SPARING INFORMATION

0  
0 Standard Sparing shall apply.

0 2.3 SOFTWARE PROVISIONING

0

0 2.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not applicable.

0 2.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 2.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0  
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0

0 NORTHERN TELECOM  
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0 2.4 REAL TIME IMPACT

0 Not applicable.

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0 CHAPTER 23

0 HOST - PHYSICAL EQUIPMENT

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Host - Physical Equipment  
Chapter 23

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0 1.0 Isolated System Grounding (ISG)

0 Presently, in the stocklist of most DMS-100F frames there is a  
0 busbar assembly called a logic return (where shelf logic grounds  
0 are connected) which runs vertically up but electrically isolated  
0 within each frame. This busbar is terminated with a braid con-  
0 nection to another copper busbar located above each frame called  
0 the frame ground. Each overhead frame ground busbar is connected  
0 to an adjacent frame's overhead busbar in an equipment lineup.  
0 Each lineup's frame ground is connected to a local Power Distrib-  
0 ution Center (PDC) where a final connection is made to the Cen-  
0 tral Office (CO) ground.

0 A new grounding topology is being applied to DMS family systems.  
0 The basic principles of the new grounding system are as follows:

- 0 1. The logic return is to be isolated from the framework ground  
0 overhead busbar.
- 0 2. Miscellaneous hardware such as HP MTDs, Digital Alarm Scanner  
0 (DAS) etc. must be electrically isolated from the framework upon  
0 which they are mounted.
- 0 3. Individual frame line ups must be electrically isolated by the  
0 use of isolation hardware.
- 0 4. LCE, RLCM, LME, RLM, ISLM and TME frames have the logic return  
0 referenced to the battery return at the frame.

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0 5. When ISG is being applied to an office, LCE frames and their associated controller frames (i.e. LGE/LTE/RCE/RCME/SME) must be served by the same PDC frame.

0 Similarly, the MS7E frames and their associated ST7E frames must be powered from the same PDC frame. However, the MS6E frames and the ST6E frames do not need to be powered from the same PDC frame.

0 In an ISDN application, the ISLM and the IAC controller frame must be grouped together on the same PDC frame.

0 In addition, the LTE, LGE, DTE, RCE, SME, RCME, IAC, MS7E and ST7E frame logic returns must be connected to the battery return plate of the same PDC from which they are powered.

0 Also, the CCC, MEX, IOE, MOE, Dedicated MIS, and Supernode frames must all be cabled to the same LRB. This LRB shall be located above the IOE frame, and dedicated to the above mentioned frames only. No other frame type can ever be cabled to this particular LRB. Other frame types in the same lineup must be cabled to a separate LRB. Both of these LRBs must be separately cabled to the LRE.

0 6. Only current loop VDU or printers may be connected directly to the IOC modules. Current loop devices may be powered from non-isolated inverters located in Standard MIS Frames.

0 EIA ports (for VDU or printers) must be connected through modems. No direct connections from VDU or printers to EIA ports are allowed. (Note - If a local EIA modem to modem arrangement is desired, both the DMS modem and the device end modem cannot co-exist in DMS frames. The device modem must be located away from any DMS frame.) The device end modem may be powered from a non-isolated inverter located in a Standard MIS Frame. However, the DMS modem must be powered from an isolated inverter located in a Dedicated MIS/Modem Frame. This Dedicated MIS/Modem Frame can only contain modems and the inverters used to power these modems.

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- 0 7. For the isolation of modem equipment, the following provisioning  
0 guidelines must adhere;

0 CANADIAN APPLICATIONS - (Host & Remote Offices)

0 Provision modem shelves on either an Input/Output Equipment Frame  
0 (IOE) or a Modem Equipment Frame (MOE). Refer to ECM 321 for  
0 provisioning guidelines on the Modem Equipment frame. For mount-  
0 ing modems on IOE frames the following rules apply:

0 1) DC Modem Shelves must be isolated from the equipment frame  
0 and the shelf chassis must be connected to the logic return  
0 busbar. One (1) NT4X2591 Data Unit Grounding and Mounting  
0 Hardware Kit must be provided per DC modem shelf provisioned  
0 to isolate the shelf from the frame and to connect the chas-  
0 sis to the logic return busbar. The DC modem shelves must be  
0 fused directly to the PDC.

0 2) AC Modem Shelves must be powered from an inverter that is  
0 mounted on the same frame. The inverter must be isolated  
0 from the framework and its chassis must be connected to the  
0 logic return busbar. Provision one (1) NT0X0009 Cable assem-  
0 bly for an inverter located in position 04 on an IOE frame.  
0 Provision one (1) NT0X4306 Cable Assembly for an inverter lo-  
0 cated in any other position on the IOE Frame.

0  
0 U.S. APPLICATIONS - (Remote Offices)

0 Initial Remote offices (RLCM,RLM,RSC) can provide modem equipment  
0 and associated inverters in any RME/RSE frame only if a logic  
0 ground bar is provisioned with the frame. Note that  
0 modems,VDU,printers or other devices connected to modems (through  
0 the EIA connection) must be powered from isolated DMS-100F sup-  
0 plied inverters. For the modems and inverters in a Remote Of-  
0 fice, apply the same grounding rules that are used in Host  
0 Offices.

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0 U.S. APPLICATIONS - (Host Offices)

0 Provision modem equipment on a Miscellaneous Equipment Frame  
0 (MIS), NT0X02AB, dedicated for modem equipment, and enhanced for  
0 ISG as follows;

0 | 1) A Ground Material Assembly, NT0X9594, which contains a logic  
0 return busbar must be provisioned for each MIS Frame that is  
0 dedicated for modem equipment.

0 2) DC Modem Shelves must be isolated from the equipment frame  
0 and the shelf chassis must be connected to the logic return  
0 busbar. One (1) NT0X0050 Modem Shelf Grounding Hardware Kit  
0 must be provided per DC modem shelf to isolate the shelf from  
0 the frame and to connect the chassis to the logic return  
0 busbar.

0 3) AC Modem Shelves must be isolated from the equipment frame  
0 and the shelf chassis must be connected to the logic return  
0 busbar. One (1) NT0X0050 Modem Shelf Grounding Hardware Kit  
0 must be provided per AC modem shelf to isolate the shelf from  
0 the frame and to connect the chassis to the logic return  
0 busbar.

0 AC Modem Shelves must be powered from an inverter that is  
0 mounted on the same frame. The inverter must be isolated  
0 from the framework and its chassis must be connected to the  
0 logic return busbar. Provision one (1) NT0X0009 Cable assem-  
0 bly per NT0X87AA inverter or one NTMX1665 isolation kit per  
0 LaMarche inverter located in a MIS frame.

0 4) The Digital Alarm Scanner (DAS) unit must be mounted on a  
0 Dedicated MIS/Modem Frame enhanced for ISG. The DAS unit  
0 must be isolated from the equipment frame and the unit chas-  
0 sis must be connected to the logic return busbar using a  
0 NT0X9502 cable assembly.

0 5) Common Equipment Shelves must be isolated from the equipment  
0 frame and the shelf chassis must be connected to the logic  
0 return busbar. For this purpose, one (1) NT0X0009 cable as-  
0 sembly has been provided in the stocklist of each common  
0 equipment shelf.

0 Common Equipment Shelves must be powered from an inverter  
0 that is mounted on the same frame. The inverter must be iso-  
0 lated from the framework and its chassis must be connected to  
0 the logic return busbar. Provision one (1) NT0X0009 Cable

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0 assembly per NT0X87AA inverter or one NTMX1665 isolation kit  
0 per LaMarche inverter located in a MIS frame.

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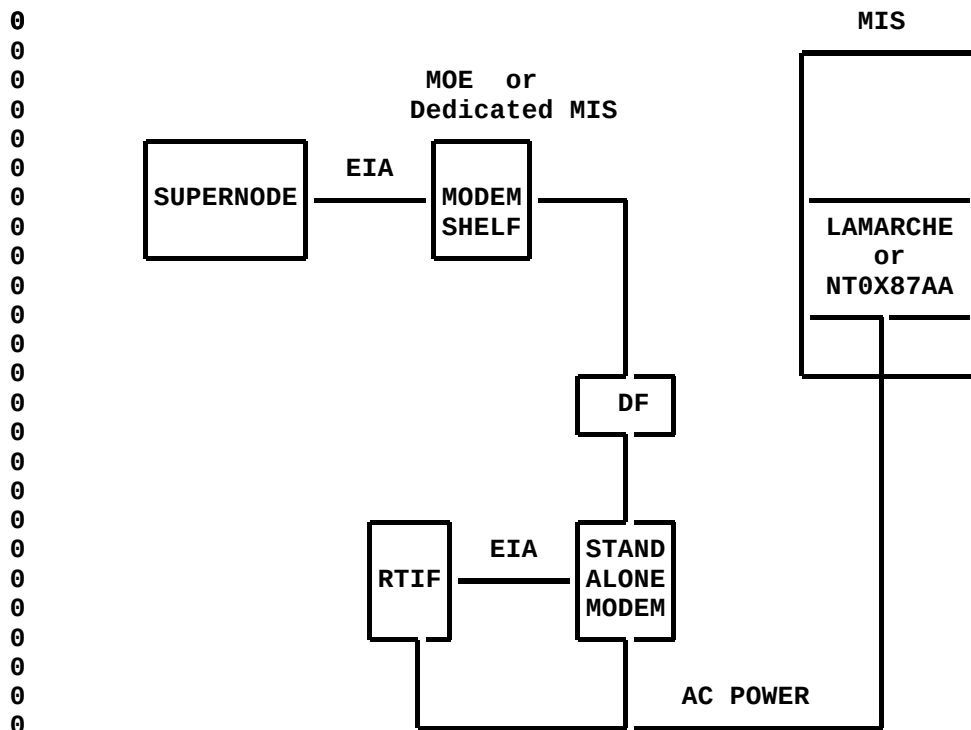
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0 8. If a Supernode is equipped with the Enhanced RTIF circuit pack (NT9X26AB) and the 20mA current loop local port is used, an approved 20mA current loop equipped VDT can be cabled directly to the Supernode RTIF. This connection is ISG compliant. (NOTE: The local port of the Enhanced RTIF circuit pack (NT9X26AB) can be used as either a 20mA current loop or RS232C EIA port.)

0 If the Supernode is equipped with the NT9X26AA RTIF circuit pack or the RS232C local port of the NT9X26AB is used, the following paragraph still applies to maintain ISG compliance:

0 RTIF terminals connected to a Supernode via EIA must be connected through back to back modems or RAD units (U.S. Only). In addition, the terminal and the stand alone modem must be powered from an inverter mounted on a MIS frame, See Figure 1.  
0 NT recommends provisioning one (1) inverter for each RTIF terminal, and these inverters shall alternate between A-power and B-power.



0 Figure 1: RTIF Terminal Connection

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0 9. Digital Packet Network (DPN) equipment that is colocated with DMS  
0 equipment must conform to the DMS Family grounding requirements:

- 0 - signal ground isolated from framework
- 0 - battery return isolated from framework
- 0 - framework isolated from incidental ground

0 DPN equipment power must be obtained from a source referenced to  
0 the DMS ground window.

0 Also, DPN equipment requires its own separate FBE and LRE.

0 10. Provide cable braid assy NT0X9587 and hardware NT4X0040 for the  
0 NT4X00AF shelf's first DDU if its serving NT1X55DA IOC circuit  
0 pack is in the same frame as the DDU Shelf.

0 Provide cable braid assy NT0X9501 and hardware NT4X0040 for the  
0 NT4X00AF shelf's second DDU if its serving NT1X55DA IOC circuit  
0 pack is in the same frame as the DDU Shelf.

0 When the serving NT1X55DA IOC CP is in a different frame from  
0 the DDU Shelf, refer to CA0X15 item 1AZ.

0 11. The LIM Frame logic ground is to be referenced to the LIM LRB  
0 when it is located in a DMS-100 frame equipment row utilizing  
0 DMS-100 frame style cable troughs. When the LIM is located in a  
0 typical equipment row with Supernode frames only, reference the  
0 logic ground to the LRB which is located above each LIM cabinet.  
0 Provide NT0X0008 ground straps to be used to strap the logic  
0 grounds of each succeeding LIM cabinet to the preceeding LIM cab-  
0 inet beside it.

0 12. For the isolation of SCP equipment, the following provisioning  
0 guidelines must adhere;

0 CANADIAN APPLICATIONS (SCP Offices)

0 1) Service Control Point (SCP) MIS frames containing Lan Inter-  
0 face Units (LIU) and associated modem equipment shall be  
0 treated as a separate equipment lineup with respect to Logic  
0 Return and be referenced to a separate LRB. Each SCP MIS  
0 Frame containing an LIU must have its frame Logic Return Bar  
0 referenced back to the LRB over the MIS frame containing the  
0 modems that serve it. No other equipment may share or be as-

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0 sociated with LIU Modems or its LRB. DC-AC inverters used to  
0 power modems and LIU equipment must be located within DMS MIS  
0 frames. MIS frames equipped with LIU and associated modems  
0 must not be used to contain non-LIU equipment.

0 2) All SCP and DNC equipment shall be powered from the same DC  
0 Power Plant. All AC powered equipment and facilities inter-  
0 facing with DMS must conform with ISOX07ZA.

0 3) For raised floor applications, the floor framework shall be  
0 referenced to the Integrated Collector Bus (ICB) from diag-  
0 onal points with at least two (2) #6 Awg cables. For floor  
0 mounted applications, the metallic pedestals associated with  
0 the DNC equipment must be isolated from any incidental con-  
0 tact with ground in accordance with DMS specifications.

0 4) The DNC FBE is local to the DNC equipment and is intended to  
0 serve as a collector point for all DNC cables that must be  
0 connected to the SPG. It is intended to facilitate cabling  
0 whenever the DNC equipment is located away from SPG or quan-  
0 tity of cables to be terminated is large. DMS FBE cables can  
0 not be referenced to the DNC FBE or vice versa since the DNC  
0 operates as a separate entity. However, it may be omitted and  
0 cables taken directly to the SPG if the specific configura-  
0 tion permits.

0 5) All signal interconnections, such as RS232, within DMS or be-  
0 tween DMS and any other equipment must be configured to avoid  
0 metallic connections that form ground loops.

0 6) The ICB is an isolated copper busbar that serves as a ground  
0 reference point for all non-DMS metallic objects that are  
0 within 2 meters (7 ft.) of DMS but originate outside the DMS  
0 area and are not already connected to the SPG. All sections  
0 of cable rack and auxilliary framing shall have all sections  
0 that are located within 7 ft. of DMS electrically connected  
0 to adjacent sections and bonded to the ICB. Bonding between  
0 adjacent sections may be accomplished by using a #6Awg cable  
0 and two hole lug terminated at each end to a paint free,  
0 clean and dry area on each section, or other approved mechan-  
0 ical methods. An oxide inhibiting compound such as Burndy  
0 NO-OX-ID shall be applied to each connection. This bonding  
0 together forms a continuous electrical path. The closest sec-  
0 tion to the ICB shall be connected to the ICB with #6Awg ca-  
0 ble and two hole lugs.

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0 13. The preferred method for new installations of Maintenance and Ad-  
0 ministration Positions (MAP) is to locate the MAP in the Common  
0 Bonding Network (IMAP). The alternative installation method is to  
0 locate the MAP in the Isolated Bonding Network (MAP). It is re-  
0 commended that the IMAP be located on the same floor with the DMS  
0 and grounded to the DMS-SPG. When providing MAP/IMAP equipment,  
0 the following provisioning guidelines must adhere:

0 CANADIAN and U.S. APPLICATIONS (MAP/IMAP)

- 0 1) MAP PAC poles must be isolated from foreign grounds such as  
0 walls, ceilings, non-DMS metallic objects. Applies to ISG  
0 and NON-ISG offices.
- 0 2) IMAP PAC poles must be isolated from DMS, referenced to  
0 non-DMS essential or protected A.C. ground through the PAC  
0 pole green wire. Isolation from foreign grounds is not re-  
0 quired. Applies to ISG and NON-ISG offices.
- 0 3) MAP and IMAP PAC poles cannot be fed from two A.C. sources  
0 simultaneously.
- 0 4) IMAP furniture must be isolated from DMS and grounded to the  
0 C.O. Ground Bus when DMS inverters are required when RS-232  
0 communications are used. Applies to ISG and NON-ISG offices.
- 0 5) MAP furniture must be isolated from foreign grounds and  
0 grounded to the DMS SPG. Applies to ISG and NON-ISG offices.
- 0 6) All communication links between IBN and CBN equipment should  
0 be made by using AC coupled subsystems such as back to back  
0 modems, isolation transformers, current loops or fiber optic  
0 links.
- 0 7) IMAP/MAP communication links shall be current loop or modem  
0 to modem. In NON-ISG offices, power for the MAP can be ob-  
0 tained from the DMS inverters or protected AC providing the  
0 feeder for the protected A.C. is referenced to the DMS SPG.  
0 All communication links to and from Isolated Bonding Network  
0 (IBN) equipment shall be A.C. coupled. When modem to modem  
0 connection connects equipment in different buildings, the  
0 modem line should be protected against exposure to power con-  
0 tact or lighting activity.
- 0 8) A.C. power for the MAP shall be obtained from within the IBN  
0 DMS-based inverters preferably located in a MIS frame and  
0 referenced to Framework Bonding Bus (FGB).

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0 9) A.C. power for the IMAP shall be obtained from within the  
0 Common Bonding Network (CBN). If the customer requires pro-  
0 tected AC for the IMAP equipment it shall be provided by us-  
0 ing an inverter, or an inverter with AC transfer switch, or a  
0 UPS system. If the inverter is used, the Battery Return (BR)  
0 and -48V lead shall be insulated from any part of the IMAP  
0 CBN unless fed from a power plant dedicated to CBN equipment  
0 or unless the BR bus of the power plant is used as the DMS  
0 SPG.

0 10) The IMAP furniture is to be referenced to a recognized  
0 grounding bus such as the closest Framework Bonding Network  
0 (FBN). This bus shall be located outside of the DMS SPG.  
0 IMAP shall not share the same enclosed floor area with the  
0 MAP. If this is requested by the customer, the 2 meter rule  
0 must be adhered to.

0 11) A PAC pole shall not be fed from two AC power sources  
0 simultaneously unless they originate from the same AC panel  
0 and are controlled by a double pole breaker. For U.S. instal-  
0 lations, the AC wiring of PAC poles and inverters shall be  
0 fixed wiring in accordance with NEC rules for facility wir-  
0 ing.

0 System Application Engineering is to provision the VDU's,  
0 printers, and IMAP/MAP furniture. Building Studies will fur-  
0 nish the PAC pole, conduit, wiring, miscellaneous hardware,  
0 etc.

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0 14. COMMERCIAL AC FREE (Canada and U.S. Applications)

0 The Commercial AC Free System is being introduced to allow the  
0 installation and reconfiguration of DMS-100 switching systems in  
0 which no commercially derived AC power is permitted within the  
0 DMS-100 switching system.

0 Commercial AC Free system has three major componets which are:

0 Center Aisle Lighting  
0 Low voltage controlled lighting  
0 Inverter powered end aisle outlets

0 The Center Aisle Lights are isolated from the DMS switching  
0 equipment and controlled by low voltage relays operated by  
0 switches mounted on the end guards. End aisle recepticals are  
0 powered from LaMarche inverters mounted in MIS frames located in  
0 every other lineup. Base outlets are not provided or supported by  
0 AC Free.

0 AC Free can be applied to both ISG and NON-ISG grounded systems.  
0 Existing offices with DMS frame mounted lighting can be converted  
0 to AC Free lighting by removing commercial AC circuits for light-  
0 ing and base outlets, replacing end guard assemblies and install-  
0 ing inverters and MIS frames as required.

0 In an AC Free system no Alternating Current Equipment Ground  
0 (ACEG) conductor, enclosure, raceway, box or fitting containing  
0 an ACEG conductor that is connected to the commercial AC system  
0 shall be allowed to be bonded to any part of the IBN equipment.  
0 Center aisle lighting with low voltage control switching or cus-  
0 tomer provided lighting not connected to the DMS equipment is a  
0 prerequisite for the AC Free option.

0 The recommended configuration for AC outlets is to locate  
0 LaMarche 500 watt inverter in a MIS frame in every odd lineup.  
0 Standard (brown) AC outlets shall be installed on the end guards  
0 of every odd lineup along with optional low voltage control  
0 switch.

0 If the AC Free option is to be provided, the MIS frame and  
0 inverters are to be provisioned by the SAE. The end guards, cen-  
0 ter aisle lighting, low voltage control, switches, outlets, etc.  
0 are to be provisioned by Building Studies.

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0 1.1 HARDWARE PROVISIONING

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0 1.1.1 HARDWARE USAGE RESTRICTIONS

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0 N/A

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0 1.1.2 HARDWARE DEPENDENCIES

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0 N/A

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0 P AND C SIDE PORT REQUIREMENTS

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0 N/A

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0 DMS BUS PORT REQUIREMENTS

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0 N/A

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0 CIRCUITS PER CARD

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0 N/A

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0 DISCRIMINATION NUMBERING

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0 N/A

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0 1.1.3 PROVISIONING CONSIDERATIONS

0

0 ISG shall be applied to all new Host and Remote DMS-100F offices.

0 Existing U.S. offices have the option of provisioning ISG or  
0 maintaining the current office grounding method. Refer to the  
0 ISG UPGRADE Section in this ECM for information on upgrading ex-  
0 isting offices to ISG (Isolated System Grounding). Also, refer  
0 to availability reports to identify valid ordering dates.

0 For all other extensions to offices that use old grounding meth-  
0 ods, Isolated System Grounding will not be applied. The office  
0 will be extended using current grounding methods.

0 ISG will initially be applied to non-EMI offices. This document  
0 will be updated when information is available on ISG for EMI of-  
0 fices.

0 Provisioning - Non-ISG Method

0 Prior to the implementation of ISG, DMS frames were equipped with  
0 (always provided) ground straps that tied the logic return ground  
0 to the frame ground. These straps have now been removed from the  
0 frame stocklist and are now provisionable. When ISG is being ap-  
0 plied, these straps do not have to be provisioned. When extending  
0 an office using old grounding methods, these straps must be pro-  
0 visioned per Table A.

0

0 Table A

0

| FRAME     | DESCRIPTION                               | PROVISIONABLE<br>CABLE ASSEMBLY |
|-----------|-------------------------------------------|---------------------------------|
| IOE       | I/O Equipment Frame                       | NT0X0008                        |
| DCE       | Digital Carrier Equipment Frame           | NT0X0009                        |
| CCC       | Central Control Frame                     | NT0X0008                        |
|           |                                           | & NT0X0012                      |
| MEX       | Memory Extension Frame                    | NT0X0011                        |
| TAE       | Test Access Network Equipment Frame       | NT0X0008                        |
| DME       | Data Modem Extension Frame                | NT0X0008                        |
| NETC      | Combined Network Frame                    | NT0X0008                        |
| DSNE      | Double Shelf Network Equipment Frame      | NT0X0008                        |
| * LGE/LTE | Common Peripheral Controller Equip. Frame | NT0X0009                        |
| * DTE/SME | Common Peripheral Controller Equip. Frame | NT0X0009                        |

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|   |             |                                             |          |
|---|-------------|---------------------------------------------|----------|
| 0 | ILGE/IDTE   | Intl Common Periph Controller Equip. Frame  | NT0X0009 |
| 0 | N6E         | No. 6 Signalling Frame                      | NT0X0008 |
| 0 | MS6E        | Message Switching 6 Equipment Frame         | NT0X0008 |
| 0 | * MS7E      | Message Switching 7 Equipment Frame         | NT0X0009 |
| 0 | * ST6E/ST7E | Signalling Terminal 6/7 Extension Frame     | NT0X0009 |
| 0 | * RCE       | Remote Controller Equipment Frame           | NT0X0009 |
| 0 | * RCME      | Remote Control & Maintenance Equip. Frame   | NT0X0010 |
| 0 | DPCC        | Supernode Cabinets                          | NT0X9501 |
| 0 | SCC         | Supernode SE Combined Cabinet               | NT0X9501 |
| 0 | ENET        | Enhanced Network                            | NT0X0008 |
| 0 | LIM/LPP     | Link Interface Module/Link Peripheral Proc. | NT0X0008 |

0 Frames not included above have no Logic Ground Bus Bar assembly  
0 as part of their frame stocklist. As a result, no provisionable  
0 cable assembly is required.

0 \* For U.S. offices, these frames do not require the provisionable  
0 cable assembly when extending a non-ISG office with current  
0| grounding methods. Instead a provisionable switchboard cable is  
0 run from the Logic Ground bus bar assembly in each frame to the  
0 PDC battery return plate. (Refer to item 1GZ in the switchboard  
0 cabling section of this ECM)

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0 PROVISIONING - ISG METHOD

0 ISG provisioning is divided into two (2) sections; Logic Return  
0 and Frame Ground Return.

0 1. Logic Return

- 0 i. Each equipment row must have a Logic Return Busbar (LRB) provi-  
0 sioned for connection of logic return. If the following frames  
0 exist in a lineup, provision a LRB for that lineup.

| 0 | ABBR    | DESCRIPTION                                   |
|---|---------|-----------------------------------------------|
| 0 | # MIS   | - Miscellaneous Equipment Frame               |
| 0 | CCC     | - Central Control Complex                     |
| 0 | MEX     | - Memory Extension Frame                      |
| 0 | MTC     | - Mag Tape Center                             |
| 0 | IOE     | - Input Output Eqpt Frame                     |
| 0 | DCE     | - Digital Carrier Eqpt Frame                  |
| 0 | CCC     | - Central Control Complex                     |
| 0 | MEX     | - Memory Extension Frame                      |
| 0 | N6E     | - No. 6 Signalling Frame                      |
| 0 | TAE     | - Test Access Eqpt Frame                      |
| 0 | NETC    | - Network Combined Frame                      |
| 0 | * DTE   | - Digital Trunk Eqpt Frame                    |
| 0 | MS6E    | - Message Switch 6 Eqpt Frame                 |
| 0 | SCSE    | - Simplex Cell Site Eqpt Frame                |
| 0 | DME     | - Data Modem Expansion Frame                  |
| 0 | DSNE    | - Double Shelf Network Frame                  |
| 0 | DPCC    | - Supernode Cabinets                          |
| 0 | SCC     | - Supernode SE Combined Cabinet               |
| 0 | ENET    | - Enhanced Network                            |
| 0 | LIM/LPP | - Link Interface Module/Link Peripheral Proc. |

0 \* (applicable only on DMS-200,DMS-250 offices)

0 # (applicable to U.S. offices on MIS frames dedicated to  
0 modem equipment)

0 The LRB must never be mounted above a PDC frame or above the  
0 first frame of an eqpt row (with the exception of a single frame  
0 line-up).

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0 The CCC, MEX, IOE, MOE, Dedicated MIS, and Supernode frames must  
0 all be cabled to the same LRB. This LRB shall be located above  
0 the IOE frame, and dedicated to the above mentioned frames only.  
0 No other frame type can ever be cabled to this particular LRB.  
0 Other frame types in the same lineup must be cabled to a separate  
0 LRB. Both of these LRBs must be separately cabled to the LRE.

0 All LRB will terminate to the Logic Return Equalizer assembly  
0 (LRE).

0 Each LRE provides termination capabilities for 14 eqpt rows. A  
0 busbar extension plate assembly (NT0X0017) may be provisioned for  
0 each additional 14 equipment rows required.

0 ii. The following list of frames require a logic return connection  
0 direct to the LRE assembly.

| 0 | ABBR    | DESCRIPTION                                   |
|---|---------|-----------------------------------------------|
| 0 | LIM/LPP | - Link Interface Module/Link Peripheral Proc. |

0 Only the first LIM cabinet in an equipment row requires a logic  
0 return connection direct to the LRE assembly. For each succeed-  
0 ing LIM cabinet, provide one (1) NT0X0008 ground strap.

0 iii. The following list of frames require a logic return but do not  
0 require a connection to the LRB. Instead, a switchboard cable is  
0 run from the Logic Ground Bus Bar assembly at each frame to the  
0 PDC battery return plate which supplies their power.

| 0 | ABBR  | DESCRIPTION                                |
|---|-------|--------------------------------------------|
| 0 | LTE   | - Line Trunk Equipment Frame               |
| 0 | LGE   | - Line Group Equipment Frame               |
| 0 | * DTE | - Digital Trunk Equipment Frame            |
| 0 | SME   | - Subscriber Carrier Equipment Frame       |
| 0 | ILTE  | - International Line Trunk Equipment Frame |
| 0 | ILGE  | - International Line Group Equipment Frame |
| 0 | MS7E  | - Message Signalling 7 Frame               |
| 0 | ST7E  | - Signalling Terminal 7 Extension Frame    |
| 0 | ST6E  | - Signalling Terminal 6 Extension Frame    |
| 0 | RCE   | - Remote Controller Equipment Frame        |

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0 RCME - Remote Control & Maintenance Eqpt Frame  
0 RME - Remote Miscellaneous Equipment Frame  
0 IAE - Integrated Access Control Frame

0 \* (applicable in DMS-100 & DMS-100/200 Offices only)

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0 iv. The following list is the remainder of frames which either A)  
0 have no logic return and thus no connection to the LRB or B) have  
0 the logic return referenced to the battery return of the frame  
0 and thus circumvent connection to the LRB. No provisioning  
0 action is required to terminate the logic return to any frame  
0 listed below.

0 (A) FRAMES WITHOUT A LOGIC RETURN

| 0 | ABBR | DESCRIPTION                          |
|---|------|--------------------------------------|
| 0 | IAE  | - Integrated Access Control Frame    |
| 0 | MIS  | - Miscellaneous Eqpt Frame           |
| 0 | DNI  | - Digital Network Interconnect Frame |
| 0 | SLC  | - Speech Link Connector Frame        |
| 0 | MSS  | - Maintenance Spare Storage          |
| 0 | MRFF | - Master Reference Frequency Frame   |
| 0 | KSE  | - 1A2 Key System Frame               |

0 (B) FRAMES WITH A LOGIC RETURN REFERENCED TO BATTERY RETURN

| 0 | ABBR | DESCRIPTION                             |
|---|------|-----------------------------------------|
| 0 | TME  | - Trunk Module Eqpt Frame               |
| 0 | LME  | - Line Concentrating Eqpt Frame         |
| 0 | RLCM | - Remote Line Concentrating Eqpt Module |
| 0 | ISLE | - ISDN1A Service Line Module Frame      |
| 0 | ISLE | - ISDN Service Line Module Frame        |
| 0 | LME  | - Line Module Eqpt Frame                |
| 0 | RLM  | - Remote Line Module Eqpt Frame         |

0  
0 2. Framework Ground

0 In each equipment row the framework grounds are consecutively  
0 terminated to the overhead busbars. Each equipment row requires  
0 a switchboard cable to the Framework Bonding Equalizer (FBE)  
0 splice plate assembly in the following arrangement:

0 For equipment rows not containing a PDC, the first overhead  
0 busbar (located above the first frame) in each lineup is  
0 cabled to the FBE splice plate assembly.

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0 For equipment rows containing a PDC, the overhead busbar  
0 (located above the PDC) is cabled to the FBE splice plate  
0 assembly regardless of location within the equipment lineup.

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0 PROVISIONING HARDWARE - HOST OFFICE

0 The following is a list of hardware required for Isolated System  
0 Grounding (ISG):

0 NT0X00BB - ISG Label

0 Provision one (1) per host office. ISG label to be placed at the cen-  
0 ter left hand side of Frame Supervisory Panel (FSP) at Power Distrib-  
0 ution Center - 00 (PDC 00). (Provisioned by Equipment Application  
0 Engineering)

0 NT0X00ZA - Splice Plate Assemblies

0 Provision one (1) per host office. Provides hardware for Logic Return  
0 Equalizer (LRE) and Framework Bonding Equalizer (FBE) Splice Plate As-  
0 semblies.

0 Provide one (1) NT0X00ZA for Digital Packet Network (DPN) equipment  
0 colocated with DMS-100 Family equipment.

0 The DPN LRE and FBE busbars shall be located in close proximity to the  
0 DMS LRE and FBE busbars.

0 The DMS LRE and FBE will mount adjacent to cable trough. The NT0X00ZA  
0 provides capability to terminate 14 equipment rows requiring logic  
0 ground (not every row will require logic ground) and 14 equipment rows  
0 requiring frame ground (every equipment row will require frame  
0 ground). Equipment rows physically broken by a column shall be con-  
0 sidered as separate equipment row with respect to ISG. (Provisioned  
0 by Building Studies Engineering)

0 NT0X00WA - Splice Plate Assembly

0 Provision one (1) per host office equipped with DNC equipment. The  
0 NT0X00WA is an Framework Bonding Equalizer (FBE) specified for DNC  
0 equipment only. The DNC framework and logic ground are tied together  
0 and therefore must be kept separate from DMS equipment grounds. No DMS  
0 equipment ground cables may be referenced to DNC-FBE or vice versa.  
0 The DNC-FBE is to reference the same SPG as associated host office  
0 equipment.

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## 0 NT0X0013 - Isolation Hardware

0 Provision Isolation Hardware for each mounting screw required for all  
0 Miscellaneous frame mounted equipment. Quantity will vary with the  
0 number of mounting holes required. Some NT manufactured miscellaneous  
0 equipment have had their stocklist updated to always provide the Iso-  
0 lation Hardware. Review the Miscellaneous Frame Equipment section of  
0 this document for a complete list. (Provisioned by Equipment Applica-  
0 tion Engineering)

## 0 NT0X0015 - Logic Return Busbar Assembly (LRB)

0 One (1) LRB is provisioned per equipment row equipped with frames re-  
0 quiring logic return. Each LRB can terminate up to 10 equipment bays  
0 (maximum five (5) bays on either side of the LRB). LRB assemblies may  
0 be multiplied together in a single equipment row to accommodate longer  
0 line-ups. The furthest point of the logic return run from the LCE  
0 splice plate to the last equipment frame requiring logic shall not ex-  
0 ceed 28.4 MT. LRBs are located at "convenient" locations above each  
0 line-up not above PDC or over first frames in eqpt rows except single  
0 bay lineups. (Provisioned by Building Studies Engineering)

## 0 NT0X0017 - Busbar Hardware (LRE &amp; FBE extension plate assemblies)

0 Provision one (1) NT0X0017 for each additional 14 equipment rows be-  
0 yond the original capacity supplied in NT0X00ZA. (Provisioned by  
0 Building Studies Engineering)

## 0 NT0X0018 - Cable Termination Hardware

0 One (1) NT0X0018 is provisioned for each application as follows;

- 0 - each FBE connection to the first frame/PDC in line up
- 0 - each LRB to LRE connection

0 (Provisioned by Equipment Application Engineering)

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## 0 NT0X0042 - Cable Termination Hardware

0 One (1) NT0X0042 is provisioned for each DMS frame (from the Logic  
0 Ground Busbar assembly) to LRB connection requiring logic return.  
0 (Provisioned by Equipment Application Engineering)

## 0 NT0X0043 - Cable Termination Hardware

0 One (1) NT0X0043 is provisioned for each DMS frame (from the Logic  
0 Ground Busbar assembly) to PDC connection requiring logic return.  
0 (Provisioned by Equipment Application Engineering)

## 0 NT0X0020 - Cable Termination Hardware

0 One (1) NT0X0020 is provisioned for each LRB to LRB connection (for  
0 long equipment row application).

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0 PROVISIONING HARDWARE - REMOTE OFFICE

0 The following is a list of hardware required for Isolated System  
0 Grounding (ISG):

0 NT0X000A - ISG Label

0 Provision one (1) per remote office. ISG label to be placed at the  
0 center left hand side of Frame Supervisory Panel (FSP) at Power Dis-  
0 tribution Center - 00 (PDC 00/RME 00). (Provisioned by Equipment Ap-  
0 plication Engineering)

0 NT0X0021 - FBE Remote Splice Plate Assembly

0 Provision one (1) per remote office. Provides hardware for Framework  
0 Bonding Equalizer (FBE) Splice Plate Assembly.

0 The DMS FBE will mount adjacent to cable trough. The NT0X0021 pro-  
0 vides capability to terminate six (6) equipment rows requiring frame  
0 ground (every equipment row will require frame ground). Equipment rows  
0 physically broken by a column shall be considered as separate equip-  
0 ment row with respect to ISG. Also, colocated ISG remotes can share a  
0 FBE splice plate assembly. (Provisioned by Building Studies Engineer-  
0 ing)

0 NT0X0013 - Isolation Hardware

0 Provision Isolation Hardware for each mounting screw on all miscella-  
0 neous frame-mounted equipment requiring isolation from framework.  
0 Quantity will vary with the number of mounting holes required. Some  
0 NT manufactured miscellaneous equipment have had their stocklist up-  
0 dated to always provide the Isolation Hardware. Review the Miscella-  
0 neous Frame Equipment section of this document for a complete list.  
0 (Provisioned by Equipment Application Engineering)

0 NT0X0018 - Cable Termination Hardware

0 One (1) NT0X0018 is provisioned for each application as follows;

0 - each FBE connection to the first frame/PDC in line up

0 (Provisioned by Equipment Application Engineering)

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0 Digital Carrier Equipment Frame (DCE) Provisioning (NT0X46AB)

0 The Logic ground bus bar assembly has been removed from the stocklist  
0 of the DCE frame and is now a provisionable item. As a result, the  
0 following items must be added to DCE provisioning;

0 NON-ISG APPLICATIONS

| 0 | PEC      | DESCRIPTION                       |
|---|----------|-----------------------------------|
| 0 | NT0X46AB | - Digital Carrier Equipment Frame |
| 0 | NT0X9504 | - Bus Bar Assembly                |
| 0 | NT0X0009 | - Cable Assembly (non-ISG)        |

0 ISG APPLICATIONS

| 0 | PEC      | DESCRIPTION                       |
|---|----------|-----------------------------------|
| 0 | NT0X46AB | - Digital Carrier Equipment Frame |
| 0 | NT0X9504 | - Bus Bar Assembly                |

0 Digital Carrier Module (DCM) and circuit pack provisioning remain un-  
0 changed for ISG or non-ISG.

0 NOTE: If the NT0X46AB equipment frame is configured as a Trunk Module  
0 Equipment Frame (TME), it is not necessary to provision the  
0 preceding equipment.

0 PDC Equalizer Cables

0 Each PDC provides an interface between A and B primary distribution  
0 feeders and up to 150 individual load within the DMS-100F. In non-ISG  
0 systems where more than one (1) PDC is provisioned, the primary dis-  
0 tribution battery return feeders are interconnected with 750 MCM ca-  
0 bles at the PDC to equalize the potential differences. In DMS-100F  
0 offices with ISG the 750 MCM equalizer cables are no longer required.

0 Power Plant Provisioning

0 In Canadian applications, the power plant engineering is subcontracted  
0 to the Power Division by means of a Power Division Subcontract Memo.  
0 The Customer Engineer must specify on this memo whether or not Iso-  
0 lated System Grounding is to be applied to the office. The Power Di-

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0 vision is responsible, in an office equipped with ISG, for the cabling  
0 from the DMS-Ground Window to the LRE and FBE plates.

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0 SWITCHBOARD CABLING

0 The switchboard cabling required for ISG implementation follows. Ref-  
0 erence CA0X04 01 22 or later.

| 0 | ITEM  | CABLE  | WIRE                              | ORIGINATION                                                                                                            | TERMINATION                                | NOTE                |
|---|-------|--------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------|
| 0 | _____ | _____  | _____                             | _____                                                                                                                  | _____                                      | _____               |
| 0 | 1GT   | LREP00 |                                   | DMS LRE PLATE                                                                                                          | DMS GROUND WINDOW                          | 2                   |
| 0 |       |        |                                   |                                                                                                                        |                                            |                     |
| 0 | 1GV   | FGEP00 |                                   | DMS FBE PLATE                                                                                                          | DMS GROUND WINDOW                          | 2                   |
| 0 |       |        |                                   |                                                                                                                        |                                            |                     |
| 0 | 1GZ   | DTPD00 | NS5482-01<br>1/6 AWG WIRE         | LTE, LGE, SME, DTE,<br>MS7E, ST7E, ST6E,<br>RCE, RCME, IAE, ILTE,<br>ILGE FRAME<br>(from Logic Grd<br>Busbar assembly) | PDC (battery<br>return plate)              | 1                   |
| 0 |       |        |                                   |                                                                                                                        |                                            |                     |
| 0 | 1GW   | ERFG00 | NS5482-01<br>1/0 AWG STRD<br>WIRE | PDC or FIRST<br>FRAME EQPT ROW                                                                                         | FBE PLATE                                  |                     |
| 0 |       |        |                                   |                                                                                                                        |                                            |                     |
| 0 | 1HE   | ERFG01 | NS5482-01<br>1/0 AWG STRD<br>WIRE | PDC or RME<br>IN REMOTE                                                                                                | FBE PLATE                                  |                     |
| 0 |       |        |                                   |                                                                                                                        |                                            |                     |
| 0 | 1HF   | ERLR02 | NS5482-01<br>1/0 AWG STRD<br>WIRE | FIRST LRB PLATE<br>IN EQPT ROW or<br>FIRST LIM FRAME<br>IN EQPT ROW                                                    | LRE PLATE                                  | 5, 12               |
| 0 |       |        |                                   |                                                                                                                        |                                            |                     |
| 0 | 1HG   | ERLR03 | NS5482-01<br>1/0 AWG STRD<br>WIRE | SUCCEEDING LRB<br>PLATE IN EQPT ROW                                                                                    | PRECEEDING<br>LRB PLATE                    | 5                   |
| 0 |       |        |                                   |                                                                                                                        |                                            |                     |
| 0 | 1HH   | ERLR04 | NS5482-01<br>1/6 AWG STRD<br>WIRE | LRB PLATE                                                                                                              | FRAMES WITH<br>LOGIC GROUND<br>BUSBAR ASSY | 1(b), 4,<br>5, 6, 7 |
| 0 |       |        |                                   |                                                                                                                        |                                            |                     |
| 0 | 1JC   | ERLR09 | NPS90508-03<br>1/0 AWG            | FIRST SUPERNODE<br>FRAME IN EQPT ROW                                                                                   | LRB PLATE<br>ASSOCIATED WITH               | 3, 4, 7             |
| 0 |       |        |                                   |                                                                                                                        |                                            |                     |

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0 STRD WIRE WITH SUPERNODE THE IOE FRAME  
0 FRAMES ONLY

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| 0 | ITEM  | CABLE  | WIRE                                | ORIGINATION                                             | TERMINATION                                             | NOTE  |
|---|-------|--------|-------------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------|
| 0 | _____ | _____  | _____                               | _____                                                   | _____                                                   | _____ |
| 0 | 1JD   | ERLR10 | NPS90508-03<br>1/0 AWG<br>STRD WIRE | LRB PLATE<br>ASSOCIATED WITH<br>SUPERNODE FRAMES        | LRB PLATE<br>ASSOCIATED WITH<br>THE IOE FRAME           | 3,4,7 |
| 0 | 1HN   | ERFG02 | NPS90508-03<br>1/0 AWG<br>STRD WIRE | FIRST NM FRAME<br>IN EQPT ROW                           | DPN FRAMEWORK<br>GROUND<br>EQUALIZER PLATE<br>DPN FBE   | 8     |
| 0 | 1HP   | ERFG03 | NPS90508-03<br>1/6 AWG<br>STRD WIRE | SUCCEEDING NM<br>FRAME                                  | PRECEEDING NM<br>FRAME                                  | 9     |
| 0 | 1HQ   | ERFG04 | NPS90508-03<br>1/0 AWG<br>STRD WIRE | FIRST AM/DIU<br>FRAME IN EQPT<br>ROW                    | DPN FRAMEWORK<br>GROUND<br>EQUALIZER PLATE<br>DPN FBE   |       |
| 0 | 1HR   | ERFG05 | NPS90508-03<br>1/6 AWG<br>STRD WIRE | SUCCEEDING<br>AM/DIU FRAME OR<br>SUCCEEDING AM<br>FRAME | PRECEEDING<br>AM/DIU FRAME OR<br>PRECEEDING AM<br>FRAME | 9     |
| 0 | 1HS   | ERLR05 | NPS90508-03<br>1/6 AWG<br>STRD WIRE | DPN NET MODULE<br>(NM)                                  | DPN LOGIC<br>RETURN EQUALIZER<br>PLATE DPN LRE          | 10    |
| 0 | 1HT   | ERLR06 | NPS90508-03<br>1/6 AWG<br>STRD WIRE | DPN AM/DIU<br>FRAME DIU PDU                             | DPN LOGIC<br>RETURN EQUALIZER<br>PLATE DPN LRE          | 11    |
| 0 | 1HU   | ERLR07 | NPS90508-03<br>1/6 AWG<br>STRD WIRE | SUCCEEDING<br>AM/DIU FRAME                              | PRECEEDING<br>AM/DIU FRAME OR<br>PRECEEDING AM<br>FRAME | 9,11  |
| 0 | 1HV   | ERLR08 | NPS90508-03<br>1/6 AWG<br>STRD WIRE | SUCCEEDING AM<br>FRAME                                  | PRECEEDING AM<br>FRAME OR<br>PRECEEDING<br>AM/DIU FRAME | 9,11  |

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0 SWITCHBOARD CABLING REMARKS

- 0 Item 1GZ - Provide qty (1) NT0X0043 cable termination hardware.
- 0 Item 1HE - For eqpt rows with PDC frames, run from PDC frames. For  
0 eqpt rows without PDC frames, run from first frame in eqpt  
0 row. Provide qty one (1) NT0X0018 cable term hardware.  
0 In Remotes, run from PDC or RME frame.
- 0 Item 1HF - Provide qty one (1) NT0X0018 cable term hardware.
- 0 Item 1HG - Multiple of item 1HF. Provide qty one (1) NT0X0020 cable  
0 term hardware.
- 0 Item 1HH - Maximum cable length 4.60 meters. For a Dedicated MIS or  
0 MOE Frame the maximum cable length is 15.0 meters.  
0 Provide qty one (1) NT0X0042 cable term hardware.
- 0 Item 1JC - Provide qty (1) NT0X0020 cable termination hardware.
- 0 Item 1JD - Provide qty (1) NT0X0020 cable termination hardware.
- 0 Item 1HN,1HP,1HQ,1HR,1HS,1HT,1HU,1HV - These items are for  
0 application of Isolated System  
0 Grounding to Digital Packet  
0 Network equipment located with  
0 DMS equipment.
- 0 Item 1HN - Provide 2 terminal lugs A0297944, 2 screws P0689176 and 2  
0 washers P0183152.
- 0 Item 1HP - Multiple cable of item 1HN. Provide 2 terminal lugs  
0 A0297943, 2 screws P097F814 and 2 washers P0423636.
- 0 Item 1HQ - Provide 2 terminal lugs A0297944, 2 screws P0689176 and 2  
0 washers P0183152.
- 0 Item 1HR - Multiple cable of item 1HQ. Provide 2 terminal lugs  
0 A0297943, 2 screws P097F814 and 2 washers P0423436.
- 0 Item 1HS - Provide one P0594332 and one A0344530 terminal lugs.
- 0 Item 1HT - Provide 2 terminal lugs as follows: A0344530 for LRE  
0 plate, A0297943 for NT9P23AA, A0288200 for NT9P11AA.  
0 Terminate on CONN TP4 PDU NT9P23AA and TB1 (1-4) for PDU  
0 NT9P11AA.

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0 Item 1HU - Originate and terminate on CONN PT4 for PDU NT9P23AA and  
0 TB1 (1-4) for PDU NT9P11AA. Provide 2 terminal lugs as  
0 follows: A0297943 for NT9P23AA, A0288200 for NT9P11AA,  
0 A0297943 for AM.

0 Item 1HV - Originate on CONN PT3 and terminate on CONN PT4 for PDU  
0 NT9P23AA and TB1 (1-4) for PDU NT9P11AA. Provide 2  
0 terminal lugs as follows: A0297943 for NT9P23AA, A0288200  
0 for NT9P11AA, A0297943 for AM.

0 Items 1GT & 1GV will be provisioned by Power Engineering.

0 Items 1GZ & 1HE-1HH will be provisioned by Equipment Application  
0 Engineering.

0 SWITCHBOARD CABLING NOTES:

0 1. A) LCE - LGE/LTE/RCME/RCE clusters, ISLE - IAE clusters, MS7E -  
0 ST7E and MS6E - ST6E clusters must be served by the same PDC.  
0 The LGE, LTE, DTE, IAE, RCME, RCE, MS7E, ST7E and ST6E frame  
0 logic return shall be connected to the battery return bus of  
0 the PDC that serves their power.

0 B) Do not run cable per item 1GZ for IDTE and DTE frames in  
0 DMS-250/200 offices (only for DMS-100 and 100/200 offices).  
0 Run per item 1HH instead.

0 2. A) Logic return and framework grounding conductors shall conform  
0 to the following:

0 Logic Return: From Single LR Bus to LRB: #6 AWG  
0 From LRB to LRE: 1/0AWG  
0 From LRE to SPG: 2/0 AWG up to 50 FT  
0 350MCM from 51 to 150 FT  
0 750MCM > 150 FT

0 Framework Ground: Single Conductor from Frame: #6 AWG  
0 From Lineup to FBE: 1/0AWG  
0 From FBE to SPG: 2/0 AWG up to 50 FT  
0 350MCM from 51 to 150 FT  
0 750MCM > 150 FT

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0 ICB to SPG: 2/0 AWG up to 50 FT  
0 350MCM from 51 to 150 FT  
0 750MCM > 150 FT

0 B) Provide the following hardware;  
0 for 1/0 AWG cable qty 2 A0286794 term lugs  
0 for 2/0 AWG cable qty 2 A0297945 term lugs  
0 for 350 MCM cable qty 2 A0297951 cable lugs  
0 for 750 MCM cable qty 2 A0297954 cable lugs

- 0 3. The Supernode cabinets are equipped to meet EMI specifications.
- 0 4. Supernode cabinets in equipment rows with other DMS-100 frames  
0 are connected using the established rules for grounding regular  
0 DMS-100 frames. An LRB plate mounted above the Supernode cabi-  
0 nets is a requirement for the ERLR10 cable run.
- 0 5. The total cable length of cables ERLR02, ERLR03 and ERLR04 from  
0 the furthest equipment frame (Logic Ground Busbar) requiring  
0 logic return shall not exceed 28.4 meters.
- 0 6. See "PROVISIONING - ISG METHOD item 1. Logic Return" in this ECM  
0 for a list of frames equipped with a Logic Ground Busbar.
- 0 7. The CCC, MEX, IOE, MOE, Dedicated MIS, and Supernode frames must  
0 all be cabled to the same LRB. This LRB shall be located above  
0 the IOE frame, and dedicated to the above mentioned frames only.  
0 No other frame type can ever be cabled to this particular LRB.  
0 Other frame types in the same lineup must be cabled to a separate  
0 LRB. Both of these LRBs must be separately cabled to the LRE.
- 0 8. When cable entry to the Network Module frame is from the top of  
0 the frame all power and ground cables must be shielded with a  
0 screening jacket. Connect ground screening jacket to upright of  
0 cabinet at a point as close to the entry point of these cables as  
0 possible. Provide the screening jacket and grounding hardware  
0 per DPN provisioning rules.
- 0 9. These cables run directly across the back of the frame without  
0 entering the cable trough.
- 0 10. Network Module Signal Ground cable must be shielded with a  
0 screening jacket. Connect ground screening jacket to upright of  
0 cabinet at a point as close to the exit point of signal ground  
0 cable as possible. Provide a ground screen cable jacket and  
0 grounding hardware per DPN provisioning rules.

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0 11. When Access Module (AM) is equipped on the same frame as the DIU,  
0 instruct the installer to multiple SIG GRD from AM shelf terminal  
0 PT3 to DIU PDU terminal PT4 for NT9P23AA or TB1 (1-4) for  
0 NT9P11AA.

0 Provide the following material:

0 1 Awg Strd Wire Black per NPS 90508-03 compression connectors as  
0 follows: A0297943 for AM shelf, A0297943 for NT9P23AA, A0288200  
0 for NT9P11AA.

0 12. Only the first LIM cabinet in an equipment row needs to be cabled  
0 directly to the LRE assembly. For each succeeding LIM cabinet in  
0 the lineup, provide one (1) NT0X0008 ground strap. The NT0X0008  
0 shall be used to strap the logic grounds of each succeeding LIM  
0 cabinet to the preceeding LIM cabinet beside it.

0  
0 MISCELLANEOUS FRAME EQUIPMENT

0 The Digital Alarm Scanner (DAS) unit must be mounted on a Dedicated  
0 MIS/Modem Frame enhanced for ISG. The DAS unit must be isolated from  
0 the equipment frame and the unit chassis must be connected to the  
0 logic return busbar.

0 Miscellaneous hardware such as HP MTDs, Digital Alarm Scanner (DAS),  
0 etc. must be electrically isolated from the framework upon which they  
0 are mounted.

0 Provision one (1) NT0X0013 Isolation Hardware in place of each mount-  
0 ing screw for each piece of miscellaneous equipment with a non-NT\_X\_\_  
0 Product Engineering Code (PEC) that is mounted in Miscellaneous Frame  
0 (NT0X02AB).

0 The following equipment (which mounts on a Miscellaneous Frame) have  
0 isolation hardware always provided as part of their stocklist. Any  
0 piece of equipment with a NT\_X\_\_ PEC which mounts on a MIS frame that  
0 is not on this list must have NT0X0013 Isolation Hardware provisioned  
0 to accommodate ISG.

0 (PLEASE NOTE: ALL isolated equipment in a MIS Frame must have one inch  
0 above and below the unit to accomodate the NT0X0013 requirement. This  
0 is to prevent the unit shorting against another unit.)

0                   PEC                   DESCRIPTION

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0 # NT5X69AA - Inactive System Timing Circuit  
0 NT5X58AA - 1A2 Key Telephone System  
0 NT5X55AA - 1A2 Key Telephone System Module  
0 NT5X09AA - Data Set (Modem) Shelf  
0 NT5X08AA - AC Modem Assy Modified Shelf  
0 \* NT0X87AA - Inverter Unit  
0 NT3X25AA - Common Equipment Shelf

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0 \* For NT0X87AA Inverter Units (on non-dedicated Mis frames)  
0 the following hardware must be ordered:  
0 qty 4 - P0284154 - Metallic Regular Washer  
0 4 - P0183220 - External Tooth Lock Washer  
0 4 - P097F813 - Mounting Screws  
0 This hardware replaces the Isolation Hardware NT0X0013 which is  
0 to be discarded.

0 \* For ISG applications of the LaMarche Inverter, provide one  
0 NTMX1657 (LaMarche Isolation Kit) per inverter installed in  
0 a Non-Modem MIS Frame. This kit provides all the mounting  
0 hardware required, therefore no other isolation kits are  
0 required.

0 # The inactive system timing circuit must be powered from an  
0 inverter mounted on the same MIS frame. The inverter shall be  
0 grounded to MIS framework per normal grounding procedures,  
0 (i.e. No NT0X0013 required). The inactive system timing  
0 circuit shall also be grounded to MIS framework using the  
0 following hardware:  
0 qty 1 - P0284154 - Metallic Regular Washer  
0 1 - P0183220 - External Tooth Lock Washer  
0 4 - P097F813 - Mounting Screws  
0 This hardware replaces the Isolation Hardware NT0X0013 which is  
0 to be discarded.

0 Isolation on cross aisle ducts is always provided as part of the  
0 stocklist for the Cross Aisle Duct Assemblies NT0X75AA, NT0X75AB,  
0 NT0X75AC, NT0X75AD, NT0X75AE, NT0X75AF and NT0X75AG.

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0 1.1.4 OFFICE LAYOUT INFORMATION

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0 N/A

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0 1.1.5 TRAFFIC TABLES

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0 A) An ISG Upgrade refers to upgrading and reconfiguring an existing  
0 office to the new Isolated System Grounding (ISG) method. Proce-  
0 dures are now available to upgrade to ISG the following frames in  
0 a DMS-100F office:

|                |     |       |              |                       |       |
|----------------|-----|-------|--------------|-----------------------|-------|
| 0 NT0X02AA, AB | MIS | Frame | NT3X45AA, CA | CCC                   | Frame |
| 0 NT0X18AA, CB | DNI | Frame | NT3X45AB, CB | MEX                   | Frame |
| 0 NT0X41AB, AK | MEX | Frame | NT3X45DA, DW | CCC                   | Frame |
| 0 NT0X41AC, AJ | CCC | Frame | NT3X45DB     | MEX                   | Frame |
| 0 NT0X42AA     | PDC | Frame | NT3X45EA, EW | CCC                   | Frame |
| 0 NT0X43AA     | IOE | Frame | NT5X12AA, AB | TAE                   | Frame |
| 0 NT0X43AB, AC | MTC | Frame | NT5X13AA, BA | NETC                  | Frame |
| 0 NT0X43AD     | IOE | Frame | NT5X56AA     | 1A2 Key System Fr     |       |
| 0 NT0X45AA, AB | LME | Frame | NT6X01AA     | LGE, DTE, LTE, SME Fr |       |
| 0 NT0X45AC, AD | LME | Frame | NT6X03AA, CA | LCE                   | Frame |
| 0 NT0X45AE     | LME | Frame | NT6X03RA, RB | LCE                   | Frame |
| 0 NT0X45BA, BB | RLM | Frame | NT6X06AA, AB | MS6E                  | Frame |
| 0 NT0X45BC, BD | RLM | Frame | NT6X06AC     | MS6E                  | Frame |
| 0 NT0X45BE, BH | RLM | Frame | NT6X09AA     | ST6E, ST7E            | Frame |
| 0 NT0X45BF, BG | RLM | Frame | NT6X10AC     | RCE                   | Frame |
| 0 NT0X45BJ, BK | RLM | Frame | NT6X14AA     | RLCM                  | Frame |
| 0 NT0X46AA, AB | DCE | Frame | NT6X29AA     | DME                   | Frame |
| 0 NT0X46AA, AB | TME | Frame | NT6X31AA     | MS7E                  | Frame |
| 0 NT0X48AA     | NET | Frame | NT8X10AA     | DSNE                  | Frame |
| 0 NT0X48AB, AC | NET | Frame | NT9X01AA     | CMDC                  | Frame |
| 0 NT0X48AG     | NET | Frame | NT9X01BA     | DPCC                  | Frame |
| 0 NT0X48AH, AJ | NET | Frame | NT9X01CA     | MSSC                  | Frame |
| 0 NT0X56AA     | SLC | Frame | NT9X01FA     | SSC                   | Frame |
| 0 NT0X85AA     | MSS | Frame | NT9X01GA     | MSDC                  | Frame |

0 (PLEASE NOTE: All miscellaneous hardware ordered per an ISG Upgrade is  
0 to be shipped loose to site.)

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0 B) Provide one (1) NT0X00YA, ISG Upgrade Kit Host, for each host of-  
0 fice being upgraded to Isolated System Grounding (ISG). This Kit  
0 contains one (1) NT0X00BB ISG Label.

0 Provide one (1) NT0X00XA, ISG Upgrade Kit Remote, for each remote  
0 office being upgraded to Isolated System Grounding (ISG). This  
0 Kit contains one (1) NT0X00DA ISG Label.

0 C) Provide one (1) NT0X00ZA, LRE & FBE Splice Plate Assembly, for  
0 each host office being upgraded to Isolated System Grounding  
0 (ISG).

0 Provide one (1) NT0X0021, FBE-Remotes Splice Plate Assembly, for  
0 each remote office being upgraded to Isolated System Grounding  
0 (ISG).

0 The NT0X00ZA and NT0X0021 shall be provisioned by Building  
0 Studies Engineering.

0 D) The CCC, MEX, IOE, MOE, Dedicated MIS, and Supernode frames must  
0 all be cabled to the same LRB. This LRB shall be located above  
0 the IOE frame, and dedicated to the above mentioned frames only.  
0 No other frame types can ever be cabled to this particular LRB.  
0 Other frame types in the same lineup must be cabled to a separate  
0 LRB.

0 E) The PDC frames shall be reconfigured and recabled so that the LCE  
0 frames and their associated controller frames (i.e.  
0 LGE/LTE/RCE/RCME/SME/DTE) are powered from the same PDC frame.  
0 Also remove the Equalizer Cables between PDC Battery Return  
0 Busbars.

0 The PDC frames shall be reconfigured and recabled so that the  
0 MS7E frames and their associated ST7E frames are powered from the  
0 same PDC frame. However, the MS6E frames and the ST6E frames do  
0 not need to be powered from the same PDC frame.

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0 F) The MIS frames shall be reconfigured and recabled so that one (1)  
0 MIS frame can be dedicated for modem equipment. Only modems and  
0 the inverters used to power these modems can be mounted in this  
0 Dedicated MIS Frame. The Dedicated MIS Frame must also be lo-  
0 cated within a 50ft cabling distance of the IOE frames. All other  
0 miscellaneous equipment shall be mounted on Standard MIS Frames.

0 Local MAP VDU and printers must be current loop devices. When  
0 these devices are powered by NT0X87AA inverters, the inverter  
0 must be a dedicated inverter mounted on a Standard MIS Frame. The  
0 inverter shall be grounded to the MIS framework per normal  
0 grounding procedures, (i.e. No NT0X0013 Required).

0 G) The hardware needed to upgrade an existing office shall be or-  
0 dered on a per frame basis. Refer to the ISG UPGRADE TABLES in  
0 the following sections of this ECM for the type of hardware and  
0 cable needed for each frame:

0 Section 3 : ISG UPGRADE TABLES (HOST OFFICE FRAMES)  
0 Section 4 : ISG UPGRADE TABLES (SUPERNODE FRAMES)  
0 Section 5 : ISG UPGRADE TABLES (REMOTE OFFICE FRAMES)

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0 1.2 ISG UPGRADE TABLES (HOST OFFICE FRAMES)

0 3.1 TO UPGRADE:

| FRAME                        | REMOVE                   | LOCATION |
|------------------------------|--------------------------|----------|
| NT0X41AC CCC<br>NT0X41AJ CCC | 2 NT0X9502 CABLE ASSY    | POS. 76  |
|                              | 2 NT0X9503 CABLE ASSY    | POS. 76  |
|                              | 8 P0069242 SCR HHC       | POS. 76  |
|                              | 8 P0065747 NUT HEX       | POS. 76  |
|                              | 16 P097Y579 WS LOCK      | POS. 76  |
|                              | 8 P0160739 WS FL         | POS. 76  |
|                              | 8 P0183028 WS SPR        | POS. 76  |
|                              |                          |          |
|                              | ADD                      | LOCATION |
|                              | 4 CA0X04 ITEM 1HH        | POS. 76  |
|                              | 4 NT0X0042 CABLE TERM HW | POS. 76  |

0 3.2 TO UPGRADE:

| FRAME                        | REMOVE                | LOCATION |
|------------------------------|-----------------------|----------|
| NT3X45AA CCC<br>NT3X45CA CCC | 1 NT0X9502 CABLE ASSY | POS. 76  |
|                              | 1 NT0X9503 CABLE ASSY | POS. 76  |
| NT3X45DA CCC<br>NT3X45DW CCC | 4 P0069242 SCR HHC    | POS. 76  |
|                              | 4 P0065747 NUT HEX    | POS. 76  |
|                              | 8 P097Y579 WS LOCK    | POS. 76  |
|                              | 4 P0160739 WS FL      | POS. 76  |
| NT3X45EA CCC<br>NT3X45EW CCC | 4 P0183028 WS SPR     | POS. 76  |
|                              |                       |          |
|                              | ADD                   | LOCATION |

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|   |  |   |          |               |         |
|---|--|---|----------|---------------|---------|
| 0 |  | 2 | CA0X04   | ITEM 1HH      | POS. 76 |
| 0 |  | 2 | NT0X0042 | CABLE TERM HW | POS. 76 |
| 0 |  |   |          |               |         |
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| FRAME        | REMOVE |          |               | LOCATION |
|--------------|--------|----------|---------------|----------|
| NT0X41AB MEX | 1      | NT0X9503 | CABLE ASSY    | POS. 76  |
|              | 1      | NT0X9536 | CABLE ASSY    | POS. 76  |
|              | 4      | P0069242 | SCR HHC       | POS. 76  |
|              | 4      | P0065747 | NUT HEX       | POS. 76  |
|              | 8      | P097Y579 | WS LOCK       | POS. 76  |
|              | 4      | P0160739 | WS FL         | POS. 76  |
|              | 4      | P0183028 | WS SPR        | POS. 76  |
|              | ADD    |          |               | LOCATION |
|              | 2      | CA0X04   | ITEM 1HH      | POS. 76  |
|              | 2      | NT0X0042 | CABLE TERM HW | POS. 76  |

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| FRAME        | REMOVE |          |               | LOCATION |
|--------------|--------|----------|---------------|----------|
| NT0X41AK MEX | 2      | NT0X9503 | CABLE ASSY    | POS. 76  |
|              | 4      | P0069242 | SCR HHC       | POS. 76  |
|              | 4      | P0065747 | NUT HEX       | POS. 76  |
|              | 8      | P097Y579 | WS LOCK       | POS. 76  |
|              | 4      | P0160739 | WS FL         | POS. 76  |
|              | 4      | P0183028 | WS SPR        | POS. 76  |
|              | ADD    |          |               | LOCATION |
|              | 2      | CA0X04   | ITEM 1HH      | POS. 76  |
|              | 2      | NT0X0042 | CABLE TERM HW | POS. 76  |

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**0 3.5 TO UPGRADE:**

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### 0 3.6 TO UPGRADE:

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| FRAME        | REMOVE |          |               | LOCATION |
|--------------|--------|----------|---------------|----------|
| NT0X43AA IOE | 2      | NT0X9502 | CABLE ASSY    | POS. 76  |
|              | 4      | P0069242 | SCR HHC       | POS. 76  |
|              | 4      | P0065747 | NUT HEX       | POS. 76  |
|              | 8      | P097Y579 | WS LOCK       | POS. 76  |
|              | 4      | P0160739 | WS FL         | POS. 76  |
|              | 4      | P0183028 | WS SPR        | POS. 76  |
|              | ADD    |          |               | LOCATION |
|              | 1      | CA0X04   | ITEM 1HH      | POS. 76  |
|              | 1      | NT0X0042 | CABLE TERM HW | POS. 76  |
|              | 1      | NT0X0012 | CABLE ASSY    | POS. 10  |

**0 3.7 TO UPGRADE:**

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| FRAME                                            | REMOVE |          |               | LOCATION |
|--------------------------------------------------|--------|----------|---------------|----------|
| NT0X43AB MTC<br>NT0X43AC MTC<br><br>NT0X43AD IOE | 1      | NT0X9502 | CABLE ASSY    | POS. 76  |
|                                                  | 2      | P0069242 | SCR HHC       | POS. 76  |
|                                                  | 2      | P0065747 | NUT HEX       | POS. 76  |
|                                                  | 4      | P097Y579 | WS LOCK       | POS. 76  |
|                                                  | 2      | P0160739 | WS FL         | POS. 76  |
|                                                  | 2      | P0183028 | WS SPR        | POS. 76  |
|                                                  | ADD    |          |               | LOCATION |
|                                                  | 1      | CA0X04   | ITEM 1HH      | POS. 76  |
|                                                  | 1      | NT0X0042 | CABLE TERM HW | POS. 76  |

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| EQUIPMENT                                                                                                                          | REMOVE                                                                                                                                                                | ADD                                                     |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <p>COOK<br/>MAG TAPE DRIVES</p> <p>NT0X44AB<br/>NT0X44BB</p> <p>A0277744 &amp;<br/>NT0X44AD</p> <p>A0326502 &amp;<br/>NT0X44AD</p> | <p>NO CHANGES<br/>REQUIRED</p>                                                                                                                                        | <p>1 NT0X0052 COOK DRIVE<br/>ISOLATION<br/>HARDWARE</p> |
| <p>HEWLETT PACKARD<br/>MAG TAPE DRIVES</p> <p>NT0X44AA</p> <p>C0048498 &amp;<br/>NT0X44AC</p>                                      | <p>8 P097F813 SCREW HHT</p> <p>1 P0284154 WS FL</p> <p>1 P0183220 WS LOCK</p> <p>1 P0575258 MTG BKT LH</p> <p>1 P0575257 MTG BKT RH</p> <p>1 NT0X4401 FRT MSK ASY</p> | <p>1 NT0X0051 HP DRIVE<br/>ISOLATION<br/>HARDWARE</p>   |

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### 3.7.2 TO UPGRADE DISK DRIVE UNITS MOUNTED ON IOE FRAME:

| EQUIPMENT    | REMOVE                                 | ADD                                                  |
|--------------|----------------------------------------|------------------------------------------------------|
| NT4X00AA DDU | REMOVE THE NT4X00AA<br>DISK DRIVE UNIT | REPLACE WITH<br>NT4X00AC OR LATER<br>DISK DRIVE UNIT |
| NT4X00AB DDU | NO CHANGES<br>REQUIRED                 | 1 NT4X00BZ DDU<br>GRD H/W                            |
| NT4X00AC DDU | NO CHANGES<br>REQUIRED                 | NO CHANGES<br>REQUIRED                               |

### 3.7.3 TO UPGRADE OTHER EQUIPMENT MOUNTED ON IOE FRAME:

| EQUIPMENT                                       | REMOVE                                                                                                            | ADD                                          |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| DC<br>MODEM SHELVES<br><br>NT5X09AA<br>A0319455 | 12 P097F813 SCREW HHT<br>1 P0284154 WS FL<br>1 P0183220 WS LOCK<br>1 NT5X0806 COVER PNL<br>2 NT5X0810 SUPPORT BKT | 1 NT0X0050 MODEM SH<br>GROUNDING<br>HARDWARE |
| AC<br>MODEM SHELVES<br><br>NT5X08AC<br>NT5X08AD | 12 P097F813 SCREW HHT<br>1 P0284154 WS FL<br>1 P0183220 WS LOCK<br>1 NT5X0806 COVER PNL<br>2 NT5X0810 SUPPORT BKT | 1 NT0X0050 MODEM SH<br>GROUNDING<br>HARDWARE |
| INVERTERS                                       | 4 P097F813 SCREW HHT                                                                                              | 1 NT0X0053 INVERTER                          |

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|   |          |                                        |                       |
|---|----------|----------------------------------------|-----------------------|
| 0 | NT0X87AA | 1 P0284154 WS FL<br>1 P0183220 WS LOCK | GROUNDING<br>HARDWARE |
| 0 |          |                                        |                       |
| 0 |          |                                        |                       |
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| FRAME        | REMOVE                                                                                                                                                                                                                                                                                                                                                                                                                         | LOCATION |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| NT0X42AA PDC | REMOVE THE EQUALIZER CABLES BETWEEN PDC BATTERY RETURN BUSBARS.                                                                                                                                                                                                                                                                                                                                                                | POS. 76  |
|              | ADD                                                                                                                                                                                                                                                                                                                                                                                                                            |          |
|              | <p>1) RECABLE AND RECONFIGURE THE PDC FRAMES SO THAT THE LCE FRAMES AND THEIR ASSOCIATED CONTROLLER FRAMES (i.e. LGE/LTE/RCE/RCME) ARE POWERED FROM THE SAME PDC FRAME.</p> <p>2) RECABLE AND RECONFIGURE THE PDC FRAMES SO THAT THE MS7E FRAMES AND THEIR ASSOCIATED ST7E FRAMES ARE POWERED FROM THE SAME PDC FRAME.</p> <p>NOTE: The MS6E frames and the ST6E frames do not need to be powered from the same PDC frame.</p> |          |

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| FRAME                          | REMOVE |          |               | LOCATION |
|--------------------------------|--------|----------|---------------|----------|
| NT5X13AA NETC<br>NT5X13BA NETC | 1      | NT0X9502 | CABLE ASSY    | POS. 76  |
|                                | 2      | P0069242 | SCR HHC       | POS. 76  |
|                                | 2      | P0065747 | NUT HEX       | POS. 76  |
|                                | 4      | P097Y579 | WS LOCK       | POS. 76  |
|                                | 2      | P0160739 | WS FL         | POS. 76  |
|                                | 2      | P0183028 | WS SPR        | POS. 76  |
|                                | ADD    |          |               | LOCATION |
|                                | 1      | CA0X04   | ITEM 1HH      | POS. 76  |
|                                | 1      | NT0X0042 | CABLE TERM HW | POS. 76  |

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| FRAME         | REMOVE |          |               | LOCATION |
|---------------|--------|----------|---------------|----------|
| NT8X10AA DSNE | 1      | NT0X9502 | CABLE ASSY    | POS. 76  |
|               | 2      | P0069242 | SCR HHC       | POS. 76  |
|               | 2      | P0065747 | NUT HEX       | POS. 76  |
|               | 4      | P097Y579 | WS LOCK       | POS. 76  |
|               | 2      | P0160739 | WS FL         | POS. 76  |
|               | 2      | P0183028 | WS SPR        | POS. 76  |
|               | ADD    |          |               | LOCATION |
|               | 1      | CA0X04   | ITEM 1HH      | POS. 76  |
|               | 1      | NT0X0042 | CABLE TERM HW | POS. 76  |

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| FRAME        | REMOVE                 | LOCATION |
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| NT0X56AA SLC | NO CHANGES<br>REQUIRED |          |
|              | ADD                    | LOCATION |
|              | NO CHANGES<br>REQUIRED |          |

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| FRAME                        | REMOVE                 | LOCATION |
|------------------------------|------------------------|----------|
| NT0X18AA DNI<br>NT0X18CB DNI | NO CHANGES<br>REQUIRED |          |
|                              | ADD                    | LOCATION |
|                              | NO CHANGES<br>REQUIRED |          |

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**0 3.15 TO UPGRADE:**

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| EQUIPMENT |        | REMOVE                | ADD                   |
|-----------|--------|-----------------------|-----------------------|
| NT2X52AA  | TM2    | 2 NT0X9501 CABLE ASSY |                       |
| AB        | TM4    |                       |                       |
| AC        | TM8    | OR                    | 1 NT0X9501 CABLE ASSY |
| AD        | DMS300 |                       |                       |
| AE        | TM2    | 2 NT0X9538 CABLE ASSY |                       |
| AF        | TM4    |                       |                       |
| AG        | TM8    |                       |                       |
| BB        | ITM8   |                       |                       |
| NT2X52AK  | TM2    | REMOVE FROM BETWEEN   | ADD TO CONNECT        |
| AN        | TM4    | LOGIC GRD AND         | LOGIC GRD TO          |
| AP        | TM8    | LOGIC RETURN BUSBAR   | FLT GRD ON SHELF      |
| AR        | DMS300 |                       |                       |
| BD        | ITM8   |                       |                       |
| NT2X58AA  | MTM    |                       |                       |
| AB        | OAU    |                       |                       |
| NT2X58AC  | MTM    |                       |                       |
| AD        | OAU    |                       |                       |
| AF        | OAU    |                       |                       |
| AG        | DRA    |                       |                       |
| AK        | DRA    |                       |                       |
| AT        | MTM    |                       |                       |
| AU        | DRA    |                       |                       |
| AN        | MTM    |                       |                       |
| NT2X58CA  | MTM    |                       |                       |
| CB        | MTM    |                       |                       |

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| FRAME    |      | REMOVE |          |               | LOCATION |
|----------|------|--------|----------|---------------|----------|
| NT6X01AA | LGE, | 1      | NT0X9502 | CABLE ASSY    | POS. 76  |
|          | DTE, | 1      | P0069242 | SCR HHC       | POS. 76  |
|          | LTE, | 1      | P0065747 | NUT HEX       | POS. 76  |
|          | SME  | 2      | P097Y579 | WS LOCK       | POS. 76  |
|          |      | 1      | P0160739 | WS FL         | POS. 76  |
|          |      | 1      | P0183028 | WS SPR        | POS. 76  |
|          |      |        |          |               |          |
|          |      | ADD    |          |               | LOCATION |
|          |      | 1      | CA0X04   | ITEM 1GZ      | POS. 76  |
|          |      | 1      | NT0X0043 | CABLE TERM HW | POS. 76  |

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| FRAME                                         | REMOVE |          |               | LOCATION |
|-----------------------------------------------|--------|----------|---------------|----------|
| NT6X01AA DTE<br><br>(DMS-200<br>OFFICES ONLY) | 1      | NT0X9502 | CABLE ASSY    | POS. 76  |
|                                               | 1      | P0069242 | SCR HHC       | POS. 76  |
|                                               | 1      | P0065747 | NUT HEX       | POS. 76  |
|                                               | 2      | P097Y579 | WS LOCK       | POS. 76  |
|                                               | 1      | P0160739 | WS FL         | POS. 76  |
|                                               | 1      | P0183028 | WS SPR        | POS. 76  |
|                                               | ADD    |          |               | LOCATION |
|                                               | 1      | CA0X04   | ITEM 1HH      | POS. 76  |
|                                               | 1      | NT0X0042 | CABLE TERM HW | POS. 76  |

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| FRAME                                                                                | REMOVE |          |            | LOCATION |
|--------------------------------------------------------------------------------------|--------|----------|------------|----------|
| NT0X45AA LME<br>NT0X45AB LME<br><br>NT0X45AC LME<br>NT0X45AD LME<br><br>NT0X45AE LME | 2      | NT0X9502 | CABLE ASSY | POS. 76  |
|                                                                                      | ADD    |          |            | LOCATION |
|                                                                                      | 1      | NT0X4550 | CABLE ASSY | POS. 45  |
|                                                                                      | 1      | NT0X4551 | CABLE ASSY | POS. 45  |

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|                                                                  |                                                                                                                                                                            |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FRAME                                                            | REMOVE                                                                                                                                                                     |
| NT6X03AA LCE<br>NT6X03CA LCE<br><br>NT6X03RA LCE<br>NT6X03RB LCE | NO CHANGES<br>REQUIRED                                                                                                                                                     |
|                                                                  | ADD                                                                                                                                                                        |
|                                                                  | RECABLE AND RECONFIGURE THE PDC FRAMES SO<br>THAT THE LCE FRAMES AND THEIR ASSOCIATED<br>CONTROLLER FRAMES (i.e. LGE/LTE/RCE/RCME)<br>ARE POWERED FROM THE SAME PDC FRAME. |

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|   |  |   |          |                 |         |
|---|--|---|----------|-----------------|---------|
| 0 |  | 1 | NT0X0053 | INVERTER GRD HW | POS. 04 |
| 0 |  |   |          |                 |         |
| 0 |  |   |          |                 |         |
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**0 3.21 TO UPGRADE:**

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**0 3.23 TO UPGRADE:**

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### 3.24 TO UPGRADE:

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|---------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|--------------|-----------------|------------|
|                                                                                                                           | NT6X29AA DME | 1               | NT0X9502     | CABLE ASSY      | POS. 76    |
|                                                                                                                           |              | 2               | P0069242     | SCR HHC         | POS. 76    |
|                                                                                                                           |              | 2               | P0065747     | NUT HEX         | POS. 76    |
|                                                                                                                           |              | 4               | P097Y579     | WS LOCK         | POS. 76    |
|                                                                                                                           |              | 2               | P0160739     | WS FL           | POS. 76    |
|                                                                                                                           |              | 2               | P0183028     | WS SPR          | POS. 76    |
|                                                                                                                           |              | 8               | P097F813     | SCREW HHT       | POS 52, 66 |
|                                                                                                                           |              | 1               | P0284154     | WS FL           | POS 52, 66 |
|                                                                                                                           |              | 1               | P0183220     | WS LOCK         | POS 52, 66 |
|                                                                                                                           |              | 8               | P097F813     | SCREW HHT       | POS. 33    |
|                                                                                                                           |              | 1               | P0284154     | WS FL           | POS. 33    |
|                                                                                                                           |              | 1               | P0183220     | WS LOCK         | POS. 33    |
|                                                                                                                           |              | 4               | P097F813     | SCREW HHT       | POS. 18    |
|                                                                                                                           |              | 1               | P0284154     | WS FL           | POS. 18    |
|                                                                                                                           |              | 1               | P0183220     | WS LOCK         | POS. 18    |
|                                                                                                                           |              | 4               | P097F813     | SCREW HHT       | POS 04, 11 |
|                                                                                                                           |              | 1               | P0284154     | WS FL           | POS 04, 11 |
|                                                                                                                           |              | 1               | P0183220     | WS LOCK         | POS 04, 11 |
|                                                                                                                           |              | ADD             |              |                 | LOCATION   |
|                                                                                                                           |              | 1               | CA0X04       | ITEM 1HH        | POS. 76    |
|                                                                                                                           |              | 1               | NT0X0042     | CABLE TERM HW   | POS. 76    |
|                                                                                                                           |              | 1               | NT0X0050     | MODEM SH GRD HW | POS 52, 66 |
|                                                                                                                           |              | 1               | NT0X0050     | MODEM SH GRD HW | POS. 33    |
| 1                                                                                                                         |              | NT0X9594        | BUS BAR ASSY | POS. 20         |            |
| 6                                                                                                                         | P097F813     | SCREW HHT       | POS. 20      |                 |            |
| 1                                                                                                                         | NT0X0053     | INVERTER GRD HW | POS. 18      |                 |            |

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|---|--|---|----------|-----------------|-----------|
| 0 |  | 1 | NT0X0053 | INVERTER GRD HW | POS 04,11 |
| 0 |  |   |          |                 |           |
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0 3.25 TO UPGRADE:

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| FRAME                                         | REMOVE                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NT5X56AA KSE -<br><br>1A2 KEY SYSTEM<br>FRAME | NO CHANGES<br>REQUIRED                                                                                                                                                                                                                                                                                                         |
|                                               | ADD                                                                                                                                                                                                                                                                                                                            |
|                                               | 1) THIS FRAME CAN BE POWERED BY<br>COMMERCIAL AC OR INVERTER POWERED.<br>IF POWERED FROM AN NT0X87AA INVERTER,<br>THE INVERTER SHALL BE A DEDICATED<br>INVERTER MOUNTED ON A STANDARD MIS<br>FRAME. THE INVERTER SHALL BE<br>GROUNDED TO THE MIS FRAMEWORK PER<br>NORMAL GROUNDING PROCEDURES,<br>(i.e. NO NT0X0013 REQUIRED). |

0 3.25.1 TO UPGRADE EQUIPMENT MOUNTED ON KSE FRAME:

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| EQUIPMENT                                | REMOVE                | ADD                                 |
|------------------------------------------|-----------------------|-------------------------------------|
| 1A2 KEY SYS.<br><br>NT5X55AA<br>NT5X55AB | 28 P097F813 SCREW HHT | 28 NT0X0013 ISOLATION<br>MTG HDWARE |

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**0 3.26 TO UPGRADE:**

| FRAME                        | REMOVE   |               |            | LOCATION |
|------------------------------|----------|---------------|------------|----------|
| NT5X12AA TAE<br>NT5X12AB TAE | 1        | NT0X9502      | CABLE ASSY | POS. 76  |
|                              | 2        | P0069242      | SCR HHC    | POS. 76  |
|                              | 2        | P0065747      | NUT HEX    | POS. 76  |
|                              | 4        | P097Y579      | WS LOCK    | POS. 76  |
|                              | 2        | P0160739      | WS FL      | POS. 76  |
|                              | 2        | P0183028      | WS SPR     | POS. 76  |
|                              | ADD      |               |            | LOCATION |
| 1                            | CA0X04   | ITEM 1HH      | POS. 76    |          |
| 1                            | NT0X0042 | CABLE TERM HW | POS. 76    |          |

**0 3.27 TO UPGRADE:**

|              |                        |          |
|--------------|------------------------|----------|
| FRAME        | REMOVE                 | LOCATION |
| NT0X85AA MSS | NO CHANGES<br>REQUIRED |          |
|              | ADD                    | LOCATION |
|              | NO CHANGES<br>REQUIRED |          |

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## 3.28.1 TO UPGRADE EQUIPMENT MOUNTED ON DEDICATED MIS FRAME:

| EQUIPMENT                                                                      | REMOVE                                                                                                            | ADD                                                         |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| INVERTERS<br>NT0X87AA                                                          | 4 P097F813 SCREW HHT<br>1 P0284154 WS FL<br>1 P0183220 WS LOCK                                                    | 1 NT0X0053 INVERTER<br>GROUNDING<br>HARDWARE                |
| AC<br>MODEM SHELVES<br>NT5X08AC<br>NT5X08AD                                    | 12 P097F813 SCREW HHT<br>1 P0284154 WS FL<br>1 P0183220 WS LOCK<br>1 NT5X0806 COVER PNL<br>2 NT5X0810 SUPPORT BKT | 1 NT0X0050 MODEM SH<br>GROUNDING<br>HARDWARE                |
| DC<br>MODEM SHELVES<br>NT5X09AA<br>A0319455<br>RIXON RM40A/B<br>(905-5121-004) | 12 P097F813 SCREW HHT<br>1 P0284154 WS FL<br>1 P0183220 WS LOCK<br>1 NT5X0806 COVER PNL<br>2 NT5X0810 SUPPORT BKT | 1 NT0X0050 MODEM SH<br>GROUNDING<br>HARDWARE                |
| EQUIPMENT SH<br>ASSY<br>NT3X25AA                                               | 6 P097F813 SCREW HHT<br>1 P0183220 WS LOCK<br>1 P0284154 WS FL                                                    | 6 NT0X0013 ISOLATION<br>MTG HDWARE<br>1 NT0X4311 CABLE ASSY |

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| EQUIPMENT                                | REMOVE                                                                                                                       | ADD                                 |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| COGNITRONICS<br><br>646, 649<br>689      | 4 P097F813 SCREW HHT                                                                                                         | 4 NT0X0013 ISOLATION<br>MTG HDWARE  |
| 1A2 KEY SYS.<br><br>NT5X55AA<br>NT5X55AB | 28 P097F813 SCREW HHT                                                                                                        | 28 NT0X0013 ISOLATION<br>MTG HDWARE |
| 1A2 KEY SYS.<br><br>NT5X58AA             | 12 P097F813 SCREW HHT                                                                                                        | 12 NT0X0013 ISOLATION<br>MTG HDWARE |
| INVERTERS<br><br>NT0X87AA                | NO CHANGES REQUIRED.<br>GROUND INVERTER TO MIS FRAMEWORK<br>PER NORMAL GROUNDING PROCEDURES,<br>(i.e. NO NT0X0013 REQUIRED). |                                     |

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## 3.29.2 MISCELLANEOUS EQUIPMENT REQUIRING NO MODIFICATIONS FOR ISG:

| PEC                                                                              | PRODUCT DESCRIPTION                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NT2X46AB                                                                         | METALLIC TEST ACCESS (MTA) UNIT                                                                                                                                                                                                        |
| NT5X26AA<br>NT5X27AA                                                             | GROUND DETECTOR FOR 911 APPLICATION<br>SLEEVE LEAD APPLIQUE CIRCUIT                                                                                                                                                                    |
| NT5X50AA<br>NT5X51AA<br>NT5X57AA<br>NT5X59AA<br>NT5X59AB                         | AUX CKT FOR INTERFACE W/STROMBERG CARLSON<br>CONVERSION OF N. ELECTRIC TSD TO CAMA POS<br>AUXILIARY RECORDING COMPLETING TRUNK<br>ALARM INDICATION APPLIQUE<br>ALARM INDICATION APPLIQUE                                               |
| NT5X63AA<br>NT5X64BA/BC<br>NT5X65AA<br>NT5X66AA<br>NT5X69AA                      | APPLIQUE CKT FOR AUTO. ELEC. FIRE REPORT<br>COMMUNICATIONS MODULE, RACKMOUNT<br>APPLIQUE CKT FOR INCOMING TEST UNIT TRNK<br>APPLIQUE CKT FOR OUTGOING TEST TRUNK<br>INACTIVE SYSTEM TIMING CIRCUIT                                     |
| NT5X74AA<br>NT5X75AA<br>NT5X75AB<br>NT5X76AA<br>NT5X77AA<br>NT5X78AA<br>NT5X79AA | UNIVERSAL CAMA POSITION CIRCUIT<br>AUXILIARY CAMA POSITION CIRCUIT<br>AUXILIARY CAMA POSITION CIRCUIT<br>AUXILIARY CAMA POSITION CIRCUIT<br>AUXILIARY CAMA POSITION CIRCUIT<br>AUXILIARY TRUNK CIRCUIT<br>BOARD TO BOARD TEST APPLIQUE |
| NT5X85AA<br>NT5X86AA<br>NT5X88AA                                                 | AUDIBLE AND VISUAL ALARM EXTENSION UNIT<br>AUDIBLE ALARM CUTOFF CONTROL UNIT<br>ABBT APPLIQUE                                                                                                                                          |
| NT5X90AA<br>NT5X91AA<br>NT5X92AB<br>NT5X93AA<br>NT5X94AA                         | AUXILIARY TEST CIRCUIT TO AECO<br>AUX TRNK FOR TOPS ACCESS FROM MOBILE 1280<br>ALARM EXTENSION PANEL<br>TEST ACCESS APPLIQUE CIRCUIT<br>APPLIQUE CKT TO SWITCHING SYSTEM NO. 309                                                       |
| 1066/1056<br>TCS 1800                                                            | ROTL UNIT E/W 52A RESPONDER & PWR SUPPLY<br>KEY TELEPHONE SYSTEM                                                                                                                                                                       |

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0 3.29.3 OTHER OUTSIDE VENDOR SUPPLIED EQUIPMENT ON MIS FRAMES  
0 must be checked for grounding criteria.  
0 Reference Installation Manual 925, Section 2100 for  
0 ground testing and hardware requirements.

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0 1.3 ISG UPGRADE TABLES (SUPERNODE FRAMES)

0 4.1 TO UPGRADE SUPERNODE FRAMES IN THEIR OWN LINE-UP:

|   |                                                                                                                                                              |                        |                        |          |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|----------|
| 0 | <div>FRAME</div> <div>NT9X01AA CMDC</div> <div>NT9X01CA MSSC</div> <div>NT9X01GA MSDC</div> <div>NT9X01BA DPCC</div> <div>(FIRST FRAME<br/>IN LINE-UP)</div> | REMOVE                 |                        | LOCATION |
| 0 |                                                                                                                                                              | NO CHANGES<br>REQUIRED |                        |          |
| 0 |                                                                                                                                                              |                        |                        |          |
| 0 |                                                                                                                                                              |                        |                        |          |
| 0 |                                                                                                                                                              | ADD                    |                        | LOCATION |
| 0 |                                                                                                                                                              | 1                      | CA0X04 ITEM 1JC        | POS. 52  |
| 0 |                                                                                                                                                              | 1                      | NT0X0020 CABLE TERM HW | POS. 52  |
| 0 |                                                                                                                                                              |                        |                        |          |
| 0 |                                                                                                                                                              |                        |                        |          |
| 0 |                                                                                                                                                              |                        |                        |          |
| 0 |                                                                                                                                                              |                        |                        |          |
| 0 |                                                                                                                                                              |                        |                        |          |
| 0 |                                                                                                                                                              |                        |                        |          |
| 0 |                                                                                                                                                              |                        |                        |          |

0 4.2 TO UPGRADE SUPERNODE FRAMES IN THEIR OWN LINE-UP:

|   |                                                                                                                                                              |                        |                     |          |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------|----------|
| 0 | <div>FRAME</div> <div>NT9X01AA CMDC</div> <div>NT9X01CA MSSC</div> <div>NT9X01GA MSDC</div> <div>NT9X01BA DPCC</div> <div>(OTHER FRAME<br/>IN LINE-UP)</div> | REMOVE                 |                     | LOCATION |
| 0 |                                                                                                                                                              | NO CHANGES<br>REQUIRED |                     |          |
| 0 |                                                                                                                                                              |                        |                     |          |
| 0 |                                                                                                                                                              |                        |                     |          |
| 0 |                                                                                                                                                              | ADD                    |                     | LOCATION |
| 0 |                                                                                                                                                              | 1                      | NT0X0008 CABLE ASSY | POS. 52  |
| 0 |                                                                                                                                                              |                        |                     |          |
| 0 |                                                                                                                                                              |                        |                     |          |
| 0 |                                                                                                                                                              |                        |                     |          |
| 0 |                                                                                                                                                              |                        |                     |          |
| 0 |                                                                                                                                                              |                        |                     |          |
| 0 |                                                                                                                                                              |                        |                     |          |
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### 0 4.3 TO UPGRADE SUPERNODE FRAMES IN LINE-UP WITH OTHER DMS-100F FRAMES:

| FRAME                                                                | REMOVE                   | LOCATION |
|----------------------------------------------------------------------|--------------------------|----------|
| NT9X01AA CMDC<br>NT9X01CA MSSC<br>NT9X01GA MSDC<br><br>NT9X01BA DPCC | NO CHANGES<br>REQUIRED   |          |
|                                                                      | ADD                      | LOCATION |
|                                                                      | 1 CA0X04 ITEM 1JD        | POS. 52  |
|                                                                      | 1 NT0X0020 CABLE TERM HW | POS. 52  |

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|              |                        |          |
|--------------|------------------------|----------|
| FRAME        | REMOVE                 | LOCATION |
| NT9X01FA SSC | NO CHANGES<br>REQUIRED |          |
|              | ADD                    | LOCATION |
|              | NO CHANGES<br>REQUIRED |          |



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**0 5.1 TO UPGRADE:**

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## 5.1.1 TO UPGRADE EQUIPMENT MOUNTED ON RME/RSE FRAME:

| EQUIPMENT                                                             | REMOVE                                                                                                            | ADD                                                                             |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| <b>INVERTERS</b><br><br><b>NT0X87AA</b>                               | 4 P097F813 SCREW HHT<br>1 P0284154 WS FL<br>1 P0183220 WS LOCK                                                    | 1 NT0X0053 INVERTER<br>GROUNDING<br>HARDWARE                                    |
| <b>AC<br/>MODEM SHELVES</b><br><br><b>NT5X08AC</b><br><b>NT5X08AD</b> | 12 P097F813 SCREW HHT<br>1 P0284154 WS FL<br>1 P0183220 WS LOCK<br>1 NT5X0806 COVER PNL<br>2 NT5X0810 SUPPORT BKT | 1 NT0X0050 MODEM SH<br>GROUNDING<br>HARDWARE                                    |
| <b>DC<br/>MODEM SHELVES</b><br><br><b>NT5X09AA</b><br><b>A0319455</b> | 12 P097F813 SCREW HHT<br>1 P0284154 WS FL<br>1 P0183220 WS LOCK<br>1 NT5X0806 COVER PNL<br>2 NT5X0810 SUPPORT BKT | 1 NT0X0050 MODEM SH<br>GROUNDING<br>HARDWARE                                    |
| <b>EQUIPMENT SH<br/>ASSY</b><br><br><b>NT3X25AA</b>                   | 6 P097F813 SCREW HHT<br><br>1 P0183220 WS LOCK<br>1 P0284154 WS FL                                                | 1 NT0X0054 EQPT SHELF<br>GROUNDING<br>HARDWARE                                  |
| <b>RSM<br/>SHELVES</b><br><br><b>NT2X58AE</b><br><b>NT2X58CF</b>      | 2 NT0X9538 CABLE ASSY<br><br>REMOVE FROM BETWEEN<br>LOGIC GRD AND<br>LOGIC RETURN BUSBAR                          | 1 NT0X9501 CABLE ASSY<br><br>ADD TO CONNECT<br>LOGIC GRD TO<br>FLT GRD ON SHELF |

## 0 5.2 TO UPGRADE:

| FRAME        | REMOVE |          |               | LOCATION |
|--------------|--------|----------|---------------|----------|
| NT6X10AC RCE | 1      | NT0X9502 | CABLE ASSY    | POS. 76  |
|              | 1      | P0069242 | SCR HHC       | POS. 76  |
|              | 1      | P0065747 | NUT HEX       | POS. 76  |
|              | 2      | P097Y579 | WS LOCK       | POS. 76  |
|              | 1      | P0160739 | WS FL         | POS. 76  |
|              | 1      | P0183028 | WS SPR        | POS. 76  |
|              | ADD    |          |               | LOCATION |
|              | 1      | CA0X04   | ITEM 1GZ      | POS. 76  |
|              | 1      | NT0X0043 | CABLE TERM HW | POS. 76  |

**O O O O O O O O O O O O O O O O**

|               |                        |          |
|---------------|------------------------|----------|
| FRAME         | REMOVE                 | LOCATION |
| NT6X14AA RLCM | NO CHANGES<br>REQUIRED |          |
|               | ADD                    | LOCATION |
|               | NO CHANGES<br>REQUIRED |          |

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**0 5.4 TO UPGRADE:**

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**0 5.5 TO UPGRADE:**

| FRAME        | REMOVE                | LOCATION |
|--------------|-----------------------|----------|
| NT0X45BC RLM | 1 NT0X9502 CABLE ASSY | POS. 76  |
| NT0X45BF RLM | 1 P0069242 SCR HHC    | POS. 76  |
|              | 1 P0065747 NUT HEX    | POS. 76  |
| NT0X45BJ RLM | 2 P097Y579 WS LOCK    | POS. 76  |
|              | 1 P0160739 WS FL      | POS. 76  |
|              | 1 P0183028 WS SPR     | POS. 76  |
|              | ADD                   | LOCATION |
|              | 1 NT0X4551 CABLE ASSY | POS. 45  |

**O O O O O O O O O O O O O O O O**

| FRAME        | REMOVE                | LOCATION |
|--------------|-----------------------|----------|
| NT0X45BD RLM | 1 NT0X9502 CABLE ASSY | POS. 76  |
| NT0X45BG RLM | 1 P0069242 SCR HHC    | POS. 76  |
|              | 1 P0065747 NUT HEX    | POS. 76  |
| NT0X45BK RLM | 2 P097Y579 WS LOCK    | POS. 76  |
|              | 1 P0160739 WS FL      | POS. 76  |
|              | 1 P0183028 WS SPR     | POS. 76  |
|              | ADD                   | LOCATION |
|              | 1 NT0X4550 CABLE ASSY | POS. 45  |

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0 2.0 Power Distribution Centers

0 2.1 HARDWARE PROVISIONING

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0 2.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 On DMS-100 Extensions, a mix of the NT0X42AA frame and NT0X42UA  
0 frame is allowed.

0 2.1.2 HARDWARE DEPENDENCIES

0  
0 Not applicable.

0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable.

0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable.

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## 0 CIRCUITS PER CARD

0  
0 Not applicable.

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable.

0 2.1.3 PROVISIONING CONSIDERATIONS

0 | The Power Distribution Centers are provisioned through PDC Build-  
0 | ing Blocks.

## 0 PDC Building Block Definition

0  
0 The available PDC Building Blocks are described below. Optional  
0 top or bottom fed PDC's can be selected. Electro Magnetic Inter-  
0 ference (EMI) protection can be optionally provided with the top  
0 feed PDC. The PDC can accommodate up to 150 provisionable fuses  
0 for distribution of power to the DMS-100F frames that are  
0 equipped in the office.

0 | A fully-equipped PDC contains ten (10) standard fuse panels  
0 | equipped for 15 fuses each. For US applications, fully-equipped  
0 | PDC (U.L. Listed) configurations are standard, which are provi-  
0 | sioned through Fully-Equipped PDC Building Blocks or through  
0 | other PDC Building Blocks when the required features cannot be  
0 | provided by Fully-Equipped PDC Building Blocks.

0 NTZZ13AA (PDC Top-Feed) (Replaced by NTZZ13HA)

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0 The NTZZ13AA contains four (4) panels for 15 fuses each (total  
0 60) and a filter panel. The remaining required type A and B fuse  
0 panels are provisionable in pairs based on frame calculations. A  
0 fully equipped PDC contains 10 panels equipped for 15 fuses each.  
0 Options to the PDC include an NT0X42AU ISDN fuse panel for Packet  
0 Handler fusing, and an NT0X42AT EMI Logic Return Equalizer Busbar  
0 for the first equipped PDC. All fuses types must be provisioned  
0 separately.

0 NTZZ13BA (PDC Bottom-Feed) (Replaced by NTZZ13JA)

0 The NTZZ13BA contains four (4) panels of 15 fuses each (total 60)  
0 and a filter panel. The remaining required type A and B fuse  
0 panels are provisionable in pairs based on frame calculations. A  
0 fully loaded PDC contains 10 panels each equipped for 15 fuses.  
0 Options to the PDC include an NT0X42AU ISDN fuse panel for Packet  
0 Handler fusing. EMI is not an available option with a bottom fed  
0 PDC. All fuses types must be provisioned separately.

0 NTZZ13CA (A and B Fuse Panels)

0 The NTZZ13CA contains one (1) A and one (1) B type Fuse panel for  
0 assignment to NTZZ13AA, NTZZ13BA, NTZZ13HA, NTZZ13JA and  
0 NTZZ13RA. Both panels have a capacity for 15 fuses each.

0 NTZZ13DA (PDC Top-Feed Fully-Equipped) (Replaced by NTZZ13KA)

0 The NTZZ13DA contains ten (10) panels for 15 fuses each (total  
0 150) and filter panels. There are no available options such as  
0 ISDN Fuse panel or the EMI option. All fuse types must be provi-  
0 sioned separately.

0 NTZZ13EA (PDC Top-Feed, Canadian Applications Only)

0 The NTZZ13EA contains four (4) panels for 15 fuses each (total  
0 60) and a filter panel. The remaining required type A and B fuse  
0 panels are provisionable in pairs based on frame calculations. A  
0 fully equipped PDC contains 10 panels equipped for 15 fuses each.  
0 Options to the PDC include an NT0X42AU ISDN fuse panel for Packet  
0 | Handler fusing, an NT0X42XC Enhanced Alarm Service Upgrade Kit,  
0 and an NT0X42AT EMI Logic Return Equalizer Busbar for the first  
0 equipped PDC. All fuses types must be provisioned separately.

0 NTZZ13FA (A and B Fuse Panels, Canadian Applications Only)

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0 The NTZZ13FA contains one (1) A and one (1) B type Fuse panel for  
0 assignment to either NTZZ13AA or NTZZ13BA. Both panels have a  
0 capacity for 15 fuses each.

0 | NTZZ13HA (U.L. PDC Top-Feed, US Applications Only)

0 The NTZZ13HA contains four (4) panels for 15 fuses each (total  
0 60) and a filter panel. The remaining required type A and B fuse  
0 panels are provisionable in pairs based on frame calculations. A  
0 fully equipped PDC contains 10 panels equipped for 15 fuses each.  
0 Options to the PDC include an NT0X42AU ISDN fuse panel for Packet  
0 Handler fusing, an NT0X42XC Enhanced Alarm Service Upgrade Kit,  
0 an NT0X42XA/XB Auxiliary Battery Return Panel Kit, and an  
0 NT0X42AT EMI Logic Return Equalizer Busbar for the first equipped  
0 PDC. All fuses types must be provisioned separately.

0 | NTZZ13JA (U.L. PDC Bottom-Feed, US Applications Only)

0 The NTZZ13JA contains four (4) panels of 15 fuses each (total 60)  
0 and a filter panel. The remaining required type A and B fuse  
0 panels are provisionable in pairs based on frame calculations. A  
0 fully loaded PDC contains 10 panels each equipped for 15 fuses.  
0 Options to the PDC include an NT0X42AU ISDN fuse panel for Packet  
0 Handler fusing, an NT0X42XC Enhanced Alarm Service Upgrade Kit  
0 and an NT0X42XA/XB Auxiliary Battery Return Panel Kit. EMI is  
0 not an available option with a bottom fed PDC. All fuses types  
0 must be provisioned separately.

0 | NTZZ13KA (U.L. PDC Top-Feed, Fully-Equipped, US Applications  
0 Only)

0 The NTZZ13KA contains ten (10) panels for 15 fuses each (total  
0 150) and filter panels. Options to the PDC include an NT0X42XC  
0 Enhanced Alarm Service Upgrade Kit and an NT0X42XA/XB Auxiliary  
0 Battery Return Panel Kit. All fuse types must be provisioned  
0 separately.  
0 |

0 | NTZZ13RA (Earthquake U.L. PDC Top-Feed, US Applications Only )

0 The NTZZ13RA contains four (4) panels for 15 fuses each (total  
0 60) and a filter panel. The remaining required type A and B fuse  
0 panels are provisionable in pairs based on frame calculations. A  
0 fully equipped PDC contains 10 panels equipped for 15 fuses each.  
0 Options to the PDC include an NT0X42AU ISDN fuse panel for Packet  
0 Handler fusing, an NT0X42XC Enhanced Alarm Service Upgrade Kit,  
0 an NT0X42XA/XB Auxiliary Battery Return Panel Kit, and an

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0 NT0X42AT EMI Logic Return Equalizer Busbar for the first equipped  
0 PDC. All fuses types must be provisioned separately.

0 | NTZZ13TA (Earthquake U.L. PDC Top-Feed Fully-Equipped, US Only)

0 The NTZZ13TA contains ten (10) panels for 15 fuses each (total  
0 150) and filter panels. Options to the PDC include an NT0X42XC  
0 Enhanced Alarm Service Upgrade Kit and an NT0X42XA/XB Auxiliary  
0 Battery Return Panel Kit. All fuse types must be provisioned  
0 separately.

0 NTZZ13UA (PDC Botton-Feed, for International Applications)

0 The NTZZ13UA contains four (4) panels for 15 fuses each (total  
0 60) and a filter panel. The remaining required type A and B fuse  
0 panels are provisionable in pairs based on frame calculations. A  
0 fully equipped PDC contains 10 panels equipped for 15 fuses each.  
0 Options to the PDC include an NT0X42AU ISDN fuse panel for Packet  
0 Handler fusing and an NT0X42XC Enhanced Alarm Service Upgrade  
0 Kit. All fuses types must be provisioned separately.

0 | NTZZ13VA (Earthquake U.L. PDC Bottom-Feed, US Applications Only)

0 The NTZZ13VA contains four (4) panels of 15 fuses each (total 60)  
0 and a filter panel. The remaining required type A and B fuse  
0 panels are provisionable in pairs based on frame calculations. A  
0 fully equipped PDC contains 10 panels each equipped for 15 fuses.  
0 Options to the PDC include an NT0X42AU ISDN fuse panel for Packet  
0 Handler fusing, an NT0X42XC Enhanced Alarm Service Upgrade Kit  
0 and an NT0X42XA/XB Auxiliary Battery Return Panel Kit. EMI is  
0 not an available option with a bottom fed PDC. All fuses types  
0 must be provisioned separately.

0 | NTZZ13WA (Earthquake U.L. PDC Bottom-Feed Fully-Equipped, US  
0 Only)

0 The NTZZ13WA contains ten (10) panels of 15 fuses each (total  
0 150) and a filter panel. Options to the PDC include an NT0X42XC  
0 Enhanced Alarm Service Upgrade Kit and an NT0X42XA/XB Auxiliary  
0 Battery Return Panel Kit. EMI is not an available option with a  
0 bottom fed PDC. All fuses types must All fuse types must be pro-  
0 visioned separately.

0 NTZZ13LA (Cabinetized PDC, for Canadian and US applications)

0 The NTZZ13LA contains one NTRX31AA CPDC and door labels. Addi-  
0 tional equipment required depends on office configuration and

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0 must be provisioned per rules in the NTZZ13LA Engineering Manual  
0 section.

0 NTZZ37MA (International Cabinetized PDC)

0 The NTZZ37MA contains one NTRX31AA CPDC and door labels. Addi-  
0 tional equipment required depends on international office config-  
0 uration and must be provisioned per rules in the NTZZ37MA  
0 Engineering Manual section. In NTZZ37MA, one (1) NTRX31AF UK  
0 Insulator Kit must be provisioned for UK markets and may be pro-  
0 visioned on customer request in other markets.

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Chapter 23

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|                |            | UNIT QTY |      |   |                        | TOTAL FUSES |                               |
|----------------|------------|----------|------|---|------------------------|-------------|-------------------------------|
| EQUIP<br>FRAME | PEC        | INIT     | EOPP | X | QTY FUSES<br>PER FRAME | =           | INITIAL<br>END PLAN<br>PERIOD |
| PAGE TOTALS    |            |          |      |   |                        |             |                               |
|                |            |          |      |   |                        |             |                               |
| ROS            | NT3X95AA   |          |      | X | 2                      | =           |                               |
| DPCC           | NT9X01BA   |          |      | X | 8                      | =           |                               |
| ROS            | NT3X95AA   |          |      | X | 2                      | =           |                               |
| NETC           | NT5X13AA   |          |      | X | 4                      | =           |                               |
|                | CNA - LSPK |          |      | X | 1                      | =           |                               |
| MIS            | NT0X02AB   |          |      | X | 2                      | =           |                               |
| HLE            | NTBX65BA   |          |      | X | 6                      | =           |                               |
| LCEI           | NTBX30AB   |          |      | X | 8                      | =           |                               |
| CPEI           | NT6X01AB   |          |      | X | 4                      | =           |                               |
| IAE            | NTBX40AA   |          |      | X | 4                      | =           |                               |
| STE            | NT6X09AA   |          |      | X | 5                      | =           |                               |
| NMM            |            |          |      | X | 2                      | =           |                               |
| DIU            |            |          |      | X | 1                      | =           |                               |
| PHAM           |            |          |      | X | 1                      | =           |                               |
| CCC            | NT3X45     | 4        | 4    | X | 2                      | =           |                               |
| LME            | NT0X45AD   |          |      | X | 10                     | =           |                               |
| MS6E           | NT6X06AB   |          |      | X | 6                      | =           |                               |
| MEX            |            |          |      | X | 2                      | =           |                               |
|                |            |          |      |   |                        |             |                               |

Note 1

Note 1

Note 2

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0 TOTAL FUSES FOR EQUIPMENT  
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0 Note 1: Remote Oscillator Shelf (Stratum II)  
0 Note 2: 2 Feeds for Ringing Generators (Future Applications)

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## (B) PDC FRAME PROVISIONING WORKSHEET FOR DC COOLING UNIT

|                |          | UNIT QTY |      |   |                        |   | TOTAL FUSES |                    |
|----------------|----------|----------|------|---|------------------------|---|-------------|--------------------|
| EQUIP<br>FRAME | PEC      | INIT     | EOPP | X | QTY FUSES<br>PER FRAME | = | INITIAL     | END PLAN<br>PERIOD |
| DTE            | NT6X01AA |          |      | X | 2                      | = |             |                    |
| CCC            | X        | 1        | 1    | X | 2                      | = |             |                    |
| NETC           | NT5X13AA |          |      | X | 2                      | = |             |                    |
| LTE            | NT6X01AA |          |      | X | 2                      | = |             |                    |
| LGE            | NT6X01AA |          |      | X | 2                      | = |             |                    |
| MEX            | X        |          |      | X | 2                      | = |             |                    |
| MS6E           | NT6X06AB |          |      | X | 2                      | = |             |                    |
| MS7E           | NT6X31AA |          |      | X | 2                      | = |             |                    |
| SME            | NT6X01AA |          |      | X | 2                      | = |             |                    |
| DSNE           | NT8X10AA |          |      | X | 2                      | = |             |                    |
| TMS            | NT6X02NA |          |      | X | 2                      | = |             |                    |
| LPP            | NT9X70   |          |      | X | 4                      | = |             |                    |
| DPCC           | NT9X01BA | 1        | 1    | X | 4                      | = |             |                    |
|                |          |          |      |   |                        |   |             |                    |
| PAGE TOTALS    |          |          |      |   |                        |   |             |                    |

Note 4

Note 1

Note 4

Note 4

Note 4

Note 2,4

Note 4

Note 4

Note 4

Note 4

Note 3

Note 3

Note 3

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## (B) PDC FRAME PROVISIONING WORKSHEET FOR DC COOLING UNIT

|                                           |          | UNIT QTY |      |   |                        | TOTAL FUSES |                    |
|-------------------------------------------|----------|----------|------|---|------------------------|-------------|--------------------|
| EQUIP<br>FRAME                            | PEC      | INIT     | EOPP | X | QTY FUSES<br>PER FRAME | = INITIAL   | END PLAN<br>PERIOD |
| PAGE TOTALS                               |          |          |      |   |                        |             |                    |
| IAE                                       | NTBX40AA |          |      | X | 2                      |             |                    |
| STE                                       | NT6X09AA |          |      | X | 2                      |             |                    |
| LCEI                                      | NTBX30AB |          |      | X | 2                      |             |                    |
| CPEI                                      | NT6X01AB |          |      | X | 2                      |             |                    |
|                                           |          |          |      |   |                        |             |                    |
|                                           |          |          |      |   |                        |             |                    |
| COOLING UNIT FUSES = TOTAL                |          |          |      |   |                        |             |                    |
| TOTALS FROM SECTION (A)                   |          |          |      |   |                        |             |                    |
| SPARE FUSE POSITIONS                      |          |          |      |   |                        |             |                    |
| TOTAL FUSE POSITIONS REQUIRED             |          |          |      |   |                        |             |                    |
| FUSE PANELS = FUSE POS DIVIDED BY 15 =    |          |          |      |   |                        |             |                    |
| PDC FRAMES REQD = FUSE PANELS DIV BY 10 = |          |          |      |   |                        |             |                    |

Note 4,5

Note 4,5

Note 5,6

Note 7

Note 1: CCC is a double bay frame and has 2 cooling units

Note 2: MEX does not require cooling units unless 4 modules of store are equipped.

Note 3: DMS-SuperNode cabinet.

Note 4: If Unit Quantity is greater than 1, divide total fuses by 2 and round up to even number.

Note 5: ISDN frames.

Note 6: Up to 5 additional cooling units may be fed off the initial LCEI frame.

Note 7: For standard fuse panels of 4" height. A/RM panels (ISDN) requires 7" height.

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0 PDC CUSTOMER QUESTIONS

0 Q1. Are Top Feed PDC's required? (Y/N) \_\_\_\_\_

0 Q2. Are Bottom Feed PDC's required? (Y/N) \_\_\_\_\_

0 Q3. Quantity of ISDN fuse panels required. \_\_\_\_\_

0 Q4. Is Electromagnetic Interference (EMI)  
0 feature (NT0X42AT) required? (Y = 1, N = 0) \_\_\_\_\_  
0 (Only one per office, Top Feed only)

0 Q5. What is the total fuse panels required? \_\_\_\_\_  
0 (Reference Table B quantity)

0 TO DETERMINE TOTAL PDC REQUIREMENTS COMPLETE THE FOLLOWING RULES.

0 R1. Total Fuse panels required =  $Q5 + (2 \times Q3)$  \_\_\_\_\_

0 R2. Total PDC's required =  $R1 / 10$  round up \_\_\_\_\_

0 R3. ISDN equipped PDC's =  $Q3 / 2$  round up \_\_\_\_\_

0 R4. EMI equipped PDC =  $Q4$  \_\_\_\_\_

0 R5. If  $Q1 = Y$  (Top Feed) CONTINUE.  
0 If  $Q1 = N$ , skip to R12.

0 R6. Quantity NTZZ13KA/TA =  $R2 - R3 - R4$  \_\_\_\_\_  
0 - Provide NTZZ13KA For U.S. Non-Earthquake Jobs  
0 - Provide NTZZ13TA For U.S. Earthquake Jobs

0 R7. Quantity NTZZ13HA/RA =  $R3 + R4$  \_\_\_\_\_  
0 - Provide NTZZ13HA For U.S. Non-Earthquake Jobs  
0 - Provide NTZZ13RA For U.S. Earthquake Jobs

0 R8. Quantity NTZZ13CA =  $((R7 \times 6) - (Q3 \times 2)) / 2$  \_\_\_\_\_

0 R9. Quantity NT0X42AU =  $Q3$  \_\_\_\_\_

0 R10. Quantity NT0X42AT =  $R4$  \_\_\_\_\_

0 R11. Quantity NT0X42AH =  $R7 - R10$  \_\_\_\_\_

0 R12. If  $Q2 = Y$  (Bottom Feed) CONTINUE.

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0 R13. Quantity NTZZ13JA = R2 \_\_\_\_\_  
0 R14. Quantity NT0X42AU = Q3 \_\_\_\_\_  
0 R15. Quantity NTZZ13CA = ((R2 X 6) - (Q3 X 2)) / 2 \_\_\_\_\_

0 2.1.4 OFFICE LAYOUT INFORMATION

0  
0 Normally, the PDC is located at the non-growth end of an equip-  
0 ment lineup. It may be located in the middle of a lineup upon  
0 customer's request, subject to cable distance versus current ca-  
0 pacity and wire gauge limitations. Several equipment lineups may  
0 share one CPDC, connected by cross-aisle power cabling.

0 The CPDC is normally located at the non-growth end of an equip-  
0 ment lineup, but it can be located in the middle of a lineup if  
0 required. The DMS-100 Cabinetization equipment are restricted to  
0 lineups of no more than eleven (11) 28" cabinets or five (5) 42"  
0 cabinets. Refer to ECM-600 for more details of office layout  
0 rules.

0 2.1.5 TRAFFIC TABLES

0  
0 Not applicable.

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0 2.2 PRODUCT/SYSTEM SPECIFICATION

0

0 2.2.1 PHYSICAL CHARACTERISTICS

0

0 For information on the physical characteristics of the CPDC, refer to ECM-600 DMS-100 Cabinetized.

0 2.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Non-UL PDC

0 For Isolated System Grounding (ISG) compliant and Electromagnetic  
0 Interference (EMI) protected applications, an Isolated System  
0 Grounding Logic Return Equalizer Bus Bar Assembly, NT0X42AT is  
0 provisioned at position 5 of PDC 00. In this particular case, no  
0 NT0X42AH Filler Panel will be provisioned and the Ground Panel  
0 must be equipped in position 68.

0 Furthermore, for all packaged EMI applications, NT0X42UE Ground  
0 Panel - Top Feed is to be provided for either top or bottom power  
0 cable feed (despite the panel's name).

0 For non-packaged (custom switch) EMI applications, NT0X42UE  
0 Ground Panel - Top Feed is to be provided and power cables run  
0 through the top of the frame only. Bottom cable feed is not  
0 available for these applications.

0 When filtered EMI protection is required, provide one (1) EMI  
0 Rear Cabling Housing Assembly and associated hardware.

0 UL PDC

0 With the implementation of Isolated System Grounding (ISG) for  
0 Electromagnetic Interference (EMI) applications, an isolated system  
0 grounding logic return equalizer bus bar assembly (NT0X42AT)

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0 is now mountable at position 05 of the U.L. PDC. Only one (1)  
0 NT0X42AT is required per office and should be mounted in U.L. PDC  
0 00.

0 For offices with both EMI and ISG the ground panel(NT0X42UE) must  
0 be mounted in pos 68 of Top Feed U.L. PDC 00. Therefore, no  
0 Filler Panel (NT0X42AH) will be required for PDC 00. The remain-  
0 ing PDC's will require a Filler Panel in pos 05 of PDC 01 and up-  
0 wards.

0 When Electromagnetic Interference (EMI) protection is required,  
0 provide one (1) NT0X42AT ISG/EMI Logical Return Ground Equalizer  
0 Busbar in position 05 of PDC 00 only. Only one (1) NT0X42AT is  
0 required per office and should be mounted in the first PDC.

0 Cabinetized PDC

0 The Cabinetized PDC is now being provided only as EMI-compliant.  
0 Refer to the Engineering Manual sections for NTZZ13LA and  
0 NTZZ37MA for details.

0 2.2.3 SPARING INFORMATION

0  
0| As a recommendation, provide 10% spare fuses.

0 2.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not applicable.

0 2.2.5 CURRENT DRAIN INFORMATION

0  
0 Not applicable.



0 2.3 SOFTWARE PROVISIONING

0

0 2.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Not applicable.

0 2.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 2.3.3 MEMORY PROVISIONING

0

0 Not applicable.

0 2.4 REAL TIME IMPACT

0 Not applicable.

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0 3.0 Power Plant Provisioning (Host and Remote)

0 The DC Power Plant supplies controlled and protected DC power to  
0 DMS-100 frames and equipment. The principal components of a power  
0 plant are as follows:

0 \* Power Board

0 \* Rectifiers

0 \* Batteries

0 The power board assembly is required to provide main control for  
0 the battery plant system and distribute protected DC power. Power  
0 board maximum capacities are not as incremental as rectifiers and  
0 batteries so the power board rating must exceed the ultimate peak  
0 hour amperage drain for the particular office it is being engi-  
0 neered for. Power boards may be housed in either a relay rack or  
0 box framework. Rear and side protective covers should always be  
0 provided to maintain safety for personnel and protect against ac-  
0 cidental contact with protective components of power board.

0 The rectifier is the source of -48V power for the power plant.  
0 They convert commercial AC electrical power to DC voltage and  
0 current demands based on telephone system requirements.  
0 Rectifiers also maintain the batteries at a fully charged state  
0 plus battery recharge following a commercial AC power failure.  
0 Unless otherwise specified by the customer, rectifier redundancy  
0 should always be provided with redundant rectifier capacity being  
0 equal to the largest rectifier in the group.

0 The batteries provide a source of uninterrupted -48V power for  
0 the telephone system in the event the rectifiers fail. Battery  
0 manufacturers size cells in ampere hours. Ampere hours are de-  
0 rived with regard to the number of plates, size and electrolyte.  
0 The typical battery cells presently being used are lead calcium  
0 or lead antimony. Sealed maintenance free batteries are also  
0 available. Sizing of the battery is based on the busy hour drain  
0 and number of hours reserve requested with initial and ultimate  
0 current drains observed.

0 Reference paragraph 2.4 for detailed information pertaining to  
0 the above equipment.

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0 3.1 HARDWARE PROVISIONING

0

0 3.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not Applicable

0 3.1.2 HARDWARE DEPENDENCIES

0

0 Not Applicable

0 P AND C SIDE PORT REQUIREMENTS

0

0 Not Applicable

0 DMS BUS PORT REQUIREMENTS

0

0 Not Applicable

0

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## 0 CIRCUITS PER CARD

0  
0 Not Applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0 3.1.3 PROVISIONING CONSIDERATIONS

0  
0 Power board mounted components can vary based on Central Office  
0 requirements. Basic components are:

0 \* Control Panel Assembly equipped with power plant metering,  
0 alarm indicating and sending capability, charger sensing  
0 fuses, etc.

0 \* Distribution fuses required for DMS-100 and other forms of  
0 telephone related equipment.

0 \* Rectifier Termination Panel (power boards 0 - 1600 amps)

0 \* Isolated Return Ground Bar Assembly

0 When engineering an initial power plant, the total peak hour load  
0 imposed on a power board should never exceed 80% of the power  
0 board rating (i.e. 1200A X .80 = 960A). If the ultimate current  
0 drain does exceed 80%, the next incremental rated power board  
0 should be furnished.

0 Power boards can be connected to rectifiers and batteries via ca-  
0 ble or busbar. If the capacity of the power board exceeds 2000  
0 amps, the plant is normally arranged with busbar over the

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0 rectifiers and batteries and connected to the busbar riser of the  
0 power board.

0 When provisioning rectifiers, the ultimate busy hour drain must  
0 be taken into account. Rectifier quantity and size should be ar-  
0 ranged for the ultimate plan and provided based on initial,  
0 intermediate or ultimate plans as specified by the customer.  
0 Rectifier redundancy should always be provided with the output of  
0 the redundant rectifier being equal to or greater than the larg-  
0 est rectifier in the group. Another consideration when provi-  
0 sioning rectifiers is the commercial AC input voltage, phase  
0 (single or three) and frequency (50 or 60 Hz).

0 Provisioning of the battery arrangements should take careful con-  
0 sideration. Some basic guides are as follows:

- 0 \* Initial, intermediate and final busy hour drain plan. The  
0 busy hour drain to include switch busy hour amperage plus  
0 customer equipment amps.
- 0 \* Battery provisioning should start with the ultimate Busy Hour  
0 Drain plan and work back to the initial Busy Hour Drain plan.  
0 Engineering can, by this method, observe when additional  
0 strings would be required in plan years other than initial or  
0 ultimate.
- 0 \* The hour reserve is also a prime factor when selecting bat-  
0 tery ampere hour capacity. The following multiplying factors  
0 are to be used to determine battery capacity.

| 0 | Hour Reserve | Multiplying Factor |
|---|--------------|--------------------|
| 0 | =====        | =====              |
| 0 | 3            | 5.3                |
| 0 | 4            | 6.3                |
| 0 | 5            | 7.2                |
| 0 | 6            | 8.1                |
| 0 | 7            | 9.0                |
| 0 | 8            | 9.8                |
| 0 | 9            | 10.6               |
| 0 | 10           | 11.4               |

0 Example: BSHA = 1000A @ 4 Hour Reserve

0 1000A X 6.3 = 6300 Amp Hour Required

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0 \* After determining the above, consideration of floor space and  
0 number of 24 cell arrangements are to be provisioned.

0 \* Select a battery capacity (in ampere hours) equal to but not  
0 less than the ampere hours determined above. Battery rack re-  
0 quired for support of cell arrangements are also selected, as  
0 dictated by floor plan plus customer preference. Standard  
0 commercial racks are as follows:

- 0 a. (2) Step Rack
- 0 b. (1) Row (2) Tier Rack
- 0 c. (1) Row (3) Tier Rack
- 0 d. (2) Row (2) Tier Rack

0 NOTE: Length of battery rack is determined by size and  
0 arrangement of battery cells.

0 Power engineering shall carefully interpret power information in  
0 NTI CI document to ensure proper battery provisioning and also if  
0 earthquake seismic protection is required. Special attention is  
0 required when Bell Companies request roll steel or fiberglass  
0 type battery stands normally provided by AT&T Technology Company.

#### 0 3.1.4 OFFICE LAYOUT INFORMATION

0  
0 Power equipment should be located per job floor plan or as re-  
0 quested by the customer. If there is any deviation from job  
0 drawings, installation is to mark drawing and return per the JIM  
0 600 process.

#### 0 3.1.5 POWER PLANT CALCULATIONS

0  
0 Power Plant equipment required on a per job basis can be deter-  
0 mined by completing the following table:

0

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| DMS 100 FAMILY POWER REQUIREMENT WORKSHEET |                   |          |      |             |   |         |
|--------------------------------------------|-------------------|----------|------|-------------|---|---------|
|                                            |                   | UNIT QTY |      | TOTAL DRAIN |   |         |
| EQUIPMENT                                  | UNIT DRAIN (AMPS) | X        | INIT | EOPP        | = | INITIAL |
| DPP                                        | 4.0               | X        |      |             | = |         |
| DATA SET SHELF                             | 6.0               | X        |      |             | = |         |
| DISC DRIVE UNIT                            | 7.0               | X        |      |             | = |         |
| MAG TAPE DRIVE UNIT                        | 3.5               | X        |      |             | = |         |
| BMC                                        | 5.0               | X        |      |             | = |         |
| LCE                                        | 8.2+4W            | X        |      |             | = | Note 1  |
| LGC MODULE                                 | 8.5               | X        |      |             | = |         |
| SMR MODULE                                 | 13.32             | X        |      |             | = |         |
| SMS MODULE                                 | 13.32             | X        |      |             | = |         |
| SMU MODULE                                 | 13.32             | X        |      |             | = |         |
| MS6E                                       | 23.0              | X        |      |             | = |         |
| TOPS MS                                    | 36.0              | X        |      |             | = |         |
| MS7E                                       | 14.0              | X        |      |             | = |         |
| DCM SHELF                                  | 2.3               | X        |      |             | = |         |
| DES SHELF                                  | 2.7               | X        |      |             | = |         |
| DTC MODULE                                 | 8.5               | X        |      |             | = |         |
| LTC MODULE                                 | 8.5               | X        |      |             | = |         |
| MTA UNIT (2X46AB)                          | 0.8               | X        |      |             | = |         |
| MTM SHELF                                  | 3.3               | X        |      |             | = |         |

0 NORTHERN TELECOM  
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PRACTICE 297-1001-450

0 PAGE TOTALS  
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0 Note 1: W = 2-Way CCS per line in unit drain formula

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0 Chapter 23

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| DMS 100 FAMILY POWER REQUIREMENT WORKSHEET (Continued) |                   |   |          |      |             |                 |
|--------------------------------------------------------|-------------------|---|----------|------|-------------|-----------------|
|                                                        |                   |   | UNIT QTY |      | TOTAL DRAIN |                 |
| EQUIPMENT                                              | UNIT DRAIN (AMPS) | X | INIT     | EOPP | =           | INITIAL         |
|                                                        |                   |   |          |      |             | END PLAN PERIOD |
| 1ST PAGE TOTALS                                        |                   |   |          |      |             |                 |
| TM SHELF                                               | 2.2               | X |          |      | =           |                 |
| LMS                                                    | 7.8               | X |          |      | =           |                 |
| LIS                                                    | 18.7              | X |          |      | =           |                 |
| ENET SHELF                                             | 21.0              | X |          |      | =           |                 |
| ENET CABINET FAN                                       | 6.0               | X |          |      | =           |                 |
| NETWORK MOD (DSNE)                                     | 7.0               | X |          |      | =           |                 |
| CMPS NT9X06AA                                          | 20.0              | X |          |      | =           |                 |
| MSPS NT9X04AA                                          | 20.0              | X |          |      | =           |                 |
| SLM NT9X07AA                                           | 12.9              | X |          |      | =           |                 |
| DTH ROTL                                               | 5.0               | X |          |      | =           |                 |
| INVERTER UNIT                                          | 5.0               | X |          |      | =           |                 |
| PDC ALARM FUNCTIONS                                    | 6.5               | X |          |      | =           |                 |
| COOLING UNIT                                           | 1.0               | X |          |      | =           |                 |
| HLE                                                    | 8.0               | X |          |      | =           |                 |
| RLE (shelf)                                            | 8.0               | X |          |      | =           |                 |
| LCEI                                                   | 26.0              | X |          |      | =           |                 |
| CPEI                                                   | 35.0              | X |          |      | =           |                 |
| IAE                                                    | 23.0              | X |          |      | =           |                 |

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| DMS 100 FAMILY POWER REQUIREMENT WORKSHEET (Continued) |                   |   |          |      |             |                 |
|--------------------------------------------------------|-------------------|---|----------|------|-------------|-----------------|
|                                                        |                   |   | UNIT QTY |      | TOTAL DRAIN |                 |
| EQUIPMENT                                              | UNIT DRAIN (AMPS) | X | INIT     | EOPP | =           | INITIAL         |
|                                                        |                   |   |          |      |             | END PLAN PERIOD |
| 2ND PAGE TOTALS                                        |                   |   |          |      |             |                 |
| STE                                                    | 19.0              | X |          |      | =           |                 |
| NMM                                                    | 26.0              | X |          |      | =           |                 |
| DIU                                                    | 20.0              | X |          |      | =           |                 |
| PHAM                                                   | 26.0              | X |          |      | =           |                 |
| 2-PORT LME FRAME                                       | 21.8              | X |          |      | =           |                 |
| 3-PORT LME FRAME                                       | 24.4              | X |          |      | =           |                 |
| 4-PORT LME FRAME                                       | 26.7              | X |          |      | =           |                 |
| NT-40 COMMON                                           | N/A               |   | 60       | 60   |             | Note 2          |
| NET                                                    | 21.0              | X |          |      | =           |                 |
| NETC                                                   | 24.0              | X |          |      | =           | Note 3          |
| MISCELLANEOUS                                          |                   |   |          |      |             |                 |
|                                                        |                   |   |          |      |             |                 |
|                                                        |                   |   |          |      |             |                 |
|                                                        |                   |   |          |      |             |                 |
|                                                        |                   |   |          |      |             |                 |
|                                                        |                   |   |          |      |             |                 |
|                                                        |                   |   |          |      |             |                 |
| TOTAL DMS AMPS                                         |                   |   |          |      |             |                 |
| TELCO AMPS REQUIRED                                    |                   |   |          |      |             |                 |

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| DMS 100 FAMILY POWER REQUIREMENT WORKSHEET (Continued) |                         |             |              |                   |  |
|--------------------------------------------------------|-------------------------|-------------|--------------|-------------------|--|
| PROTECTED INVERTER POWER REQUIREMENTS                  |                         |             |              |                   |  |
| EQUIPMENT                                              | UNIT<br>DRAIN<br>(AMPS) | UNIT<br>QTY | (VA)<br>X120 | VOLT AMPS<br>(AC) |  |
| TOPS MP                                                | .85                     | X           |              | =                 |  |
| TOPS MPX                                               | 2.1                     | X           |              | =                 |  |
| TOPS MPX DSU                                           | .4                      | X           |              | =                 |  |
| CBT UNIT                                               | 12.0                    | X           |              | =                 |  |
| CBT VDU                                                | 1.0                     | X           |              | =                 |  |
| SUN WKSTN.                                             | .77                     | X           |              | =                 |  |
| SUN TAPE DR.                                           | .77                     | X           |              | =                 |  |
| NORSTAR DKSU                                           | .42                     | X           |              | =                 |  |
| NORSTAR NTM/NSM                                        | .2                      | X           |              | =                 |  |
| PRINTER                                                |                         | X           |              | =                 |  |
| VDUs                                                   |                         | X           |              | =                 |  |
| MODEMS                                                 |                         | X           |              |                   |  |
|                                                        |                         |             |              |                   |  |
|                                                        |                         |             |              |                   |  |
|                                                        |                         |             |              |                   |  |
|                                                        |                         |             |              |                   |  |
|                                                        |                         |             |              |                   |  |
| TOTAL VA REQUIRED                                      |                         |             |              |                   |  |

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0 1.1 Total VA required \_\_\_\_\_  
0 1.2 Total KVA required \_\_\_\_\_  
0 (Total VA/1000)  
0 1.3 Inverter Conversion Efficiency Percent \_\_\_\_\_  
0 (Enter as decimal)  
0 1.4 Equivalent DC Power Drain \_\_\_\_\_  
0 ((Item 1.1/(48 x Item 1.3))  
0 1.5 Total DC Power Drain \_\_\_\_\_  
0 (Item 1.4 + Total AMPS Required)

0

0 3.1.6 TRAFFIC TABLES

0

0 N/A

0 3.2 PRODUCT/SYSTEM SPECIFICATION

0

0 3.2.1 PHYSICAL CHARACTERISTICS

0

0 Reference job specifications/drawings for dimensions of equipment  
0 on a per job basis.

0 3.2.2 EMI/EARTHQUAKE INFORMATION

0

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0 Relay rack type power boards and rectifier frames will require  
0 additional top bracing to meet most companies earthquake require-  
0 ments. Battery racks can be specified as earthquake type to meet  
0 or exceed earthquake zones as required. Reference EMI section of  
0 this document for more information pertaining to seismic pro-  
0 tection of power related equipment.

0 3.2.3 SPARING INFORMATION

0  
0 Unless otherwise specified, NTI Power Engineering will provide a  
0 minimum of 2 spare fuses for each size required. One rectifier  
0 and power board spare parts kit will also be furnished if not  
0 otherwise specified on initial jobs.

0 3.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Please refer to the other sections of this ECM and the referenced  
0 EM Sections. All of this document describes Power Plant Provi-  
0 sioning.

0 3.2.5 CURRENT DRAIN INFORMATION

0  
0 When engineering an initial power plant, the total peak hour load  
0 imposed on a power board should never exceed 80% of the power  
0 board rating (i.e.  $1200A \times .80 = 960A$ ). If the ultimate current  
0 drain does exceed 80%, the next incremental rated power board  
0 should be furnished.

0

0

0 3.3 SOFTWARE PROVISIONING

0

0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not Applicable

0 3.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not Applicable

0 3.3.3 MEMORY PROVISIONING

0  
0 Not Applicable

0 3.4 REAL TIME IMPACT

0 Not Applicable

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0 4.0 DMS-100 Cabinetized

0 This project was introduced to re-package the existing DMS-100 product  
0 line into 28 inch cabinets. The project is referred to as DMS-100  
0 Cabinetization (Model A). DMS-100 Cabinetized provides a more effec-  
0 tive design for EMI compliance.

0 The project development will be divided into phases. Phase 1 will in-  
0 clude development of cabinetized versions of the PDC, IOE, MIS, LCE,  
0 TME, CPE, DSN, SLC and DNI frames. There will also be development of a  
0 modular FSP prototype, LCE signal connectorization, low voltage con-  
0 trol "AC free", double hole frame ground and enhanced endguard control  
0 with aisle identification card included in Phase 1. Phase 1' intro-  
0 duces the CPCI module and the CLMI ISDN line cabinet. Subsequent  
0 phases will add cabinets and capabilities which will be covered in fu-  
0 ture issues of this ECM.

0 The cabinet will be a unified steel structure that will support four  
0 standard 26 inch wide by 13 inch high DMS-100 shelves and an FSP. The  
0 integral cooling unit (for applications that require cooling) will  
0 mount in the base of the cabinet. Intra lineup cabling can be routed  
0 within the EMI shield horizontally between cabinets. The cabinets will  
0 be light grey with medium blue accent.

0

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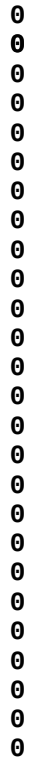
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0 4.1 HARDWARE PROVISIONING

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0 4.1.1 HARDWARE USAGE RESTRICTIONS

0

0 4.1.2 HARDWARE DEPENDENCIES

0

0 DMS-100 Cabinetized equipment is intended to replace the existing  
0 DMS-100 product line. To maintain the EMI capability of the  
0 cabinetized system, CABINETIZED EQUIPMENT MUST NOT BE MIXED WITH  
0 FRAMES.

## 0 P AND C SIDE PORT REQUIREMENTS

0

## 0 DMS BUS PORT REQUIREMENTS

0

## 0 CIRCUITS PER CARD

0

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## 0 DISCRIMINATION NUMBERING

0

0 4.1.3 PROVISIONING CONSIDERATIONS

0  
0 The equipment included in the DMS-100 Cabinetized project is pri-  
0 marily the DMS-100 product repackaged into cabinets. Building  
0 Block provisioning methods have been incorporated to simplify or-  
0 dering Cabinetized equipment and associated hardware.

0  
0 Cabinetized Line Concentrating Equipment (CLCE)

0  
0 The NTRX30AA Cabinetized LCE is a cabinet module that maintains  
0 the current functionality of the DMS-100 LCE frame. Like the LCE,  
0 it will contain two fully duplicated LCMS, each with ten drawers  
0 providing 640 line card capacity. Each CLCE will utilize a single  
0 backplane for the duplicated controller, processor and power con-  
0 verter cards. This backplane eliminates over 95% of the LCE  
0 wirewrapped connections by use of connectors. All wiring between  
0 the duplicated controller processor and convertor is integrated  
0 into the dual shelf backplane. The line drawer fusing has been  
0 moved to the side of the respective shelf to allow packaging of  
0 the seven foot LCE into a six foot cabinet.

0  
0 Connectorization is provided to a rear bulkhead for DS-30A links,  
0 metallic test access and line drawer tip and ring connections.  
0 The FSP is mounted at the top of the cabinet and contains dupli-  
0 cated ringing generators, a cooling fan unit and equipment for  
0 cabinet power distribution and alarms. A cooling unit is also  
0 mounted in the bottom of the cabinet. To accomodate the cutover  
0 by directory number feature, the +15V and ground is brought out  
0 to a terminal block on an applique panel at the rear of the cabi-  
0 net. The cables from the CLCE line drawers to the bulkhead are  
0 included with the cabinet (Always Provided).

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0 The NTRX30AA is always provided in the NTZZ08DB building block.

0 Cabinetized Line Module ISDN (CLMI)

0  
0 The NTRX30BA Cabinetized LMI is a cabinet module that maintains  
0 the current functionality of the DMS-100 LCEI frame. Like the  
0 LCEI, it will contain two fully duplicated LCMEs, each with eight  
0 drawers providing 480 single slot 2B1Q lines.

0 The FSP is mounted at the top of the cabinet and contains dupli-  
0 cated ringing generators, a cooling fan unit and equipment for  
0 cabinet power distribution and alarms. A cooling unit is also  
0 mounted in the bottom of the cabinet. The cables from the CLCE  
0 line drawers to the bulkhead are included with the cabinet (Al-  
0 ways Provided).

0 The NTRX30BA is always provided in the NTZZ33AA building block.

0 Cabinetized Power Distribution Center (CPDC)

0  
0 The NTRX31AA Cabinetized PDC houses equipment required to inter-  
0 face between the -48V office batteries and up to 84 individual  
0 loads within the DMS-100 system. The CPDC will contain power  
0 distribution shelves, an FSP which includes DC distribution fil-  
0 tering and one optional inverter shelf which will serve conven-  
0 ience outlets.

0 The CPDC will provide the capability to use circuit breakers  
0 rather than fuses, connectors in place of bolted connections and  
0 the ability to add CPDC shelves as required. EMI compliance is  
0 achieved at the cabinet level for all input power cabling and at  
0 the system level for all power distribution. The maximum capac-  
0 ity of the CPDC is 200 Amps per feed.

0 The NTRX31AA is always provided in the NTZZ13LA building block.

0

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## 0 Cabinetized Trunk Module Equipment (CTME)

0  
0 The NTRX32AA CTME is the cabinet module which has the same basic  
0 functions as the DMS-100 TME frame. The cabinet may contain up to  
0 four shelf modules (MTM, DRA, TM8, AXU) which are provisionable  
0 in positions 5, 19, 33 and 47 except the AXU which is restricted  
0 to position 47 only. When an MTM is functioning as the alarm  
0 system (OAU), the shelf should be mounted below the AXU in posi-  
0 tion 33. The NTZZ31BA building block contains one (1) AXU, one  
0 (1) OAU, and the associated hardware required for the office  
0 alarm system. A Meridian cabinet FSP will be utilized in Phase 1  
0 until the new modular FSP is available (Phase 2).

0 The MTM used for the Office Alarm Unit (OAU) on the CTME is to  
0 use the following circuit pack mounting positions:

| 0 PEC                            | 0 SLOT  |
|----------------------------------|---------|
| 0 -----                          | 0 ----- |
| 0 NT2X45AB                       | 0 01    |
| 0 NT0X70AA                       | 0 02    |
| 0 NT2X53AA                       | 0 03    |
| 0 NT2X59AA                       | 0 04    |
| 0 RESERVED FOR NT3X82AA          | 0 05,06 |
| 0 RESERVED FOR NT2X57AA          | 0 07    |
| 0 RESERVED FOR NT3X83AA,NT3X84AA | 0 08    |
| 0 RESERVED FOR NT3X85AA          | 0 09    |
| 0 RESERVED FOR NT0X10AA          | 0 10    |
| 0 RESERVED FOR NT0X10AA          | 0 11    |
| 0 RESERVED FOR NT0X10AA          | 0 12    |
| 0 RESERVED FOR NT0X10AA          | 0 13    |
| 0 PROVISIONABLE                  | 0 14    |
| 0 PROVISIONABLE                  | 0 15    |
| 0 PROVISIONABLE                  | 0 16    |

0 The NTRX32AA is always provided in the NTZZ31AA building block.  
0 Personality plates are always provided in the TM8/MTM/DRA build-  
0 ing blocks. Cabling will be via filtered connectors in the rear  
0 EMI bulkheads.

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0 Cabinetized Input Output Equipment (CIOE)

0  
0 The NTRX33AA CIOE will house Data Processing Peripheral (DPP),  
0 Input Output Controller (IOC), Magnetic Tape Drive (MTD), Disk  
0 Drive Units (DDU), and Stratum II and 2.5 Clocks.

0 The basic CIOE will be equipped with a Frame Supervisory Panel  
0 (FSP), a cooling unit (CU), and an Input Output Controller (IOC).  
0 The NTZZ32AA building block comes always provided with one  
0 NTRX33AA, one FSP, and one CU. One (1) NTZZ32EA IOC Package  
0 should be ordered per CIOE. The MTD, DDUs, DPPs and Stratum  
0 equipment is optional and provisionable in building block pack-  
0 ages. The FSP will be in shelf position 60, the IOC in position  
0 19 and the cooling unit in position 00. When provisioned, the  
0 DDU will always be mounted in shelf position 05, the Stratum in  
0 position 05 and the MTD or DPP in position 33. The Phase 1 CIOE  
0 will support only one IOC per cabinet. Personality plates are  
0 always provided in the building block packages.

0 MTD/DPP (NT1X68AC) or DDU (NT1X55DA) controller cards can be as-  
0 signed to only slot 4 or slot 6 of the IOC shelf in the CIOE. The  
0 cables from these slots to the bulkhead are not normally provided  
0 since the MTD/DDU/DPP do not require them. While it is not re-  
0 commended, use of these slots for other devices will require that  
0 cables (4 per slot) be provisioned. Therefore, IOC slots 4 and 6  
0 are reserved for MTD/DPP/DDU controllers only. The MTD,DPP or  
0 DDU connected to these slots must be inside the same Faraday cage  
0 of the CIOE.

0 Shielded cable will be used for DS30 connection to ECORE through  
0 bulkhead. All cable connections from the IOC to MTDs, DDUs and  
0 DPPs will be direct, rather than through the bulkhead. A Meridian  
0 cabinet FSP will be utilized for Phase 1 and the modular FSP will  
0 be included in Phase 2.

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## 0 Cabinetized Miscellaneous Equipment (CMIS)

0  
0 The NTRX34AB CMIS accomodates miscellaneous DMS-100 common sys-  
0 tems and other hardware required in a DMS-100 office. The equip-  
0 ment in the CMIS is currently provisionable. The NTRX34AB, CMIS,  
0 has been subdivided into eight (8) 7 inch zones. building block.  
0 Equipment that is working together should be mounted together in  
0 one zone. Equipment that may be mounted is being added in a  
0 phased introduction.

## 0 Available equipment:

0 LaMarche inverter unit - NTZZ18QA  
0 Inactive system timing circuit - NTZZ18LA  
0 DTH/ROTL - NTZZ18PA  
0 Case/Datatel AC shelf rack - NTZZ18MA  
0 Case/Datatel DC shelf rack - NTZZ18NA  
0 Common equipment shelf - NTZZ18YA  
0 Terminal block assembly - NT3X25BA  
0 CMIS Terminal block assembly - NTZZ18ZA  
0 Audible and visual alarm extension unit - NTZZ18VA  
0 Audible alarm cutoff control unit - NTZZ18WA  
0 Audible alarm cutoff key panel - NT5X86AB  
0 Pylon RG-2 ringing generator - Part of NTZZ18VA  
0 Digital Alarm Scanner - NTZZ18XA  
0 Multiple Loop Test Applique Shelf - NTZZ18UA  
0 Cook Digital Announcer - NT5M0N\_\_, NTZZ23

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0 The following diagram depicts the NTRX34AB CMIS configuration  
0 that is currently supported:

|   |        |                                     |                      |
|---|--------|-------------------------------------|----------------------|
| 0 | Height |                                     |                      |
| 0 | —      |                                     |                      |
| 0 | 5 in.  | NTRX45AA Frame<br>Supervisory Panel | —> Shelf position 60 |
| 0 | —      |                                     |                      |
| 0 | 7 in.  | H                                   | —> Shelf position 53 |
| 0 | —      |                                     |                      |
| 0 | 7 in.  | G                                   | —> Shelf position 46 |
| 0 | —      |                                     |                      |
| 0 | 7 in.  | F                                   | —> Shelf position 39 |
| 0 | —      |                                     |                      |
| 0 | 7 in.  | E                                   | —> Shelf Position 32 |
| 0 | —      |                                     |                      |
| 0 | 7 in.  | D                                   | —> Shelf position 25 |
| 0 | —      |                                     |                      |
| 0 | 7 in.  | C                                   | —> Shelf Position 18 |
| 0 | —      |                                     |                      |
| 0 | 7 in.  | B                                   | —> Shelf Position 11 |
| 0 | —      |                                     |                      |
| 0 | 7 in.  | A                                   | —> Shelf Position 04 |
| 0 | —      |                                     |                      |
| 0 | 4 in.  | Cooling Unit                        | —> Shelf position 00 |
| 0 | —      |                                     |                      |

0 Cabinetized Miscellaneous Equipment

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0 Internal cables from the CMIS shelves to the cabinet bulkhead are  
0 always provided in the individual unit building block packages.

0 The PDC fusing for the CMIS is identical to the frame version of  
0 the MIS (Four 20 Amp fuses). The LaMarche inverter will be fused  
0 directly at the CPDC.

#### 0 Cabinetized Dual Shelf Network (CDSN)

0  
0 The NTRX35AA CDSN cabinet can contain up to two fully duplicated  
0 dual shelf network modules. All connectors to and from the net-  
0 work module are connected through the bulkhead for EMI pro-  
0 tection. In the top of the cabinet is the FSP which distributes  
0 power, control and alarms to the cabinet. In the base of the  
0 cabinet there is a fan unit for forced air cooling. Personality  
0 plates will be Always Provided for the CDSN.

0 The NTRX35AA CDSN cabinet is always provided in the NTZZ07FA  
0 building block model. The NTZZ07FA can be provisioned with up to  
0 two complete networks, NTZZ07GA or NTZZ07JA. The NTZZ07GA, Net-  
0 work Common CP Kit, should be provisioned for each Network Module  
0 that will be non-junctored at the CDNI. The NTZZ07JA, Network  
0 Common CP Kit, should be provisioned for each Network Module that  
0 will be junctored at the the CDNI.

#### 0 Cabinetized Common Peripheral Equipment (CCPE)

0  
0 The NTRX36AB CCPE cabinet mounts two dual shelf XPM modules and  
0 comes always provided with the ISDN-Ready backplane. All con-  
0 nections to the network and DS1 links shall be through the  
0 bulkhead for EMI protection. The FSP is mounted in the top of the  
0 cabinet and a fan unit is mounted in the base.

0 The NTRX36AB CCPE cabinet is always provided in the NTZZ22CA  
0 building block. Two dual shelf XPM modules can be mounted on the  
0 NTZZ22CA.

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0 Cabinetized Speech Link Connection (CSLC)

0  
0 The NTRX37AA CSLC cabinet provides a patch cord cross-connect fa-  
0 cility for interconnecting peripheral equipment and network pe-  
0 ripheral face ports to facilitate network loading administration.

0 Cabinetized equipment will use a single identifier (CSLC) for  
0 both planar and combined cabinets. The discrimination number  
0 will be used to identify the different usage of the cabinet.  
0 Planar cabinets will be CSLC 0-00, CSLC 1-00 and the combined  
0 cabinets will be CSLC 00, CSLC 01, etc.

0 The NTZZ21CA building block comes always provided with the  
0 NTRX37AA.

0 Cabinetized Digital Network Interconnection (CDNI)

0  
0 The NTRX38AA CDNI provides a patch cord junctor cross-connect fa-  
0 cility for interconnecting between the network juncture face  
0 ports of Network Modules in the same plane.

0 Cabinetized equipment will use a single identifier (CDNI) for  
0 both planar and combined cabinets. The discrimination number  
0 will be used to identify the different usage of the cabinet.  
0 Planar cabinets will be CDNI 0-00, CDNI 1-00 and the combined  
0 cabinets will be CDNI 00, CDNI 01, etc.

0 The NTZZ20CA building block comes always provided with the  
0 NTRX38AA.

0 Dual Plane Combined Core (DPCC)

0  
0 Refer to ECM626 for provisioning considerations on  
0 SuperNode(S/DMS) in a Cabinetized office. The SuperNode house

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0 one Computing Module (CM), two Message Switch (MS), and one Sys-  
0 tem Load Moduale (SLM) shelf assembly.

0 Enhanced Network (ENET)

0  
0 Refer to ECM627 for provisioning considerations on ENET(S/DMS) in  
0 a Cabinetized office. The ENET houses up to four ENET shelves  
0 per plane. Each shelf provides a nominal switching capacity of  
0 32K channels.

0 Link Peripheral Processor (LPP/LIM)

0  
0 Refer to ECM386 for provisioning considerations on LPP in a  
0 Cabinetized office. Refer to ECM609 for LPP Building Block pro-  
0 visioning. When a LPP (NT9X0113 42" cabinet) is provisioned in a  
0 lineup, one of each of the following EMI endpanels should be pro-  
0 visioned on the cabinet: NTRX73AD, NTRX73AE.

0 Refer to ECM620 for provisioning considerations on LPP in a S/DMS  
0 Cabinet.

0 Cabinetized Miscellaneous Spare Storage (CMSS)

0  
0 The Cabinetized Miscellaneous Spare Storage (CMSS) provides for  
0 storage of spare circuit packs. The storage cabinet can be pro-  
0 visioned with up to four spare storage shelf assemblies which can  
0 hold 0.875, 1.125, or SuperNode size circuit packs.

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0 4.1.4 OFFICE LAYOUT INFORMATION

0  
0 The DMS-100 Cabinetized equipment will be restricted to lineups  
0 of no more than eleven (11) 28" cabinets or five (5) 42" cabi-  
0 nets. The first cabinet in each lineup will be a Cabinetized  
0 Power Distribution Center (CPDC). Future growth will be limited  
0 to the end of the lineup on the opposite side of the CPDC.

0 If more than one CSLC exists in an office then the cabinets must  
0 be located directly across one another in separate lineups due to  
0 heavy cabling requirements. The same restriction applies to CDNI  
0 cabinets.

0 No break in a line-up will be allowed when using cabinetized  
0 equipment. If an obstruction exists in a lineup, a new lineup  
0 (with CPDC) must be used, rather than an empty space to  
0 accomodate the obstruction. An empty cabinet may be provisioned  
0 in a line-up for future use as long as it is inside the faraday  
0 cage.

0 Cabinetized equipment will be installed according to whether the  
0 office requires earthquake bracing or not. Building Studies will  
0 order one of the following kits per cabinet:

0 Slab Floor  
0 -----  
0 Earthquake Anchor Kit NTRX2512 (4 Anchors & Isolator Pad)

0 DMS-100 Cabinetized will use the same power and grounding  
0 topology as the Integrated System Ground (ISG) DMS. DMS-100  
0 Cabinetized will require power only from a -48VDC source and  
0 equipment requiring any type of power that cannot be obtained  
0 from this feed will not be used within the DMS-100 Cabinetized.

0 Lighting equipment will be a separate entity from the DMS-100  
0 Cabinetized and will not be provided as an integral part of the  
0 switch. Center aisle lighting is the preferred lighting system  
0 for Cabinetized offices.

0 AC power will be available only for two applications. One as a  
0 customer requested option to power a pair of duplex receptacles,  
0 one at each end of the lineup. Provision one NTRX31AD, LaMarche  
0 Inverter Kit, per CPDC. The other, to provide 115VAC to miscella-  
0 neous equipment mounted in a CMIS cabinet. The NTZZ18QA LaMarche

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0 Inverter Unit can power up to four AC-powered units which must be  
0 mounted in the same cabinet as the inverter itself.

0 The following general application rules will impact the  
0 Cabinetized equipment layout:

0 - Dual Plane Core Cabinet (DPCC), CIOE and CMIS (with  
0 modems for the IOC) must be located adjacent to each  
0 other in the same lineup.

0 - There will be no DC coupled signal interconnection  
0 between equipment in separate lineups.

0 - LIU and associated CMIS modem equipment must be  
0 located in a cluster in the same lineup.

0 - LGE and associated LCE equipment must be powered  
0 from the same CPDC.

0 - Cabinetization will conform to corporate standard CS4122.

0 - Cabinets arranged in a cluster will have a #6 AWG  
0 cable "equaliser" run along their base. A #6 AWG  
0 cable will be run from the logic return bus in  
0 each of these cabinets and H-tapped to the #6 AWG  
0 cluster equaliser. #6 to #6 AWG H-Tap will be the  
0 Thomas & Betts 63110.

0 - A #0 AWG logic return collector cable will be run  
0 along the base of each lineup. A #6 AWG cable will  
0 be run from any cluster equalisers in the lineup  
0 and also from any separate equipment logic return  
0 bus not part of a cluster and H-tapped to the  
0 collector cable. The collector cable will terminate  
0 at an EMI feed-thru filter located on the CPDC EMI  
0 bulkhead. #6 to #0 AWG H-Tap will be the Thomas &  
0 Betts 63125.

0 - A #0 AWG cable will be run from the CPDC feed-thru  
0 filter to the DMS system Logic Return Equaliser  
0 Bus (LRE).

0 - All logic return H-taps will be equipped with a  
0 protective cover (Thomas & Betts: HT20CFR).

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- 0 - Two hole lugs will be used wherever possible to  
0 terminate cable.
- 0 - All Cabinetized equipment will be isolated from  
0 contact with any incidental ground and bonded to  
0 the DMS Single Point Ground. A #0 AWG framework  
0 ground collector cable will be run along the base  
0 of each lineup. A #6 AWG cable will be run from  
0 the ground studs on each cabinet and H-tapped to  
0 the collector cable. The collector cable will  
0 terminate at the ground studs on the bottom of  
0 the CPDC EMI bulkhead. A #0 AWG cable will be  
0 run from the CPDC ground studs to the DMS system  
0 Framework Ground Equaliser Bus (FGE).
- 0 - All power distribution, logic return and ground  
0 cabling will be of the flexible style. Secondary  
0 power distribution cables between cabinets and the  
0 CPDC shall be #8 or #10 AWG and supplied with each  
0 cabinet. All cables will be supplied for maximum  
0 length and cut to length and terminated by the  
0 installer.

#### 0 DMS-100 Cabinetized Cable Racks

0 DMS-100 Cabinetized will use a set of universal cross aisle  
0 trays. These trays will be 3" high by 12" wide. They will be  
0 provisionable in lengths from one to six feet in increments of 4  
0 inches. Cross aisle mounting kits will be utilized to mount the  
0 cross aisle trays to the Cabinetized cable tray (NTNX5511). When  
0 mounting from cabinet to cabinet, a NTNX5512 cross aisle kit  
0 should be used. This kit provides a one inch (in half inch incre-  
0 ments) vertical adjustment to allow leveling of the tray. It also  
0 allows three-fourths of an inch horizontal adjustment for center-  
0 ing. The kit is mounted to the NTNX5511 with standard hardware  
0 using one starwasher to provide frame grounding. Height from  
0 floor to the base of the tray should be approximately eight feet.

0 Though not currently supported, when mounting from Cabinetized  
0 DMS-100 to an existing DMS-100, a NTNX5512 cable cross aisle kit  
0 should be provisioned on the Cabinetized side and a NTNX5528 ca-  
0 ble cross aisle kit should be provisioned on the DMS-100 side. An  
0 isolation strip is provided with this kit to provide isolation  
0 between the two lineups. No lineup to lineup frame isolation is  
0 required when cross aisling from Cabinet to Cabinet.

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When cross aisling from Cabinet to SuperNode is required, the ladder rack should be used for cable handling. When cross aisling from SuperNode to SuperNode, continue to use the current SuperNode cable tray with redesigned oxford grey cross aisle trays.

When cross aisles are required between a Cabinet and a DMS-100 and the cable tray exceeds 10.10 inches, ladder rack should be used for cable handling. If an office requires a cross aisle tray length that exceeds 68.5 inches, ladder rack should be used. No cross aisle trays should be used in a seismic engineered office. Ladder rack should be used for cable handling in earthquake engineered applications.

Refer to the following table for DMS-100 Cabinetized cable handling part numbers:

| FROM DMS-100 CABINETIZED                          |                                  | TO DMS-100 CABINETIZED                                              |
|---------------------------------------------------|----------------------------------|---------------------------------------------------------------------|
| Cross Aisle Kit NTN5512                           |                                  | Cross Aisle Kit NTN5512                                             |
| FROM DMS-100 CABINETIZED                          |                                  | TO DMS-100                                                          |
| Cross Aisle Kit NTN5512                           |                                  | Cross Aisle Kit NTN5528                                             |
| Cable Tray Assembly (Length to be job engineered) |                                  |                                                                     |
| NTRX5513<br>P0715950<br>P0715965                  | B0232838<br>P0715950<br>P0715965 | Cable Tray Assembly 12.50<br>12.0 X 12.5 Cable Duct<br>12.5 Divider |
| NTRX5514<br>P0715949<br>P0715964                  | B0232837<br>P0715949<br>P0715964 | Cable Tray Assembly 16.50<br>12.0 X 16.5 Cable Duct<br>16.5 Divider |
| NTRX5515<br>P0715948<br>P0715963                  | B0232836<br>P0715948<br>P0715963 | Cable Tray Assembly 20.50<br>12.0 X 20.5 Cable Duct<br>20.5 Divider |
| NTRX5516<br>P0715947<br>P0715962                  | B0232835<br>P0715947<br>P0715962 | Cable Tray Assembly 24.50<br>12.0 X 24.5 Cable Duct<br>24.5 Divider |
| NTRX5517                                          | B0232834                         | Cable Tray Assembly 28.50                                           |



**QUESTION**

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|                                                                                  |                                                                                  |                                                                                                                                                                                        |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P0726528                                                                         | P0726528                                                                         | Main Aisle Mounting Brkt. Bottom                                                                                                                                                       |
| NTRX5529<br>P0726609<br>P0726612                                                 | B0232947<br>P0726609<br>P0726612                                                 | Main Cross Aisle Weld Assembly<br>Main Cross Aisle Cable Duct<br>Main Cross Aisle Duct Divider                                                                                         |
| NTRX5531                                                                         | B0233096                                                                         | Cable Assy.(Main Aisle Gnding.)                                                                                                                                                        |
| NTRX5532<br>P0726983                                                             | B0233055<br>P0726983                                                             | 10 inch Cable Rack Support kit<br>10 inch Cable Rack Support brkt.                                                                                                                     |
| NTRX5533<br>P0726982                                                             | B0233056<br>P0726982                                                             | 12 inch Cable Rack Support kit<br>12 inch Cable Rack Support brkt.                                                                                                                     |
| NTRX5535<br>P0726981                                                             | B0233058<br>P0726981                                                             | 14 inch Cable Rack Support kit<br>14 inch Cable Rack Support brkt.                                                                                                                     |
| NTRX5536<br>P0726864                                                             | B0233059<br>P0726864                                                             | 16 inch Cable Rack Support kit<br>16 inch Cable Rack Support brkt.                                                                                                                     |
| NTRX5537<br>P0726863                                                             | B0233060<br>P0726863                                                             | 18 inch Cable Rack Support kit<br>18 inch Cable Rack Support brkt.                                                                                                                     |
| NTRX5534<br>P0726984                                                             | B0233060<br>P0726984                                                             | 12 in. Overframe Cable Duct Sprt<br>12 in. Overframe Cable Duct Brkt                                                                                                                   |
| NTRX5538<br>P0727257<br>P0727256<br>P0727255<br>P0727254<br>P0727253             | B0233122<br>P0727257<br>P0727256<br>P0727255<br>P0727254<br>P0727253             | Lighting Frame Support Assembly<br>Mounting Bracket CAL 24 inch<br>Mounting Bracket CAL 26 inch<br>Mounting Bracket CAL 28 inch<br>Mounting Bracket CAL 30 inch<br>Channel 51 inch CAL |
| NTNX5510<br>P0715857<br>P0715858<br>P0688745<br>P0713966<br>P0713977<br>P0726788 | B0232284<br>P0715857<br>P0715858<br>P0688745<br>P0713966<br>P0713977<br>P0726788 | Cable Tray Mechanical Assembly<br>Cable Trough<br>Cable Tray rear divider<br>Cable Tray front divider<br>Cable Tray bracket right<br>Cable Tray bracket left<br>Brace Top              |
| NTNX5511<br>NTNX5512<br>P0715855<br>P0715854                                     | B0232799<br>B0232805<br>P0715855<br>P0715854                                     | Cable Tray and Mounting Hardware<br>Cable Cross Aisle Kit<br>Cable Aisle Bracket Base<br>Cable Aisle Bracket Top                                                                       |

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0 DMS-100 Cabinetized Discrimination Numbering

0 Cabinetized equipment is currently not allowed to be mixed with  
0 frame type equipment in an office. Future development may allow  
0 mixed office configurations, so equipment should be numbered to  
0 prevent confusion when the two equipment types eventually coex-  
0 ist. Note that while, for example, LCE 00 and CLCE 00 could both  
0 exist in the same office, the LCMS would require unique number-  
0 ing.

0 Endguard Designation Labels

0 DMS-100 Cabinetized endguards are shipped with a Slipsheet,  
0 P0715815, and a Window Panel, P0727378, that are used to mount  
0 labels for each cabinet position in a lineup. There is a column  
0 on the slipsheet for each position in the lineup to list cabinet  
0 name, cabinet number, and up to four module names and numbers per  
0 cabinet. The slipsheet mounts in a pocket on the endguard along  
0 with the window panel which provides column headings for the  
0 slipsheet.

0 Refer to MS0X60AA, Issue 26 or later, for a list of the  
0 Cabinetized DMS-100 endguard labels. This drawings describes  
0 which and how many labels are on each sheet.

0 4.1.5 TRAFFIC TABLES

0  
0 Not applicable.

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0 4.2 PRODUCT/SYSTEM SPECIFICATION

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0 4.2.1 PHYSICAL CHARACTERISTICS

0

0 The DMS-100 Cabinetized equipment is 72" high, 28" wide and 28"  
0 deep. The cabinet will have two center-open doors (both front  
0 and rear).

0 All 28" Cabinetized equipment, except the CMIS, is fused using  
0 four (4) 30Amp Circuit Breakers (two A feeds and two B feeds).  
0 The CMIS is fused using two (2) 30Amp Circuit Breakers (one A  
0 feed and one B feed). Cooling units are fused at the FSP rather  
0 than the PDC.

0 S/DMS style cabinets (NT9X95AA framework) are fused per the fol-  
0 lowing chart:

|                          | 10 Amp | 30 Amp |
|--------------------------|--------|--------|
|                          | -----  | -----  |
| 0 SuperNode, LPP (S/DMS) | 1A,1B  | 4A,4B  |
| 0 ENET Plane 0 (S/DMS)   | 2A     | 8A     |
| 0 ENET Plane 1 (S/DMS)   | 2B     | 8B     |

0 4.2.2 EMI/EARTHQUAKE INFORMATION

0

0 DMS-100 Cabinetized requires no additional bracing or stiffening  
0 hardware when applied in an earthquake environment. The cabinet  
0 must be bolted to the floor with four bolts and anchors. For  
0 raised floor installations in active seismic zones, a sub-  
0 structure support between the concrete sub-floor and the raised  
0 flooring is required. (The sub-structure is not provided as part  
0 of this program.) A qualified seismic engineer should be con-  
0 sulted regarding additional bracing on a per job basis.

0

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0 Building Studies should provide one NTNX2512 kit per cabinet when  
0 Cabinetized equipment is applied in an earthquake configuration.

0 DMS-100 Cabinetized provides EMI compliant functionality when  
0 equipped with shielded cables. The cabinet doors and bulkheads  
0 provide shielding for the equipment to meet EMI standards.

0 4.2.3 SPARING INFORMATION

0  
0 Sparing practices are not impacted by the application of cabi-  
0 nets. Equipment should be spared per existing practices.

0 4.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Fusing, for cabinets with fusing requirements, is always pro-  
0 vided. Fusing to the central office Power Panel is determined by  
0 Power Engineering based on the maximum current drain per cabinet.  
0 See CURRENT DRAIN INFORMATION.

0 4.2.5 CURRENT DRAIN INFORMATION

0  
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0  
0  
0  
0  
0  
0  
0  
0  
0

| CABINET | DISSIPATION<br>WATTS | CURRENT DRAIN |
|---------|----------------------|---------------|
| CLCE    | 1350 *               | 28Amp *       |
| CLMI    | 1350 *               | 28Amp *       |
| CTME    | 875                  | 18Amp         |
| CIOE    | 850                  | 18Amp         |

\* Traffic dependent. Values given are based traffic of 9.6 CCS per line with a 500 ohm average loop resistance.

## 0 4.3 SOFTWARE PROVISIONING

#### 0 4.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

|   |                 |
|---|-----------------|
| 0 | Not applicable. |
|---|-----------------|

#### 0 4.3.2 SOFTWARE USAGE RESTRICTIONS

|   |                 |
|---|-----------------|
| 0 | Not applicable. |
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0 4.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 4.4 REAL TIME IMPACT

0 Not applicable.

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0 5.0 International DMS-100 Cabinetized

0 This document, in conjunction with ECM-600, describes the provisioning  
0 rules for DMS-100 Cabinetized equipment in G700 Cabinets for use in  
0 the international market where the power supply is 48VDC. This equip-  
0 ment is designed to meet the European Community safety requirements,  
0 including the specific safety requirements for the UK, and global  
0 electromagnetic radiation EN Class A requirements for the European  
0 Community, and Australia.

0 The DMS-100 Cabinetized base product is described in ECM-600 covering  
0 cabinets for use in North America developed in the DMS-100 Global  
0 Cabinetization project Phases 1 - G700 Base Product.

0 This ECM-636 describes the cabinets developed specifically for the  
0 international market as well as the international aspects of the base  
0 cabinets described in ECM-600, developed in the DMS-100 Global  
0 Cabinetization project Phase 3 - UK Base Increment and Phase 5A - EN  
0 Class A Compliancy in G700 cabinets.

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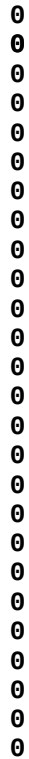
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| DMS-100 G700 Cabinets for International Applications |                                                |
|------------------------------------------------------|------------------------------------------------|
| Cabinet Codes                                        | Cabinet Abbreviation Name and Title            |
| NTRX30AA                                             | CLCE International CLCE                        |
| NTRX30BA                                             | CLMI Cabinetized LCM ISDN                      |
| NTRX31AA                                             | CPDC International CPDC                        |
| NTRX32AA                                             | CTME International CTME                        |
| NTRX33AA                                             | CIOE International CIOE                        |
| NTRX34AB                                             | CMIS Cabinetized Miscellaneous Equipment       |
| NTRX35AA                                             | CDSN International CDSN                        |
| NTRX37AA                                             | CSLC Cabinetized Speech Link Connecting        |
| NTRX38AA                                             | CDNI Cabinetized Digital Network Interconnect  |
| NTRX46AA                                             | CIPE International CIPE Fiber ISDN (CLG0/CDT0) |
| NTRX47AA                                             | CIDC International CIDC (PDTC/PLGC/IDTC/ILGC)  |
| NTRX48AA                                             | CMS7 International CMS7                        |
| NTRX49AA                                             | CMSS Cabinetized Maintenance Spare Storage     |

| DMS-100 G700 Cabinets<br>for International Applications |                         |         |                           |
|---------------------------------------------------------|-------------------------|---------|---------------------------|
| Cabinet Name                                            | ECM General Description |         | Engineering Manual Insert |
| CLCE                                                    | ECM-600 and             | ECM-636 | NTZZ37LA                  |
| CLMI                                                    | ECM-600 and             | ECM-636 | NTZZ33AA                  |
| CPDC                                                    | ECM-600 and             | ECM-631 | NTZZ37MA                  |
| CTME                                                    | ECM-600 and             | ECM-636 | NTZZ37QA                  |
| CIOE                                                    | ECM-600 and             | ECM-636 | NTZZ37AM                  |
| CMIS                                                    | ECM-600 and             | ECM-655 | NTRX34AB                  |
| CDSN                                                    | ECM-600 and             | ECM-636 | NTZZ37XA                  |
| CSLC                                                    | ECM-600 and             | ECM-636 | NTZZ21CA                  |
| CDNI                                                    | ECM-600 and             | ECM-636 | NTZZ20CA                  |
| CIPE                                                    |                         | ECM-659 | NTZZ37AA                  |
| CIDC                                                    |                         | ECM-660 | NTZZ37EA                  |
| CMS7                                                    |                         | ECM-661 | NTZZ37HA                  |
| CMSS                                                    | ECM-600 and             | ECM-636 | NTRX49AA                  |

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0 RELEASE 28.01  
0 93 12 030 5.1 HARDWARE PROVISIONING

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0 5.1.1 HARDWARE USAGE RESTRICTIONS

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0 Only the following DMS-100 Cabinets are available for the inter-  
0 national market at this time:

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| PEC      | ABBREV.<br>NAME | TITLE                                          |
|----------|-----------------|------------------------------------------------|
| NTRX30AA | CLCE            | Cabinetized Line Concentrating Equipment       |
| NTRX30BA | CLMI            | Cabinetized Line Module ISDN                   |
| NTRX31AA | CPDC            | Cabinetized Power Distribution Center          |
| NTRX32AA | CTME            | Cabinetized Trunk Module Equipment             |
| NTRX33AA | CIOE            | Cabinetized Input Output Equipment             |
| NTRX34AA | CMIS            | Cabinetized Miscellaneous Equipment            |
| NTRX35AA | CDSN            | Cabinetized Dual Shelf Network                 |
| NTRX37AA | CSLC            | Cabinetized Speech Link Connection             |
| NTRX38AA | CDNI            | Cabinetized Digital Network Interconnect       |
| NTRX46AA | CIPE            | Cabinetized International Peripheral Equipment |
| NTRX47AA | CIDC            | Cabinetized International Digital Controller   |
| NTRX48AA | CMS7            | Cabinetized (International) Message Switch 7   |
| NTRX49AA | MCSS            | Cabinetized Miscellaneous Spare Storage        |

0 5.1.2 HARDWARE DEPENDENCIES

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The international DMS-100 cabinetized equipment is intended to replace the existing international DMS-100 product lines including frames and Meridian cabinets. To maintain the EMI capability of the cabinetized system, DMS-100 Cabinetized cabinets should not be mixed with frames or Meridian cabinets.

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0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable.

0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable.

0 CIRCUITS PER CARD

0  
0 Not applicable.

0 DISCRIMINATION NUMBERING

0  
0 Not applicable.

0 5.1.3 PROVISIONING CONSIDERATIONS

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0 NTRX30AA International CLCE

0 The provisioning considerations of ECM-600 are modified for the  
0 international Cabinetized Line Concentrating Equipment (CLCE) as  
0 follows:

- 0 - For each equipped ILCM provide:
- 0 - one (1) NT6X04BB ILCM Common Circuit Pack,
  - 0 - up to ten (10) NT6X05AA Line Drawers, or
  - 0 up to ten (10) NT6X05BA International Line Drawers, or
  - 0 up to ten (10) NT6X05AX Line Drawer Filler Kits,
- 0 - For each international CLCE provide:
- 0 - two (2) NT6X30AB Ringing Generators (UK), or
  - 0 - two (2) NT6X30DA Ringing Generators (China), or
  - 0 - two (2) NT6X30AE Ringing Generators (Australia), and
- 0 |

0 NTRX30AA is always provided in building block NTZZ37LA Interna-  
0 tional CLCE.

0 NTRX30BA International CLMI

0 The provisioning considerations of ECM-600 are modified for the  
0 international Cabinetized Line Module ISDN (CLMI) as follows:

- 0 - For each international CLMI provide:
- 0 - two (2) NT6X30AB Ringing Generators (UK), or
  - 0 - two (2) NT6X30DA Ringing Generators (China), or
  - 0 - two (2) NT6X30AE Ringing Generators (Australia), and
- 0 - one (1) P0733738 Terminal Block Safety Cover  
0 when required.

0 The Terminal Block Safety Cover must be provisioned for UK mar-  
0 kets and may be provisioned on customer request in other markets.

0 NTRX30BA is always provided in building block NTZZ33AA  
0 Cabinetized Line Module ISDN (CLMI) in ECM600.

0 NTRX31AA Cabinetized Power Distribution Center (CPDC)

0 Please refer to ECM631.

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0 NTRX32AA Cabinetized Trunk Module Equipment (CTME)

0 The provisioning considerations of ECM-600 are modified for the  
0 international Cabinetized Trunk Module Equipment (CTME) as fol-  
0 lows:

- 0 - For each international CTME provide:  
0 - one (1) NTZZ37RA International CTME AXU/OAU Package  
0 occupying shelf positions 33 and 47, and/or  
0 - For each shelf position 05, 19, 33, and/or 47  
0 - one (1) NTZZ37SA International CTME DRA Package,  
0 - one (1) NTZZ37TA International CTME MTM Package,  
0 - one (1) NTZZ37VA International CTME T8A Package, and/or  
0 - one (1) NTZZ37WA International CTME TM8 Package.

0 Provide safety features as follows:

- 0 - For each CTME, provide as required:  
0 - one (1) P0730668 Terminal Block Cover,  
0 - two (2) P0707195 Latches, and  
0 - two (2) A0368391 Terminal Block Covers.  
0 |

0 The NTRX32AA is always provided in building block NTZZ37QA Inter-  
0 national CTME.

0 For each NTZZ37RA, NTZZ37SA, or NTZZ37TA provide an IMTM Common  
0 CP as follows:

- 0 - For Turkey, provide:  
0 - one (1) NT2X58AY IMTM Common CP,  
0 - For Scopedial in the UK and Spain,  
0 provide:  
0 - one (1) NT2X58BB IMTM Common CP,  
0 - For the Caribbean Expansion Plan (CEP),  
0 provide:  
0 - one (1) NT2X58CL IMTM Common CP, and  
0 - For Mercury DMS-250, provide:  
0 - one (1) NT2X58DB IMTM Common CP.

0 Refer to table A of Engineering Manual section EMB14-01-000 for  
0 the circuit packs which may be provisioned on an international  
0 OAU, IDRA, IMTM, IT8A, or ITM8.

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0 NTRX33AA Cabinetized Input Output Equipment (CIOE)

0 The provisioning considerations of ECM-600 are modified for the  
0 international Cabinetized Input Output Equipment (CIOE) as fol-  
0 lows:

- 0 - For each international CIOE provide:
  - 0 - in shelf position 05:
    - 0 - one (1) NTZZ37EM International CIOE
    - 0 DDU Package, or
    - 0 - one (1) NTZZ37FM International CIOE
    - 0 Stratum 2.5 ROS Package, or
    - 0 - one (1) NTZZ37GM International CIOE
    - 0 Stratum II ROS Package,
  - 0 - in shelf position 19:
    - 0 - one (1) NTZZ37CM International CIOE IOC Package,
  - 0 - in each shelf position 33:
    - 0 - one (1) NTZZ37BM International CIOE MTD Package, or
    - 0 - one (1) NTZZ37DM International CIOE DPP Package,

0 Provide safety features as follows:

- 0 - For each CIOE, provide as required:
  - 0 - one (1) P0730668 Terminal Block Cover,
  - 0 - two (2) P0707195 Latches, and
  - 0 - two (2) A0368391 Terminal Block Covers.
- 0 - For CIOE packages , provide as required:
  - 0 - Two (2) P0706920 -48V Stud Covers.

0 The above safety features must be provisioned for UK markets and  
0 may be provisioned on customer request in other markets.

0 The NTRX33AA is always provided in building block NTZZ37AM Inter-  
0 national CIOE.

0 NTRX34AB Cabinetized Miscellaneous Equipment (CMIS)

0 Refer to ECM-655.

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0 NTRX35AA Cabinetized Dual Shelf Network (CDSN)

0 The provisioning considerations of ECM-600 are modified for the  
0 international NTRX35AA Cabinetized Dual Shelf Network (CDSN) as  
0 follows:

0 When the CDSN is equipped with one (1) Network Module (2nd net-  
0 work not provided), provide for each CDSN:

- 0 - one (1) NTZZ37YA International CDSN Common CP  
0 (positions 33 and 05), and
- 0 - one (1) NT6X02AB Filler Faceplates  
0 (positions 47 and 19).

0 When the NTZZ37XA is equipped with two (2) Network Module per  
0 plane, provide for each CDSN:

- 0 - two (2) NTZZ37YA International CDSN Common CPs  
0 (positions 33 and 05 for the 1st network, and  
0 positions 47 and 19 for the 2nd network).

0 For each CDSN provide per customer requirements:

- 0 - one (1) NTRX3531 Power & Ground Cover Kit.

0 The Power & Ground Cover Kit must be provisioned for UK markets  
0 and may be provisioned on customer request in other markets.

0 The NTRX35AA is always provided in building block NTZZ37XA Inter-  
0 national CDSN.

0 NTRX37AA Cabinetized Speech Link Connecting (CSLC)

0 The provision rules of ECM-600 apply to the NTRX37AA Cabinetized  
0 Speech Link Connecting (CSLC) in international applications.

0 NTRX37AA is always provided in building block NTZZ21CA  
0 Cabinetized Speech Link Connecting (CSLC).

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0 NTRX38AA Cabinetized Digital Network Interconnect (CDNI)

0 The provision rules of ECM-600 apply to the NTRX38AA Cabinetized  
0 Digital Network Interconnect (CDNI) in international applica-  
0 tions.

0 NTRX38AA is always provided in building block NTZZ20CA  
0 Cabinetized Digital Network Interconnect (CDNI)

0 NTRX46AA Cabinetized International Peripheral Equipment (CIPE)

0 Please refer to ECM659.

0 NTRX47AA Cabinetized International Digital Controller (CIDC)

0 Please refer to ECM660.

0 NTRX48AA Cabinetized Message Switch 7 (CMS7)

0 Please refer to ECM661.

0 NTRX49AA Cabinetized Maintenance Spare Storage (CMSS)

0 The provision rules of ECM-600 apply to the NTRX49AA Cabinetized  
0 Maintenance Spare Storage (CMSS) in international applications.

0 5.1.4 OFFICE LAYOUT INFORMATION

0  
0 Please refer to ECM-600 DMS-100 Cabinetized.

0 5.1.5 TRAFFIC TABLES

0  
0 Not Applicable.

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0 5.2 PRODUCT/SYSTEM SPECIFICATION

0

0 5.2.1 PHYSICAL CHARACTERISTICS

0

0 Please refer to ECM-600 DMS-100 Cabinetized.

0 5.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

0 5.2.3 SPARING INFORMATION

0

0 Sparing practices are not impacted by the application of cabinets. Equipment should be spared per existing practices.

0 5.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 Not applicable.

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0 5.2.5 CURRENT DRAIN INFORMATION

0  
0 Not applicable.

0 5.3 SOFTWARE PROVISIONING

0

0 5.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Software provisioning is not affected by the application of  
0 cabinetized equipment.

0 5.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not Applicable.

0 5.3.3 MEMORY PROVISIONING

0  
0 Not Applicable.

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0 5.4 REAL TIME IMPACT

0 Not Applicable.

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0 The Dimensions of the CIPE cabinet, DMS-100 C28, are shown in Figure  
0 1.



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0 6.1 HARDWARE PROVISIONING

0

0 6.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 The international DMS-100 cabinetized equipment is intended to  
0 replace the existing international DMS-100 product lines includ-  
0 ing frames and Meridian cabinets.

0 6.1.2 HARDWARE DEPENDENCIES

0  
0 To maintain the EMI capability of the cabinetized system, DMS-100  
0 Cabinetized cabinets should not be mixed with frames or Meridian  
0 cabinets.

0 6.1.3 HARDWARE DEPENDENCIES

0  
0 Not applicable.

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable

## 0 CIRCUITS PER CARD

0  
0 Not applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable

0 6.1.4 PROVISIONING CONSIDERATIONS

0  
0 The NTRX48AA cabinet houses a dual-shelf Message Switch Buffer 7  
0 (MSB7) module and two STG7 shelves. The MSB7 shelves are con-  
0 nected to each plane of the CDSN Network through the CSLC via  
0 bulkhead DS30 cabling. Each of the MSB7 and STG7 shelves sup-  
0 ports 4 and 16 NT6X66 Signaling Terminal (ST) circuit packs re-  
0 spectively, for a total of 40 STs per cabinet.

0 NT6X66AA and NT6X66CA STs are provisionable for CCS7 and DPNSS7  
0 respectively.

0 In the top of the cabinet is the FSP which distributes power,  
0 control and alarms to the cabinet.

0 The cabinet is forced air cooled with a fan unit integrated into  
0 the base of the cabinet.

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0 The NTRX48AA is always provided in building block NTZZ37HA Inter-  
0 national CMS7.

0 6.1.5 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 6.1.6 TRAFFIC TABLES

0  
0 Standard traffic provisioning algorithms apply.

0 6.2 PRODUCT/SYSTEM SPECIFICATION

0

0 6.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 6.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0



0 6.2.3 SPARING INFORMATION

0  
0 Standard sparing algorithms apply.

0 6.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 The following fuses and feeds are required:

0 6.2.5 CURRENT DRAIN INFORMATION

0  
0 Current Drain for the circuit packs are:

0 6.3 SOFTWARE PROVISIONING

0

0 6.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not applicable.

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0 6.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 6.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 6.4 REAL TIME IMPACT

0 Not applicable.

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## 7.0 Cabinetized Zoned Miscellaneous Equipment

This document describes the provisioning rules for DMS-100 Cabinetized Miscellaneous (CMIS) equipment in C28 Cabinets for use in the international and domestic markets where the power supply is -48VDC. This equipment is designed to meet the European Community safety requirements, including the specific safety requirements for the UK, and global electromagnetic radiation EN Class A requirements for the European Community, and Australia.

The DMS-100 Cabinetized base product is described in ECM-600 covering cabinets for use in North America developed in the DMS-100 Global Cabinetization project.

This ECM describes the CMIS cabinet developed for the international and domestic market as well as the international aspects of the base cabinets.

| DMS-100 C28 Cabinets for International Applications |                                                                           |
|-----------------------------------------------------|---------------------------------------------------------------------------|
| Cabinet Codes                                       | Cabinet Abbreviation Name and Title providing background information only |
| NTRX30AA                                            | CLCE International CLCE                                                   |
| NTRX30BA                                            | CLMI Cabinetized LCM ISDN                                                 |
| NTRX31AA                                            | CPDC International CPDC                                                   |
| NTRX32AA                                            | CTME International CTME                                                   |
| NTRX33AA                                            | CIOE International CIOE                                                   |
| NTRX34AB                                            | CMIS Cabinetized Miscellaneous Equipment                                  |
| NTRX35AA                                            | CDSN International CDSN                                                   |
| NTRX37AA                                            | CSLC Cabinetized Speech Link Connecting                                   |
| NTRX38AA                                            | CDNI Cabinetized Digital Network Interconnect                             |
| NTRX46AA                                            | CIPE International CIPE Fiber ISDN (CLGO/CDT0)                            |
| NTRX47AA                                            | CIDC International CIDC (PDTC/PLGC/IDTC/ILGC)                             |
| NTRX48AA                                            | CMS7 International CMS7                                                   |
| NTRX49AA                                            | CMSS Cabinetized Maintenance Spare Storage                                |

| DMS-100 C28 Cabinets<br>for International Applications |                               |         |                                 |
|--------------------------------------------------------|-------------------------------|---------|---------------------------------|
| Cabinet<br>Name                                        | ECM<br>General<br>Description |         | Engineering<br>Manual<br>Insert |
| CLCE                                                   | ECM-600 and                   | ECM-636 | NTZZ37LA                        |
| CLMI                                                   | ECM-600 and                   | ECM-636 | NTZZ33AA                        |
| CPDC                                                   | ECM-600 and                   | ECM-636 | NTZZ37MA                        |
| CTME                                                   | ECM-600 and                   | ECM-636 | NTZZ37QA                        |
| CIOE                                                   | ECM-600 and                   | ECM-636 | NTZZ37AM                        |
| CMIS                                                   | ECM-600 and                   | ECM-636 | NTRX34AB                        |
| CDSN                                                   | ECM-600 and                   | ECM-636 | NTZZ37XA                        |
| CSLC                                                   | ECM-600 and                   | ECM-636 | NTZZ21CA                        |
| CDNI                                                   | ECM-600 and                   | ECM-636 | NTZZ20CA                        |
| CIPE                                                   |                               | ECM-636 | NTZZ37AA                        |
| CIDC                                                   |                               | ECM-636 | NTZZ37EA                        |
| CMS7                                                   |                               | ECM-636 | NTZZ37HA                        |
| CMSS                                                   | ECM-600 and                   | ECM-636 | NTRX49AA                        |

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### 0 7.1.1 HARDWARE USAGE RESTRICTIONS

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Only the following DMS-100 Cabinets are available for the international market at this time:

| PEC      | ABBREV. NAME | TITLE                                          |
|----------|--------------|------------------------------------------------|
| NTRX30AA | CLCE         | Cabinetized Line Concentrating Equipment       |
| NTRX30BA | CLMI         | Cabinetized Line Module ISDN                   |
| NTRX31AA | CPDC         | Cabinetized Power Distribution Center          |
| NTRX32AA | CTME         | Cabinetized Trunk Module Equipment             |
| NTRX33AA | CIOE         | Cabinetized Input Output Equipment             |
| NTRX34AA | CMIS         | Cabinetized Miscellaneous Equipment            |
| NTRX35AA | CDSN         | Cabinetized Dual Shelf Network                 |
| NTRX37AA | CSLC         | Cabinetized Speech Link Connection             |
| NTRX38AA | CDNI         | Cabinetized Digital Network Interconnect       |
| NTRX46AA | CIPE         | Cabinetized International Peripheral Equipment |
| NTRX47AA | CIDC         | Cabinetized International Digital Controller   |
| NTRX48AA | CMS7         | Cabinetized (International) Message Switch 7   |
| NTRX49AA | MCSS         | Cabinetized Miscellaneous Spare Storage        |

### 0 7.1.2 HARDWARE DEPENDENCIES

0

The international DMS-100 cabinetized equipment is intended to replace the existing international DMS-100 product lines including frames and Meridian cabinets. To maintain the EMI capability of the cabinetized system, DMS-100 Cabinetized cabinets should not be mixed with frames or Meridian cabinets.

0

0 P AND C SIDE PORT REQUIREMENTS

0  
0 N/A

0 DMS BUS PORT REQUIREMENTS

0  
0 N/A

0 CIRCUITS PER CARD

0  
0 N/A

0 DISCRIMINATION NUMBERING

0  
0 The CMIS is sequentially number in the office

0 7.1.3 PROVISIONING CONSIDERATIONS

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0 NTRX34AB Cabinetized Miscellaneous Equipment (CMIS)

0 The provisioning considerations of ECM-600 are modified for the  
0 Cabinetized Miscellaneous Equipment (CMIS) as follows:

0 For international markets provide: an international modem shelf  
0 (RACAL), and an international inverter (FISKAR) for UK require-  
0 ments.

0 The CMIS is provided for US and Canadian markets when an addi-  
0 tional RMM is required in an RSC-SONET office.

0 7.1.4 OFFICE LAYOUT INFORMATION

0  
0 Please refer to ECM-600 DMS-100 Cabinetized.

0 Please refer to ECM-617 Building Block/Detail RSC-SONET for in-  
0 formation concerning CMIS for RSC-S application

0 7.1.5 TRAFFIC TABLES

0  
0 Not Applicable.

0 7.2 PRODUCT/SYSTEM SPECIFICATION

0

0 7.2.1 PHYSICAL CHARACTERISTICS

0  
0 Refer to ECM-600 DMS-100 Cabinetized.

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0 Refer to ECM-617 Building Block/Detail RSC-SONET for CMIS in  
0 RSC-S.

0 7.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Refer to ECM-600 DMS-100 Cabinetized.

0 Refer to ECM-617 Building Block/Detail RSC-SONET for CMIS in  
0 RSC-S.

0 7.2.3 SPARING INFORMATION

0  
0 Sparing practices are not impacted by the application of cabi-  
0 nets. Equipment should be spared per existing practices.

0 7.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Refer to ECM 600

0 7.3 DRAIN INFORMATION

0 Refer to ECM 600

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0 7.4 SOFTWARE PROVISIONING

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0 7.4.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Software provisioning is not affected by the application of  
0 cabinetized equipment.

0 7.4.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Refer to ECM 617 Building Block/Detail RSC-SONET for any software  
0 usage restrictions when CMIS is required in an RSC-SONET office.

0 7.4.3 MEMORY PROVISIONING

0  
0 Not Applicable.

0 7.5 REAL TIME IMPACT

0 Not Applicable.

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0 8.0 Cabinetized International Peripheral Equipment

0 SYNOPSIS: This document describes engineering and provisioning  
0 considerations for the Cabinetized International Peripheral Equipment  
0 Fiber ISDN (NTRX46AA) introduced for the European Community and  
0 Australian markets, where the power supply is 48VDC, to meet safety  
0 and global electromagnetic radiation EN Class A requirements.

0 NTRX46AA is a general purpose Common Peripheral Controller Equipment  
0 Frame for international applications which houses two independent dual  
0 shelf modules.

0 Each module may be provisioned as a

- 0 - Line Group Controller Offshore (LGC0), or
- 0 - Digital Trunk Controller Offshore (DTC0).

0 An LGC0 may be provisioned to support

- 0 - copper interface (DS-30) or
- 0 fiber interface (DS-512) to the network,
- 0 - PCM-30 links to RLCM, RSC or OPM,
- 0 - DS-30A interface to LCM.

0 A DTC0 may be provisioned to support

- 0 - copper interface (DS-30) or
- 0 fiber interface (DS-512) to the network,
- 0 - PCM-30 links to other offices,
- 0 - Common Channel Signaling 7 (CCS7).

0 The Dimensions of the CIPE cabinet, DMS-100 C28, are shown in Figure  
0 1.

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0 8.1 HARDWARE PROVISIONING

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0 8.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 The international DMS-100 cabinetized equipment is intended to  
0 replace the existing international DMS-100 product lines includ-  
0 ing frames and Meridian cabinets.

0 8.1.2 HARDWARE DEPENDENCIES

0  
0 To maintain the EMI capability of the cabinetized system, DMS-100  
0 Cabinetized cabinets should not be mixed with frames or Meridian  
0 cabinets.

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable

## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable

0

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## 0 CIRCUITS PER CARD

0  
0 Not applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable

0 8.1.3 PROVISIONING CONSIDERATIONS

0  
0 .us NTZZ37AA International CIPE Fiber ISDN (CLG0/CDT0)

0 Building block NTZZ37AA includes NTRX46AA Cabinetized Interna-  
0 tional Peripheral Equipment.

0 The NTZZ37AA Cabinetized International Peripheral Equipment  
0 (CIPE) houses one or two dual shelf XPM modules each configured  
0 as either Line Group Controller Offshore ISDN (LGCO) or Digital  
0 Trunk Controller Offshore ISDN (DTCO).

0 CIPE connects to the network through either DS-30 Trunks (twisted  
0 pairs) or DS-512 trunks (fiber optic cables).

0 CIPE connects to the Line Card Modules (LCMs) via DS-30A trunks  
0 (twisted pairs).

0 CIPE may also interface directly to external PCM-30 trunks (ei-  
0 ther twisted pair or coax).

0 all connections to the network, line card modules, or PCM-30  
0 trunks pass through the bulkhead for EMI protection.

0

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0 The FSP (Frame Supervisory Panel), located at the top of the cab-  
0 inet, distributes -48 VDC power to shelves and contains the cabi-  
0 net alarms.

0 CIPE is air cooled with a fan unit integrated into the base of  
0 the cabinet.

0 8.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 8.1.5 TRAFFIC TABLES

0  
0 Standard traffic provisioning algorithms apply.

0 8.2 PRODUCT/SYSTEM SPECIFICATION

0

0 8.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 8.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

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0 8.2.3 SPARING INFORMATION

0

0 8.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Standard sparing algorithms apply.

0 8.2.5 CURRENT DRAIN INFORMATION

0  
0 8.3 SOFTWARE PROVISIONING

0

0 8.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30  
0 Interface Circuit Pack.

0 8.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

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0 8.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 8.4 REAL TIME IMPACT

0 Not applicable.

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0 The Dimensions of the CIDC cabinet, DMS-100 C28, are shown in Figure  
0 1.

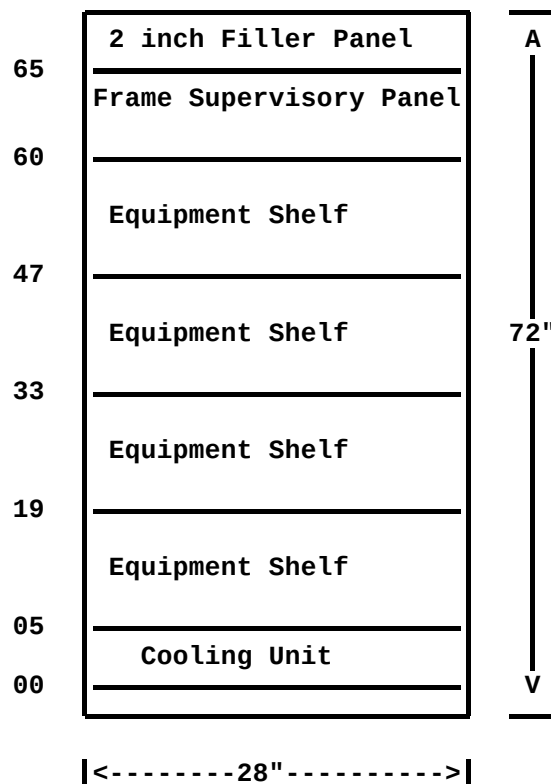


**FIGURE 1**

**DMS-100 C28 CABINET LAYOUT**

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0 9.1 HARDWARE PROVISIONING

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0 9.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The international DMS-100 cabinetized equipment is intended to  
0 replace the existing international DMS-100 product lines includ-  
0 ing frames and Meridian cabinets.

0 9.1.2 HARDWARE DEPENDENCIES

0

0 To maintain the EMI capability of the cabinetized system, DMS-100  
0 Cabinetized cabinets should not be mixed with frames or Meridian  
0 cabinets.

## 0 P AND C SIDE PORT REQUIREMENTS

0

0 Not applicable

## 0 DMS BUS PORT REQUIREMENTS

0

0 Not applicable

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## 0 CIRCUITS PER CARD

0  
0 Not applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable

0 9.1.3 PROVISIONING CONSIDERATIONS

0  
0 The NTRX47AA cabinet houses two dual shelf International LGC/DTC  
0 modules where each shelf contains three processor cards.

0 All external connections, with the exception of power, are  
0 through the bulkhead.

0 The CIDC can provide the following interfaces: DS30 or DS512  
0 network interfaces, and PCM30, DS0, or DS30A interfaces. A maxi-  
0 mum of sixteen (16) PCM-30 interfaces may be equipped on the  
0 international version of LGC/DTC versus twenty (20) DS-1 inter-  
0 faces on the North American product. Provision one (1)  
0 NT6X27AC/BB PCM-30 Interface CP for every two PCM-30 interfaces  
0 required.

0 Where fiber interface to the Enhanced Network (ENET) is required,  
0 provide:

0 two (2) NT6X40CA DS-512 Link Control CPs,  
0 two (2) NT6X40DA DS-512 Link Control Paddleboards  
0 two (2) NT6X69LB DS-512 CPP Protocol & Downld CPs, and  
0 one (1) NT6X02BU FXPM Bracket Assembly Kits.

0 or

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0 two (2) NT6X40FA DS-512 Link Control CPs,  
0 two (2) NT6X40GA DS-512 Link Control Paddleboards  
0 two (2) NT6X69LB DS-512 CPP Protocol & Downld CPs, and  
0 one (1) NT6X02BU FXPM Bracket Assembly Kits.

0 The NT6X40CA/DA were designed as a functional pair. The same  
0 follows with the NT6X40FA/GA. The paddleboards and circuit packs  
0 cannot be mixed because they do not function in mis-matched  
0 pairs.

0 The NT6X40FA/GA are the latest circuit pack design combination  
0 and should be ordered instead of the NT6X40CA/DA combination when  
0 the packs become generally available.

0 When fiber interface is not required, provide:

0 two (2) NT6X40AC DS30 Network Interface CPs  
0 two (2) NT6X69LA/LB CPP Protocol & Downld CPs.

0 The NT6X69LA may be used for non-fiberised peripherals. It is  
0 recommended that the NT6X69LB be used for jobs when it becomes  
0 available for general use.

0 The XPM (MP/SP) processor complex, always provided with NTRX47AB  
0 Common CP, consists of

0 NT6X45BAs,  
0 NT6X46BBs, and  
0 NT6X47ACs.

0 For each equipped LGC/DTC which supports PCM30 links or for each  
0 equipped LGC module which supports links to an LCM which is  
0 equipped with a PCM30 line drawer such as the NT6X05CA, provide:

0 two (2) NT6X28AA PCM-30 Signaling Interface CPs.

0 An Echo Canceller may also be equipped.

0 The DS0 I/F card (NT6X55CA) can be assigned only in slot 1 of  
0 unit 1 of the module.

0 The FSP, which distributes power control and alarms, is located  
0 at the top of the cabinet.

0 This cabinet is forced air cooled by a cooling unit located at  
0 the bottom of the cabinet.

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0 The NTRX47AA is always provided in building block NTZZ37EA Inter-  
0 national CIDC (PDTC/PLGC/IDTC/ILGC).

0 9.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

0 9.1.5 TRAFFIC TABLES

0  
0 Standard traffic provisioning algorithms apply.

0 9.2 PRODUCT/SYSTEM SPECIFICATION

0

0 9.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 9.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0

0 9.2.3 SPARING INFORMATION

0  
0 Standard sparing algorithms apply.

0 9.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 9.2.5 CURRENT DRAIN INFORMATION

0  
0 9.3 SOFTWARE PROVISIONING

0

0 9.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30  
0 Interface Circuit Pack.

0 9.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

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0 9.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 9.4 REAL TIME IMPACT

0 Not applicable.

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## 0 10.0 DMS-100 CIPE 48VDC/60VDC - EN Class B

0 The NTRX46BA Cabinetized International Peripheral Equipment (CIPE) was  
0 developed in the DMS-100 Global Cabinetization project Phase 4 -  
0 Germany Intelligent Network and EN Class B.

0 The CIPE contains two dual shelf XPM modules configured as either LGCs  
0 (Line Group Controllers) or DTCs (Digital Trunk Controllers).

0 CIPE connects to the network through either DS-30 trunks (twisted  
0 pairs) or DS-512 trunks (fiberoptic cables).

0 CIPE connects to the LCMS (Line Card Modules) via DS-30A trunks  
0 (twisted pairs).

0 CIPE may also interface directly to external PCM-30 trunks (either  
0 twisted pairs or coaxial cables).

0 All connections to the network, line card modules or PCM-30 trunks  
0 pass through the bulkhead for EMI protection.

0 The Modular Supervisory Panel (MSP) that distributes -48VDC or -60VDC  
0 to shelves and contains the cabinet alarms is located at the top of  
0 the cabinet.

0 CIPE is forced air cooled with a -48VDC or -60VDC fan unit integrated  
0 into the base of the cabinet.

0 The following features and options of the NTRX46BA apply to the  
0 Germany Intelligent Network:

- 0 - MSP: -60VDC option,
- 0 - Fan Unit: -60VDC option,
- 0 - Labels: German Language option for some labels,
- 0 - EN Class B requirements:
  - 0 - Molded, shielded inter cabinet cables,
  - 0 - Molded bulkhead-to-backplane signal cables

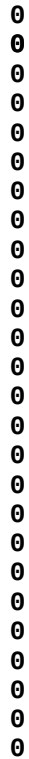
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0 10.1 HARDWARE PROVISIONING

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0 10.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 10.1.2 HARDWARE DEPENDENCIES

0  
0 To maintain EMI capability of the cabinetized system, this equip-  
0 ment must not be mixed with non-EMI equipment.

0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable

0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable

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0 CIRCUITS PER CARD

0  
0 Not applicable

0 DISCRIMINATION NUMBERING

0  
0 Not applicable

0 10.1.3 PROVISIONING CONSIDERATIONS

0  
0 Please refer to the Engineering Manual Insert for NTRX46BA.

0 10.1.4 OFFICE LAYOUT INFORMATION

0  
0 Please refer to ECM-600 DMS100 Cabinetized.

0 10.1.5 TRAFFIC TABLES

0  
0 Not applicable.

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0 10.2 PRODUCT/SYSTEM SPECIFICATION

0

0 10.2.1 PHYSICAL CHARACTERISTICS

0

0 Please refer to ECM-600 DMS100 Cabinetized.

0 10.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Please refer to ECM-600 DMS100 Cabinetized.

0 10.2.3 SPARING INFORMATION

0

0 Use existing practices.

0 10.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 10.2.5 CURRENT DRAIN INFORMATION

0

0

0 10.3 SOFTWARE PROVISIONING

0

0 10.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Software feature AE0777 is required for NT6X27BB Enhanced PCM-30  
0 Interface Circuit Pack.

0 10.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 10.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 10.4 REAL TIME IMPACT

0 Not applicable.

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0 11.0 DMS Common Equipment

0 This ECM describes the following DMS-100 Common Equipment:

0 NT0X07 Frame Common Assembly  
0 NT0X25 Framework Assemblies  
0 NT0X49 Light Fixture Assemblies  
0 NT0X32 EMI Adapters for LCE Frame

0 Standard lighting in the DMS area will be provided by frame-  
0 mounted modular units. One unit will be fastened on each side of  
0 each frame (at the top) and will contain two (2) 15 Watt lamps.  
0 Low intensity lighting, which involves the operation of only the  
0 first units at the end of each line-up, will also serve the emer-  
0 gency lighting requirements.

0 Northern Telecom is evolving to a new preferred method for pro-  
0 viding AC power within the DMS switch. The Commercial AC Free op-  
0 tion utilizes the Center Aisle Lighting concept by placing the  
0 lights off the DMS framework and onto the Integrated Ground  
0 Plane. These lights are isolated from the DMS framework and ref-  
0 erenced to the Integrated Collector Bus (ICB). These lights will  
0 be powered by commercial AC and controlled by low voltage relays  
0 with the switches located in the new end guards introduced in  
0 this document.

0 11.1 HARDWARE PROVISIONING

0

0 11.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 The frame doors section details doors for non-earthquake frame-  
0 works only.

0 The P0711698 Tape is used on the DMS SuperNode only.

0

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0 11.1.2 HARDWARE DEPENDENCIES

0  
0 Not applicable.

0 11.1.3 PROVISIONING CONSIDERATIONS

0  
0 Refer to Engineering Manual Sections.

0 11.1.4 OFFICE LAYOUT INFORMATION

0  
0 None.

0 11.1.5 TRAFFIC TABLES

0  
0 Not applicable.

0 11.2 PRODUCT/SYSTEM SPECIFICATION

0

0 11.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

0 11.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 11.2.3 SPARING INFORMATION

0  
0 Not applicable.

0 11.3 SOFTWARE PROVISIONING

0

0 11.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Not applicable.

0 11.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 11.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

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0 11.4 REAL TIME IMPACT

0 Not applicable.

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## 0 12.0 LaMarche Inverter Provisioning

0 The LaMarche Model A31-500-48V-A6 (A0367433) is a 500-watt DC to  
0 AC inverter designed to provide a protected 120 VAC at 60 Hz sup-  
0 ply from an input source of -48VDC nominal. The inverter is a  
0 solid state transistorized switching supply that utilizes a  
0 ferroresonant filter in delivering a non-distorted sinewave out-  
0 put. The unit can provide 500 Watts with a total harmonic dis-  
0 tortion of less than 5%.

0 This unit is equipped with two dual AC receptacles on the rear  
0 for AC output which will supply power to four (4) devices, the  
0 total of which cannot exceed 500 Watts. The -48VDC input is con-  
0 nected to the unit via a terminal strip (also located on the  
0 rear). Circuit breakers are located on the front panel to supply  
0 the DC input to the inverter and distribute it to the AC outlets.

0 The inverter is enclosed in a rack-mountable case for mounting on  
0 an MIS frame, an IOE frame or an MOE frame. When installing the  
0 unit in one of those frames, ensure sufficient space is available  
0 to allow two inches of cooling space above and below the  
0 inverter.

0 The LaMarche inverter is designed to eventually replace the  
0 NT0X87AA Inverter. The LaMarche unit provides the following  
0 enhancements/regulatory compliances over the existing units:

### 0 Regulatory Compliance

0 \* UL/CSA Listed

0 \* NEC Approved

### 0 Functional Enhancements

0 \* Commercial AC Free System

0 \* Provides up to 500W power output

0 \* Overload Shutdown and Automatic Recovery

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0 12.1 HARDWARE PROVISIONING

0

0 12.1.1 HARDWARE USAGE RESTRICTIONS

0

0 When installing this unit in a rack mounted configuration  
0 4-inches (2 above and below the unit) must be reserved for forced  
0 air cooling.

0 This unit must be installed per ISG Inverter Specifications per  
0 ECM-289.

0 The LaMarche Inverter must be connected to a UL-Fuse-Panel, in  
0 initial offices, as the required fusing is 30Amps via an NT0X42AS  
0 fuse.

0

0 12.1.2 HARDWARE DEPENDENCIES

0

0 Not Applicable

0

0 12.1.3 PROVISIONING CONSIDERATIONS

0

0 Provision the LaMarche inverter on new job in lieu of the  
0 NT0X87AA inverter. This LaMarche inverter is designed to be used  
0 as an integrated component of the DMS-100F Miscellaneous Equip-  
0 ment Frame (MIS) to provide protected AC to components internal  
0 and external to the MIS frame. The inverter is also used in the

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0 | Input/Output Equipment (IOE) frame and the Modem Equipment (MOE)  
0 | Frame.

0

0 12.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not Applicable

0

0 12.1.5 TRAFFIC TABLES

0  
0 Not Applicable

0 12.2 PRODUCT/SYSTEM SPECIFICATION

0

0  
0 12.2.1 PHYSICAL CHARACTERISTICS

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## 0 LaMarche Inverter (A0367433)

0  
0 Input Voltage.....-48VDC at 60Hz  
0 Power Consumption.....134 watts  
0 Current Drain.....2.8 Amps  
0 Thermal Dissipation.....571 BTU/hr  
0 Fusing Requirements.....One 30 Amp Fuse at PDC

## 0 MECHANICAL DIMENSIONS

0 Height 7" Width 26"

0

0 12.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not Applicable

0

0 12.2.3 SPARING INFORMATION

0

0 The are no provisionable spare component for this unit. If spares  
0 are required, provide the required number of complete units as  
0 per the standard sparing algorithm.

0 The Mean Time Between Failure (MTBF) as tested per the Bell Com-  
0 munications Standard TR-TSY-00032 is 183,000 hours at 50 C.

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0 12.3 SOFTWARE PROVISIONING

0

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0 12.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Not Applicable

0

0 12.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not Applicable

0

0 12.3.3 MEMORY PROVISIONING

0

0 Not Applicable

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0 12.4 REAL TIME IMPACT

0 Not Applicable

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### 0 13.0 Global Cabinetization

0 The DMS product has begun the transition from frames to cabinets in  
0 order to comply with international EMI and safety regulations. At the  
0 outset of the project, the cabinets were known as 'Streamline' cabi-  
0 nets. This name is no longer used. The cabinets designed in the first  
0 DMS 100 Cabinetization project are now referred to as DMS-100 Cabinets  
0 (Model A). A number of issues have resulted from the initial design of  
0 the Model A Cabinets. These issues are being addressed by the Global  
0 Cabinetization project. The cabinet designs produced from the later  
0 Global Cabinetization project are known as DMS 100 Cabinets (Model B)  
0 This NTP describes the differences between Model B Cabinets and the  
0 earlier design Model A Cabinets. The improvements provided by Model B  
0 are described in detail, as well as the differences in engineering  
0 rules.

0 The principle focus of this stage of the Global Cabinetization program  
0 is to modify the DMS system power distribution so that it has config-  
0 uration flexibility that, at least, equals the frame-based DMS 100.  
0 This is accomplished by the introduction of a new CPDC that distrib-  
0 utes power external to the EMI shield provided by the system cabinets.  
0 EMI is prevented from being radiated by the externally routed power  
0 cabling by means of External Power Filter Modules fitted in each cabi-  
0 net at the point of entry of the power cables. This power arrangement  
0 is also known as "external power" arrangement. This external power  
0 scheme enables frame-based office extension by cabinetized equipment.  
0 , as well as providing compatibility with the existing cabinetized  
0 equipment (Model A). Model A systems use 'horizontal' (internal) power  
0 arrangement.

0 The Model B product includes a 21 inch wide cabling cabinet known as  
0 the "C21", a 28 inch wide "C28" for the standard cabinet applications  
0 and a 42 inch wide "C42" for SuperNode, ENET and LPP use. Both  
0 Fiberworld Grey and Maple Brown assemblies have been created as part  
0 of this program. Model B C28 cabinets are available in grey only. The  
0 C42 is available in either grey or brown.

0

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0 13.1 HARDWARE PROVISIONING

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0 13.1.1 HARDWARE USAGE RESTRICTIONS

0

## 0 Modular Supervisory Panel

0

0 The MSP provides alarm monitor and control functions for C28 cab-  
0 inets. It is provisioned with modules to provide the capabilities  
0 needed for a specific function. Up to ten Breaker Modules, each  
0 with two breakers, may be provisioned for -48 VDC distribution.  
0 Up to eight Fuse Modules, each with eight breakers, may be pro-  
0 vided for protection of sub-circuits. A total of thirteen Fuse  
0 and Breaker modules may be provisioned. Up to two Talk Battery  
0 Modules may be provided for filtered -48 VDC distribution.

0 |

## 0 Cabinetized Power Distribution Center (CPDC)

0

0 | Secondary power cables for a centralized CPDC (external powering)  
0 | shall be #10 AWG unless specifically required by the customer or  
0 | dictated by the installation (voltage drop) to be #8 AWG or #6  
0 | AWG cable.

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0 13.1.2 HARDWARE DEPENDENCIES

0  
0 In order to avoid the restrictions in office layout defined for  
0 the original cabinetized product, individual cabinets must be  
0 equipped with Power and Alarm Filter Modules. These have been  
0 made available for the existing CLCE, CLMI, CCPE and CMIS and are  
0 incorporated into the design of all Model B Optimized C28 cabi-  
0 nets. These modules allow overhead filtered power input, under  
0 floor filtered power input as well as through the lineup power-  
0 ing.

## 0 P AND C SIDE PORT REQUIREMENTS

0

## 0 DMS BUS PORT REQUIREMENTS

0

## 0 CIRCUITS PER CARD

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## 0 DISCRIMINATION NUMBERING

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0 13.1.3 PROVISIONING CONSIDERATIONS

0  
0 Each Model B cabinet is described in terms of the differences be-  
0 tween the Model B and original Streamline versions (Model A) and  
0 the effect these differences have on provisioning. Items not de-  
0 scribed as different will function as in the original Streamline  
0 product and will be provisioned as before.

0 System Aspects

0  
0 | Provisioning Rules for Extension to Model A Equipment

0 | When Model B Cabinetization equipment becomes generally avail-  
0 | able, the engineering rules for Model A Cabinetization will be-  
0 | come classified as "Retired". That is, Model A will be supported  
0 | for maintenance purposes only. Because of this, extensions to  
0 | Model A equipment, will be made using Model B equipment.

0 | The provisioning rules for extensions to Model A will be re-  
0 | stricted to the cabinet level, that is, the rules for Model B do  
0 | not exploit available shelf space in the existing Model A cabi-  
0 | nets in situations where Model B cabinets are used to extend  
0 | Model B offices.

0 Power Routing Arrangement

0 The standard powering scheme for Model B cabinet systems is the  
0 'external powering' scheme. With this scheme, a cabinet lineup  
0 may receive power from a power distribution center which is not  
0 necessarily in the same lineup. The power distribution center  
0 (PDC) and the cables delivering power to the cabinets from the  
0 CPDC are not enclosed in an EMI shield or cage. EMI which is gen-  
0 erated in the equipment cabinet is filtered from the power supply  
0 cables at the point where the power cables enter each cabinet.

0 Model A cabinetized systems, on the other hand, use the 'horizon-  
0 tal powering' scheme. With this scheme, each cabinet lineup con-

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0 tains a CPDC. The CPDC and the cables delivering power to the  
0 equipment cabinets are completely enclosed in the EMI envelope or  
0 cage formed by the cabinet lineup. EMI filters remove EMI from  
0 conductors, such as the battery power feeds to the CPDC, at the  
0 point of entry to the cabinet lineup.

## 0 C28-Type Cabinets

### 0 0 General

0 All C28 Cabinet Products are provisioned as 'Building Blocks'.  
0 C28 Cabinet building blocks, generally, are configured to satisfy  
0 the requirements of all market areas with a minimum of engineer-  
0 ing options.

0 The Standard C28 cabinet building blocks, primarily intended for  
0 the US and CALA, market areas have the following characteristics  
0 selected from the C28 Cabinet design configuration options:

- 0 \* Grey doors with center latch
- 0 |
- 0 \* External Power arrangement
- 0 \* -48V Power

0 The above characteristics satisfy the requirements of all market  
0 areas, however, where a cabinet building block contains equipment  
0 providing functionality, such as ringing generation in the CLCE,  
0 does not satisfy the requirements of all market areas, a second  
0 building block of the same product is provided. Generally, where  
0 two building blocks are provided for the same product type, one  
0 covers the US (domestic) market and any other compatible market  
0 while the other(s) cover overseas (international) markets and  
0 specific countries within a market area for which the domestic  
0 building block is not compatible.

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0 Cabinetized LCE (CLCE)

0 There are two CLCE building blocks:

0 \* Cabinetized LCE (Model B) (domestic)

0 \* Cabinetized LCE Int. (Model B) (international)

0 The above building blocks differ only in that the ringing genera-  
0 tors are always provided in the CLCE intended for domestic appli-  
0 cation. For the CLCE intended for international application the  
0 ringing generators are provisionable to permit the selection of  
0 ringing generators to be compatible with the country of applica-  
0 tion.

0 Each CLCE building block contains an EMI filter adapter to filter  
0 lines at the EMI bulkhead. Line connectors 78 pin D-sub at the  
0 bulkhead, interface with 64 pin Key Telephone connectors on the  
0 customer distributing frame. A total of 40 tip and ring connector  
0 interfaces are available on the CLCE, each corresponding to one  
0 Line Subgroup of 32 lines.

0 An MSP provides 3 Circuit Breaker Modules (six total breakers), 2  
0 Fuse Modules, 2 Talk Battery Modules and an Alarm Module. This  
0 MSP provides the normal functions of power distribution and  
0 alarms within the cabinet. Low profile duplicated Ringing Genera-  
0 tors with ANI Coin are mounted horizontally across the top of the  
0 MSP.

0 The CLCE building blocks contain up to 2 LCMS (Line Concentration  
0 Modules). The LCMS are provisionable

0 Cabinetized Line Module ISDN (CLMI)

0 There are two CLMI building blocks:

0 \* Cabinetized Line Module ISDN (domestic)

0 \* Cabinetized Line Module ISDN (international)

0 The above building blocks differ only in that the ringing genera-  
0 tors are always provided in the CLMI intended for domestic appli-  
0 cation. For the CLMI intended for international application, the  
0 ringing generators are provisionable to permit the selection of  
0 ringing generators to be compatible with the country of applica-  
0 tion.

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0 The Model B CLMI building blocks contain EMI filter adapters to  
0 filter lines at the EMI bulkhead. Line connectors, 78 pin D-sub,  
0 at the bulkhead, interface with 64 pin Key Telephone connectors  
0 on the customer distributing frame. A total of 32 tip and ring  
0 connector interfaces are available on the CLMI, each correspond-  
0 ing to one Line Subgroup of 30 lines.

0 The same MSP that is used on the Model B CLCE are used on the  
0 Model B CLMI, as well as the low profile Ringing Generators.

#### 0 Cabinetized Power Distribution Center CPDC

0 The CPDC building block is a single building block which is suit-  
0 able for application in all market areas. The CPDC building block  
0 supports only 'External' power arrangements and supports for 48V  
0 power supply systems.

0 For the External power arrangement, the CPDC and its power dis-  
0 tribution cables, do not generate EMI, and are, therefore, not  
0 enclosed in a Faraday cage. The cabinets generating EMI are indi-  
0 vidualy supplied with power from the CPDC. EMI is filtered from  
0 the power cables at the point of entry to the cabinets. This ca-  
0 pability is the most important feature difference between the  
0 Model B cabinet system and the Model A system. The capability of  
0 centralizing the CPDC enables it to supply more than one cabinet  
0 lineup while EMI suppression of the whole system complies with at  
0 least EN Class A standards. The capability of centralizing the  
0 CPDC enables flexibility of layout similar to that of the DMS-100  
0 Family frame based systems. Safety covers for all points requir-  
0 ing hazard protection and Enhanced Alarm System support are  
0 standard features. Secure 2 hole bolted joints are used for all  
0 power connections.

0 The Centralized CPDC supports up to thirty-seven (37) cabinets in  
0 four lineups. The CPDC is not an EMI violator and is located out-  
0 side the Faraday cage formed by the cabinet lineup. Power is pro-  
0 vided to each cabinet individually via External Power Filter  
0 Modules. The Model B CPDC does not support power distribution  
0 internally, within the lineup.

0 The CPDC has provides one (1) to four (4) CB (Circuit Breaker)  
0 panels which may be connected in one of two possible configura-  
0 tions.

0 | \* Single Feed (Standard Configuration)

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0 | \* Multiple Feed (Alternate Configuration)

0 | Single Feed - two (2) -48V inputs (A and B feeds) from the Cen-  
0 | tral Office Power Plant are fed to all installed CB Panels.

0 | Multiple Feed - two (2) -48V inputs (A and B feeds) are fed to  
0 | each CB Panel, i.e. a maximum of four A and B power feed pairs  
0 | are taken from the Central Office Power Plant; one pair feeds  
0 | each CB panel.

0 | In the Single Feed configuration the Power Plant feeds to the  
0 | CPDC are fused at 600 amps at the Power Plant. Each feed may be  
0 | loaded to a maximum of 400 amps.

0 | In the Multiple Feed configuration the Power Plant feeds to each  
0 | CPDC CB Panel are fused at a maximum of 225 amps and may be  
0 | loaded to a maximum of 150 amps.

0 | A maximum of 160 circuit breakers may be provided on four panels  
0 | of 40 breakers each (20 "A" Feed and 20 "B" Feed). Out of the 40  
0 | breakers on the first panel, 36 are available for assignment. On  
0 | additional shelves, 36 breakers are available where individual  
0 | feeds are provided and 38 are available if single cabinet feed is  
0 | used. The breakers are equally divided between A and B feeds.

0 | A maximum of four breaker panels may be supplied per CPDC. Any  
0 | mix of the following may be used:

- 0 | \* NTRX02CA for applications using C28-type cabinets. Provides  
0 | forty 30 Amp circuit breakers per panel.  
0 | \* NTRX02CD for applications using C42-type cabinets. Provides  
0 | thirty-four 30 Amp and six 10 Amp breakers per panel.

0 Cabinetized TME

0 | There is one Model B CTME building block. It is configured like  
0 | the frame-based TME and uses all currently available TME  
0 | provisionable hardware. Due to the limited bulkhead space avail-  
0 | able for connectors, a maximum of twenty lineups may be config-  
0 | ured when using the Model B CTME. This CTME supports the Enhanced  
0 | Alarm System as an optional provisionable feature. External EMI  
0 | protection for the service and trunk circuits to the distributing  
0 | frame is provided via filtered connectors at the rear EMI  
0 | bulkhead. The MSP is used on the Model B CTME.

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## 0 Cabinetized IOE (CIOE)

0 One CIOE building block is specified for application in all mar-  
0 ket areas currently identified for Model B applications.

0 The CIOE houses the following equipment:

0 \* Data Processing Peripheral (DPP) in shelf position 33

0 \* Input/Output Controller (IOC) in shelf position 19

0 \* Mag Tape Drive (MTD) in shelf position 33

0 \* 5.25"/8" Disk Drive Unit (DDU) in shelf position 05

0 \* Stratum Clock in shelf position 05

0 Shielded cables are used for the DS30 connection to SuperNode  
0 through the Bulkhead. Either filtered connectors or shielded ca-  
0 bles are used for EMI protection on external connections to ter-  
0 minals or other devices. Cable connections between the MTD, DDU  
0 or DPP and IOC shelf are made within the EMI envelope formed by  
0 the CIOE.

## 0 Optimized CMIS

0 One CMIS building block is defined for application in all Market  
0 areas in which Model B cabinetized systems are required.

0 The Model B CMIS serves the same function as the frame-based MIS  
0 and accommodates both DMS and outside vendor equipment. EMC  
0 compliant and non-EMC compliant equipment will be housed by using  
0 three basic types of functional cabinets: Totally EMI Shielded  
0 CMIS, Partially EMI Shielded CMIS and Non-Shielded CMIS. CMIS  
0 interconnections are achieved by using generic fully terminated  
0 cables.

0 The Totally EMI Shielded CMIS provides full EMI containment and  
0 contains only Non-EMI compliant provisionable equipment that is  
0 supplied and managed by Northern Telecom. Bulkhead personality  
0 plates and filters are provisioned to supply the same degree of  
0 EMI protection as the other Model B C28-type cabinets.

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0 The Partially Shielded CMIS will be split as half Shielded and  
0 half Non-Shielded. The Shielded half houses only NT-supplied and  
0 controlled equipment. Only EMI-compliant equipment is provided in  
0 the Non-Shielded half of the cabinet and no bulkhead personality  
0 plates or filters are used. The customer is responsible for  
0 equipment in the Non-Shielded half of the cabinet. No equipment  
0 has currently been identified for use in the Non-Shielded area.  
0 The two halves of the cabinet are separated by an EMI barrier.

0 The Non-Shielded Open CMIS is provided to mount customer-supplied  
0 EMI-Compliant equipment, although the option will exist for NT to  
0 provide EMI-Compliant equipment in this cabinet, when necessary.  
0 However, support is given only for equipment for which rules for  
0 provisioning in the non-shielded housing are provided in the En-  
0 gineering Manual. For this reason, the customer will be consid-  
0 ered responsible for overall cabinet and individual equipment EMI  
0 if non supported equipment is mounted in the CMIS. No bulkhead  
0 personality plates or filters are used on this cabinet version.

0 To accommodate the variety of equipment needed in a CMIS, the Op-  
0 timized CMIS is divided into eight, seven inch high, zones, high.  
0 In the Partially Shielded CMIS, one zone is used to mount the EMI  
0 Barrier. Each piece of equipment occupies one or more zones.  
0 Ideally, one personality plate is associated with each piece of  
0 equipment, however, by grouping functionality in one cabinet,  
0 some equipment with a high number of connectors may use the per-  
0 sonality plate associated with other equipment. Empty space may  
0 be provided above and below equipment per the manufacturer's  
0 specifications. All CMIS equipment complies with system ISG  
0 guidelines.

#### 0 Cabinetized DSN

0 The Model B CDSN contains two fully duplicated dual shelf network  
0 modules, the MSP and a cooling unit. All connectors to and from  
0 the network module are connected through the bulkhead for EMI  
0 protection.

#### 0 Cabinetized CPE

0 The Model B CCPE is the cabinetized version of both the base Com-  
0 mon Peripheral Controller frame and the ISDN CPE frame. This cab-  
0 inet is both ISDN-ready, using the NT6X0226 backpanel, and  
0 fiber-ready as an interface to ENET. All connections to the net-  
0 work and DS-1 links are through the bulkhead for EMI protection.

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0 The MSP is mounted in the top of the cabinet and a C-feed module  
0 is provisionable for ISDN applications.

#### 0 Cabinetized SLC

0 Provisioning for the Model B SLC is unchanged from the Model A  
0 CSLC. All Model B enhancements are included in the base ordering  
0 code.

#### 0 Cabinetized DNI

0 Provisioning for the Model B DNI is basically the same as for the  
0 original CDNI. EMI protection is provided via bulkhead filtering.  
0 When the DNI is provided, make allowance for two cabinets, side  
0 by side.

#### 0 Cabinetized MSS

0 Two CMSS building blocks are provided:

0 \* Cabinetized MSS (BROWN)

0 \* Cabinetized MSS (Grey)

0 The CMSS (BROWN) building block is used for initial installations  
0 and extensions to frame based systems colored brown

0 The CMSS (GREY) building block is used in extensions and initial  
0 installations of EMI compliant cabinetized systems. Such systems  
0 are colored grey.

0 The CMSS provides shelves for storage of standard DMS-size cir-  
0 cuit packs, SuperNode-size packs and MSP-size packs. In addition  
0 to the two shelf-types originally used (DMS and SuperNode size  
0 shelves), the MSP card cage is provisioned, when needed. A util-  
0 ity tray for technician tools may be provisioned.

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## 0 C42-TYPE CABINETS

0  
0 Dual Plane Combined Cabinet (DPCC)

0 The DPCC NT9X01JB provides the same functionality as the DPCC  
0 NT9X01JA. The NT9X01JB supports both horizontal and external  
0 power cabling and is EMI compliant. The DPCC provides two Mes-  
0 sage Switch shelves, one Computing Module shelf, one System Load  
0 Module, a cooling unit and an FSP, all in a standard C42 cabinet.

## 0 Enhanced Network (ENET)

0 Two packages of the ENET are contained in a standard C42 cabinet.  
0 The NT9X05AC is a 128K channel network duplex contained in two  
0 cabinets. Plane 0 is mounted in one cabinet and Plane 1 in the  
0 other. The network can grow from 2K to 128K channels. This is  
0 equivalent to 64 Double Shelf Networks. The NT9X05AD is a 64K  
0 channel duplex in one cabinet (both planes in the same cabinet),  
0 with half the capacity of the NT9X05AC.

0 Each cabinet has four identical shelves, each shelf having 2 to  
0 16 crosspoint cards, equivalent to 16 Double Shelf Networks. The  
0 cabinet has a cooling unit and FSP, supports both horizontal and  
0 external power feed and is EMC protected.

## 0 Link Peripheral Processor (LPP)

0 The Model B LPP is packaged in the C42 cabinet and retains the  
0 same functionality as the LPP NT9X70BA. The benefits provided by  
0 the Model B power arrangement are the only significant improve-  
0 ment. The Model B LPP is backward compatible and can now be in-  
0 stalled in a cabinetized lineup, allowing the use of non-filtered  
0 power cabling.

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## 0 SuperNode Service Enhanced (SNSE)

0 The SNSE is intended for small Class 5 offices and remote appli-  
0 cations and provides the functionality of a SuperNode, ENET and  
0 LPP in a single cabinet. The single C42 cabinet contains a  
0 Compute/SLM shelf, a 16K ENET shelf, a Link Interface Shelf and a  
0 Message Switch shelf. The ENET can be expanded in increments of  
0 2K up to the 16K maximum and can accommodate both fiber and me-  
0 tallic inputs from the associated peripherals.

## 0 Single Shelf LPP C42 Cabinet

0 Single Shelf LPP C42 Cabinet (NTEX01AB) provides a housing, for  
0 a SuperNode office, requiring only a relatively small number of  
0 Link Interface Units (LIUs). Up to two 'Fiberized' Link Interface  
0 Shelves (LISS) may be provisioned. The NTEX01AB contains a maxi-  
0 mum of twenty- four LIUs.

0 The Single Shelf LIS does not require a Local Message Switch for  
0 inter LIU and LIU to Message Switch communication as does an LIS  
0 mounted in an LPP. A special FBUS controller and associated fiber  
0 interface paddleboard enable direct connection between the con-  
0 taining LIS and the SuperNode Message Switch.

## 0 Extensions

0  
0 Equipment enclosed in Model B cabinets may be used for extending  
0 existing Model A Streamline offices.

0 Because Model A offices use the horizontal power arrangement  
0 there are some restrictions when extending using Model B cabinets  
0 which use the 'external power' or external power arrangement. The  
0 Model A CPDC has the capability of powering 1 to 3 standard, i.e.  
0 external power, Model B cabinets in addition to the 'horizontal  
0 power' or internal power cabinets in the associated Model A cabi-  
0 net lineup. This means that a Model A lineup can be extended by a  
0 maximum of 3 powered Model B cabinets, on condition that the  
0 power rating of the CPDC at the end of the lineup is not ex-  
0 ceeded. Model B extensions requiring more than three cabinets,  
0 should be installed in a separate additional lineup or lineups.

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0 The additional lineup(s) require at least one Model B CPDC to be  
0 provisioned.

0 In instances where an extension to either a Model A or Model B  
0 office contain CMIS or CIOE which include modems, special core  
0 cluster grounding arrangements are required. For details refer to  
0 ECM 283.

0  
0 13.1.4 Office Layout Information

0  
0 The central capability provided by the Model B versions of  
0 cabinetized equipment is functionally equivalent to the frame  
0 based product in terms of office layout. Using the Model B Cen-  
0 tralized CPDC, the previous limit of eleven cabinets per lineup  
0 is removed. The term "Centralized CPDC" does not mean that it  
0 must be positioned in the center of a lineup, but rather that it  
0 is able to distribute power to more than one lineup. A single  
0 Model B CPDC can power up to thirty-seven frames/cabinets in up  
0 to four lineups. Power supplies are routed outside the EMI  
0 shields formed by the cabinet lineups. Filter modules are used to  
0 allow connections to penetrate the EMI barriers of each cabinet  
0 while retaining EMI compliance. Alarm and frame/logic ground ca-  
0 bling can be routed either inside or outside the EMI shield. When  
0 routed outside, e.g. between cabinet lineups, EMI filters are  
0 used at exit and entry points.

0 Model B cabinets are backward compatible with the original C28  
0 cabinet and will allow extension of existing Model A Cabinetized  
0 offices. The External Power Filter Module extends the capability  
0 to use existing RMEs or CPDCs to derive power and alarms.  
0

0 \* All CLCE and CLMI cabinets must be powered by the same CPDC  
0 that powers the associated CCPE. The cabinets no longer need  
0 to be in the same lineup as their controllers but must be  
0 powered from the same CPDC as their controllers.

0 \* With the introduction of External Power Filter and Alarms,  
0 breaks in lineups due to columns or future additions are al-  
0 lowed. This increases flexibility in engineering Hot Slide  
0 offices.

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- 0 \* Restrictions in location of NT9X95-style cabinets in a lineup  
0 do not apply to Model B Externally Powered offices (external  
0 powering scheme).
- 0 \* In a lineup with no C28 cabinets, the maximum number of C42  
0 (NT9X95) cabinets is five. This limit is imposed by the  
0 Centralized CPDC maximum power capacity of 400 Amps.
- 0 \* Provisioning CSLCs and CDNIs is the same as the in the provi-  
0 sioning of a frame-based DMS office. Allow for two CSLCs, one  
0 for Plane 0 and one for Plane 1. Provide two cabinets to ac-  
0 commodate CDNI. When there is more than one CSLC or CDNI,  
0 they should be located across from each other in separate  
0 lineups. Multiple CSLC/CDNIS should not be in the same lineup  
0 due to heavy cabling required.
- 0 \* Additional cabinets should be added to the growth end of a  
0 lineup. Cabinets cannot be added to the non-growth end of a  
0 lineup, nor can they be added between the CPDC and the non-  
0 growth end of the lineup in instances where the CPDC not lo-  
0 cated at the non-growth end.
- 0 \* Frame ground bus and logic return bus must be extended as the  
0 lineup grows.
- 0 \* When adding cabinets to a DMS-100 frame office, the cabinets  
0 must be located in separate lineups.
- 0 \* If cabinets (which are ISG compliant) are added to a non-ISG  
0 frame office, consideration will have to be given to ISG in-  
0 tegrity.
- 0 The system is free of all commercially-derived sources of AC  
0 power. This is accomplished by using low voltage light control  
0 for the Center Aisle Lighting and inverter-derived power for the  
0 AC convenience outlets on the endguards.

#### 0 13.1.5 TRAFFIC TABLES

0  
0 Not applicable.

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0 13.2 PRODUCT/SYSTEM SPECIFICATION

0

0 13.2.1 PHYSICAL CHARACTERISTICS

0

0 Dimensions and weights of the Model B cabinets are as follows:

0 - C21 Cabinet with cosmetic panel:  
0 20.7" wide, 28" deep, 72" high; weight 180 lb.

0 - C28 Cabinet with cosmetic panel:  
0 28.5" wide, 28.4" deep, 72" high  
0 weight for major components:  
0 doors.....25 lb. each  
0 bulkheads.....14 lb. each  
0 endpanels.....13 lb. each  
0 loaded shelf.....61 lb. each  
0 empty shelf.....27 lb. each  
0 cooling unit.....20 lb.  
0 MSP.....15 lb.  
0 Overhead cable trough...30 lb.  
0 C28 Cabinet Assy.....250 lb.

0 - C42 Cabinet (dimensions & weights approximate)  
0 41.9" wide, 28" deep, 72" high

0 SuperNode Shelf: 12.9" high  
0 36.13" wide  
0 22.26" deep

0 Cooling Unit: 9.62" high  
0 36.13" wide  
0 22.26" deep

0 FSP: 4.9" high  
0 36.13" wide  
0 22.26" deep

0 C42 with four empty shelves, FSP, cooling unit  
0 bulkheads and bulkhead PCs, shelf cable trays,  
0 logic return bars and power cabling: 800 lb.

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0  
0 Same as above with complete set of circuit packs  
0 and a set of four doors: 1400 lb.

0 weight for major components:  
0 doors.....40 lb. each  
0 bulkheads.....23 lb. each  
0 endpanels.....25 lb. each  
0 loaded shelf.....180 lb. each  
0 empty shelf.....70 lb. each  
0 cooling unit.....65 lb.  
0 FSP.....21 lb.  
0 Overhead cable trough...51 lb.  
0 Cabling Cabinet .....180 lb. (complete)

0 13.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 All Model B cabinets provide both primary and secondary holes for  
0 anchoring the cabinets to the floor during installation. The cab-  
0 inets use 12mm anchors in all seismic (earthquake) zones. The  
0 cabinets use leveling feet in all non-seismic zones.

0 Model B cabinets are EMI compliant.

0 13.2.3 SPARING INFORMATION

0  
0 Not applicable.

0 13.2.4 ISG REQUIREMENTS

0  
0 Isolated System Grounding (ISG) for Cabinetization Model B is  
0 outlined in this section. Refer to ECM-289, Isolated System



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0 Grounding (ISG), for a detailed description of ISG. As with a  
0 frame office, the various grounds (frame, logic, battery return)  
0 in a Cabinetization office are also kept separate until the Cen-  
0 tral Office (CO) Ground Window. Only the additional requirements  
0 and differences for Cabinetization Model B are outlined in this  
0 section. For any items not mentioned in this section, the same  
0 ISG rules as stated in ECM-289 and other individual documents ap-  
0 ply (e.g. DDU, inverters, modems, etc.).

0 The CPDC in a Model B Cabinetization office is provisioned in the  
0 Centralized Power mode. The ISG requirements for the Centralized  
0 Power mode is outlined in the following sections. In a  
0 Cabinetization Model A office only the Integrated Power scenario  
0 is available (CPDC at the end of each lineup). Extensions to  
0 Model a Model A lineup using Model B cabinets are restricted to a  
0 maximum of three (3) cabinets owing to restrictions inherent in  
0 the CPDC when used in the horizontal configuration. In the hori-  
0 zontal configuration, the CPDC can supply a maximum of three ex-  
0 ternally powered cabinets on condition that the total number of  
0 cabinets supplied by the CPDC is within the capacity of the CPDC.

0 In a Cabinetization Model B office the Centralized Power must be  
0 used. An extension to a Model A using Model B cabinets must,  
0 therefore, use mixed power modes. The Model A cabinets use the  
0 Integrated Power mode.(Horizontal Power arrangement). Model B  
0 cabinet extensions use the external power arrangement that is  
0 characteristic of the Centralized Power configuration.

#### 0 Integrated Power (Horizontal Power)

0  
0 The power arrangement referred to as Integrated Power which is  
0 used with Model A Cabinets is the arrangement in which each  
0 line-up contains a CPDC and Model A equipment cabinets. The CPDC  
0 is, preferably, located at the start of the line-up. All the  
0 cabinets in each line-up are physically bolted together, to allow  
0 power and ground cables to traverse Horizontally within the  
0 line-up via a passage-way in the side walls. This arrangement  
0 provides an EMI-compliant, self-enclosed cabinet line- up.

0 Integrated MAP (IMAP) shall be the only topology used for mainte-  
0 nance and administration positions. Refer to ECM-289 for ISG  
0 rules on IMAP.

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0 1. Framework Ground (FG)

- 0 \* A Framework Ground stud or reference point is located at  
0 the bottom of each cabinet, so that the cabinets can be  
0 bonded to the FG collector. This FG stud or reference  
0 point is identified with the international ground symbol.
- 0 \* A No.0 AWG Framework Ground collector cable shall be run  
0 internal to each line-up along the base of the cabinet.  
0 A No.6 AWG cable shall be run from each cabinet's FG stud  
0 and C-tapped to the FG collector cable. The FG collector  
0 cable shall terminate at the ground plate at the bottom  
0 of the CPDC EMI bulkhead.
- 0 \* A No.0 AWG cable shall be run from the CPDC ground plate  
0 to the Framework Bonding Equalizer (FBE).
- 0 \* The cable from the FBE to the CO Ground Window shall be  
0 the same as frame ISG rules.
- 0 \* Two-hole lugs shall be used wherever possible to termi-  
0 nate cables.

0 2. Logic Ground (LG)

- 0 \* DPCC, CIOE, and associated dedicated CMIS cabinets must  
0 be located in the same line-up. These cabinets are re-  
0 ferred to as the Core Cluster.
- 0 \* LGE and associated LCE equipment must be located in the  
0 same line-up.
- 0 \* LIU equipment and associated CMIS modems must be located  
0 in the same line-up.
- 0 \* There shall be no dc-coupled signal interconnections be-  
0 tween equipment in separate line-ups.
- 0 \* A No.0 AWG Logic Return collector cable shall be run  
0 along the base of the cabinets, and shall terminate at  
0 the EMI feed-through filter located on the CPDC bulkhead.  
0 For any cabinet requiring a logic return termination, a  
0 No.6 AWG cable shall be run from the LR bus of the equip-  
0 ment and C-tapped to this LR collector cable. The cabi-

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0 nets requiring a logic return termination are the same as  
0 their functional counterpart in a frame office.

0 \* Core cluster cabinets shall have a No.6 AWG Core Cluster  
0 Equalizer cable run along their base, and C-tapped to the  
0 LR collector cable. A No.6 AWG cable shall be run from  
0 the LR bus of each core cluster cabinet, and C-tapped to  
0 this Core Cluster Equalizer cable.

0 \* No.0 AWG cable shall be run from the CPDC EMI feed-  
0 through filter to the Logic Return Equalizer (LRE).

0 \* The cable from the LRE to the CO Ground Window shall be  
0 the same as frame ISG rules.

0 \* All LR C-taps shall be equipped with a protective cover  
0 to insulate the taps from any incidental contact with FG,  
0 etc.

0 \* Two-hole lugs shall be used wherever possible to termi-  
0 nate cables.

### 0 3. Battery Return (BR)

0 | \* Power filter modules for Model B are available to support  
0 | 16,13,12,9 and 5 power type connections. These include  
0 | battery, battery return, and logic return connections.  
0 | The terminals can support up to 6 AWG cable, however, 10  
0 | AWG is recommended to facilitate installability.

0 | Dedicated tooling is used for the Filtered Terminal  
0 | Blocks. This tooling is flexible in that filtered termi-  
0 | nal blocks of 1 to 13 positions can be produced.

0 | Power filter kits designed to fit specific Model A cabi-  
0 | nets supply the required number of connection points for  
0 | each application.

### 0 Centralized Power (External Power)

0  
0 | The second scenario is referred to as Centralized Power. Central-  
0 | ized power is used in Model B systems and for Model B extensions

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0 | to Model A systems. This is when the CPDC is located in one of  
0 the line-ups central to the equipment line-ups. The CPDC can  
0 power up to 37 cabinets.

0 Integrated MAP (IMAP) shall be the only topology used for mainte-  
0 nance and administration positions. Refer to ECM-289 for ISG  
0 rules on IMAP.

0 1. Framework Ground (FG)

0 \* A No.0 AWG Framework Ground collector cable shall be run  
0 external to each line-up. A No.6 AWG cable shall be run  
0 from each cabinet's FG stud and C-tapped to the FG col-  
0 lector cable. The FG collector cable shall terminate at  
0 the Framework Bonding Equalizer (FBE).

0 \* A No.0 AWG cable shall be run from the Framework Ground  
0 stud of the CPDC to the Framework Bonding Equalizer  
0 (FBE).

0 \* The cable from the FBE to the CO Ground Window shall be  
0 the same as frame ISG rules.

0 \* Two-hole lugs shall be used wherever possible to termi-  
0 nate cables.

0 2. Logic Ground (LG)

0 \* DPCC, CIOE, and associated dedicated CMIS cabinets must  
0 be located in the same line-up. These cabinets are re-  
0 ferred to as the Core Cluster.

0 \* CLCE or CLMI and their associated controllers (either  
0 CCPE or CIPE) must be powered from the same CPDC.

0 \* The LPP and associated CMIS modems must be located in the  
0 same line-up.

0 \* There shall be no dc-coupled signal interconnections be-  
0 tween equipment in separate line-ups.

0 \* A No.0 AWG Logic Return collector cable shall be run ex-  
0 ternal to each line-up. For any cabinet requiring a  
0 logic return termination, a No.6 AWG cable shall be run  
0 from the LR bus of the equipment and C-tapped to this LR  
0 collector cable. The cabinets requiring a logic return  
0 termination are the same as their functional counterpart

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0 in a frame office. The LR collector cable shall termi-  
0 nate at the system Logic Return Equalizer (LRE).

- 0 \* Core cluster cabinets shall have a No.6 AWG cable run  
0 from their respective LR bus, and C-tapped to a LR col-  
0 lector spaced at 15cm intervals above CIOE 00.

- 0 \* The LPP and associated CMIS cabinets shall have a No.6  
0 AWG cable run from their respective LR bus, and C-tapped  
0 to a LR collector spaced at 15cm intervals above the LPP.

- 0 \* No.0 AWG cable shall be run from the CPDC Frame Ground  
0 (FG) plate to the Logic Return Equalizer (LRE).

- 0 \* The cable from the LRE to the CO Ground Window shall be  
0 the same as frame ISG rules.

- 0 \* All LR C-taps shall be equipped with a protective cover  
0 to insulate the taps from any incidental contact with FG,  
0 etc.

- 0 \* Two-hole lugs shall be used wherever possible to termi-  
0 nate cables.

### 0 3. Battery Return (BR)

- 0 \* For any cabinet requiring a battery return termination, a  
0 No.6 AWG cable shall be run from the LR bus of the equip-  
0 ment to the Battery Return plate of the CPDC. The cabi-  
0 nets requiring a battery return termination are the same  
0 as their functional counterpart in a frame office.

### 0 13.2.5 POWER FEED AND FUSING REQUIREMENTS

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**Host - Physical Equipment**  
**Chapter 23**

0 13.3 SOFTWARE PROVISIONING

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0 13.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 Not applicable.

0 13.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 13.3.3 MEMORY PROVISIONING

0 /par;Not applicable.

0 13.4 REAL TIME IMPACT

0 Not applicable.

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0 CHAPTER 24

0 REMOTE OFFICE EQUIPMENT

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Remote Office Equipment  
Chapter 24



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0 1.0 Remote Line Concentrating Module (RLCM)

0 1.1 Introduction

0 The RLCM (Figure 312.1) is essentially a Line Concentrating Mod-  
0 ule (LCM) operating in a location remote from the controlling  
0 DMS-100 host office through DS1-rate links.

0 The RLCM has a capacity of 640 lines, and its design is based on  
0 that of the LCM in the host office. This approach ensures both  
0 commonality of hardware and features and feature sets for the  
0 RLCM lines and allows total integration of RLCM maintenance and  
0 administration with the host.

0 The RLCM frame can accommodate one Line Concentrating Module  
0 (LCM), one Remote Maintenance Module (RMM), one Host Interface  
0 Equipment (HIE) shelf, one Frame Supervisory Panel (FSP), and two  
0 Ringing Generators. The LCM interfaces with the subscriber lines  
0 via line cards.

0 The Remote Line Concentrating Cabinet (RLCC) is a repackaged ver-  
0 sion of the Remote Line Concentrating Module (RLCM) Frame for U.S.  
0 Offices only. The cabinet is design to meet all earthquake zone  
0 requirements without external bracing. However when the RLCC is  
0 mounted on raised floors, under floor bracing is required.

0 Note: RLCC, RLCM 100C and RLCM C are used interchangeably in  
0 reference to the Remote Line Concentrating Cabinet. In this doc-  
0 ument the acronym used to refer to the Remote Line Concentrating  
0 Cabinet is RLCC.

0 The RLCC uses the following modules:

- 0 - Remote Maintenance Module (RMM): Same as used on the  
0 existing RLCM Frame
- 0 - Host Interface Equipment (HIE): Same as used on the  
0 existing RLCM Frame
- 0 - Line Concentrating Equipment (LCE): The DMS-100F LCE  
0 shelves do not meet space requirements, therefore,  
0 the Meridian SL-100F LCE shelves (NTNX2802) are used.  
0 The heat baffles are removed from the Meridian LCE  
0 shelves, therefore cooling fans are used and fused  
0 from the FSP.

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0 - Frame Supervisory Panel (FSP): The RLCC uses the  
0 Meridian SL-100F FSP (NTNX26AA) which includes LCE  
0 fuses but does not include repeaters.

0 - Fan Cooling Unit (FCU): The FCU will be essentially  
0 the same as used on the Meridian SL-100F but will use  
0 a nonmetallic fiber filter in place of the metal  
0 mesh filter. The FCU is used because the baffles  
0 were removed from the LCE.

0 Refer to Figure 312.1 below which provides a picto-  
0 rial comparison of the RLCM and RLCC.

0 NOTE: In this Remote Line Concentrating Module sec-  
0 tion, RLCM also refers to RLCC unless otherwise  
0 stated.

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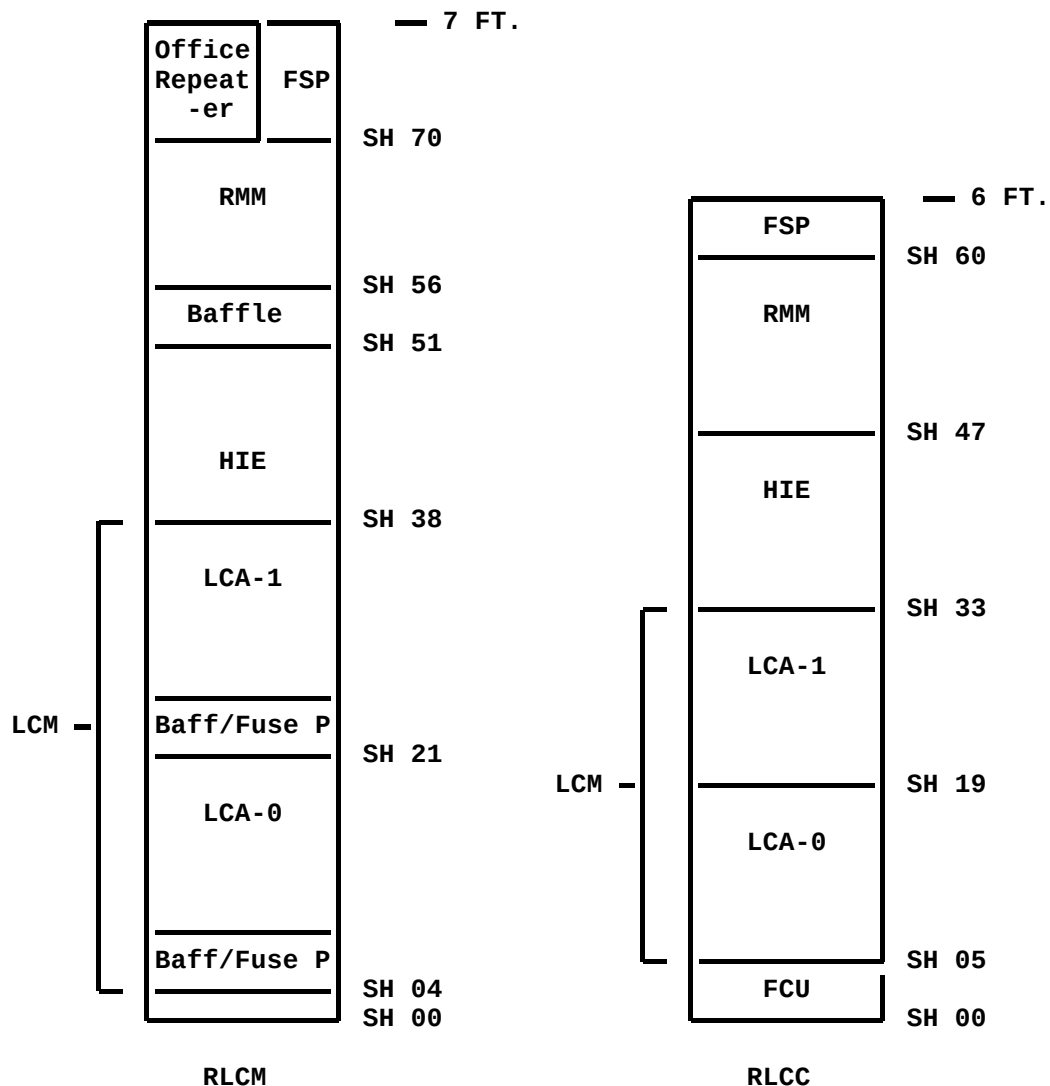
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0 Figure 312.1 RLCM and RLCC Frame Configuration Comparison

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0 1.2 Features0 1.2.1 Line Features

0 The RLCM supports all current line features that are supported by  
0 host LCM's. This includes POTS, IBN stations, IBN consoles,  
0 DATAPATH and IBN Business Sets.

0  
0 1.2.2 Intra-Calling

0 Calls which both originate and terminate within an RLCM can be  
0 made without using the DS-1 links to the host office, except dur-  
0 ing the call set-up stage. After such a call has been determined  
0 to terminate within the RLCM, channels internal to the RLCM will  
0 be utilized. If an idle channel is not available, the connection  
0 via the host office network is made and maintained for the dura-  
0 tion of the call.

0  
0 1.2.3 Emergency Stand Alone

0 The Emergency Stand Alone (ESA) option provides POTS service be-  
0 tween subscribers connected to the same LCM controlled by the  
0 same HIE shelf in the event of loss of all DS-1 signalling chan-  
0 nels to the host office.

0 For ESA, a specially equipped HIE shelf and a specially equipped  
0 RMM are required for each LCM having ESA.

0  
0 1.2.4 RLCM With Unique RLCM/LCM Numbering Option

0 With this option, the RLCM/LCM numbering can be unique per site  
0 or per office (i.e. host and all remote sites).

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0 If the RLCM/LCM numbering is unique per site, then the numbering  
0 will start with RLCM 00 LCM 00 0.

0 If the RLCM/LCM numbering is unique per office, then the number-  
0 ing will be contiguous to the LCE/LCM's in the host office.

0 If the remote site already has RLM's, then the RLCM/LCM numbering  
0 will be contiguous to the RLM frame/RLM bay number of this site.

0 Once the numbering option has been chosen, it cannot be changed  
0 at a subsequent extension.

0 If the Line Equipment Numbers (LEN) (i.e. for LM, RLM, LCM) will  
0 be unique per office, in order to have sequential (contiguous)  
0 LEN numbers for the host office and each remote site, the cus-  
0 tomer may reserve groups of numbers for future growth in the host  
0 and each remote site (i.e. gaps are allowed in the numbering).

0  
0 1.2.5 RLCM Off RSC

0 The RLCM can be connected to the P-side of an RCC of the RSC. The  
0 Remote-Off-Remote configurationn allows several smaller sites to  
0 be remotod off the site served by the RCC. This facilitates the  
0 conversion of small offices to DMS-100 and with intraswitching  
0 the usage of DS-1 facilities is kept to a minimum. The same fea-  
0 tures that are provided for an RLCM off a Line Trunk Controller  
0 (LTC) (such as intraswitching, ESA, RMM and carrier maintenance)  
0 are supported on a RLCM off an RSC. Refer to the Remote Switch-  
0 ing Center section for more information.

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0 1.2.6 Service Circuit Provisioning0 (a) General Description

0 The RMM can accommodate up to 14 provisionable Service circuits.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations

0 ( i) The following circuit packs are provisionable on the  
0 RMM.

0 NT0X10AA SCAN CARD  
0 NT2X10AB LINE TEST UNIT  
0 NT2X11AA LINE TEST UNIT  
0 NT2X90AB INC/OG TST TRK  
0 NT2X90AC INC/OG TST TRK  
0 NT2X90AD INC/OG TST TRK  
0 NT2X57AA SD CARD  
0 NT3X09AA REMOTE METALLIC TEST ACCESS  
0 NT3X09BA REMOTE METALLIC TEST ACCESS  
0 NT3X04AA INCOMING TEST TRUNK FOR AECO LOCAL  
0 TEST BOARD INTERFACE CP  
0 NT2X48AB DIGITONE RECEIVER (ESA ONLY)  
0 NT2X47AB TRMSN TST MOD CON SIG GEN  
0 NT2X48CA TRMSN TST MOD CON SIG GEN  
0 NT2X48CB DTMF RECEIVER  
0 NT2X48CC A-LAW DTMF RECEIVER  
0 NT2X57AB SD CARD I WITH OAU MON  
0 NT4X94AA MTU CONTROLLER  
0 NT4X98BA MTU ANALOG

0 ( ii) For more information, refer to Section 3.5.

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0 1.2.7 Remote Maintenance Module (RMM)

0 (a) General Description

0 The RMM provides maintenance and service functions for the LCM.  
0 It is based on the host Maintenance Trunk Module (MTM).

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) The RMM has fourteen (14) provisionable slots to ac-  
0 commodate service circuit requirements.

0 ( ii) Only one RMM can mount on one RLCM frame.

0 ( iii) An RMM module is composed of a shelf assembly (a card  
0 cage, an entity without any circuit packs) and one set of  
0 common circuit packs.

0 ( iv) The RMM Shelf Assembly, NT6X1301, is always provided on  
0 the RLCM frame.

0 ( v) The RMM Common Circuit Packs, NT6X13\_\_, contain the fixed  
0 by design circuit packs which are supplied only if the  
0 RMM module is required on the frame.

0 The following RMM CPs are to be ordered for the following  
0 applications:

| <u>RMM CP</u> | <u>APPLICATION</u> |
|---------------|--------------------|
| NT6X13AB      | Domestic           |
| NT6X13BA      | Turkey, China      |
| NT6X13DA      | CEP                |
| NT6X13EA      | SL-100 UK          |

0 ( vi) The RMM module can be shared between RLCM's in the same  
0 site, and RLCM's and RSC's in the same site as long as  
0 there is no ESA option required.

0 ( vii) If the ESA option is required, then each RLCM requires  
0 its own dedicated RMM module along with the traffic pro-  
0 visioned digitone receiver circuits mounted on it. The



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0 other service circuits mounted on the RMM module can be  
0 shared between RLCM's in the same site, and RLCM's and  
0 RSC's in the same site (i.e., they need not be duplicated  
0 on every RMM module).

0 (viii) The present RSM in an RLM site can be shared by a co-  
0 located RLCM and/or RSC as long as there is no need for  
0 digitone receivers.

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0 1.2.8 Host Interface Equipment (HIE)

0 (a) General Description

0 The RLCM connects to the host office through its Host Interface  
0 Equipment (HIE) shelf assembly. The HIE shelf contains the fol-  
0 lowing components:

- 0 \* Ringing Generators
- 0 \* Link Control Cards
- 0 \* DS1 Interface Cards (Domestic)
- 0 \* PCM-30 Interface Cards (International)
- 0 \* Power Converters

0 (b) References

0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 ( i) An HIE shelf is composed of a shelf assembly (a card  
0 cage, an entity without any circuit packs) and one set of  
0 common circuit packs. The HIE Shelf Assembly is always  
0 provided with the RLCM frame. The HIE Common Circuit  
0 Packs, NT6X11AB, contain the fixed by design circuit  
0 packs which are supplied only if the HIE shelf is re-  
0 quired on the frame. NT6X11BB HIE Common Circuit Packs  
0 are for International applications except China and  
0 SL-100 UK. NT6X11KA is equipped for China and NT6X11EB  
0 for SL-100 UK.

0 | The minimum packfill for BCS-32 and BCS-33 is NT6X11AA  
0 for an RLCM (with HIE shelf).

0 | Effective with BCS-33, an RLCM with ESA must be provi-  
0 sioned with one NT6X47AC CP per shelf (in new offices),  
0 or with the addition of a second NT6X47AB CP per shelf.

0 ( ii) Each equipped HIE shelf requires one NT6X11AB.

0 ( iii) DS1 Interface Circuit Pack, NT6X50AA, is required to  
0 interface with the DS1 links from the LGC or LTC module  
0 in the host office.

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0 PCM-30 Interface Circuit Pack, NT6X27AB, is required to  
0 interface with the PCM-30 links from the ILGC module in  
0 the host office.

0 ( iv) NT6X50AA mounts on the Host Interface Equipment Shelf.

0 Minimum NT6X50AA = 2, maximum = 3.

0 Two NT6X50AA cards are contained in one NT6X11AB.

0 Each NT6X50AA card accommodates two (2) DS1 links.

0 Minimum number of DS1 links per RLCM to the host is two  
0 (2), maximum is six (6). The number of links is  
0 engineerable based on traffic requirements.

0 ( v) NT6X27AB mounts on the Host Interface Equipment Shelf.

0 Minimum NT6X27AB = 2, maximum = 3.

0 Two NT6X27AB cards are contained in one International  
0 RMM.

0 Each NT6X27AB card accommodates two (2) PCM-30 links.

0 Minimum number of PCM-30 links per IRLCM to the host is  
0 two (2), maximum is six (6). The number of links is  
0 engineerable based on traffic requirements.

0 ( vi) Two (2) DS-1 circuit packs (4 DS-1 links) are always pro-  
0 vided in the HIE shelf. All RLCM DS-1 links must access  
0 the same LGC or LTC module in the host office.

0 Two (2) PCM-30 circuit packs (4 PCM-30 links) are always  
0 provided in the HIE shelf. All RLCM DS-1 links must ac-  
0 cess the same ILGC module in the host office.

0 ( vii) It is recommended to assign the HIE (C-side) message  
0 links, 0 and 1, to ports on different LGA/LTA at the host  
0 office (i.e. assign message link 0 to LGA/LTA shelf array  
0 0 and assign message link 1 to LGA/LTA shelf array 1).

0 (viii) Two message ports belonging to two separate remotes are  
0 allowed in the same DS-1/PCM-30 Interface card on the  
0 LGC/ILGC or LTC module of the host office.

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- 0 ( ix) Ringing generators are required to provide analog ring-  
0 ing. Business Set and Data Unit do not require analog  
0 ringing.
- 0 ( x) Ringing Generators contain frequency circuits that gener-  
0 ate ringing signals to subscriber line cards on the LCA  
0 shelves. Superimposed and Frequency Selective Ringing  
0 are supported.
- 0 ( xi) The ringing generators also contain ANI/Coin generator  
0 circuits. These circuits check for two or four-party ANI  
0 and for coin presence in Prepay coin telephones. They  
0 also produce voltages required for ANI and coin control  
0 (<sup>1</sup> 48V DC and <sup>1</sup> 130V DC). The ringing generators monitor  
0 ANI/Coin voltages and ring bus outputs for failure.
- 0 ( xi) Ringing type and level are set by means of a switch on  
0 the Ringing Generator.

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0 1.2.9 Frame Supervisory Panel (FSP)

0 (a) General Description

0 The FSP provides talk jacks, fuse alarm features, and power control for the RLCM frame. The FSP contains 48V distribution breakers to the Ring Generators (RG-0, RG-1) in the HIE and various converters in the RLCM frame.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) There are two versions of the FSP which can mount on the RLCM frame only. One version is ordered if the FSP is required to provide the power distribution function for the RLCM frame. Otherwise the other version is provided.

0 For the RLCC, one MSL-100 FSP NTNX26AA is always provided.

0 ( ii) FSP NT6X25AA is the FSP without the power distribution function.

0 Hence, with this FSP, a PDC or equivalent is required.

0 FSP NT6X25BA is the FSP equipped with the power distribution function.

0 This FSP requires 2 feeds, one A feed and one B feed.

0 ( iii) Provide one Alarm Battery Supply NT6X14WA when FSP NT6X25BA is required.

0 ( iv) If the FSP will be required to provide the power distribution function for the RLCM frame, then the FSP can optionally house one QPP519 Fault Locate and Order Wire Access circuit pack and up to six QRY18 series office repeaters.

0 The RLCC FSP includes fusing for line drawers but no provision for mounted repeater cards. Repeaters must be mounted external to the RLCC.

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0 For each QPP519 provide one (1) QFB127\* or QFB128\* fault  
0 locate filter. The QFB127 is a Dual Amplified type and  
0 the QFB128 is a Single passive Type. The following fil-  
0 ter types are available:

|   |       |          |          |
|---|-------|----------|----------|
| 0 | * = A | 832Hz    | G = 1722 |
| 0 |       | B 928Hz  | H = 2008 |
| 0 |       | C 1048Hz | J = 2193 |
| 0 |       | D 1206Hz | K = 2413 |
| 0 |       | E 1340Hz | L = 2680 |
| 0 |       | F 1508Hz | M = 3017 |

0 Each DS-1 line requires one appropriate QRY18 type office  
0 repeater.

0 The following is a list of QRY18 series office repeaters:

- 0 (a) QRY18A, Office Repeater powering the line repeater  
0 (provides DC power to the line).
- 0 (b) QRY18B1, Office Repeater powering the line repeater  
0 with error monitor feature.
- 0 (c) QRY18C, Office Repeater without power.
- 0 (d) QRY18D1, Office Repeater without power, but with er-  
0 ror monitor feature.
- 0 (e) QRY18F, Office Repeater with -130V only.
- 0 (f) QRY18G1, Office Repeater with -130V and with error  
0 monitor feature.

0 Both QRY18F and QRY18G1 have -48V input and generate  
0 -130V output for the DS-1 line.

0 Usually the host office supplies the power and fault lo-  
0 cate facilities.

0 For short distances, there is no need for power from the  
0 RLCM (for details refer to NTP 368-2111-160N).

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0 Normally the customer will specify which type of QRY18  
0 office repeater is required since they engineer the  
0 transmission facilities.

0 For more details, refer to NTP 368-2111-160N Span Engi-  
0 neering Information and NTP 368-2111-103N Span Terminal  
0 Equipment. The above NTP's are for North American appli-  
0 cations.

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0 1.2.10 Line Concentrating Module (LCM)

0 (a) General Description

0 The LCM in the RLCM allow the connection of up to 640 subscriber  
0 lines. Within the RLCM the LCM connects from two to six DS-1 C-  
0 side links to its 640 analog subscriber lines.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations

0 ( i) See LCM Provisioning in Section 3.5.

0 ( ii) RLCM's with the ESA option require a minimum of two line  
0 cards per RLCM bay in order to demonstrate the intra  
0 calling option with ESA.

0 ( iii) The RLCC uses the MSL-100 LCE shelves. These shelves are  
0 the same as DMS-100 LCE shelves except the heat baffle is  
0 omitted and fuse holders are moved to the FSP.

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## Remote Office Equipment Chapter 24

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0 2.0 Remote Switching Center (RSC)

0 2.1 Introduction

0 (i) The RSC is available in two (2) basic configurations  
0 (i.e. Mono RSC (Figure 312.5) and Dual RCC (Figure  
0 312.6)). These configurations are defined as follows:

0 \* The MONO RSC is comprised of a Remote Controller  
0 Equipment (RCE) Frame. Also required, but custom  
0 provisioned, are the Line Concentration Equipment  
0 (LCE) Frames and Remote Miscellaneous Equipment (RME)  
0 Frames.

0 \* The Dual RSC is comprised of two (2) Remote Control-  
0 ler Equipment (RCE) Frames. Also required, but cus-  
0 tom provisioned, are the Line Concentration Equipment  
0 (LCE) Frames and Remote Miscellaneous Equipment (RME)  
0 Frames and/or Power Distribution Center (PDC) Frames.

0 The Dual RCC configuration consists of two RCC pe-  
0 ripheral modules which are colocated no further than  
0 200 meters apart. Each is connected on the  
0 controller-side (C-side) to an LGC or LTC. Both  
0 LGC/LTCs must be on the same DMS-100 switch. The two  
0 RCCs are interconnected on the C-side by a minimum of  
0 two DS-1 links, known as interlinks. These interlinks  
0 carry inter-RCC calls when the RCCs are in the normal  
0 and ESA modes.

0 (ii) REMOTE CONTROLLER EQUIPMENT FRAME (RCE)

0 The controller side (C-side) interfaces to the host over  
0 DS-1 links to a LGC/LTC. (Note: Software translations  
0 will require from 3 to 16 ports to interface to an RSC.)  
0 Hardware facilitates a host interface requirement of from  
0 2 to 16 DS-1 links, with a third link reserved. All DS-1  
0 links from a RSC must terminate on the same LGC/LTC. The  
0 number of RSC's off of the same host LGC/LTC is one. It  
0 can be a maximum of two if the RSC's host LCM's only.

0 The peripheral side (P-side) of a RCC consists of 20  
0 ports that can currently support LCMs (each 2 to 6 DS-30A  
0 links), DS-1 trunks and Remote Maintenance Modules (each  
0 1 DS-30A link). Peripheral interfaces include RLCM/OPM  
0 (each 2 to 6 DS-1 links).

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0 The RCE Frame contains a maximum of two (2) Remote Main-  
0 tenance Modules (RMM). Each RMM occupies one (1) shelf  
0 in the RCE frame. At least one RMM shelf is recommended  
0 at each site to provide service circuits and diagnostic  
0 tests. The RMM shelf can be shared between co-located  
0 RSCs at the same site, provided they share the same host.  
0 The RMM can be shared with a co-located RLCM at the same  
0 site, provided they share the same host as the RSC and  
0 only if the RLCM does not have the emergency stand alone  
0 feature option specified.

0 (iii) Line Concentrating Equipment Frame (LCE)

0 The LCE frame at the remote site contains the same Line  
0 Concentrating Modules (LCM), ringing generators and line  
0 drawer cutoff straps as provisioned in the host. Each LCM  
0 will serve up to 640 subscribers. The LCM will interface  
0 to the RCC module via DS-30A links (each 2 to 6).

0 (iv) Remote Miscellaneous Equipment (RME) Frame

0 The RME Frame (NT0X02AB) will serve as frame space for  
0 power fuse panels, spare circuit pack cages or other  
0 Telco defined misc frame space.

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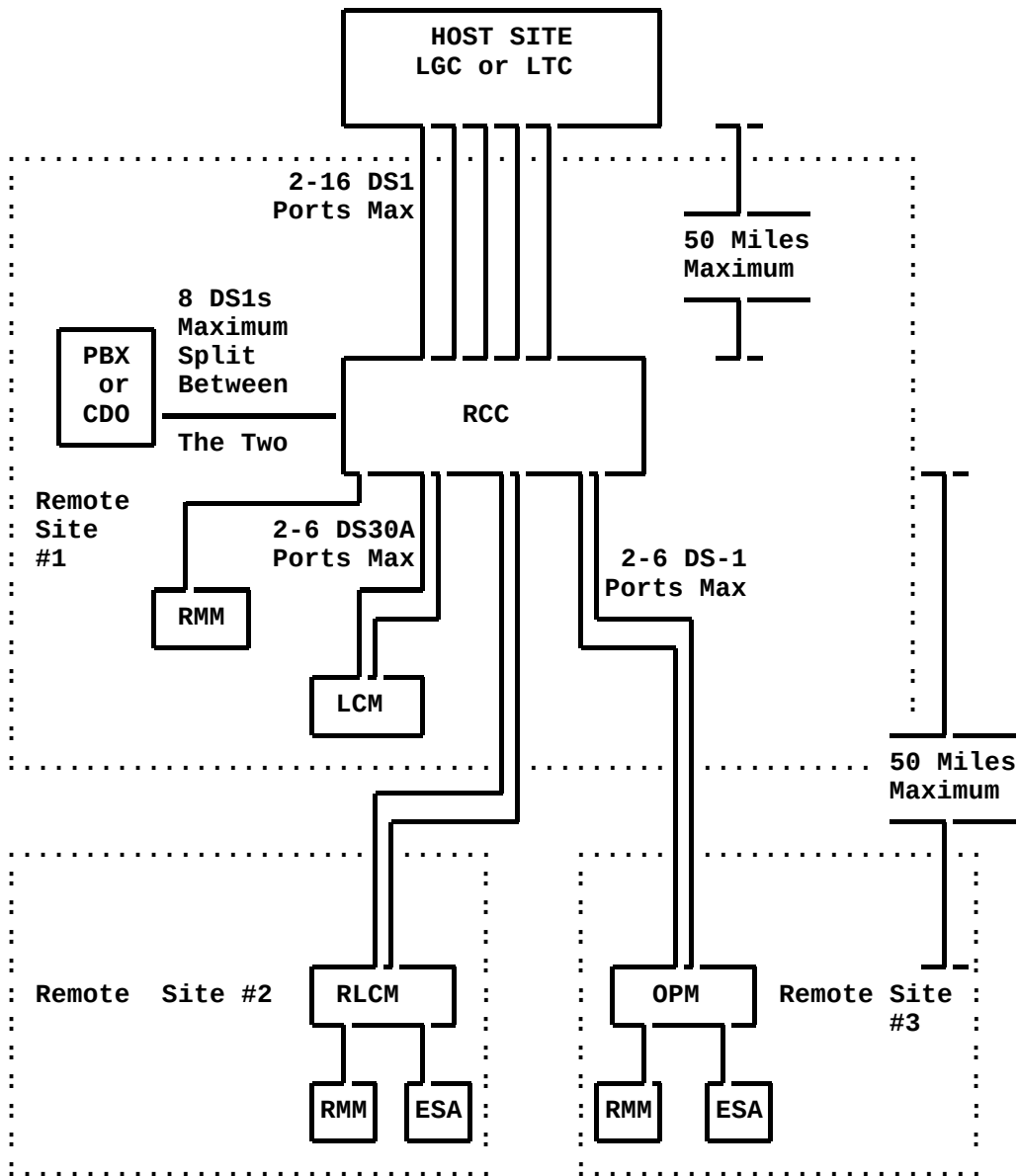


Figure 312.5:  
Typical Mono RCC Remote Off Remote C & P-Sided Configuration

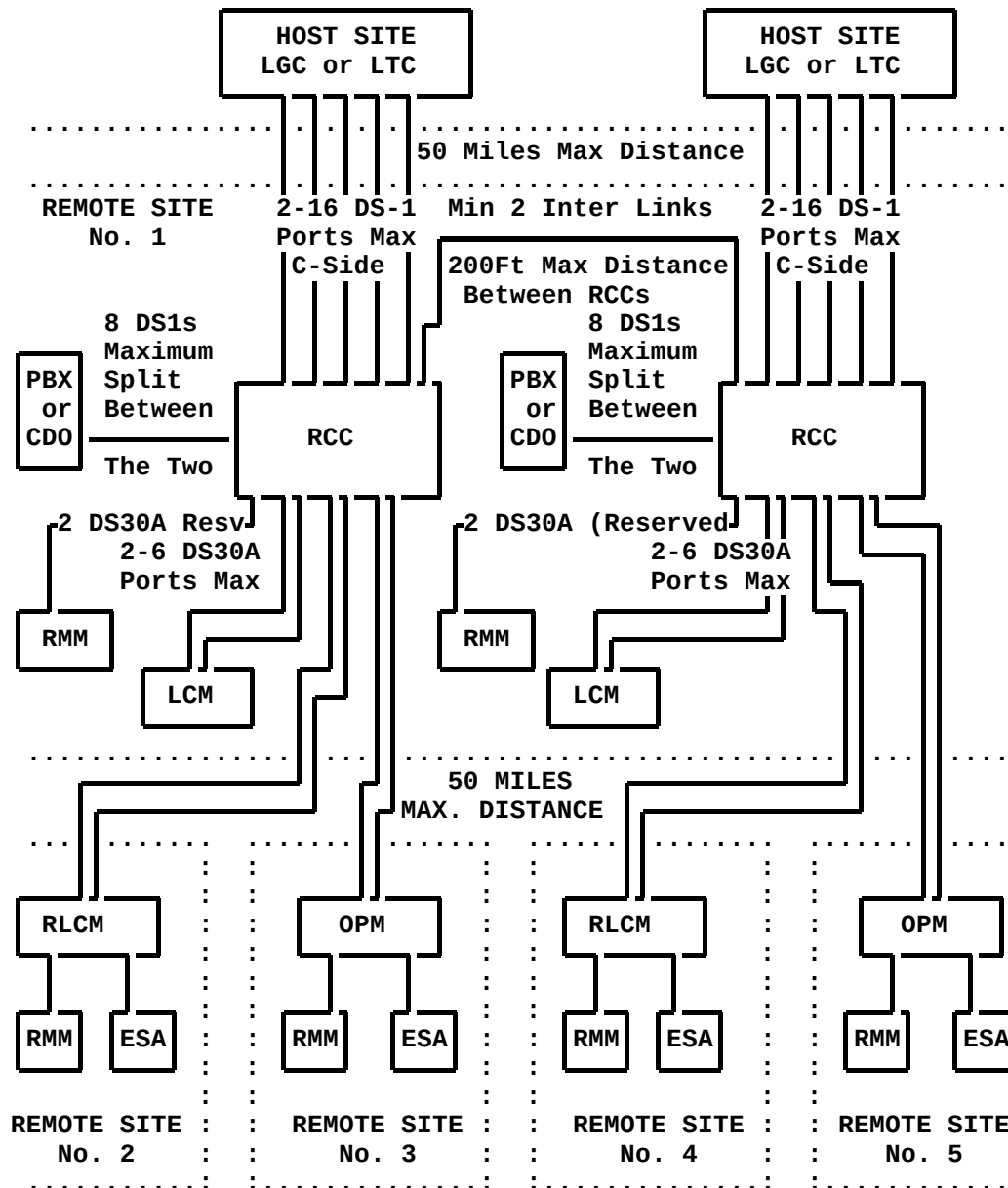


Figure 312.6:  
Typical DUAL RCC Remote Off Remote C & P-Sided Configuration

0 2.2 Features

0 2.2.1 Line Features

0 The RSC supports all current line features that are supported by  
0 host LCM's. This includes POTS, IBN stations, IBN consoles,  
0 DATAPATH and IBN Business Sets.

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### 0 2.2.2 Trunking Features

0 If software feature package NTX152AA/AB RSC Digital Trunking is  
0 specified then the RSC must interface to a host LTC.

0 The RSC supports limited trunking. Specifically, local (non  
0 toll) interoffice trunking (EAS), Private Branch Exchange (PBX),  
0 Direct Inward/Outward Dial (DID/DOD) Trunking.

#### 0 TRUNKING CHARACTERISTICS

- 0 - DS-1 Trunking Only
- 0 - Multi-Frequency (MF), Dial Pulse (DP), Dual Tone Multi-  
0 Frequency (DTMF), Wink Start, Delay Dial and Immediate  
0 Dial Supervision
- 0 - Trunks may have Local Call Detail Recording (LCDR) and/or  
0 Multi-Unit Message Rate (MUMR) recorded at the host (non-  
0 functional during ESA)
- 0 - up to 48 members/trunk group
- 0 - 8 trunk groups Maximum to a total of 4 NT6X50AA DS-1 I/F  
0 CPs for trunks (192 trunks) per RCC
- 0 - RSCs supporting trunks will require a LTC at the Host Of-  
0 fice

#### 0 TRUNKING CHARACTERISTICS NOT SUPPORTED

- 0 - Revertive Pulsing
- 0 - Common Channel Signaling
- 0 - Cut Through Dialing
- 0 - Coin or ANI Signalling
- 0 - Echo Suppressors
- 0 - Toll, Toll Completing, Intertoll and their associated  
0 billing
- 0 - Tandem through RSC

0 Offices that received Software Package NTX152AA RSC Digital  
0 Trunking (currently rated A&M) must provide, on a one-to-one ded-  
0 icated span basis, one span back to the host for every span ter-  
0 minating on the P-side for trunking (from the RSC to other CDOs).  
0 In addition, the dedicated spans back to the host must terminate  
0 on the same controller (LTC) as the host-RSC DS-1 links.

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### 0 2.2.3 Electromagnetic Interference

0 When the EMI option is specified for a RSC, all power equipment  
0 must reside in a Power Distribution Center (PDC) Frame. The RME  
0 may not be equipped with power fuse panels when the EMI option is  
0 specified.

### 0 2.2.4 Remote Off Remote Feature

0 This feature provides for connecting an RLCM/OPM to the P-side of  
0 an RCC of the RSC which will provide the same features that are  
0 available to an LCM off the RCC. The Remote-Off-Remote  
0 configurationn allows several smaller sites to be remotod off the  
0 site served by the RCC. This facilitates the conversion of small  
0 offices to DMS-100, and with intraswitching the usage of DS-1 fa-  
0 cilities is kept to a minimum. The same features that are pro-  
0 vided for an RLCM off a Line Trunk Controller (LTC) (such as  
0 intraswitching, ESA, RMM and carrier maintenance) are supported  
0 on a RLCM off an RCC.

0 The Remote Off Remote feature is software only and the hardware  
0 required for the RLCM and RSC has been defined in previous  
0 sections. The maximum number of RLCMs, OPMS or combination of  
0 the two supported off the same RCC is five (5), provided there  
0 are no LCMS subtending off the RSC.

0 This feature is also compatible with the dual RCC. Each RLCM or  
0 OPM must still home on only one RCC. The number of remotes sup-  
0 ported by two RCCs in a dual RCC configuration is twice that sup-  
0 ported by a single RCC. As is true now, loss can be inserted at  
0 the line card when either or both RSCs are in a remote-off-remote  
0 configuration.

### 0 Intraswitching

0 Intraswitching provides the capability of switching calls at a  
0 remote location without requiring transmission back to the host.  
0 Both the RCC and the RLCM have line to line intraswitching capa-  
0 bilities which operate as follows:

0 For intraswitched line to line calls a loss of 0dB is in-  
0 serted. This loss value is valid for up to 100 miles on a



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0 line to line call. This feature supports a maximum distance  
0 on intraswitched calls of 100 miles. Therefore, for intra-  
0 switching purposes the RCC and the RLCM must be within a  
0 distance of 100 miles from the host LTC.

0 Furthermore, the RLCM must be within 50 miles of the host  
0 RCC because an intraswitched call at the RLCM level could be  
0 blocked and then an attempt is made to intraswitch at the  
0 RCC level. This would result in a path of 100 miles (2 X  
0 50) and is within the 100 mile limit. The same situation  
0 occurs if a call is made between two RLCMs on the same RCC  
0 (See Typical Remote-Off-Remote Configuration diagram).

0  
0 2.2.5 RSC With Intra-Calling Option

0 Calls which both originate and terminate within one RSC (includ-  
0 ing subtending RLCM's) can be made without using the DS-1 links  
0 to the host office, except during the call set-up stage. After  
0 such a call has been determined to terminate within the RSC,  
0 channels internal to the RCC will be utilized. If an idle chan-  
0 nel is not available, the connection via the host office network  
0 is made and maintained for the duration of the call. RLCM must  
0 be within 50 miles of the host RCC.

0  
0 2.2.6 RSC With Unique LCE/LCM Numbering Option

0 With this option, the LCE/LCM numbering can be unique per site or  
0 per office (i.e. host and all remote sites).

0 If the LCE/LCM numbering is unique per site, then the numbering  
0 will start with LCE 00 LCM 00 0.

0 If the LCE/LCM numbering is unique per office, then the numbering  
0 will be contiguous to the LCE/LCM's in the host office.

0 If the remote site already has RLM's, then the LCE/LCM numbering  
0 will be contiguous to the RLM frame/RLM bay number of this site.

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0 Once the numbering option has been chosen, it cannot be changed  
0 at a subsequent extension.

0 If the Line Equipment Numbers (LEN) (i.e. for LM, RLM, LCM) will  
0 be unique per office, in order to have sequential (contiguous)  
0 LEN numbers for the host office and each remote site, the cus-  
0 tomer may reserve groups of numbers for future growth in the host  
0 and each remote site (i.e. gaps are allowed in the numbering).

0  
0 2.2.7 Emergency Stand Alone (ESA)

0 The ESA software feature (NTX149AA) (lines only) in the RSC pro-  
0 vides sufficient intelligence in the RSC to allow continued lim-  
0 ited POTS service for intraswitched calls when the message DS-1  
0 links to the host LGC/LTC are out of service.

| 0 SUPPORTED SYSTEMS | NOT SUPPORTED SYSTEMS |
|---------------------|-----------------------|
|---------------------|-----------------------|

|                                  |                         |
|----------------------------------|-------------------------|
| 0 -POTS calls (Intra-RSC)        | -IBN Attendant Consoles |
| 0 -IBN Station calls (Intra-RSC) | -Datapath               |
| 0 -IBN Business Set's            | -Station features       |
| 0 primary numbers                | -Feature Activation     |

0 Up to 16 directory numbers or prefixes may be datafilled for spe-  
0 cial routing during ESA. Up to eight (8) prefixes or special  
0 numbers may be datafilled per IBN customer group for special  
0 routing during ESA. Calls in progress are taken down during  
0 entry to and exit from ESA. Billing info is lost for calls dur-  
0 ing ESA takeover. Local coin calls are free during ESA. No addi-  
0 tional hardware is required for operation of the ESA feature.

0 ESA for both lines and trunks (NTX149AB) is scheduled for avail-  
0 ability in BCS23.

0 When both RSCs in a dual RCC configuration are in ESA mode, line  
0 and trunk intracalling within each RSC and line and trunk inter-  
0 switching between the RCCs via the DS1 interlinks are supported.  
0 If either RSC in a dual RCC configuration loses communication  
0 with the host, the customer will be given the option of having  
0 both RSCs enter ESA or of having one in ESA and the other in  
0 normal operation with interswitching not supported. Support for  
0 a dual RCC configuration with one RSC in ESA mode and the other

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0 RSC in normal operation with full interswitch capabilities cannot  
0 be provided currently.

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0 2.2.8 RSC Alarms

0 The Remote Alarm Panel (NT0X63AC) may now be provided for a RSC  
0 Site.

0  
0 2.2.9 Remote Miscellaneous Equipment (RME) Frame (NT0X02AB)

0 The hardware which normally mounts on the RSE frame when used in  
0 conjunction with the old RLM equipment is also valid for use with  
0 the RSC except for the following:

0 1. Metallic Test Access (MTA), NT2X46AB.

0 For use with the RSC, this item has been replaced by the  
0 RMTA, NT3X09AA which mounts on the RMM on the RCE frame.

0 2. Remote Service Module (RSM), NT2X58AE.

0 For use with the RSC, this item has been replaced by the  
0 RMM which mounts on the RCE frame.

0 See Section 3.12, Remote Service Equipment (RSE) Frame  
0 Summary for hardware which can mount on the RME frame.

0  
0 2.2.10 Summary of I/O Devices Associated with Remote Sites

0 MAPs at the Remote Site will connect to the Host via dedicated  
0 facilities external to the RSC or via dial up facilities through  
0 the RSC.

0 If a Remote MAP, a Printer or TTY are required at the Remote  
0 Site, I/O ports must be provided at the Host.

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0 Note that a VDU for initial Remote Sites must be on site and op-  
0 erational through a dedicated trunk facility to the Host, (FX  
0 line) by (H + 6) date to meet commissioning requirements.

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0 2.3 Equipment Provisioning

0 2.3.1 Service Circuit Provisioning

0 (a) General Description

0 The RMM can accommodate up to 14 provisionable Service circuits.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations

0 ( i) The following circuit packs are provsionable on the RMM.

0 NT0X10AA SCAN CARD  
0 NT2X10AB LINE TEST UNIT  
0 NT2X11AA LINE TEST UNIT  
0 NT2X90AB INC/OG TST TRK  
0 NT2X90AC INC/OG TST TRK  
0 NT2X90AD INC/OG TST TRK  
0 NT2X57AA SD CARD  
0 NT3X09AA REMOTE METALLIC TEST ACCESS  
0 NT3X09BA REMOTE METALLIC TEST ACCESS  
0 NT3X04AA INCOMING TEST TRUNK FOR AECO LOCAL  
0 TEST BOARD INTERFACE CP  
0 NT2X48AB DIGITONE RECEIVER (ESA ONLY)  
0 NT2X47AB TRMSN TST MOD CON SIG GEN  
0 NT2X48CA TRMSN TST MOD CON SIG GEN  
0 NT2X48CB DTMF RECEIVER  
0 NT2X57AB SD CARD I WITH OAU MON  
0 NT4X97AA MTU CONTROLLER  
0 NT4X98BA MTU ANALOG

0 ( ii) For more information, refer to Section 3.5.

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0 2.3.2 Remote Maintenance Module (RMM)0 (a) General Description

0 The RMM provides maintenance and service functions for the LCM.  
0 It is based on the host Maintenance Trunk Module (MTM). Each RMM  
0 connects to the RCC through a DS30A link. Each RMM requires one  
0 P-Side port on the RCC.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) The RMM has fourteen (14) provisionable slots to accommo-  
0 date service circuit requirements.

0 ( ii) An RCE frame can house up to two (2) RMM shelves.

0 ( iii) An RMM module is composed of a shelf assembly (a card  
0 cage, an entity without any circuit packs) and one set of  
0 common circuit packs.

0 The first RMM Shelf Assembly, NT6X1301, is always pro-  
0 vided on the RCE frame. The second RMM Shelf Assembly is  
0 provisionable by ordering Remote Control Maintenance  
0 Product Change Kit NT6X10AB.

0 ( iv) The RMM Common Circuit Packs, NT6X13AB, contain the fixed  
0 by design circuit packs which are supplied only if the  
0 RMM module is required on the frame.

0 Each equipped RMM module requires one NT6X13AB.

0 The RMM shelf can be shared between co-located RSCs at  
0 the same site provided they share the same host.

0 ( v) The RMM can be shared between co-located RLCMs at the  
0 same site, provided they share the same host as the RSC  
0 and only if the RLCM does not have the ESA feature option  
0 specified.

0 ( vi) The present RSM in an RLM site can be shared by a  
0 colocated RLCM and/or RSC as long as there is no need for  
0 digitone receivers.

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- 0 (vii) At least one RMM shelf is recommended at each site to  
0 provide service circuits and diagnostic tests.
- 0 (viii) Slots 13-16 are currently wired together to allow the op-  
0 eration of DRAM circuitry in these slots when the DRA  
0 software becomes available for remotes. The NT2X10AB,  
0 NT2X11AA Line Test Unit (LTU) pair is not operational in  
0 these slots because of the DRA wiring and therefore  
0 should not be provisioned in slots 13-16. All other ap-  
0 plicable RMM CPs are allowed in slots 13-16, however,  
0 these slots should be reserved whenever possible to allow  
0 for the future DRA application.
- 0 (ix) The total -48V power consumption of the provisionable  
0 circuit packs in the RMM must not exceed 110 Watts.

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0 2.3.3 Line Concentrating Equipment Frame (LCE)

0 (a) General Description

0 The LCE frame at the remote site contains the same Line Concen-  
0 trating Modules (LCM), ringing generators and line drawer cutoff  
0 straps as provisioned in the host. Each LCM will serve up to 640  
0 subscribers. The LCM interface to the RCC module via DS-30A  
0 links (each 2 to 6).

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Module - Host

0 (c) Provisioning Considerations

0 See LCM Provisioning in Section 3.5

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#### 0 2.3.4 Remote Cluster Controller (RCC)

##### 0 (a) General Description

0 The RCC provides a master controller for all units at the RSC,  
0 and is in turn controlled by the host LTC. The RSC is a dual-  
0 shelf peripheral module (PM) similar in configuration to the  
0 LGC/LTC, and using many of the same components. The 20 C-side  
0 RCC ports provide an interface via 2 to 16 DS-1 links to matching  
0 DS-1 interfaces in the host office LGC/LTC.

##### 0 (b) References

0 Chapter 2 Traffic Criteria and Capacities

##### 0 (c) Provisioning Considerations

0 ( i) The RCC module is made up of two (2) Remote Controller  
0 Array (RCA) shelves. The two (2) RCA shelves act as the  
0 remote controller for the LCM's in the RSC site.

0 Two RSC's can share one LCE frame (i.e. of the 2 LCMs on  
0 the same LCE frame, one RCC module can accommodate one  
0 LCM while the other RCC module can accommodate the other  
0 LCM).

0 The RCC Common Circuit Packs, NT6X12CA, contain the fixed  
0 by design circuit packs which are supplied only if the  
0 RCC module is required on the frame. Each equipped RCC  
0 module requires one NT6X12CA.

0 ( ii) The maximum cabling distance between the RCC and the LCM  
0 is 50 feet.

0 ( iii) One pair of NT6X48AA cards can provide an interface for  
0 up to 10 LCM and RMM ports (links). Hence, the periph-  
0 eral face of the RCC module can accommodate up to a maxi-  
0 mum of 20 DS30A ports.

0 DS-30A ports 0 & 1 (found on the NT6X48AA CP equipped in  
0 the RCC) are reserved for control of the RMM shelf. Thus  
0 all RSCs equipped with RMM shelf(s) and interfacing to  
0 LCM must be configured with four (4) (two per RCA shelf)  
0 DS-30A LCM Interface CP (NT6X48AA).

0 ( iv) LGC/LTC P-SIDE CONFIGURATION

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0 When provisioning the p-side of an LGC/LTC, the p-side  
0 ports can be configured for a maximum of two (2) RSCs if  
0 the following conditions are met:

- 0 1) 2 RSCs from a single configuration
- 0 2) 1 RSC from a dual configuration and 1 RSC from a sin-  
0 gle configuration
- 0 3) Traffic, Real Time and software Nodal requirements do  
0 not exceed the recommended engineering limits.
- 0 4) All DS-1 links from a RCC must terminate on the same  
0 LGC/LTC.
- 0 5) :TC required when CDO/PBX Trunking is required.

0 In addition, the remaining p-side ports can be configured  
0 for two RLCMs or OPMs if the Traffic, Real Time and soft-  
0 ware Nodal requirements do not exceed the recommended en-  
0 gineering limits.

0 Offices with BCS22 software or earlier can support up to  
0 a maximum of 18 P-side datafilled software nodes, where  
0 a node is defined as host LCMs, RSC LCMs, RCC, RLCM, OPM,  
0 RMMs, ESA processor (for RLCM/OPMs) and dummy software  
0 nodes. In BCS 23, this node limit is raised to a maximum  
0 of 62 p-side nodes.

0 All the DS1 links from one RCC module must terminate onto  
0 the same LGC or LTC module in the host office.

0 Taking into account the restrictions for assigning RCC  
0 ports to LGC/LTCs the remaining LGC/LTC ports can be used  
0 to provision host LCMs, RLCMs, or OPMs as Host LGC/LTC  
0 capacity permits. However, consideration should be given  
0 to RSC growth.

0 ( v) RSC P-SIDE CONFIGURATION

0 When provisioning the p-side of an RSC, the p-side ports  
0 can be configured for the following maximums if the Traf-  
0 fic, Real Time and software Nodal requirements do not ex-  
0 ceed the recommended engineering limits:

- 0 1) Maximum of 9 LCMs (using 2 ports per LCM)
- 0 2) Maximum of 4 DS1s for PBX Trunking and 4 DS1s for CDO  
0 Trunking

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0 3) Maximum of 18 DS1s for any combination of RLCMs and  
0 OPMS

0 4) Any combination of the above not to exceed the stated  
0 individual maximums

0 Although PBX trunking can utilize both Fixed or Dynamic  
0 Trunking, it is highly recommended that PBX Trunking use  
0 Fixed Trunking (nailed up or Static Trunking) to the Host  
0 LGC/LTC when a large percentage of the PBX traffic is go-  
0 ing to the host. This decreases the loading effect of RCC  
0 DS1 trunks to the Host when compared to Dynamic Trunking.  
0 Fixed trunking does not operate in the ESA mode.

0 Dynamic Trunking is applicable when a large percentage of  
0 the PBX traffic is intra office traffic at the RCC and  
0 does not go to the host. Therefore, the intra office  
0 traffic utilizes the C-side channels of the RCC.

0 ( vi) The RCC must have (an) unequipped C-side DS1 (NT6X50)  
0 port(s). It must also must have 1 megabyte of SP memory  
0 (NT6X46AC or NT6X46BA) and 4 megabyte of MP memory ( 2  
0 NT6X47AB).

0 For dual RCCs, there is a requirement for additional Sig-  
0 nal Processor (SP) and Master Processor (MP) memory that  
0 is applicable to XPMs generically. The following up-  
0 grades are required:

0 SP Memory: NT6X46BA (1 Meg.) or NT6X46AC (which is an  
0 upgraded NT6X46AB to 1 Meg.)

0 MP Memory: Each RCA shelf, which is part of a dual RCA  
0 configuration, will require two NT6X47ABs  
0 as part of the common CP fill in BCS-26  
0 (V0). All RSCs will require the second  
0 NT6X47AB as of BCS-27.

0 ( vii) Verify Real Time limitations by doing a real time calcu-  
0 lation based on "Guidelines for New Peripheral Capacity  
0 Estimates".

0 (viii) Enhanced Office Recovery (NTXA66AA) is an optional soft-  
0 ware feature that improves the present office recovery  
0 time of extended peripheral modules (XPM). Extended XPM  
0 Diagnostics (NTXA67AA) as an optional software feature  
0 that enhances the present diagnostics of XPMs.

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0 These features are applicable to any RCC which contains  
0 both enhanced messaging (NT6X69/79 pair or the NT6X69 CP)  
0 and enhanced memory (NT6X46AC or NT6X46BA CP). The XPM  
0 Processor CP (NT6X45BA or BB) is also required. Provide  
0 four (4) XPM Processor CP per RCC module.

0 | ( ix) For BCS-32/33, the minimum packfill for both RCC and Dual  
0 RCC is NT6X12CA/AD, for both new and existing offices.

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0 2.3.5 Remote Controller Equipment (RCE) Frame

0 (a) General Description

0 The RCE frame (NT6X10AC) contains a two (2) shelf Remote Control  
0 Cluster (RCC) module (NT6X12CA) which is a LTC type peripheral.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) One RCE frame, NT6X10AC, accommodates one RCC module; 0,  
0 1, or 2 RMM shelves; and an always provided Frame Super-  
0 visory Panel (FSP).

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0 2.3.6 Subscriber Carrier Module-100S Remote (SMS-R)

0 (a) General Description

0 The Subscriber Carrier Module-100S Remote(SMS-R) module provides  
0 a direct digital interface between the SLC-96 Remote Terminal(RT)  
0 and the RSC. The SMS-R module is mounted in an Subscriber Main-  
0 tenance Equipment(SME) frame which is co-located in the same Re-  
0 mote Switching Center(RSC) office. Refer to Figure 312.7 for a  
0 diagram of the SMS-R system.

0 The RSC is widely used as a Central Office(CO) replacement in  
0 areas where the existing office is serving SLC-96 systems. Cur-  
0 rently the SLC-96 interface to the RSC is through the Central Of-  
0 fice Terminal(COT) and the Line Concentrating Module(LCM). The  
0 SMS-R fullfills the requirement for a direct digital interface  
0 between the SLC-96 and RSC.

0 The SMS-R is connected to the RCC via DS-30A links. The SMS-R  
0 connects directly to the SLC-96 via DS-1 links. The number of  
0 DS-1 links used depends upon the SLC-96 mode of operation. There  
0 are three(3) operating modes for the SLC-96: Mode I, II, and III.

0 - MODE I is a non-concentrating mode in which the SLC-96 sup-  
0 ports up to 96 subscriber lines. Assuming a standard Mode I  
0 configuration, each SLC-96 connects to the SMS-R via five(5)  
0 DS-1 links, one (1) of which is used as a protection link. In  
0 a standard Mode I configuration, each SMS-R serves four(4)  
0 Mode I SLC-96s. Thus, in Mode I operation, up to 384 sub-  
0 scriber lines are served by each SMS-R.

0 It is possible for the SMS-R to serve five(5) Mode I SLC-96s  
0 by eliminating the protection links.

0 - MODE II is a concentrating mode(2:1 concentration) in which  
0 SLC-96 typically connects to the SMS-R through three(3) DS-1  
0 links, one(1) serving as a protection link. In a standard  
0 Mode II configuration, each each SMS-R serves Six(6) mode II  
0 SLC-96s. Thus, in mode II operation, up to 576 subscriber  
0 lines are served by each SMS-R.

0 - MODE III is a non-concentrating mode in which a SLC-96, typi-  
0 cally, connects to a SMS-R through three(3) DS-1 links. One(1)  
0 of the three links is a protection link. Each SMS-R can serve  
0 six(6) mode III SLC-96s. In mode III the SLC-96 shelves are  
0 equipped only with coin and D4 Single Circuit Channel Units.

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0 Thus, in Mode III operation, up to 288 subscriber lines are  
0 served by each SMS-R.

0 - The SMS-R is capable of serving a mixture of SLC-96s in dif-  
0 ferent modes. For example, one SLC-96 with all shelves in Mode  
0 I could be served along with a SLC-96 with all its shelves in  
0 Mode II. However, the SMS-R is not capable of serving Split  
0 Mode SLC-96s. For example, a SLC-96 with two shelves in Mode  
0 I and two shelves in Mode III.

0 The SMS-R is dedicated to supporting SLC-96 RTs. It does not  
0 support LCMS,RLCMS, switched digital trunk services or ISDN  
0 lines. No provision is made to facilitate future enhancement to  
0 enable the SMS-R to be located remotely from the RSC.

0 The SMS-R supports the following features:

0 -Plain Ordinary Telephone Service(POTS)

0 -single party

0 -multi party

0 -two-party ANI and ONI

0 -four(4) or Eight(8) party ONI

0 -Coin Features

0 -coin first(CCF)

0 -dial tone first(CDF)

0 -coin semi-post pay(CSP)

0 -PBX Line

0 -loop start

0 -ground start(Special Plain Ordinary Telephone Service  
0 (SPOTS))

0 -Custom Calling Services

0 -speed calling

0 -call waiting

0 -three-way calling

0 -call forwarding

0 -Ringing

0 -Bridged Ringing

0 -single party

0 -Superimposed Ringing

0 -Multi-Party

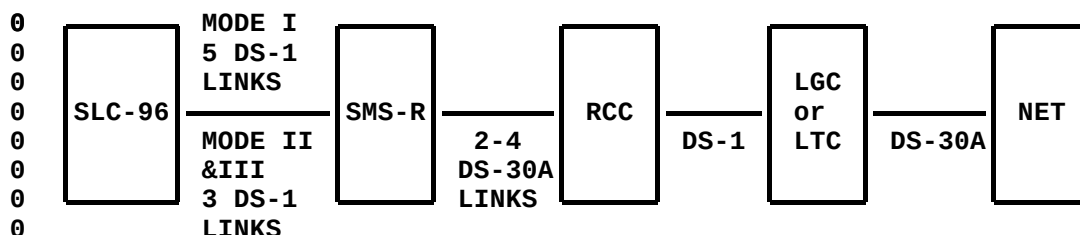
0 -four-party,fully-selective

0 -eight-party,semi-selective

0 -Coded Ringing

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- 0 -cadencing  
0 -Frequency Selective Ringing
- 0 -Dialing  
0 -dial pulse  
0 -digitone
- 0 -Tones  
0 -dial tone  
0 -audible ringback  
0 -reorder  
0 -busy
- 0 -Special Services(Special Services Supported by the SMS  
0 Module are supported by the SMS-R Module).
- 0 -Additional Features  
0 -Automatic Loss Pad Switching



0 Figure 312.7 SMS-R System Block Diagram

0 Automatic node and link maintenance of SMS-R and SLC-96RTs is in-  
0 tegrated with the host RSC maintenance which is in turn inte-  
0 grated with the host central office maintenance functions.

0 Loop testing is provided for SLC-96 subscriber lines. Tests may  
0 be performed through the MAP at the Host Office, or from Remote  
0 Test Desks (eg., MLT 1 or 2, Local Test Cabinet, LTD, (CALRS for  
0 Canadian offices)).

0 Bypass Testing refers to the use of the Metallic Test Pair con-  
0 necting the DMS-100 Test Equipment to either SLC-96 line card or  
0 the subscriber loop. This connection is established through the  
0 Channel Test Unit. There are two(2) Bypass Test configurations  
0 for the SMS-R SLC-96 subsystem:

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0 1) Termination to the Metallic Test Access(MTA) in the  
0 DMS-100 or DMS-100/200 central office from the SLC-96  
0 at the Maintenance Trunk Module(MTM).

0 2) Termination to the MTA in the RCC-RMM(Remote Maintenance  
0 Module) from the SLC-96.

0 Bypass testing can be performed from the MAP position or from Remote  
0 Test Desks.

0 Mechanized Line Testing refers to testing subscriber loops and  
0 line cards using Non-DMS equipment located at a Remote  
0 site(eg., #14 Local Test Desk(LTD), #3 Local Test  
0 Cabinet(LTC), Mechanized Loop Testing(MLT), etc.). The Remote Test  
0 site works with the DMS system to gain metallic access to the  
0 subscriber loops. The Remote site executes tests on the loop  
0 such as measuring foreign AC and DC voltage, resistance, etc.

0 Refer to NTP 297-2101-516 for more information on line testing.

0 The Digital Remote Test Unit (DRTU) is a measurement device located  
0 at the carrier remote terminal and it functions as a slave  
0 measurement device controlled by a Local Test Cabinet. A spare  
0 carrier channel is used as a two way communication path linking  
0 the DRTU and the central office test unit. All measurement results  
0 are displayed at the repair service center. Only metallic line test  
0 and communications circuit pack modules are included in the DRTU.

0 (b) References

0 Chapter 3, Section 3.7 Office Maintenance

0 NTP 297-2101-516 Line Maintenance Reference Manual

0 (c) Provisioning Considerations

0 ( i) Up to two NT6X02PD SMS-R modules can mount in a Subscriber  
0 Module Equipment (SME) frame (NT6X01AA).

0 ( ii) One (1) DC cooling unit(NT3X90AC) is required per SME  
0 frame for forced cooling requirements.

0 ( iii) A maximum of ten(10) DS-1 cards (NT6X85AB) are provisioned  
0 per SMS-R module. A maximum of ten(10) NT6X85AB  
0 CPs are provisioned when Mode I SLC-96s are used. A max-

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0 imum of nine(9) NT6X85AB CP's are provisioned when Mode  
0 II and Mode III SLC-96s are used.

- 0 ( iv) There is a distance limit of 100 miles from the host Cen-  
0 tral Office (CO) to the SLC-96 with repeaters located ap-  
0 proximately every 6,000 ft.

0 One(1) repeater is required to be co-located with the  
0 SMS-R module.

- 0 ( v) Provide two (2) NT6X69AC, CPP Msg Protocol & Tone CP, per  
0 SMS-R module.

- 0 ( vi) Provide two (2) NT8X18BA DS-30A C-side I/F CPs per SMS-R  
0 module. Each NT8X18BA provides ports for up to 8 DS-30A  
0 C-Side Links. In the SMS-R a minimum of 2 and a maximum  
0 of 4 ports can be used. The maximum permissible length  
0 of the DS-30A Links between the RCC and the SMS-R is 50  
0 ft.

0 The SMS-R is connected to the RCC P-Side via 2 to 4  
0 DS-30A links. Each SMS-R shelf has one(1) dedicated  
0 channel for messaging per DS-30A link, thereby, leaving a  
0 minimum of 60 voice channels to interface with the RCC.  
0 Up to 120 voice channels are available when the SMS-R is  
0 provisioned with four DS-30A links. Links are provi-  
0 sioned according to carried traffic.

0 All traffic tables are based on the following:

- 0 1) 5 CCS per loop  
0 2) Maximum 4% blocking (HD G.O.S.)  
0 3) CCS per SLC-96 line assumes 100% fill  
0 4) Mode I (384 Subscriber lines)  
0 Mode II (576 Subscriber lines)  
0 Mode III(288 Special Subscriber lines)  
0 5) Based on infinite sources (SLC Lines)(Loops)  
0 to SMS-R DS-30 Channels.

0 ESTIMATED CARRIED TRAFFIC CAPACITY (MODE I).

| 0<br>0<br>0 NO OF DS-30A<br>0 LOOPS<br>0 (NO of | 0<br>0 CARRIED LOAD<br>0 IN CCS<br>0 HD CAPACITY<br>0 per SMS-R | 0<br>0 CCS PER<br>0 CHANNEL | 0<br>0 CCS PER<br>0 SLC-96 LINE |
|-------------------------------------------------|-----------------------------------------------------------------|-----------------------------|---------------------------------|
|-------------------------------------------------|-----------------------------------------------------------------|-----------------------------|---------------------------------|

|   |            |      |       |      |
|---|------------|------|-------|------|
| 0 | (CHANNELS) |      |       |      |
| 0 |            |      |       |      |
| 0 |            |      |       |      |
| 0 |            |      |       |      |
| 0 | 2          | 1607 | 26.78 | 4.18 |
| 0 | (60)       |      |       |      |
| 0 |            |      |       |      |
| 0 |            |      |       |      |
| 0 |            |      |       |      |
| 0 | 3          | 2591 | 28.79 | 6.75 |
| 0 | (90)       |      |       |      |
| 0 |            |      |       |      |
| 0 |            |      |       |      |
| 0 |            |      |       |      |
| 0 | 4          | 3603 | 30.03 | 9.38 |
| 0 | (120)      |      |       |      |
| 0 |            |      |       |      |
| 0 |            |      |       |      |
| 0 |            |      |       |      |

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0 CONCENTRATION RATIOS

0 The SMS-R has concentration capabilities, which are de-  
0 termined by the provisioning of DS-30A ports. The con-  
0 centration ratio may be calculated using the following  
0 formulae:

0 FOR MODE I & II

0 CONCENTRATION RATIO = (NO. OF SLC-96s / SMS-R) X 96  
0 -----  
0 (NO. OF DS-30A LOOPS) X 30

0 FOR MODE III

0 CONCENTRATION RATIO = (NO. OF SLC-96s / SMS-R) X 48  
0 -----  
0 (NO. OF DS-30A LOOPS) X 30

0 A physical maximum of 9 SMS-Rs can be connected to an RCC  
0 assuming that the minimum number of C-Side Links are used  
0 on each SMS-R and that 2 RCC P-Side Links are dedicated  
0 to RMM interface. The practical maximum number of SMS-R  
0 may be less than 9. However, there is a possibility that  
0 the consumption of RCC and Line Trunk Controller or LGC  
0 Real-Time by high traffic SMS-Rs may impose a practical  
0 limit of less than 9 SMS-Rs off an RCC.

- 0 ( vii) Maximum current consumption per SMS-R, including all  
0 provisionable packs, should be limited to 50 Amps. A  
0 module can handle 55 Amps but will only function for 8  
0 hours in power sharing mode.



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## 0 3.0 Small Remote Unit (SRU)

0 3.1 Introduction

0 (i) The SRU is a 240-line remote capable of handling all call  
0 types (including ISDN) and merges the remote maintenance  
0 and host interface deployment capabilities of the Remote  
0 Line Concentrating Module (RLCM). It can be used for  
0 customer premiss applications and can be provisioned with  
0 an internal AC power supply and battery back-up. Up to  
0 six (6) PCM-30/DS1 host links can be used.

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## 0 3.2 Features

### 0 3.2.1 SRU Features

0 The Small Remote Unit (SRU) is a cabinetized DMS-100 remote whose  
0 hardware and software are based on the DMS Series-II peripherals. The  
0 SRU is a hybrid product, merging the LCME subscriber ISDN access capa-  
0 bility with the remote maintenance and host interface deployment capa-  
0 bilities of the Remote Line Concentrating Module (RLCM).

0 The SRU provides remote access for up to 240 subscriber lines. It  
0 communicates with a DMS-100 Host using PCM30 or DS1 links. The service  
0 provided by the SRU on the subscriber lines can be a mix of POTS,  
0 Centrex, and ISDN. The SRU does not support a Trunk interface.

0 The SRU's most significant feature is that it is intended to be lo-  
0 cated in a customer premises environment. The design objectives are  
0 to make full use of the existing DMS-100 hardware. The major elements  
0 housed in the SRU cabinet are:

- 0 - Duplicated SRU control units, LCME based.
- 0 - Up to 4 2B1Q Line Drawers.
- 0 - Host Interface using PCM30 or DS1 links.
- 0 - Remote Maintenance Unit.
- 0 - Duplicated Ringing.
- 0 - Frame Supervisory Panel.
- 0 - Cooling Unit (fans).
- 0 - AC to DC rectifier (optional).
- 0 - Battery Charging Unit and batteries (optional).
- 0 - EMI terminations.

0 The SRU is packaged in a cabinet.

0 The SRU is compatible with the Australian, U.K., and other interna-  
0 tional markets as well as domestic markets.

0 Note: Software is currently unavailable for the SRU to function in  
0 the domestic market. Domestic market software for the SRU will be  
0 available at a later date.

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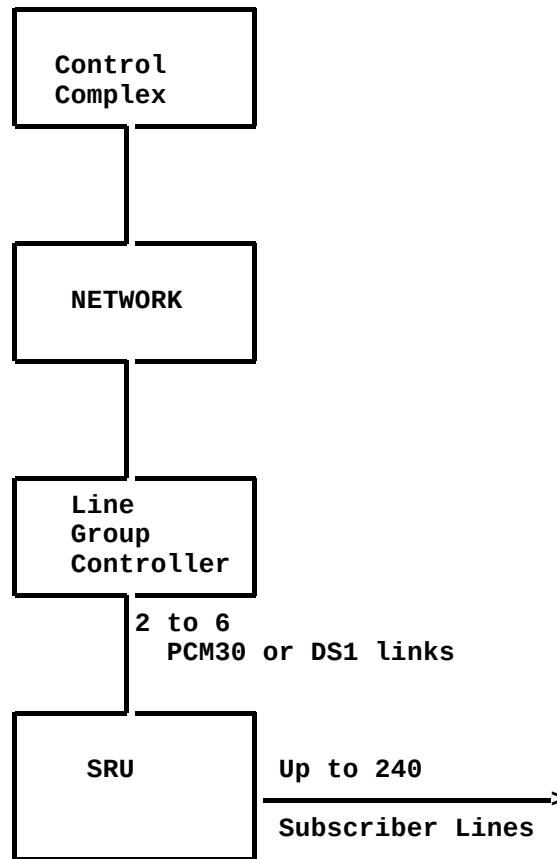


Figure 312.8: DMS view of SRU.

0 3.3 Equipment Provisioning

0 3.3.1 SRU Provisioning

0 (a) General Description

0 The SRU integrates into the overall DMS architecture in the same  
0 manner as a Remote (ie IRLCM) (ref. Figure 312.8). The SRU can  
0 be provisioned to provide:

- 0 - Cabinetized SRU for end User premises (AC powered  
0 (rectifier) with or without battery back-up).
- 0 - Cabinetized SRU for Telco premises (DC powered without  
0 battery back-up).

0 The SRU consists of six (6) basic functional blocks; these are:

- 0 - the Host Interface Unit (HIU)
- 0 - duplicated SRU Control Units (SRU)
- 0 - Ringing Unit
- 0 - Line Drawers
- 0 - Remote Maintenance Unit (RMU)
- 0 - Power Supply Unit (PSU)

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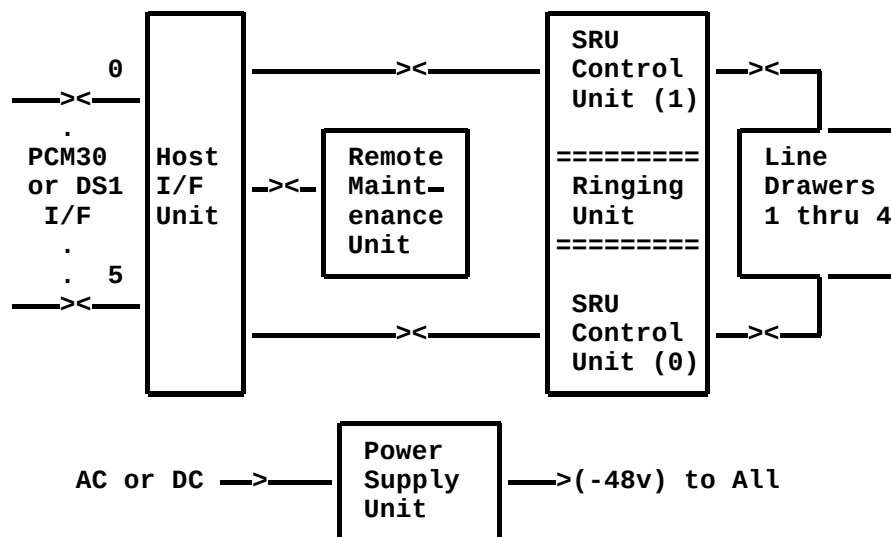


Figure 312.9: SRU Architecture.

#### (b) References

NTP 297-1001-451 Customer Data Schema  
NTP 297-1001-310 Table Editor

#### (c) Provisioning Considerations

- ( i) The SRU meets the same host to remote distance requirements as the existing IRLCM remote, ie., 150 miles. Three (3) factors have to be considered in order to extend the host to remote distance to 500 miles. They are:

**ECHO:** A loss has to be inserted in the transmission path in order to reduce echo. For countries with less than 6dB loss, echo cancellor devices are required. For countries with a loss of greater than 6 dB, ie., UK, echo will not be a problem.

**PROPAGATION TIME:** The messaging time on the links increases as the host to remote distance increases. This reduces the number of Call Attempts per Second that the remote can handle.

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0 TRANSMISSION ERRORS: As the distance between host and remote  
0 increases, the quality of the transmission  
0 media becomes very important. Every errored  
0 message has to be re-transmitted and re-  
0 sults in reduced call processing capacity.

0 ( ii) PCM30 Line Drawer is not supported.

0 PCM30 repeaters and Lightning arrestor are not housed in  
0 the SRU cabinet. There is also no backup rectifier.

0 (iii) The SRU cabinet has a front door to allow access to the  
0 equipment installed inside. Opening of the front door re-  
0 veals a frame. This frame contains a Cooling unit, Ser-  
0 vice & Interface, LCME & FSP shelves. An optional  
0 Battery Charging Unit (BCU) and a Rectifier is mounted on  
0 the right hand side inside the SRU cabinet. Battery  
0 strings are mounted in two trays at the bottom of the SRU  
0 Cabinet. Each Battery string consists of four Batteries.  
0 Above the Battery trays, a connector field is provided.  
0 Basic functions of each equipment are described below.

0 - Cooling Unit: This contains an air filter and fans to  
0 force air cool the SRU equipment.

0 - Service & Interface Shelf: This contains the circuit  
0 packs for the Host Interface Unit (HIU), the Remote  
0 Maintenance Unit (RMU), one of SRU Control Unit (SCU)  
0 and two Ringing Generators.

0 - SCU Shelf. This shelf contains the other SCU and con-  
0 tains four (4) line Drawers.

0 - Frame Supervisory Panel: This contains the power dis-  
0 tribution and a visual power frame fail indicator.

0 - Battery Charge Unit. This unit provides the capabil-  
0 ity to charge each battery string either under the  
0 control of the craftperson, or automatically by the  
0 system.

0 - Rectifier: This provides AC to DC power conversion.

0 - Batteries: Two battery strings can be housed in the  
0 SRU cabinet, to provide power backup. Each battery  
0 string is good for two hours.

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0 All external connections to the SRU are made at the con-  
0 nector field located in front and just below the Cooling  
0 Unit and behind the protective cover. The connector  
0 field contains 3 areas. The first, for PCM30/DS1 con-  
0 nection to the Host; the second, for Tip-Ring pairs, each  
0 connector having 25 pair; the third, for either an AC in-  
0 let or with -48 vdc A and B feeds. In addition a Frame  
0 Ground connection is provided.

0 The Cabinetized SRU for Telco premises need not be  
0 equipped with battery back-up, a Rectifier (Telco to pro-  
0 vide -48 Vdc power), or a RMU as the Remote Maintenance  
0 Unit packs can be provided by the MTM (if co-located with  
0 a DMS).

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0 This card provides two (2) 2.048 Mbits/s PCM30 interface  
0 between the host and the SRU. Total of six (6) PCM30  
0 interface ports are provided by the SRU. The SRU re-  
0 quires a minimum of two (2) PCM30 links to the host.  
0 These links are designated as primary links and must ter-  
0minate on a different PCM30 card on the SRU and the Host.  
0 Therefore, provide a minimum of two (2), maximum of three  
0 (3) NT6X27BA CPs for the SRU (depending on traffic re-  
0quirements). NOTE: The NT6X27AC is to be used until the  
0 NT6X27BA is available.

0 DS1 INTERFACE CARD (NT6X50AB)

0 This card provides two (2) 1.544 Mbits/s DS1 interface  
0 between the host and the SRU. Total of six (6) DS1  
0 interface ports are provided by the SRU. The SRU re-  
0quires a minimum of two (2) DS1 links to the host. These  
0 links are designated as primary links and must terminate  
0 on a different DS1 card on the SRU and the host. There-  
0fore, provide a minimum of two (2), maximum of three (3)  
0 NT6X50AB CPs for the SRU (depending on traffic require-  
0ments).

0 The LCME portion of the SRU requires two (2) message  
0 channels to the Host. These channels occupy ch#16 on  
0 each primary PCM30 link. When a Remote Maintenance  
0 Equipment (optional) is provided, it also requires a mes-  
0sage channel on each of the primary PCM30 links, other-  
0wise these channels are available for call processing.  
0 Failure of one of the primary PCM30 links results in the  
0 LCME portion of the SRU to go into TAKEOVER and force the  
0 LCME and RMU to use the remaining primary PCM30 link.

0 PCM30 LINK CONTROL CARD (NT6X73BA)

0 This card acts as the messaging interface and provides  
0 data rate conversion between the SCU, RMU, and the PCM30.  
0 It also acts as the clock source for the SRU.

0 DS1 LINK CONTROL CARD (NT6X73AA)

0 This card acts as the messaging interface and provides  
0 data rate conversion between the SCU, RMU, and the DS1.  
0 It also acts as the clock source for the SRU.

0 Provide two (2) PCM30 or two (2) DS1 Link Control Cards  
0 per SRU.



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0 ( v) SRU Control Unit (SCU)

0 The SRU Control Unit (SCU) is based on the existing ISDN  
0 LCM Controller (LCME). There are two SRU Control Units,  
0 and each SCU consists of a processor (NTBX34), two  
0 digroup controller (NTBX35) and a new power converter  
0 (NT8X99). There is a total of four (4) circuit packs per  
0 SCU.

0 In normal operation each SCU handles service for the  
0 lines in its own two line drawers. In the event one SCU  
0 fails, the remaining working SRU will handle service to  
0 all the lines. Each SCU unit requires +15 Vdc and +5 Vdc  
0 for power, and is power spared from the other SCU unit.

0 Always provide one (1) SRU Common CP Fill NT8X95AQ per  
0 SRU. The NT8X95AQ provides two (2) NTBX34CA, four (4)  
0 NTBX35CA, two (2) NT0X50AC and two (2) NT8X99AB circuit  
0 packs; half in SCU-0, half in SCU-1. The function of  
0 each of these cards are outlined below.

0 LCME Processor (NTBX34CA)

0 This card is responsible for processing associated with  
0 scanning the line cards for calls, setting up call con-  
0 nections through the digroup controller card (NTBX35) and  
0 DMS-X messaging with the Host. This card also carries  
0 out background tasks for diagnostics.

0 LCME Diagroup Controller (NTBX35CA)

0 This card provides time switching for external and inter-  
0 nal channel assignments, and provides digital loop around  
0 paths. It also interface with the Link Control Card (LCC)  
0 and the Line Drawers.

0 LCME Power converter (NT8X99AB)

0 This circuit pack provides +5v dc to the NTBX34 and the  
0 two NTBX35s for its own SCU, and provides +15v dc to the  
0 Line Drawers and has the capability to power the mate SCU  
0 for power redundancy.

0 This pack also contains the Ring, ANI and Coin  
0 detector/multiplexer circuit, and in addition, has iso-  
0 lating diodes for serving the Line Drawer voltage needs.

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0 ( vi) Ringing Unit.

0 Two Ringing Generators (RG) NT6X60 are used in the SRU.  
0 The NT6X60 Ringing Generators do not provide ANI and COIN  
0 voltages for Subscriber lines. For North American appli-  
0 cation, a domestic RG board is to be used to provide  
0 ANI/COIN (future).

0 Provide 0, 1, or 2 Ringing Generators per SRU to be used  
0 with POTS line cards.

0 Provide the NT6X60EA Ringing Generator for Australian ap-  
0 plications.

0 Provide the NT6X60GA Ringing Generator for U.K. applica-  
0 tions.

0 No Ringing Generators are needed when the SRU is in-  
0 stalled with ISDN line cards only.

0 ( vii) Line Drawer (NTBX32BA)

0 This is a 2B1Q Enhanced Line Drawer, which provides the  
0 means to house a 2B1Q Bus Interface Card (NTBX36), a  
0 Point of Use Power Supply (PUPS) (NTBX71) and up to 60  
0 application specific line Cards. Provide up to four (4)  
0 Line Drawers (depending on the need). Refer to the Engi-  
0 neering Manual for more information on configuring line  
0 cards on the NTBX32BA line drawers.

0 2B1Q Bus Interface Card (NTBX36)

0 The 2B1Q Bus Interface Card (BIC) provides interface be-  
0 tween the SCU and up to 60 line Cards. The principal  
0 functions of the BIC are to scan line cards for change in  
0 state, communicate with the LCME processor (NTBX34), D-  
0 channel multiplexing/demultiplexing & time switching,  
0 PUPS voltage supervision, ringing voltages control, and  
0 activity switching.

0 PUPS (NTBX71)

0 The Point of Use Power Supply (PUPS) occupies 4 line card  
0 slots in a two-by-two configuration. The PUPS converts  
0 the -48v Battery to +5v supply, which in turn is used to  
0 power the line Cards.

0 Line Cards

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0 Line card that can be housed in the Line Drawer depends  
0 on the type of service required and the country in which  
0 the SRU will be used. POTS, CENTREX and ISDN lines  
0 should be equally divided between the Line Drawers.

0 Following is a list line cards that is used in the  
0 Australian and United Kingdom markets. Further details  
0 regarding each card may be obtained from the Engineering  
0 Manual, section EMA14-03-000.

| Line Type | Australia  | UK                   |
|-----------|------------|----------------------|
| -----     | -----      | --                   |
| A         | * NT6X93EA | NT6X98AA             |
| B         | -          | -                    |
| C         | NT6X21BC   | NT6X21BC (p-phone)   |
|           | -          | NT6X71AB (Data path) |
|           | -          | NT6X76AC (AIM LC)    |
| ISDN      | NTBX26AA   | NTBX26AA (T I/F)     |
|           | NTBX27AA   | NTBX27AA (U I/F)     |

0 \* 6X93EA is to be used if the World Line Card is not  
0 available on time.

#### 0 (viii) Remote Maintenance Unit (RMU)

0 The RMU is based on the existing Remote Maintenance Mod-  
0 ule (RMM) that is used in the IRLCM/RLCM/RSC. The RMU,  
0 like the RMM, is a modified cost -reduced Trunk Module  
0 (TM). The RMU supports line maintenance, Scan points and  
0 Battery Charge Unit (BCU). The BCU is optional on the  
0 SRU. The Remote Maintenance Unit (RMU) consists of the  
0 following circuit packs:

##### 0 RMM Control Card (NT6X74)

0 This card provides processor, memory and I/O functions.

##### 0 Metallic Test Unit (NT4X97AA & NT4X98BB)

0 These cards are used to perform maintenance tests on the  
0 subscriber loops or the line cards. Provide one of each  
0 circuit pack (per SRU) if Metallic Testing is required.

##### 0 Miscellaneous Scan Detector Card (NT0X10AA)

0 There are 14 scan detector circuits on this card, each of  
0 which may be configured as a loop, ground or battery de-

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0 tector. Provide one (1) (per SRU) if scan points are re-  
0 quired.

0 Metallic Test access card (NT3X09BA) - Optional with BCU

0 This card provides 8 by 8 two wire metallic matrix for  
0 cross connection between the test equipment, test card,  
0 line and line card. Provide one (1) NT3X09BA (per SRU)  
0 if MTA is required.

0 Group Codec card (NT2X59) & Test Trunk card (NT2X90)

0 These packs can be provisioned on the RMU.

0 The following PECs for the Group Codec card can be pro-  
0 vided for the following markets:

| PEC      | Market<br>Application |
|----------|-----------------------|
| -----    | -----                 |
| NT2X59AA | Domestic              |
| NT2X59BA | Turkey                |
| NT2X59CA | U.K.                  |
| NT2X59DA | CEP*                  |

0 \* The CEP (Caribbean Expansion Plan) CODEC was developed for  
0 Offshore markets. The NT2X59DA is used in the Australian  
0 market as well.

0 ( ix ) Power Supply Unit.

0 The SRU can be powered from external -48v DC supply. For  
0 reliability, both A & B feed are provided. DC power to  
0 each DC/DC converter in the SRU is controlled by the  
0 Frame Supervisory Panel, NT8X96AB, using circuit break-  
0 ers.

0 Optionally the SRU may be powered from 240 Volt AC main.  
0 Provide one (1) NT5C06CA Rectifier for the AC input.  
0 Batteries can also be housed in the SRU. This is done to  
0 provide power backup in the event either the AC power or  
0 rectifier fails. Provide A0376779 YUASA Batteries (quan-  
0 tity of 8) if this option is requested. Each string of  
0 batteries (quantity of 4) provide two hours of back-up  
0 power.

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0 Where batteries are equipped then a Battery Charging Unit  
0 (BCU), NT8X02AA, shall also be provided. The BCU enables  
0 the batteries to be either automatically charged or under  
0 the control of a craftsman. The batteries provide  
0 power back-up for up to 4 hours (two hours per string).

0 Frame Supervisory Panel (NT8X96AB)

0 This unit provides -48v dc distribution to the equipment  
0 used in the SRU, provides Talk Battery filter and de-  
0 tection of DC/DC power converter failures. The FSP has 6  
0 circuit breakers. The FSP provides the Automatic Recovery  
0 from Low Battery (ARLB) feature (through the NT6X36AF  
0 ARLB FSP Alarm Card CP) which prevents the circuit break-  
0 ers on the FSP from tripping in case of low battery sup-  
0 ply. This eliminates the need for a craftsman to  
0 manually re-set the breakers on site.

0 Battery Charging Unit (NT8X02AA)

0 This unit enables the system and craftsman with the  
0 ability to charge, determine the status of each battery  
0 string and also provides low voltage disconnect. Provide  
0 one unit when batteries are provided.

0 ( x ) Administration, Maintenance and Operations

0 The SRU is an integral part of the host DMS-100 Office.  
0 It is centrally administered and maintained by the  
0 DMS-100 system from the MAP located at the host site. MAP  
0 access from a remote SRU site by using a dial up proce-  
0 dure currently established for DMS remotes, using modem  
0 on a working line.

0 For the SRU, the DMS supports integrated administration  
0 and maintenance consistent with that for the LCME, but  
0 with the following additional facilities:

0 Remote maintenance and diagnostics  
0 Monitor SRU Alarms.  
0 Carrier Alarms

0 ( xi) Traffic Engineering

0 Traffic engineering rules for SRU are different from that  
0 of the LCME, as the number of lines and p-side channels  
0 is different. The SRU provides up to 180 p-side channels

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0 for call processing. Out of these channels, 2 are used by  
0 the SRU Control Unit and 2 by the RME. It must be noted  
0 that the SRU design is limited to maximum of 6 PCM-30  
0 links to the host.

0 The following table presents approximate LCME line drawer  
0 load service for ISDN only, and mix service applications  
0 for the SRU.

|   | No of lines |      |         | PCM-30 links req'd | ccs achieved   |
|---|-------------|------|---------|--------------------|----------------|
|   | ISDN        | POTS | CENTREX | (@8ccs for ISDN)   | (with 6 links) |
|   | -----       | ---- | -----   | -----              | -----          |
| 0 | 240 (100%)  | 0    | 0       | 7                  | 6.44           |
| 0 | 216 (90%)   | 0    | 0       | 6                  | 7.76           |
| 0 | 192 (80%)   | 0    | 0       | 6                  | 9.41           |

|   | No of lines |           |          | PCM-30 links req'd |
|---|-------------|-----------|----------|--------------------|
|   | ISDN        | POTS      | CENTREX  |                    |
|   | -----       | ----      | -----    | -----              |
| 0 | 216 (90%)   | 12 (5%)   | 12 (5%)  | 6                  |
| 0 | 192 (80%)   | 24 (10%)  | 24 (10%) | 6                  |
| 0 | 168 (70%)   | 48 (20%)  | 24 (10%) | 6                  |
| 0 | 144 (60%)   | 72 (30%)  | 24 (10%) | 5                  |
| 0 | 120 (50%)   | 96 (40%)  | 24 (10%) | 5                  |
| 0 | 96 (40%)    | 120 (50%) | 24 (10%) | 4                  |
| 0 | 72 (30%)    | 144 (60%) | 24 (10%) | 4                  |
| 0 | 48 (20%)    | 168 (70%) | 24 (10%) | 3                  |
| 0 | 24 (10%)    | 192 (80%) | 24 (10%) | 3                  |
| 0 | 0 (0%)      | 216 (90%) | 24 (10%) | 2                  |

0 The above calculations are based upon the following assumptions,

- 0 - nailed connections on 10% ISDN lines
- 0 - 5% blocking (Grade of Service = 0.05)
- 0 - Traffic rate for ISDN = 8ccs
- 0 - Traffic rate for POTS = 6ccs
- 0 - Traffic rate for CENTREX = 6ccs

#### 0 ( xii) Software

0 The SRU software is be based on the existing LCME soft-  
0 ware. The base package for the SRU is:

0 NTXH96AA SRU BASIC

0 The SRU BASIC (NTXH96AA) software package needs the fol-  
0 lowing software packages in order to function:

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0 NTX001AA COMMON BASIC  
0 NTX146AA REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 NTX147AB OUTSIDE PLANT MODULE MAINTENANCE(UPGRADE OF NTX147AA)  
0 NTX270AA NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA DTC 30 CARRIER MAINTENANCE  
0 NTX750AB ISDN BASIC ACCESS  
0 NTX901AA LOCAL FEATURES I  
0 NTX941AA CM COMMON

0 The DMS-100 Data Schema NTP has been updated to include an inventory  
0 table that references the SRU. The Data Schema uniquely identifies  
0 the SRU. For general information relating to tables and table con-  
0 trol, refer to NTP 297-1001-451 and NTP 297-1001-310.

0 ESA capability is not provided.

0 Intraswitching is not supported.

0 Software is currently unavailable for domestic applications. The cur-  
0 rent software only supports installations for Australia and the United  
0 Kingdom (UK).

0 There is no degradation on CC real-time as compared to a LCME working  
0 through LGCI.

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0 | 3.3.2 BCS Gating Hardware

0 (a) General Description

0 BCS Required Hardware is defined as the modification necessary to  
0 load the BCS software into the DMS-100. This ECM lists, in table  
0 form, all the equipment gating to BCS 26-34.

0 ANY OFFICE THAT IS UPGRADING A BCS MUST MEET THE MINIMUM HARDWARE  
0 REQUIREMENTS. HARDWARE MINIMUMS ARE BASED ON ADDITIONS TO THE  
0 PREVIOUS BCS HARDWARE REQUIREMENTS.

0 All other hardware is feature hardware. The feature related  
0 hardware information and details on BCS Gating hardware should be  
0 obtained from Advanced Provisioning Information (API) or Engi-  
0 neering Change Memorandum (ECM) documents on the feature. This  
0 feature related hardware should be ordered in the appropriate  
0 specs.

0 (c) Provisioning Considerations

0 BCS26 & 27 Gating Hardware

0 In the table, terms used are defined as:

| 0 Terms in Table | Associated PEC                    |
|------------------|-----------------------------------|
| 0 Ext. SP Mem    | NT6X46AC or NT6X46BA - SEE NOTE   |
| 0 Ext. MP Mem    | 2nd NT6X47AB per shelf - SEE NOTE |

0 NOTE: The NT6X46AC circuit pack (cp) will be used to up-  
0 date existing modules. This cp (NT6X46AC) will be ordered  
0 via a Product Change (PC) kit. The PC kit will change  
0 the PEC of the base modules and make several other cir-  
0 cuit pack slots provisionable. (The slots are being made  
0 provisionable to eliminate the need for additional PC  
0 kits and base module PECs when the circuit packs change  
0 PECs due to upcoming features.) The NT6X46BA will be  
0 used on new modules. These new modules will contain  
0 provisionable slots for changing cp's.

0 The second NT6X47AB (MP Memory CP) will be a  
0 provisionable card on the new and updated modules. There-  
0 fore, the second NT6X47AB will be ordered as a line  
0 item.)



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0 BCS28 & 29 Gating Hardware

0 In the table, terms used are defined as:

| 0 Terms in Table    | Associated PEC                         |
|---------------------|----------------------------------------|
| 0 Ext. SP Mem       | NT6X46AC or NT6X46BA - SEE NOTE        |
| 0 Ext. MP Mem       | 2nd NT6X47AB per shelf or - SEE NOTE   |
| 0                   | NT6X47AC                               |
| 0 New Msg           | NT6X69AA & 79AA or NT6X69AB - SEE NOTE |
| 0                   | or NT6X69AC                            |
| 0 XPM Processor CP  | NT6X45BA - SEE NOTE                    |
| 0 Ext. LCM Proc. CP | NT6X51AB - SEE NOTE                    |

0 NOTE: The NT6X46AC circuit pack (cp) will be used to up-  
0 date existing modules. This cp (NT6X46AC) will be ordered  
0 via a Product Change (PC) kit. The PC kit will change  
0 the PEC of the base modules and make several other cir-  
0 cuit pack slots provisionable. (The slots are being made  
0 provisionable to eliminate the need for additional PC  
0 kits and base module PECs when the circuit packs change  
0 PECs due to upcoming features.) The NT6X46BA will be  
0 used on new modules. These new modules will contain  
0 provisionable slots for changing cp's.

0 The second NT6X47AB (MP Memory CP) will be a  
0 provisionable card on the new and updated modules. There-  
0 fore, the second NT6X47AB will be ordered as a line item.  
0 One NT6X47AC can be used in place of two NT6X47AB circuit  
0 packs.

0 The NT6X69AA and NT6X79AA or NT6X69AB cp can be used to  
0 update existing modules. These cp will be ordered via PC  
0 Kit. The PC kit will change the PEC of the base modules  
0 and make the card slots provisionable. The NT6X69AC is  
0 to be used for all New Messaging updates and replaces all  
0 the previous New Msg circuit packs.

0 For Canadian applications, the provisionable NT6X45BA  
0 circuit pack will be required for BCS-28 for XPM Super  
0 Charging.

0 For Canadian applications, the NT6X51AB circuit pack will  
0 be required for BCS-28 for XPM Super Charging. NT6X51AB  
0 is an "Always Provided" circuit pack on the LCM Common CP  
0 fill. It is part of NT6X04AB LCM Common CP (i.e. per-  
0 taining to LCM, RSC, RLCM) and NT8X04AB LCM Common CP

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0 (i.e. pertaining to OPM). In Canada, Change Application  
0 Dept. 1955 BRW will field upgrade existing LCM modules as  
0 required (i.e. Systems Application Engineering will NOT  
0 retrofit NT6X51AA to NT6X51AB via product change kit).  
0 However, after Change Application field upgrades an of-  
0 fice, System Application Engineering will update the of-  
0 fice records accordingly.

0 BCS30 & 31 Gating Hardware

0 In the table, terms used are defined as:

| 0 Terms in Table | Associated PEC                     |
|------------------|------------------------------------|
| 0 Ext. SP Mem    | NT6X46AC or NT6X46BA - SEE NOTE    |
| 0 Ext. MP Mem    | 2nd NT6X47AB or one (1) - SEE NOTE |
| 0                | NT6X47AC per shelf                 |

0 NOTE: The NT6X46AC circuit pack (cp) will be used to up-  
0 date existing modules. This cp (NT6X46AC) will be ordered  
0 via a Product Change (PC) kit. The PC kit will change  
0 the PEC of the base modules and make several other cir-  
0 cuit pack slots provisionable. (The slots are being made  
0 provisionable to eliminate the need for additional PC  
0 kits and base module PECs when the circuit packs change  
0 PECs due to upcoming features.) The NT6X46BA will be  
0 used on new modules. These new modules will contain  
0 provisionable slots for changing cp's.

0 For U.S. applications only, the second NT6X47AB (MP  
0 Memory CP) pair can be provisioned card on updated mod-  
0 ules. The second NT6X47AB CP pair will be ordered as a  
0 line item on modules where the existing module already  
0 contained one (1) NT6X47AB CP pair. The one (1) NT6X47AC  
0 is provisionable on new modules and has the memory capac-  
0 ity equivalent of two (2) NT6X47AB. Existing modules can  
0 be updated via a change kit which replaces the NT6X47ABs  
0 with the NT6X47ACs.

0 For Canadian applications only, one (1) NT6X47AC pair  
0 will be provisioned on new modules and will replace  
0 NT6X47AB on existing modules. The second NT6X47AB is not  
0 to be provisioned for Canadian jobs.

0 BCS32 Gating Hardware

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0 Effective BCS-32, all IACs in an office must be replaced  
0 with LGCI/LTCI or LGC/LTC modules with ISDN capabilities  
0 prior to accepting a BCS-32 or above load.

0 BCS33 Gating Hardware

0 Effective with BCS33, the old messaging/small memory con-  
0 figuration will no longer be supported on new BCS loads  
0 for any XPM except DTC6, MSB6, and MSB7.

0 The following terms used in the table below are defined  
0 as follows:

| 0 Terms in Table | Associated PEC                                  |
|------------------|-------------------------------------------------|
| 0 -----          | -----                                           |
| 0 Ext. MP Mem    | 2nd NT6X47AB or one<br>0 NT6X47AC per shelf     |
| 0 New Msg        | NT6X69AB, NT6X69AC, or<br>0 NT6X69AA & NT6X79AA |
| 0 Ext. SP Mem    | NT6X46AC, NT6X46BA, or NT6X46BB                 |
| 0 4M MS Proc     | NT9X13DC                                        |
| 0 6M Memory      | NT9X14BB                                        |

0 The second NT6X47AB (MP Memory CP) can be provided when  
0 upgrading existing DTC modules. A NT6X02EQ change kit  
0 will be used on existing DTCs to replace the NT6X47AB CPs  
0 with NT6X47AC CPs.

0 The NT6X47AC CP will be provisioned on new DTC modules  
0 and RLCM/OPM modules with ESA.

0 The NT6X69AC (Msg Protocol & Tone CP) will be provisioned  
0 on new DTC and SMR modules. DTC and SMR modules with old  
0 messaging, NT6X43AA, will be upgraded with the NT6X69AC,  
0 via a Product Change (PC) Kit, to meet new messaging re-  
0 quirements. DTC modules being upgraded to new messaging  
0 must upgrade the Signal Processor Memory CP with the  
0 NT6X46AC or NT6X46BB via PC Kits. New modules will be  
0 provisioned with the NT6X46BB CP. Existing DTC modules  
0 may have been provisioned with the NT6X46BA.

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0 NT6X69AA & NT6X79AA or NT6X69AB, Msg Protocol & Tone CP,  
0 satisfies the new messaging requirement on existing DTC  
0 modules.

0 NT9X13DC, MS CPU Processor CP (4Meg), and NT9X14BB, 6MB  
0 Memory, must be provisioned on the Message Switch (MS)  
0 when ENET hardware and/or software (NTXE01AA) is being  
0 ordered or upgraded to BCS33. Refer to ECM493 and  
0 ECM331. The NT9X13DC and NT9X14BB must also be provi-  
0 sioned for all FLIS applications in BCS33 and beyond.  
0 Refer to ECM612.

0 Refer to the appropriate API/ECM document for further  
0 provisioning rules.

0 Refer to ECM441, XPM Power Provisioning, to ensure that  
0 the correct NT2X70, Power Converter CP, is provisioned in  
0 upgraded XPMs.

0 The following terms used in the table below are defined  
0 as follows:

| Terms in Table | Associated PEC |
|----------------|----------------|
| -----          | -----          |
| Unified Proc   | NTMX77AA       |
| XPM+ Term PB   | NTMX71AA       |
| EISP           | NTBX01AB       |
| 4M MS Proc     | NT9X13DC       |
| 6M Memory      | NT9X14BB       |

0 The NTMX77AA (Unified Processor), NTMX71AA (XPM Plus Ter-  
0 minator Paddleboard), and NTBX01AB (Enhanced ISP) must be  
0 provisioned on all RCCI modules going to BCS34.

0 NT9X13DC, MS CPU Processor CP (4Meg), and NT9X14BB, 6MB  
0 Memory, must be provisioned on the Message Switch (MS)  
0 for DMS Packet Handler applications in BCS34.

0 The following tables list the hardware gating and MINIMUM  
0 packfill level required for BCS 32-34 on a per module ba-  
0 sis:

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| MODULE<br>BCS    | SMR                                  | SMS                                                   | SMU                                                                                 |
|------------------|--------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------|
| 26<br>MIN PACKFL | NO CHANGE<br>NT6X02CA                | NO CHANGE<br>NT6X02DA                                 | NO CHANGE<br>NT6X02EA                                                               |
| 27<br>MIN PACKFL | NO CHANGE<br>from BCS 26<br>NT6X02CA | NO CHANGE<br>from BCS 26<br>NT6X02DA                  | Ext. SP Mem.<br>NT6X02EB<br>NT6X02AW(upg)                                           |
| 28<br>MIN PACKFL | NO CHANGE<br>from BCS 27<br>NT6X02CA | Ext. SP Mem.<br>New Msg<br>NT6X02DD<br>NT6X02DC(upg)  | Canada:<br>NT6X45BA<br>US:<br>NO CHANGE<br>from BCS 27<br>NT6X02EB<br>NT6X02AW(upg) |
| 29<br>MIN PACKFL | NO CHANGE<br>from BCS 28<br>NT6X02CA | NO CHANGE<br>from BCS 28<br>NT6X02DD<br>NT6X02DC(upg) | NO CHANGE<br>from BCS 28<br>NT6X02EB<br>NT6X02AW(upg)                               |
| 30<br>MIN PACKFL | NO CHANGE<br>from BCS 29<br>NT6X02CA | NO CHANGE<br>from BCS 29<br>NT6X02DD<br>NT6X02DC(upg) | NO CHANGE<br>from BCS 29<br>NT6X02EB<br>NT6X02AW(upg)                               |

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| MODULE<br>BCS    | RSC                                                                                 | Dual<br>RSC                                                                         | MSB7                                                                         |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| 26<br>MIN PACKFL | NO CHANGE<br>NT6X12AB                                                               | Ext. SP Mem.<br>Ext. MP Mem.<br>NT6X12CA<br>NT6X12AD(upg)                           | NO CHANGE<br>NT6X32AA                                                        |
| 27<br>MIN PACKFL | Ext. SP Mem.<br>Ext. MP Mem.<br>NT6X12CA<br>NT6X12AD(upg)                           | NO CHANGE<br>NT6X12CA<br>NT6X12AD(upg)                                              | Ext. SP Mem.<br>NT6X32CA<br>NT6X32AB(upg)                                    |
| 28<br>MIN PACKFL | Canada:<br>NT6X45BA<br>US:<br>NO CHANGE<br>from BCS 27<br>NT6X12CA<br>NT6X12AD(upg) | Canada:<br>NT6X45BA<br>US:<br>NO CHANGE<br>from BCS 27<br>NT6X12CA<br>NT6X12AD(upg) | Canada:<br>NT6X45BA<br>NO CHANGE<br>from BCS 27<br>NT6X32CA<br>NT6X32AB(upg) |
| 29<br>MIN PACKFL | NO CHANGE<br>from BCS 28<br>NT6X12CA<br>NT6X12AD(upg)                               | NO CHANGE<br>from BCS 28<br>NT6X12CA<br>NT6X12AD(upg)                               | NO CHANGE<br>from BCS 28<br>NT6X32CA<br>NT6X32AB(upg)                        |
| 30<br>MIN PACKFL | NO CHANGE<br>from BCS 29<br>NT6X12CA                                                | NO CHANGE<br>from BCS 29<br>NT6X12CA                                                | NO CHANGE<br>from BCS 29<br>NT6X32CA                                         |



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|                                      | NT6X12AD(upg)                                                                                              | NT6X12AD(upg)                                                                                              | NT6X32AB(upg)                                                                           |
|--------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| <b>31</b><br><hr/> <b>MIN PACKFL</b> | <b>NO CHANGE</b><br><b>from BCS 30</b><br><hr/> <b>NT6X12CA</b><br><b>NT6X12AD(upg)</b>                    | <b>NO CHANGE</b><br><b>from BCS 30</b><br><hr/> <b>NT6X12CA</b><br><b>NT6X12AD(upg)</b>                    | <b>NO CHANGE</b><br><b>from BCS 30</b><br><hr/> <b>NT6X32CA</b><br><b>NT6X32AB(upg)</b> |
| <b>32</b><br><hr/> <b>MIN PACKFL</b> | <b>NO CHANGE</b><br><b>from BCS 31</b><br><hr/> <b>NT6X12AG(new)</b><br><b>NT6X12CA</b><br><b>NT6X12AD</b> | <b>NO CHANGE</b><br><b>from BCS 31</b><br><hr/> <b>NT6X12AG(new)</b><br><b>NT6X12CA</b><br><b>NT6X12AD</b> | <b>NO CHANGE</b><br><b>from BCS 31</b><br><hr/> <b>NT6X32CA</b><br><b>NT6X32AB</b>      |
| <b>33</b><br><hr/> <b>MIN PACKFL</b> | <b>NO CHANGE</b><br><b>from BCS 32</b><br><hr/> <b>NT6X12AG(new)</b><br><b>NT6X12CA</b><br><b>NT6X12AD</b> | <b>NO CHANGE</b><br><b>from BCS 32</b><br><hr/> <b>NT6X12AG(new)</b><br><b>NT6X12CA</b><br><b>NT6X12AD</b> | <b>NO CHANGE</b><br><b>from BCS 32</b><br><hr/> <b>NT6X32CA</b><br><b>NT6X32AB</b>      |
| <b>34</b><br><hr/> <b>MIN PACKFL</b> | <b>NO CHANGE</b><br><b>from BCS 33</b><br><hr/> <b>NT6X12AG(new)</b><br><b>NT6X12CA</b><br><b>NT6X12AD</b> | <b>NO CHANGE</b><br><b>from BCS 33</b><br><hr/> <b>NT6X12AG(new)</b><br><b>NT6X12CA</b><br><b>NT6X12AD</b> | <b>NO CHANGE</b><br><b>from BCS 33</b><br><hr/> <b>NT6X32CA</b><br><b>NT6X32AB</b>      |

TABLE 3: BCS Requirements for RSC/Dual RSC/MS7E

| <div> <div>MODULE</div> <div>BCS</div> </div> | LCM                                                                                                                           | RLCM<br>(w/ESA)                                                                           | OPM<br>(w/ESA)                                                                            |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <div>26</div> <div>MIN PACKFL</div>           | <div>NO CHANGE</div> <div> NT6X03RA<br/> NT6X03RB<br/> NT6X04AA (LCM) </div>                                                  | <div>NO CHANGE</div> <div>NT6X11AA</div>                                                  | <div>NO CHANGE</div> <div>NT6X11AA</div>                                                  |
| <div>27</div> <div>MIN PACKFL</div>           | <div>NO CHANGE<br/>from BCS 26</div> <div> NT6X03RA<br/> NT6X03RB<br/> NT6X04AA (LCM) </div>                                  | <div>NO CHANGE<br/>from BCS 26</div> <div>NT6X11AA</div>                                  | <div>NO CHANGE<br/>from BCS 26</div> <div>NT6X11AA</div>                                  |
| <div>28</div> <div>MIN PACKFL</div>           | <div>Canada:<br/>NT6X51AB<br/>US:<br/>NO CHANGE<br/>from BCS 27</div> <div> NT6X03RA<br/> NT6X03RB<br/> NT6X04AA (LCM) </div> | <div>Canada:<br/>NT6X51AB<br/>US:<br/>NO CHANGE<br/>from BCS 27</div> <div>NT6X11AA</div> | <div>Canada:<br/>NT6X51AB<br/>US:<br/>NO CHANGE<br/>from BCS 27</div> <div>NT6X11AA</div> |
| <div>29</div> <div>MIN PACKFL</div>           | <div>NO CHANGE<br/>from BCS 28</div> <div> NT6X03RA<br/> NT6X03RB<br/> NT6X04AA (LCM) </div>                                  | <div>NO CHANGE<br/>from BCS 28</div> <div>NT6X11AA</div>                                  | <div>NO CHANGE<br/>from BCS 28</div> <div>NT6X11AA</div>                                  |

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|                        |                                                                         |                                             |                                             |
|------------------------|-------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------|
| 30<br><hr/> MIN PACKFL | NO CHANGE<br>from BCS 29<br><hr/> NT6X03RA<br>NT6X03RB<br>NT6X04AA(LCM) | NO CHANGE<br>from BCS 29<br><hr/> NT6X11AA  | NO CHANGE<br>from BCS 29<br><hr/> NT6X11AA  |
| 31<br><hr/> MIN PACKFL | NO CHANGE<br>from BCS 30<br><hr/> NT6X03RA<br>NT6X03RB<br>NT6X04AA(LCM) | NO CHANGE<br>from BCS 30<br><hr/> NT6X11AA  | NO CHANGE<br>from BCS 30<br><hr/> NT6X11AA  |
| 32<br><hr/> MIN PACKFL | NO CHANGE<br>from BCS 31<br><hr/> NT6X03RA<br>NT6X03RB<br>NT6X04AA(LCM) | NO CHANGE<br>from BCS 31<br><hr/> NT6X11AA  | NO CHANGE<br>from BCS 31<br><hr/> NT6X11AA  |
| 33<br><hr/> MIN PACKFL | NO CHANGE<br>from BCS 32<br><hr/> NT6X03RA<br>NT6X03RB<br>NT6X04AA(LCM) | Ext. MP Mem<br>(NT6X47AC)<br><hr/> NT6X11AA | Ext. MP Mem<br>(NT6X47AC)<br><hr/> NT6X11AA |
| 34<br><hr/> MIN PACKFL | NO CHANGE<br>from BCS 33<br><hr/> NT6X03RA<br>NT6X03RB<br>NT6X04AA(LCM) | NO CHANGE<br>from BCS 33<br><hr/> NT6X11AA  | NO CHANGE<br>from BCS 33<br><hr/> NT6X11AA  |

TABLE 4: BCS Requirements for LCM/RLCM/OPM

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0 3.3.3 ISDN Remote Switching Center (RCCI)

0 (a)

0 General Description

0 The ISDN RSC (RCCI) is part of the ongoing evolution of ISDN. The  
0 objective is to support ISDN both on new shipments and on  
0 retrofit of existing >in-service> RSCs. The NT6X1022 Change kit  
0 allows an existing NT6X12CA RCC to be converted to an RCCI. The  
0 additional equipment which must be added to the current RSC in-  
0 cludes an ISDN version of the LCM and RCC (LCMI and RCCI) and a  
0 Packet Handler. The RCCI will support ISDN Basic Rate Access  
0 (BRA), basic Emergency Stand Along (ESA) service, single or dual  
0 Universal Tone Receiver (UTR) (single UTR only when CLASS Modem  
0 Resource card is required), delivery of calling number to  
0 500/2500 sets (CND under CLASS) and all terminals and features  
0 supported by the existing RSC base as of BCS-28.

0 All call processing features available for ISDN loops on host pe-  
0 ripherals will be supported for the RCCI, in addition to the  
0 non-ISDN services currently available on the RCC. Host loop main-  
0 tenance features will be provided for ISDN loops on an RCCI and  
0 all standard maintenance features will be supported.

0 ISDN Basic Rate Interface (BRI) Services supported on RCCI are as  
0 follows:

- 0 o Stimulus signaling
- 0 o Functional signaling
- 0 o All supplementary services as offered to host lines
- 0 o Intraswitching of BRI calls
- 0 o Dynamic trunks - intra to BRI lines
- 0 o ESA - basic call set-up with either stimulus
- 0 or functional signalling is provided.
- 0 o Packet handler service during ESA can optionally be provided.

0 Primary Rate Interface (PRI) is not currently supported.

0 Several software enhancements to the RCCI were implemented in  
0 BCS-31. No reconfiguration nor additional hardware is required  
0 for these capabilities. The following list summarizes these  
0 BCS-31 enhancements:

- 0 - software added to have RCCI recognize and handle ISDN termi-  
0 nals and nodes while in ESA.

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- 0 - software added to have CC download ISDN terminal information  
0 to RCCI so that it is prepared to handle ISDN calls while in  
0 ESA mode.
- 0 - capability to intraswitch ISDN BRI calls on RCCI.
- 0 - support for Dual RCC with ISDN (DRCCI) during ESA or non-ESA  
0 conditions and trunks from RCCI during ESA. (Either one or  
0 both RSCs in DRCCI may support ISDN loops.)
- 0 - provides RCCI support of LCME and support for AMI U-loop  
0 linecard and 2B1Q ISDN U-loop linecard.
- 0 - provides RCCI support of Digital Test Access (DTA).

0 Figure 316.8 illustrates the general architecture of the RCCI.

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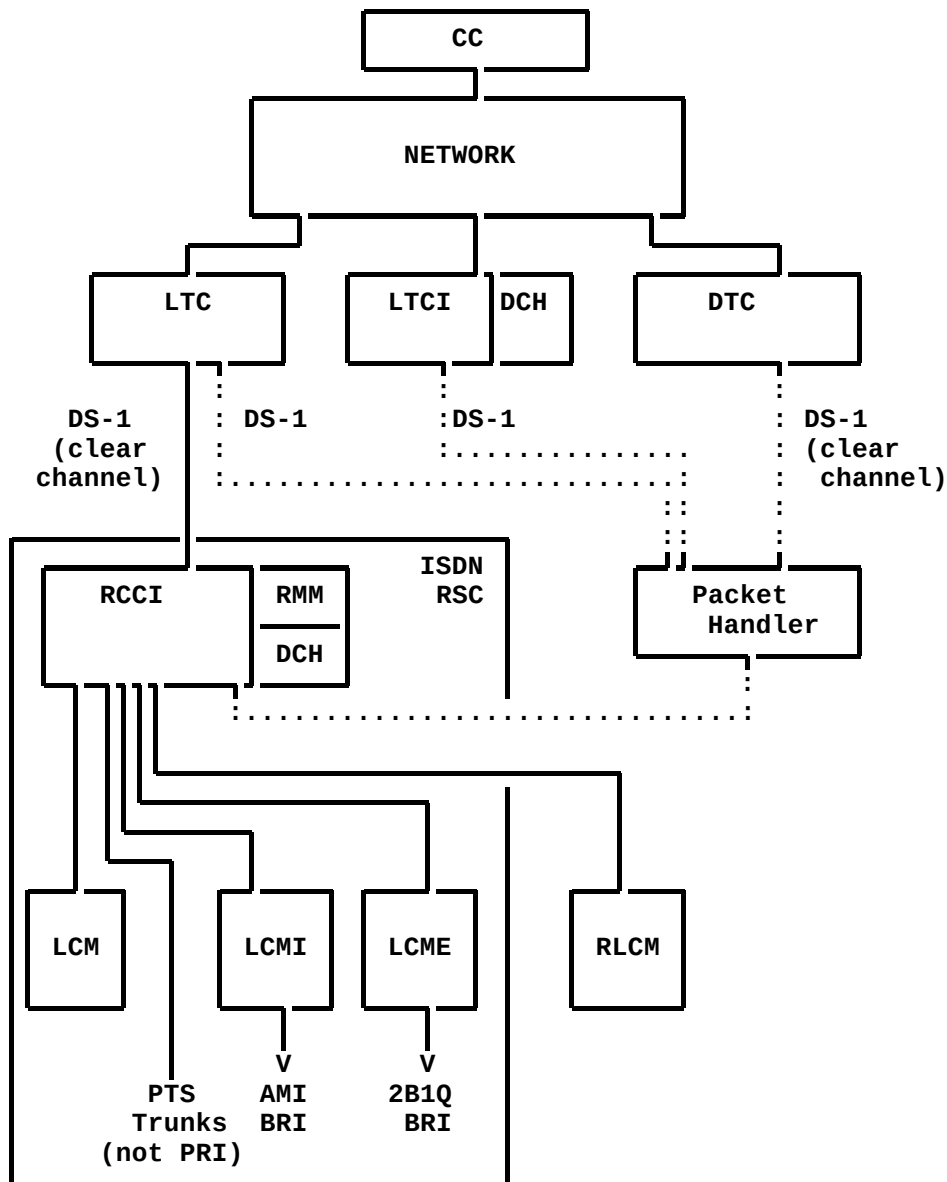


Figure 316.8 : DMS ISDN Architecture

In addition to RCC base functionality, the RCCI will support the following to provide ISDN functionality:

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- 0 o collection of both D and concentrated B channels from
- 0 LCMI/LCME via DS-30A ports.
- 0 o provision of front end Q.931 processing of D-Channels in ISP.
- 0 o routing D-Channels to D-Channel Handler.
- 0 o routing Bd and Bb packet data to P-side located packet han-
- 0 dler via intraswitched C-side channels or to host located
- 0 packet handler via C-side host umbilicals.
- 0 o routing switched B channels, if host destined via host
- 0 umbilicals or if not via intraswitching.
- 0 o handling all digit collection for CC.
- 0 o physically terminating DCH via DS-1 slots on P-side.

0 D-channels are multiplexed 4:1 and together with Bd and Bb links  
0 destined for the Packet Handler (PH) (if PH interface is from the  
0 P-side) are connected to the P-side using the intra switching ca-  
0 pability of the RCCI.

0 The DMS-100 Packet Handler can be co-located with the RCCI or co-  
0 located at the host DMS-100. The physical location of the Packet  
0 Handler is largely a tradeoff of ESA functionality and system  
0 cost. Links to the Packet Handler can be via one of the follow-  
0 ing:

- 0 o P-side links off host XPM (not routed via network)
- 0 o nailed up network connections terminating via DTC/DTCIs.
- 0 o P-side links off RCCI.

0 The host XPM can be an LTC, LTCI, LGC or LGCI. The host XPM has  
0 the following capabilities:

- 0 o terminates DS-1 umbilicals from RCCI and switches them
- 0 through to the network (non-concentrating).
- 0 o optionally can terminate LCMS directly. The host LGC/LTC need
- 0 NOT be upgraded to an LGCI/LTCI unless it supports a separate
- 0 LCMI in addition to the RCCI.
- 0 o must be LTC or LTCI if there are trunks off of the RCCI.

0 An RCCI with remote trunking that requires interface to a host  
0 LTCI is not available at this time.

0 The DS-1 umbilical for the RCCI must support 64Kbps clear chan-  
0 nels. The RCCI host umbilical restrictions are essentially the  
0 same as those for the RSC. The maximum distance is 100 miles. The  
0 intervening transmission network may be whatever the operating  
0 company chooses (e.g. copper, fiber, digital radio, etc.). Extended  
0 Super Frame format and Bipolar Coding with 8 Zeros Suppression  
0 (B8ZS) are required to support 64K clear channels.

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0 A Dual RCCI configuration is not yet available.

0 The NT6X10AE Offshore Remote Controller Equipment Frame (RCEI) is  
0 based on the domestic NT6X10AD ISDN RCE, adapted for Offshore  
0 markets. For remote applications it supports POTS, Centrex and  
0 limited ISDN services on standard International and ISDN Line  
0 Concentrating Modules (LCMs). PCM30 trunks link the RCEI to the  
0 host peripheral controller.

0 (b) References

0 Section 3.12 Peripheral Modules - Remotes  
0 Chapter 2 Traffic Criteria and Capacities

0 (c) Provisioning Considerations

0 ( i) The RCCI is currently available as new equipment only.  
0 Upgrades of existing RSC to RCCI are not supported.

0 ( ii) The NT6X10AD ISDN Remote Controller Equipment (RCEI)  
0 Frame is equipped with NT6X12DA RCCI Common CP, and pro-  
0 visioned with NT6X50AB DS-1 Interface CP, NTB02AA D-  
0 Channel Handler CP, and NT6X48AA DS-30A LCM Interface CP  
0 as required.

0 Engineering for the RCCI must take several factors into  
0 account:

- 0 o number of C-side ports
- 0 o number of P-side ports and slots (DS-30A & DS-1)
- 0 o number of DS-1 slots (incl. DCH)
- 0 o Speech Bus bandwidth
- 0 o MP,SP and ISP real time

0 The RCCI has 20 accessible P-side ports shared between  
0 DS-30A, DS-1 and optional PH interface. DCH use 1 P-side  
0 port and 1 DS-1 slot per DCH. The basic rules are:

0  $\lceil \text{DS-30A ports} \rceil + \lceil \text{DS-1 ports} \rceil + \lceil \text{DCH} \rceil \leq 19$   
0 (excl. RMM)

0  $\lceil \text{DS-1 slots} \rceil \leq 10$  (with each DCH using one slot)

0 Due to power limitations, use of NT6X78AA CLASS CMR  
0 will add the following rule:

0  $\lceil \text{DS-1 cards (C-side)} \rceil + \lceil \text{DS-1 cards (P-side)} \rceil \leq 10$  max



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0 Each DCH occupies a single P-side port and consumes one  
0 P-side DS-1 slot on the RCCI. The number of DCHs required  
0 depends on the number of D terminals per loop, user  
0 packet throughput on each D-channel and the stat mux ra-  
0 tio used in the DCH.

0 Each provisioned DCH reduces the number of available P-  
0 side DS-1 slots by one.

0 If there is no Bd, then 31 channels can be used for mux'd  
0 D-channels, meaning a D-Channel Handler can support a  
0 maximum of 124 lines. Typically, a DCH will support about  
0 108 D-channels. The RCCI supports a maximum of ten (9  
0 active + 1 hot spare) provisionable DCHs.

0 The number of LCMI/LCMEs that can be supported by the  
0 available P-side DS-30A ports will depend on the number  
0 of ISDN loops per LCMI/LCME, the number of provisioned B  
0 packet channels and circuit switched B channel traffic  
0 levels. A minimum of two DS-30A links are required per  
0 LCMI/LCME.

0 ( iii) The RSC supports both (AMI) LCMIs and (2B1Q) LCMEs. The  
0 LCME does not support the AMI U-loop linecard nor coin  
0 lines.

0 ( iv) The 2B1Q requires the Multiline Test Unit (MTU) for the  
0 line test function. If 2B1Q lines home on the RCCI, the  
0 RMM must be equipped with an MTU pair. Refer to section  
0 3.5 for more information on the MTU.

0 ( v) The NT6X78AA CLASS Modem Resource (CMR) card is provided  
0 to support Custom Local Area Signaling Services (CLASS)/  
0 Call Management Services (CMS). When the CMR card is  
0 equipped, the RCCI is limited to one (1) Universal Tone  
0 Receiver card. Dual UTRs can be supported if the CMR  
0 card is not required.

0 If the CMR card is present, a maximum of ten NT6X50AB  
0 DS-1 cards can be supported, thereby limiting C-side and  
0 P-side to a maximum of 20 DS-1 ports in the RCCI.

0 ( vi) The Remote Maintenance Module (RMM) datafill will be  
0 identical to the current RCC. Ports 0 and 1 will be re-  
0 served for RMM use.

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0 ( vii) Preliminary Real Time data indicates that the RCCI is not  
0 limited by Real Time constraints for any level of traf-  
0 fic.

0 (viii) The RCCI is available in a 7-foot shrouded frame for EMI  
0 applications. EMI and earthquake compliance is unchanged  
0 from that provided for the RSC.

0 ( ix) ISDN Packet Services on a RCCI are the same as those on a  
0 host LTCI, making use of the same Packet Handler (PH) at  
0 the host. If ESA is needed, either a complete remote PH  
0 or a remote access module may be deployed. If the avail-  
0 ability benefits afforded by ESA are not required, the  
0 RCCI can use the PH deployed at the host. There are  
0 three ways the RCCI can be linked to the host PH for pro-  
0 visioned packet data services:

- 0 o direct P-side DS-1 port off RCCI
- 0 o nailed up via host umbilical but looped back in
- 0 host XPM and routed out on DS-1 links to PH
- 0 o nailed up via host umbilical and host network

0 Remote deployment of a DMS-100 Packet Handler at the re-  
0 mote location maximizes the remote's ESA functionality  
0 but a more cost effective option is to deploy only a re-  
0 mote Access Module (AM). The remote AM is recommended  
0 only under the following circumstances:

- 0 o majority of packet traffic is local to the
- 0 remote.
- 0 o ESA is required for packet services.
- 0 o reduced connectivity in ESA is acceptable.

0 During ESA, the Access Module will maintain all calls lo-  
0 cal to that AM and will allow the set-up of new calls lo-  
0 cal to that AM, provided that the link to the AM remains  
0 intact.

0 ( x) Extended Super Frame (ESF) must be used when the Packet  
0 Handler is host located or when a high percentage of the  
0 circuit switched data traffic is host bound.

0 | ( xi) NT6X10AE Offshore Remote Controller Equipment Frame

0 | Unlike its domestic equivalent, the Offshore RCEI frame  
0 houses only one (1) Remote Maintenance Module (RMM)

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0 shelf. The Remote Cluster Controller shelf is abbrevi-  
0 ated >PRCC> (PCM-30 Remote Cluster Controller).

0 Note that the following features are NOT supported on the  
0 Offshore RCEI:

- 0 - P-side PCM-30 links
- 0 - ISDN Primary Rate Interface (PRI)
- 0 - Emergency Standalone (ESA) - planned for a future BCS
- 0 - Intraswitched calls (all calls must be switched via  
0 the host office; this must be taken into account when  
0 provisioning host links)
- 0 - Dual RCC
- 0 - Remote off remote
- 0 - Data Unit line cards

0 In BCS-31, ISDN Basic Rate Interface (BRI) is not sup-  
0 ported. This restriction is removed in BCS-32, at which  
0 time LCMI and LCME modules may be interfaced to the PRCC.  
0 Line Drawer 00, slot 00 must not be datafilled.

0 All PCM30 links from a PRCC must terminate on the same  
0 host PLGC. Only the PLGC peripheral type can terminate  
0 PRCC host links.

0 (xii) The Offshore versions of the Common Peripheral Controller  
0 Equipment Frame and Remote Controller Equipment Frame are  
0 provisioned the same as their domestic counterparts (sub-  
0 ject to the usage restrictions). The primary difference  
0 is the use of PCM-30 interfaces instead of DS-1 inter-  
0 faces.

0 A maximum of sixteen (16) PCM-30 interfaces may be  
0 equipped on the PLGC/PDTC versus twenty (20) DS-1 inter-  
0 faces on the North American product.

0 Provision one (1) NT6X27AC PCM-30 Interface CP for every  
0 two PCM-30 interfaces required.

0

0 | Certain other circuit pack vintages are different between  
0 | domestic and Offshore products; refer to the Engineering  
0 | Manual sections for details.

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0 4.0 Building Block ENGINEERING - RLCM

0 The purpose of this ECM is to document the DMS Building Block approach  
0 for capturing the provisioning of the Remote Line Concentrating Module  
0 (RLCM) and IRLCM.

0 There are three (3) components to this ECM,

- 0 RLCM Customer Questions
- 0 RLCM Calculations
- 0 Engineering Manual Sections

0 RLCM Customer Questions - Worksheet of Telco inputs derived at the  
0 time of order capture. Inputs from this section will be abbreviated  
0 with a 'Q', a number and a letter (for example, Q1a represents Question  
0 1, subsection a).

0 RLCM Calculations - Worksheet of provisioning algorithms driven from  
0 the results of RLCM Customer Questions. Inputs from this section will  
0 be abbreviated with a 'C', a number and a letter (for example, C1a re-  
0 presents Calculation 1, subsection a).

0 Engineering Manual Section - Detailed description of the provisioning  
0 guidelines adjusted for Building Block Engineering.

0 4.1 HARDWARE PROVISIONING

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0 4.1.1 HARDWARE USAGE RESTRICTIONS

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0 Not Applicable

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0 4.1.2 HARDWARE DEPENDENCIES

0  
0 Not Applicable

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 The RLCM requires a minimum of two and a maximum of six DS-1  
0 links to the host. The two minimum links are the primary links.  
0 Each DS-1 interface card (NT6X50AA) connects two DS-1 links be-  
0 tween the RLCM and the host XPM. All DS-1 links must terminate on  
0 the same host peripheral. For reliability, the primary links  
0 should terminate on different NT6X50AA interface cards at the  
0 host and on the RLCM.

0 The IRLCM requires a minimum of four and a maximum of six PCM-30  
0 links. Four are always provided by the HIE Common CP  
0 NT6X11BA/BB/BC/EA/ EB/KA. If more than four PCM-30 links are re-  
0 quired, provide 1 additional PCM-30 NT6X27BB Interface Pack.

## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

## 0 CIRCUITS PER CARD

0  
0 Not Applicable

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## 0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0 4.1.3 PROVISIONING CONSIDERATIONS

0  
0 The following sections contain the questions and the calculations  
0 required for RLCM provisioning. Options included are: FSP, RMM  
0 Packfill, HIE Packfill, LCM Packfill, and Miscellaneous Equip-  
0 ment.

## 0 RLCM CUSTOMER QUESTIONS

0  
0 Detailed below are questions asked of the "Customer" which are  
0 designed to trigger the use of specific Building Blocks.

0 1. No longer used

0 2. No longer used

0 3. No longer used

0 4. No longer used

0 5. RLCM Powering

0 a. Will the RLCM(s) be powered from a RME?  
0 (Enter Y/N) \_\_\_\_\_

0 b. Will the RLCM(s) be powered from a PDC  
0 (Enter Y/N) \_\_\_\_\_

0 c. Will the RLCM(s) be powered from the RLCM's FSP?

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- 0 (Enter Y/N) \_\_\_\_\_
- 0 6. Will the RLCM(s) require ESA capability  
0 (Enter Y/N) \_\_\_\_\_
- 0 7. Trunk Circuits Required (NT2X90--)
- 0 a. No. 3 Local Test Cab. (Enter Quantity) \_\_\_\_\_
- 0 b. No. 14 Local Test Desk (Enter Quantity) \_\_\_\_\_
- 0 c. 3703 Local Test Cab. (Enter Quantity) \_\_\_\_\_
- 0 d. MTU (talk/mon MTA I/F) (enter Quantity) \_\_\_\_\_
- 0 e. Verification access (Enter Quantity) \_\_\_\_\_
- 0 f. Coin line test interface (Enter Quantity) \_\_\_\_\_
- 0 g. Mechanized Loop Test (LT) (Enter Quantity) \_\_\_\_\_
- 0 8. Scan Points Required (NT0X10--)
- 0 a. points required for DMS alarms (Enter Quantity) \_\_\_\_\_
- 0 b. points required for telco alarms  
0 (Enter Quantity) \_\_\_\_\_
- 0 c. points required for hunting (Enter Quantity) \_\_\_\_\_
- 0 d. points required for network management  
0 (Enter Quantity) \_\_\_\_\_
- 0 e. points required for modem shelf power failure  
0 (Enter Quantity) \_\_\_\_\_
- 0 f. points required for AC failure alarm  
0 (Enter Quantity) \_\_\_\_\_
- 0 g. points required for span protection alarm  
0 (Enter Quantity) \_\_\_\_\_
- 0 9. Signal Distribution Applications Required (NT2X57AA)
- 0 a. points required for DMS alarms (Enter Quantity) \_\_\_\_\_
- 0 b. points required for telco alarms (Enter Quantity) \_\_\_\_\_



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0 c. points required for hunting (Enter Quantity) \_\_\_\_\_

0 d. points required for network management  
0 (Enter Quantity) \_\_\_\_\_

0 e. points required for carrier line test applique  
0 (Enter Quantity) \_\_\_\_\_

0 f. points required for conference and alert  
0 (Enter Quantity) \_\_\_\_\_

0 10. Remote Maintenance Module

0 a. Is the RMM - Standard layout Canadian Applications  
0 required? Enter (Y/N) \_\_\_\_\_

0 b. Is the RMM - Standard layout US Applications required?  
0 Enter (Y/N) \_\_\_\_\_

0 c. Is the RMM - Standard layout UK Applications required?  
0 Enter (Y/N) \_\_\_\_\_

0 d. Is the RMM - Standard layout TURKEY Applications re-  
0 quired?  
0 Enter (Y/N) \_\_\_\_\_

0 e. Is the RMM - Standard layout CEP Applications required?  
0 Enter (Y/N) \_\_\_\_\_

0 11. Line Drawers (U. S. Offices)

0 a. What quantity of line drawers is required for the RLCM?  
0 Range = 1 - 10 (64 Lines maximum per line drawer)  
0 (Enter Quantity) \_\_\_\_\_

0 12. Line Drawers (CALA and CANADIAN Offices)

0 a. What quantity of line drawers is required for the RLCM?  
0 Range = 1 - 10 (64 Lines maximum per line drawer)  
0 (Enter Quantity) \_\_\_\_\_

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## 0 RLCM CALCULATIONS

0  
0 C4. RLCM Requirement

0 a. Quantity of RLCM = R29 from ECM 497 \_\_\_\_\_

0 C5. Choose link configuration for RLCM(s)

0 Calculations C5 a thru f has been deleted.

0 g. Links per RLCM (ABSBH) = R34 from ECM 497 \_\_\_\_\_

0 h. Links per RLCM (HDBH) = R35 from ECM 497 \_\_\_\_\_

0 i. Links per RLCM = R36 from ECM 497 \_\_\_\_\_

0 j. Host Links per RLCM = R37 from ECM 497 \_\_\_\_\_

0 C6 a. Total NT2X90--s needed

0 (Q7a+Q7b+Q7c+Q7d+Q7e+Q7f+Q7g) =  
0 (Enter Quantity) \_\_\_\_\_

0 b. Total NT0X10--s needed  
0 (Q8a+Q8b+Q8c+Q8d+Q8e+Q8f+Q8g)/14 =  
0 (Round Up, Enter Quantity) \_\_\_\_\_

0 c. Total NT2X57--s needed  
0 (Q9a+Q9b+Q9c+Q9d+Q9e+Q9f)/14 =  
0 (Round Up, Enter Quantity) \_\_\_\_\_

0 C7. Remote Maintenance Module

0 For Canadian applications, a choice of RMM - Standard layout  
0 or RMM - Custom layout is available. For U.S. applications,  
0 the RLCM frame is always provided with a standard RMM layout.  
0 The Standard RMMs are always provided with a basic complement  
0 of circuits used for remote testing, plus a number of free  
0 slots available to be provisioned per office requirements.  
0 The following calculations are used to assist in provisioning  
0 these slots.

0 a. Extra NT2X90-- provisioning : C6a - (2\*C4a) = \_\_\_\_\_

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0 b. Extra NT0X10-- provisioning : C6b - (1\*C4a) = \_\_\_\_\_

0 c. Extra NT2X57-- provisioning : C6c - (1\*C4a) = \_\_\_\_\_

0 Note: C6a+C6b+C6c cannot exceed 2 free slots per RLCM  
0 (Canadian standard RMM) or 4 free slots per RLCM  
0 (U.S. standard RMM)

0 RLCM PROVISIONING

0  
0 1a. For Canadian applications provide a quantity of NTZZ16AC  
0 RLCM frames = C4a.

0 For International applications provide a quantity of of  
0 NTZZ41RA frames = C4a.

0 For CALA and Canadian applications that require a a specific  
0 number of Line Drawers provide a quantity of NTZZ16LA frames  
0 = C4a.

0 1b. For U.S. offices, provide a quantity of NTZZ16ED RLCM frames  
0 = C4a. Each NTZZ16ED requires one NTZZ16HA either one  
0 NT0X25AA Common Framework or one NT0X25AH Earthquake Common  
0 Framework.

0 2a. If Question 5a.1 is Y, provide one NTZZ16BA per NTZZ16AC or  
0 NTZZ16ED and provide a RME frame.

0 NTZZ15AA RME w/PDC (Canadian offices)  
0 NTZZ15CA RME w/PDC (US non-earthquake offices)

0 2b. If Question 5a.2 is Y, provide one NTZZ16BA per NTZZ16AC or  
0 NTZZ16ED and provide a PDC frame.

0 NTZZ13AA PDC Top Feed (Canadian offices)  
0 NTZZ13BA PDC Bottom Feed (Canadian offices)  
0 NTZZ13HA PDC Top Feed (US non-earthquake offices)  
0 NTZZ13JA PDC Bottom Feed (US non-earthquake offices)

0 3. If Question 5b is Yes, provide one NTZZ16CA per NTZZ16AC or  
0 NTZZ16ED.

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- 0 4. If Question 6 is Yes, provide one NTZZ16DB per NTZZ16AC or  
0 NTZZ16ED or NTZZ16LA.
- 0 . If Question 6 is Yes, and this is for the CHINA market then  
0 provide one NTZZ41UA per NTZZ41RA.
- 0 . If Question 6 is Yes, and this is for the CEP market then  
0 provide one NTZZ41VA per NTZZ41RA.
- 0 . If Question 6 is Yes, and this is for the MURCURY market then  
0 provide one NTZZ41WA per NTZZ41RA.
- 0 5. Extra RMM circuit pack provisioning
- 0 a. Provide quantity of NT2X90--s specified in C6a + one (1)  
0 NT2X77AA per NT2X90-- provided.
- 0 b. Provide quantity of NT0X10--s specified in C6b.
- 0 c. Provide quantity of NT2X57--s specified in C6c.
- 0 6. If Calculation 5i equals 5 or 6, provide one NT6X50AA.
- 0 7. If Question 10a is Yes, provide one NTZZ16FA RMM - Standard.  
0 If Question 10a is No, provide one NT6X13AB RMM - Custom
- 0 8. For U.S. offices, provide a quantity of NT6X05AA line drawers  
0 equal to Q11a.
- 0 9. If Question 10c is YES, provide one NTZZ41KA RMM.
- 0 10 If Question 10d is YES, provide one NTZZ41SA RMM.
- 0 11 If Question 10e is YES, provide one NTZZ41TA RMM.
- 0 12 For CALA applications, provide a quantity of NT6X05AA Line  
0 Drawers equal to Q12a.

0 4.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not Applicable

0 4.1.5 TRAFFIC TABLES

0  
0 Refer to ECM-497 for Traffic Tables and Traffic provisioning con-  
0 siderations.

0 4.2 PRODUCT/SYSTEM SPECIFICATION

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0 4.2.1 PHYSICAL CHARACTERISTICS

0

0 NT6X14AA - RLCM Frame

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0 Input Voltage.....-48VDC at -42.75 To 55.8 Volts  
0 Power Consumption.....N/A  
0 Current Drain.....N/A  
0 Thermal Dissipation.....N/A  
0 Fusing Requirements.....2, 7 or 9 20Amp Fuses as follows:

0 RLCM W/O PDC This option with Analog Ringing require five A-  
0 Feeds and four B-Feeds fused at 20amps each.

0 RLCM W/O PDC This option without Analog Ringing require four  
0 A-Feeds and three B-Feeds, fused at 20amps each.

0 RLCM With PDC This option requires one A-Feed and one B-Feed,  
0 fused at 20amps each.

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0 4.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Refer to EMA15-03-000 EMI requirements.

0 4.2.3 SPARING INFORMATION

0  
0 Standard sparing algorithms apply.

0 4.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 4.2.5 CURRENT DRAIN INFORMATION

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0 4.3 SOFTWARE PROVISIONING

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0 4.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The following S/W packages are required in the Host office:

0

0 NTX146AA - RLCM Basic  
0 NTX156AA - RLCM Intra-Switching  
0 NTX154AA - RLCM Emergency Stand Alone  
0 NTX653AA - IRLCM - ESA

0 4.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not Applicable

0 4.3.3 MEMORY PROVISIONING

0  
0 Not Applicable in the RLCM.

0 4.4 REAL TIME IMPACT

0 Not Applicable

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0 5.0 Building Block ENGINEERING - RLCM

0 The purpose of this ECM is to document the DMS Building Block approach  
0 for capturing the provisioning of the Remote Line Concentrating Module  
0 (RLCM) and IRLCM.

0 There are three (3) components to this ECM,

- 0 RLCM Customer Questions
- 0 RLCM Calculations
- 0 Engineering Manual Sections

0 RLCM Customer Questions - Worksheet of Telco inputs derived at the  
0 time of order capture. Inputs from this section will be abbreviated  
0 with a 'Q', a number and a letter (for example, Q1a represents Question  
0 1, subsection a).

0 RLCM Calculations - Worksheet of provisioning algorithms driven from  
0 the results of RLCM Customer Questions. Inputs from this section will  
0 be abbreviated with a 'C', a number and a letter (for example, C1a re-  
0 presents Calculation 1, subsection a).

0 Engineering Manual Section - Detailed description of the provisioning  
0 guidelines adjusted for Building Block Engineering.

0 5.1 HARDWARE PROVISIONING

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0 5.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 Not Applicable

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0 5.1.2 HARDWARE DEPENDENCIES

0  
0 Not Applicable

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 The RLCM requires a minimum of two and a maximum of six DS-1  
0 links to the host. The two minimum links are the primary links.  
0 Each DS-1 interface card (NT6X50AA) connects two DS-1 links be-  
0 tween the RLCM and the host XPM. All DS-1 links must terminate on  
0 the same host peripheral. For reliability, the primary links  
0 should terminate on different NT6X50AA interface cards at the  
0 host and on the RLCM.

0 The IRLCM requires a minimum of four and a maximum of six PCM-30  
0 links. Four are always provided by the HIE Common CP  
0 NT6X11BA/BB/BC/EA/ EB/KA. If more than four PCM-30 links are re-  
0 quired, provide 1 additional PCM-30 NT6X27BB Interface Pack.

## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

## 0 CIRCUITS PER CARD

0  
0 Not Applicable

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## 0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0 5.1.3 PROVISIONING CONSIDERATIONS

0  
0 The following sections contain the questions and the calculations  
0 required for RLCM provisioning. Options included are: FSP, RMM  
0 Packfill, HIE Packfill, LCM Packfill, and Miscellaneous Equip-  
0 ment.

## 0 RLCM CUSTOMER QUESTIONS

0  
0 Detailed below are questions asked of the "Customer" which are  
0 designed to trigger the use of specific Building Blocks.

0 1. No longer used

0 2. No longer used

0 3. No longer used

0 4. No longer used

0 5. RLCM Powering

0 a. Will the RLCM(s) be powered from a RME?  
0 (Enter Y/N) \_\_\_\_\_

0 b. Will the RLCM(s) be powered from a PDC  
0 (Enter Y/N) \_\_\_\_\_

0 c. Will the RLCM(s) be powered from the RLCM's FSP?

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- 0 (Enter Y/N) \_\_\_\_\_
- 0 6. Will the RLCM(s) require ESA capability  
0 (Enter Y/N) \_\_\_\_\_
- 0 7. Trunk Circuits Required (NT2X90--)
- 0 a. No. 3 Local Test Cab. (Enter Quantity) \_\_\_\_\_
- 0 b. No. 14 Local Test Desk (Enter Quantity) \_\_\_\_\_
- 0 c. 3703 Local Test Cab. (Enter Quantity) \_\_\_\_\_
- 0 d. MTU (talk/mon MTA I/F) (enter Quantity) \_\_\_\_\_
- 0 e. Verification access (Enter Quantity) \_\_\_\_\_
- 0 f. Coin line test interface (Enter Quantity) \_\_\_\_\_
- 0 g. Mechanized Loop Test (LT) (Enter Quantity) \_\_\_\_\_
- 0 8. Scan Points Required (NT0X10--)
- 0 a. points required for DMS alarms (Enter Quantity) \_\_\_\_\_
- 0 b. points required for telco alarms  
0 (Enter Quantity) \_\_\_\_\_
- 0 c. points required for hunting (Enter Quantity) \_\_\_\_\_
- 0 d. points required for network management  
0 (Enter Quantity) \_\_\_\_\_
- 0 e. points required for modem shelf power failure  
0 (Enter Quantity) \_\_\_\_\_
- 0 f. points required for AC failure alarm  
0 (Enter Quantity) \_\_\_\_\_
- 0 g. points required for span protection alarm  
0 (Enter Quantity) \_\_\_\_\_
- 0 9. Signal Distribution Applications Required (NT2X57AA)
- 0 a. points required for DMS alarms (Enter Quantity) \_\_\_\_\_
- 0 b. points required for telco alarms (Enter Quantity) \_\_\_\_\_

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0 c. points required for hunting (Enter Quantity) \_\_\_\_\_

0 d. points required for network management  
0 (Enter Quantity) \_\_\_\_\_

0 e. points required for carrier line test applique  
0 (Enter Quantity) \_\_\_\_\_

0 f. points required for conference and alert  
0 (Enter Quantity) \_\_\_\_\_

0 10. Remote Maintenance Module

0 a. Is the RMM - Standard layout Canadian Applications  
0 required? Enter (Y/N) \_\_\_\_\_

0 b. Is the RMM - Standard layout US Applications required?  
0 Enter (Y/N) \_\_\_\_\_

0 c. Is the RMM - Standard layout UK Applications required?  
0 Enter (Y/N) \_\_\_\_\_

0 d. Is the RMM - Standard layout TURKEY Applications re-  
0 quired?  
0 Enter (Y/N) \_\_\_\_\_

0 e. Is the RMM - Standard layout CEP Applications required?  
0 Enter (Y/N) \_\_\_\_\_

0 11. Line Drawers (U. S. Offices)

0 a. What quantity of line drawers is required for the RLCM?  
0 Range = 1 - 10 (64 Lines maximum per line drawer)  
0 (Enter Quantity) \_\_\_\_\_

0 12. Line Drawers (CALA and CANADIAN Offices)

0 a. What quantity of line drawers is required for the RLCM?  
0 Range = 1 - 10 (64 Lines maximum per line drawer)  
0 (Enter Quantity) \_\_\_\_\_

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## 0 RLCM CALCULATIONS

0  
0 C4. RLCM Requirement

0 a. Quantity of RLCM = R29 from ECM 497 \_\_\_\_\_

0 C5. Choose link configuration for RLCM(s)

0 Calculations C5 a thru f has been deleted.

0 g. Links per RLCM (ABSBH) = R34 from ECM 497 \_\_\_\_\_

0 h. Links per RLCM (HDBH) = R35 from ECM 497 \_\_\_\_\_

0 i. Links per RLCM = R36 from ECM 497 \_\_\_\_\_

0 j. Host Links per RLCM = R37 from ECM 497 \_\_\_\_\_

0 C6 a. Total NT2X90--s needed

0 (Q7a+Q7b+Q7c+Q7d+Q7e+Q7f+Q7g) =  
0 (Enter Quantity) \_\_\_\_\_0 b. Total NT0X10--s needed  
0 (Q8a+Q8b+Q8c+Q8d+Q8e+Q8f+Q8g)/14 =  
0 (Round Up, Enter Quantity) \_\_\_\_\_0 c. Total NT2X57--s needed  
0 (Q9a+Q9b+Q9c+Q9d+Q9e+Q9f)/14 =  
0 (Round Up, Enter Quantity) \_\_\_\_\_

0 C7. Remote Maintenance Module

0 For Canadian applications, a choice of RMM - Standard layout  
0 or RMM - Custom layout is available. For U.S. applications,  
0 the RLCM frame is always provided with a standard RMM layout.  
0 The Standard RMMs are always provided with a basic complement  
0 of circuits used for remote testing, plus a number of free  
0 slots available to be provisioned per office requirements.  
0 The following calculations are used to assist in provisioning  
0 these slots.

0 a. Extra NT2X90-- provisioning : C6a - (2\*C4a) = \_\_\_\_\_

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0 b. Extra NT0X10-- provisioning : C6b - (1\*C4a) = \_\_\_\_\_

0 c. Extra NT2X57-- provisioning : C6c - (1\*C4a) = \_\_\_\_\_

0 Note: C6a+C6b+C6c cannot exceed 2 free slots per RLCM  
0 (Canadian standard RMM) or 4 free slots per RLCM  
0 (U.S. standard RMM)

0 RLCM PROVISIONING

0  
0 1a. For Canadian applications provide a quantity of NTZZ16AC  
0 RLCM frames = C4a.

0 For International applications provide a quantity of of  
0 NTZZ41RA frames = C4a.

0 For CALA and Canadian applications that require a a specific  
0 number of Line Drawers provide a quantity of NTZZ16LA frames  
0 = C4a.

0 1b. For U.S. offices, provide a quantity of NTZZ16ED RLCM frames  
0 = C4a. Each NTZZ16ED requires one NTZZ16HA either one  
0 NT0X25AA Common Framework or one NT0X25AH Earthquake Common  
0 Framework.

0 2a. If Question 5a.1 is Y, provide one NTZZ16BA per NTZZ16AC or  
0 NTZZ16ED and provide a RME frame.

0 NTZZ15AA RME w/PDC (Canadian offices)  
0 NTZZ15CA RME w/PDC (US non-earthquake offices)

0 2b. If Question 5a.2 is Y, provide one NTZZ16BA per NTZZ16AC or  
0 NTZZ16ED and provide a PDC frame.

0 NTZZ13AA PDC Top Feed (Canadian offices)  
0 NTZZ13BA PDC Bottom Feed (Canadian offices)  
0 NTZZ13HA PDC Top Feed (US non-earthquake offices)  
0 NTZZ13JA PDC Bottom Feed (US non-earthquake offices)

0 3. If Question 5b is Yes, provide one NTZZ16CA per NTZZ16AC or  
0 NTZZ16ED.

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- 0 4. If Question 6 is Yes, provide one NTZZ16DB per NTZZ16AC or  
0 NTZZ16ED or NTZZ16LA.
- 0 . If Question 6 is Yes, and this is for the CHINA market then  
0 provide one NTZZ41UA per NTZZ41RA.
- 0 . If Question 6 is Yes, and this is for the CEP market then  
0 provide one NTZZ41VA per NTZZ41RA.
- 0 . If Question 6 is Yes, and this is for the MURCURY market then  
0 provide one NTZZ41WA per NTZZ41RA.
- 0 5. Extra RMM circuit pack provisioning
- 0 a. Provide quantity of NT2X90--s specified in C6a + one (1)  
0 NT2X77AA per NT2X90-- provided.
- 0 b. Provide quantity of NT0X10--s specified in C6b.
- 0 c. Provide quantity of NT2X57--s specified in C6c.
- 0 6. If Calculation 5i equals 5 or 6, provide one NT6X50AA.
- 0 7. If Question 10a is Yes, provide one NTZZ16FA RMM - Standard.  
0 If Question 10a is No, provide one NT6X13AB RMM - Custom
- 0 8. For U.S. offices, provide a quantity of NT6X05AA line drawers  
0 equal to Q11a.
- 0 9. If Question 10c is YES, provide one NTZZ41KA RMM.
- 0 10 If Question 10d is YES, provide one NTZZ41SA RMM.
- 0 11 If Question 10e is YES, provide one NTZZ41TA RMM.
- 0 12 For CALA applications, provide a quantity of NT6X05AA Line  
0 Drawers equal to Q12a.

0 5.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not Applicable

0 5.1.5 TRAFFIC TABLES

0  
0 Refer to ECM-497 for Traffic Tables and Traffic provisioning con-  
0 siderations.

0 5.2 PRODUCT/SYSTEM SPECIFICATION

0

0 5.2.1 PHYSICAL CHARACTERISTICS

0

0 NT6X14AA - RLCM Frame

0

0 Input Voltage.....-48VDC at -42.75 To 55.8 Volts  
0 Power Consumption.....N/A  
0 Current Drain.....N/A  
0 Thermal Dissipation.....N/A  
0 Fusing Requirements.....2, 7 or 9 20Amp Fuses as follows:

0 RLCM W/O PDC           This option with Analog Ringing require five A-  
0 Feeds and four B-Feeds fused at 20amps each.

0 RLCM W/O PDC           This option without Analog Ringing require four  
0 A-Feeds and three B-Feeds, fused at 20amps each.

0 RLCM With PDC           This option requires one A-Feed and one B-Feed,  
0 fused at 20amps each.

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0 5.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Refer to EMA15-03-000 EMI requirements.

0 5.2.3 SPARING INFORMATION

0  
0 Standard sparing algorithms apply.

0 5.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0  
0 5.2.5 CURRENT DRAIN INFORMATION

0

0 5.3 SOFTWARE PROVISIONING

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0 5.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The following S/W packages are required in the Host office:

0

0 NTX146AA - RLCM Basic  
0 NTX156AA - RLCM Intra-Switching  
0 NTX154AA - RLCM Emergency Stand Alone  
0 NTX653AA - IRLCM - ESA

0 5.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not Applicable

0 5.3.3 MEMORY PROVISIONING

0  
0 Not Applicable in the RLCM.

0 5.4 REAL TIME IMPACT

0 Not Applicable

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## 0 6.0 Remote Line Concentrating Module (RLCM)

0 The Remote Line Concentrating Module (RLCM) is a DMS-100F remote. The  
0 RLCM is based on the Line Concentrating Module (LCM). The RLCM pro-  
0 vides an interface for up to 640 remote subscribers and is packaged in  
0 a single DMS-100F frame. The following modules make up the RLCM (See  
0 Figure 1):

- 0 \* Frame Supervisory Panel (FSP)
- 0 \* Remote Maintenance Module (RMM)
- 0 \* Host Interface Equipment (HIE)
- 0 \* Line Concentrating Module (LCM)

### 0 Frame Supervisory Panel (FSP)

0 The FSP contains power control and alarm circuits which provide  
0 interfaces between the Power Distribution Center (PDC) and other  
0 DMS100F equipment frames. Office Repeaters, Filler Face Plates,  
0 and Fault Locator circuits are provisionable to the FSP.

### 0 Line Concentrating Module (LCM)

0 The LCM is a two-shelf configuration housing 640 subscriber line  
0 cards in 10 line drawers (5 per shelf).

### 0 Remote Maintenance Module (RMM)

0 The RMM provides the LCM with access to test and service circuits  
0 at the remote site (thereby reducing the load on the RLCM-TO-HOST  
0 DS1 Links). The RMM C-Side interfaces the LCM via a pair of  
0 DS30A links, one to each Link Control Card (LCC) in the HIE. The  
0 RMM shelf can accommodate up to 14 test/service circuits which are  
0 selected from a variety of types to meet the office requirements.

### 0 Host Interface Shelf (HIE)

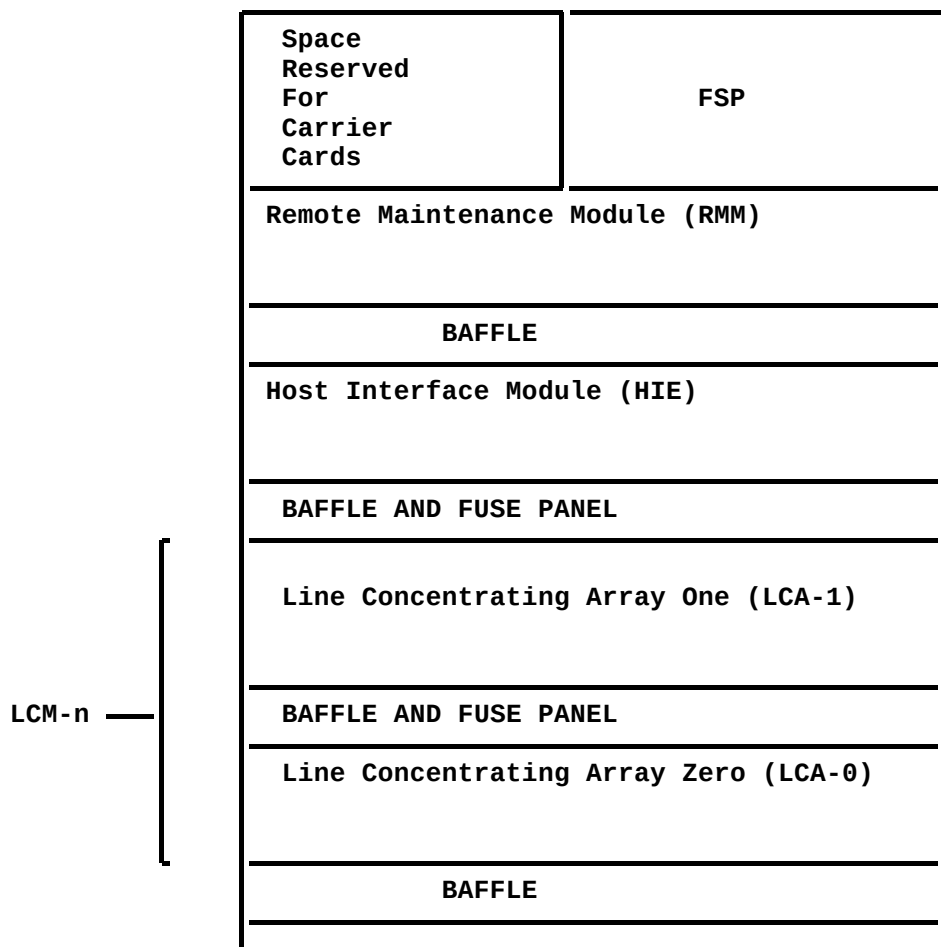
0 The HIE equipment is required to enable the RLCM to support C-  
0 Side Links. The HIE provides a two-way interface between the  
0 Host office DS1-Links (Located in a LGC or LTC) and DS30A-Links  
0 (Located in the RLCM).

0 The RLCM supports all of the existing line features now supported  
0 at the host. Other available RLCM features include:

0 Intra-Switching An optional software feature allowing  
0 all calls originating and terminating  
0 within the RLCM to be switched without  
0 using the DS1 links to the host.

0 Emergency Stand Alone An optional feature providing the RLCM  
0 with the intelligence to continue ser-  
0 vice for intra-switched traffic in the  
0 event of a loss of communication with  
0 the host.

REMOTE LINE CONCENTRATING MODULE (RLCM) FRAME



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0 Figure 1: RLCM Shelf And Panel Configuration

0 6.1 HARDWARE PROVISIONING

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0 6.1.1 HARDWARE USAGE RESTRICTIONS

0

0 Not Applicable

0 6.1.2 HARDWARE DEPENDENCIES

0

0 Not Applicable

0 P AND C SIDE PORT REQUIREMENTS

0

0 The RLCM requires a minimum of two and a maximum of six DS-1  
0 links to the host. The two minimum links are the primary links.  
0 Each DS-1 interface card (NT6X50AA) connects two DS-1 links be-  
0 tween the RLCM and the host XPM. All DS-1 links must terminate on  
0 the same host peripheral. For reliability, the primary links  
0 should terminate on different NT6X50AA interface cards at the  
0 host and on the RLCM.

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

## 0 CIRCUITS PER CARD

0  
0 Not Applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0 6.1.3 PROVISIONING CONSIDERATIONS

0  
0 When provisioning the RLCM one must consider the five major  
0 options, where the frame PEC (NT6X14AA) is common to all applica-  
0 tion. These options are: FSP, RMM Packfill, HIE Packfill, LCM  
0 Packfill, and Miscellaneous Equipment.

## 0 RLCM FSP Provisioning

0  
0 The Frame Supervisory Panel (FSP) NT6X25AA/BA is provisioned in  
0 the RLCM frame based on the number of DMS frames to occupy the  
0 RLCM Remote Office.

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0 Provide the NT6X25AA FSP when the RLCM and other frames such as a  
0 RME are to be provided or Retrofit the RLCM frame with a NT6X25AA  
0 FSP when the office is extended with another frame. A PDC frame  
0 or RME frame equipped with PDC hardware and a NT6X1429 Intercon-  
0 nect Cable is required when provisioning the NT6X25AA FSP.

0 Provide the NT6X25BA for single frame installations and office  
0 growth expectations do not exceed the single frame limit. A  
0 NT6X1430 Interconnect cable is also required with this FSP.

0 The RLCM FSP (NT6X25AA/BA) must be equipped with RLCM to Host Of-  
0 fice interface cards, a minimum of two (2) and a maximum of six  
0 (6) DS-1 links may be provisioned. The required number of links  
0 is based on Traffic requirements (See ECM-350 for Traffic Provi-  
0 sioning). the host office.

#### 0 RLCM RMM Provisioning

0  
0 The Remote Maintenance Module (RMM) card cage is always provided  
0 with the frame PEC. However, the engineer must provision the ap-  
0 propriate circuit pack fill and test/service circuits specific to  
0 the Market where the RLCM shall be installed. Refer to the chart  
0 below for Market to packfill association:

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| MARKET<br>USAGE | RMM CP FILL NT6X13 |    |    |    |
|-----------------|--------------------|----|----|----|
|                 | AB                 | BA | DA | EA |
| U.S             | X                  |    |    |    |
| Canadian        | X                  |    |    |    |
| Turkey          |                    | X  |    |    |
| CEP             |                    |    | X  |    |
| SL-100 UK       |                    |    |    | X  |
| China           |                    | X  |    |    |

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0 There are fourteen (14) provisionable slots on the RMM. Refer  
0 to Table A section EMA14-01-000 for RMM provisionable circuit  
0 packs. Note: A NT2X48AB/CC pack is required if ESA is provi-  
0 sioned. One (1) NT0X10AA Scan Card should always be provided  
0 to support the reporting of Circuit Breaker 8 tripped or the  
0 loss of Talk Battery A.

#### 0 RLCM HIE Provisioning

0  
0 The Host Interface Equipment (HIE) shelf card cage is always pro-  
0 vided with the NT6X14AA RLCM frame PEC. However, the engineering  
0 must provision the HIE Circuit Packfill and certain other special  
0 application cards based on the Market where the office shall be  
0 installed as follows:

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| PROVISIONABLE<br>PECs | MARKET DEPENDANCE |     |        |       |    |
|-----------------------|-------------------|-----|--------|-------|----|
|                       | US/Canadian       | CEP | Turkey | CHINA | UK |
| NT6X11AB              | X                 |     |        |       |    |
| NT6X11BB              |                   | X   | X      |       |    |
| NT6X11BC              |                   | X   | X      |       |    |
| NT6X11EB              |                   |     |        |       | X  |
| NT6X11KA              |                   |     |        | X     |    |
| NT6X11JA              |                   |     |        |       |    |
| NT6X60AA              | X                 | X   | X      |       |    |
| NT6X60AB              |                   |     |        |       | X  |
| NT6X60CA              | X                 | X   | X      |       |    |
| NT6X60DA              |                   |     |        | X     |    |
| * NT6X47AB            | X                 | X   | X      | X     | X  |
| NT6X47AC              | X                 | X   | X      | X     | X  |
| NT6X45AF              | X                 | X   | X      | X     | X  |
| NT6X50AA              | X                 |     |        | X     |    |
| NT6X27AB              |                   | X   | X      | X     | X  |
| NT6X27BB              |                   | X   | X      |       | X  |
| NT6X75AA              | X                 |     |        |       |    |
| NT6X75DA              |                   | X   | X      |       |    |
| NT6X75EA              |                   |     |        |       | X  |
| NT6X75KA              |                   |     |        | X     |    |

\* Replaced by the NT6X47AC for BCS-33 and later.

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0 In International RLCMs, two (2) DS-1 circuit packs (4 DS-1) links are  
0 always provided in the HIE shelf. An additional PCM-30 circuit pack is  
0 provisionable in the HIE shelf.

0 In US or Canadian RLCMs, Two (2) DS-1 circuit packs (4 DS-1) links are  
0 always required and provisionable. An additional DS-1 pack is also  
0 provisionable.

0 All RLCM DS-1 Links must access the same LGC/LTC/RCC module in the  
0 Host Office.

0 It is recommended to assign the HIE (C-side) message links, 0 and 1,  
0 to ports on different LGA/LTA at the host office (i.e. assign message  
0 link 0 to LGA/LTA shelf array 0 and assign message link 1 to LGA/LTA  
0 shelf array 1).

0 At a Telco's request, the NT2X70AZ PC Kit may be provisioned to modify  
0 the NT6X11AA/BA/EA/ HIE with the NT2X70AE Power Converter.

#### 0 LCM Provisioning

0  
0 The Line Concentrating Module (LCM) in the RLCM is the same as  
0 provisioned in a DMS100 Central Office (CO). The LCM is a two-  
0 shelf configuration where the shelves are always provided with  
0 the RLCM frame PEC (NT6X14AA). However, the engineer must pro-  
0 vision the appropriate circuit packfill, Line Drawers, and Line  
0 Cards.

0 \* Circuit PackFills, and Line Drawers

0 \* US and Canadian Market

0 Refer to the appropriate BCS GATING HARDWARE ECM for the cor-  
0 rect LCM Packfill to be provisioned.

0 \* Line Cards

0 The Line cards are common to all markets. The maximum line  
0 capacity in an RLCM is 640 lines. All of the DMS100 LCM line  
0 card types are also provisionalbe in the RLCM according to  
0 existing LCM provisioning rules.

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## 0 Miscellaneous Equipment Provisioning

0  
0 Miscellaneous equipment in RLCM offices shall be mounted in a Re-  
0 mote Maintenance Equipment (RME) frame. For provisioning rules,  
0 see ECM 429.

0 6.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not Applicable

0 6.1.5 TRAFFIC TABLES

0  
0 Refer to ECM-497 for Traffic Tables and Traffic provisioning con-  
0 siderations.

0 6.2 PRODUCT/SYSTEM SPECIFICATION

0  
0 6.2.1 PHYSICAL CHARACTERISTICS

0  
0 NT6X14AA - RLCM Frame

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0  
0 Remote Office Equipment  
0 Chapter 24

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0 Input Voltage.....-48VDC at -42.75 To 55.8 Volts  
0 Power Consumption.....N/A  
0 Current Drain.....N/A  
0 Thermal Dissipation.....N/A  
0 Fusing Requirements.....2, 7 or 9 20Amp Fuses as follows:

0 RLCM W/O PDC           This option with Analog Ringing require five A-  
0 Feeds and four B-Feeds fused at 20amps each.

0 RLCM W/O PDC           This option without Analog Ringing require four  
0 A-Feeds and three B-Feeds, fused at 20amps each.

0 RLCM With PDC           This option requires one A-Feed and one B-Feed,  
0 fused at 20amps each.

0 6.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Refer to EMA15-03-000 EMI requirements.

0 6.2.3 SPARING INFORMATION

0  
0 Standard sparing algorithms apply.

0 6.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Standard sparing algorithms apply.

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0 6.2.5 CURRENT DRAIN INFORMATION

0  
0 Standard sparing algorithms apply.

0 6.3 SOFTWARE PROVISIONING

0

0 6.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The following S/W packages are required in the Host office:

0 NTX146AA - RLCM Basic  
0 NTX156AA - RLCM Intra-Switching  
0 NTX154AA - RLCM Emergency Stand Alone  
0 NTX653AA - IRLCM - ESA

0 6.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not Applicable

0 6.3.3 MEMORY PROVISIONING

0  
0 Not Applicable in the RLCM.

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PRACTICE 297-1001-450

0 6.4 REAL TIME IMPACT

0 Not Applicable

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0 7.0 Building Block/Detailed RSCI Engineering

0 The ISDN RSC (RCCI) is part of the ongoing evolution of ISDN. The  
0 objective is to support ISDN both on new shipments and on  
0 retrofit of existing "in-service" RSCs. The NT6X1022 Change kit  
0 allows an existing NT6X12CA RCC to be converted to an RCCI. The  
0 additional equipment which must be added to the current RSC in-  
0 cludes an ISDN version of the LCM and RCC (LCMI and RCCI) and a  
0 Packet Handler. The RCCI will support ISDN Basic Rate Access  
0 (BRA), basic Emergency Stand Alone (ESA) service, single or dual  
0 Universal Tone Receiver (UTR)(single UTR only when CLASS Modem  
0 Resource card is required), delivery of calling number to  
0 500/2500 sets (CND under CLASS) and all terminals and features  
0 supported by the existing RSC base as of BCS-28.

0 All call processing features available for ISDN loops on host pe-  
0 ripherals will be supported for the RCCI, in addition to the  
0 non-ISDN services currently available on the RCC. Host loop main-  
0 tenance features will be provided for ISDN loops on an RCCI and  
0 all standard maintenance features will be supported.

0 ISDN Basic Rate Access (BRA) Services supported on RCCI are as  
0 follows:

- 0 \* stimulus signaling
- 0 \* functional signaling
- 0 \* All supplementary services as offered to host lines
- 0 \* Intraswitching of BRA calls
- 0 \* Dynamic trunks - intra to BRA lines
- 0 \* ESA - basic call set-up with either stimulus or functional  
0 signalling is provided.
- 0 \* Packet handler service during ESA can optionally be provided.

0 Primary Rate Access (PRA) is not part of the RCCI program. Noth-  
0 ing in the RCCI architecture would preclude the addition of PRA  
0 at a later date. The PRA links can be homed to the host.

0 Several software enhancements to the RCCI were implemented in  
0 BCS-31. No reconfiguration nor additional hardware is required  
0 for these capabilities. The following list summarizes these  
0 BCS-31 enhancements:

- 0 \* software added to have RCCI recognize and handle ISDN termi-  
0 nals and nodes while in ESA.

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- 0 \* software added to have CC download ISDN terminal information  
0 to RCCI so that it is prepared to handle ISDN calls while in  
0 ESA mode.
  - 0 \* capability to intraswitch ISDN BRA calls on RCCI.
  - 0 \* support for Dual RCC with ISDN (DRCCI) during ESA or non-ESA  
0 conditions and trunks from RCCI during ESA. (Either one or  
0 both RSCs in DRCCI may support ISDN loops.)
  - 0 \* provides RCCI support of LCME and support for AMI U-loop  
0 linecard and 2B1Q ISDN U-loop linecard.
  - 0 \* provides RCCI support of Digital Test Access (DTA).
- 0 Refer to Figure 1 for general ISDN architecture of the RCCI.

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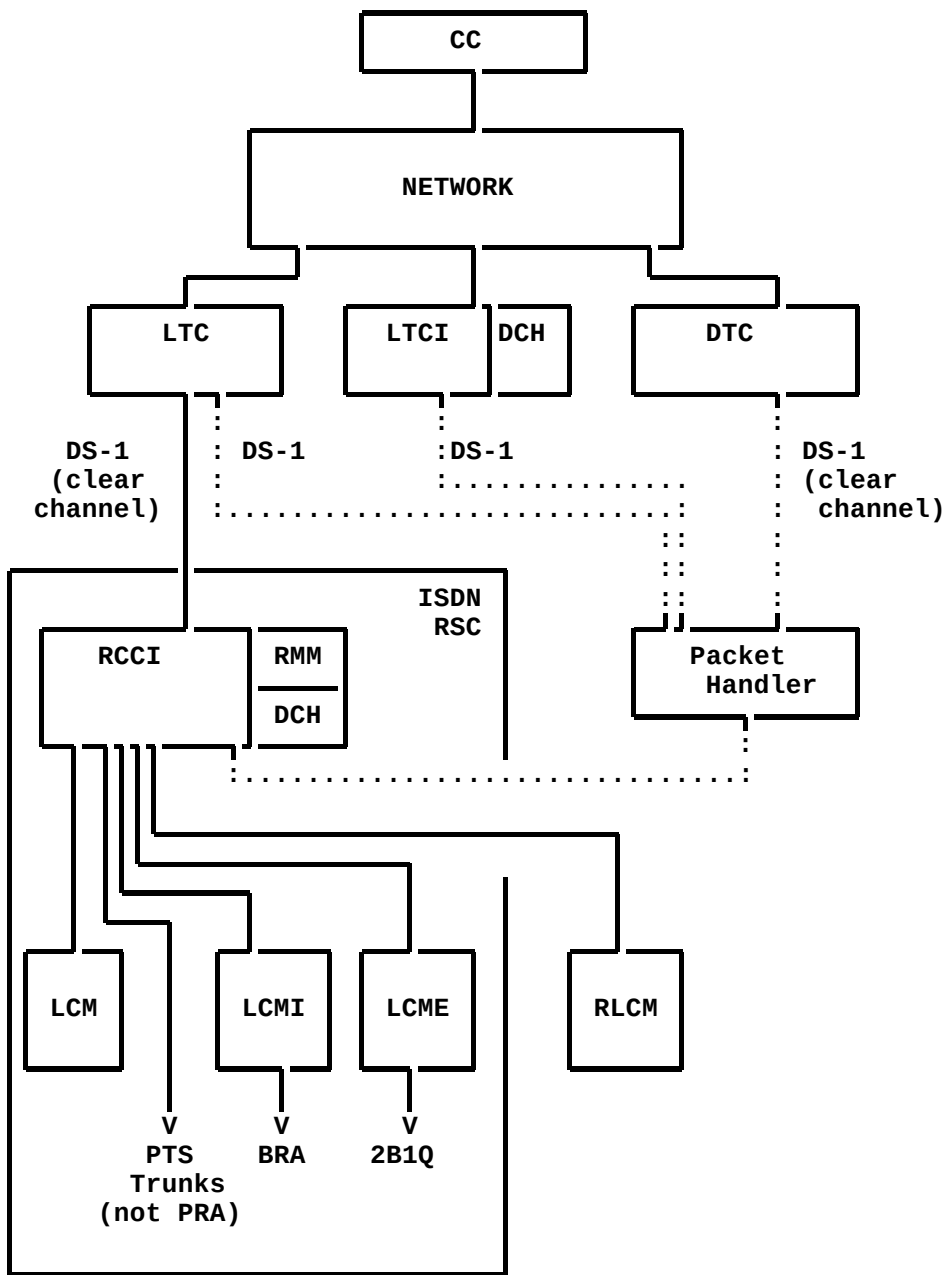
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0 Figure 1 : DMS ISDN Architecture

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0 7.1 HARDWARE PROVISIONING

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0 7.1.1 HARDWARE USAGE RESTRICTIONS

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0 In addition to RCC base functionality, the RCCI will support the  
0 following to provide ISDN functionality:

0 \* The collection of both D and concentrated B channels from  
0 LCMI/LCME via DS-30A ports.

0 \* Provisioning of the front end Q.931 processing of D-Channels  
0 in ISP.

0 \* Routing the D-Channels to the D-Channel Handler.

0 \* Routing the Bd and Bb packet data to the P-side located  
0 packet handler via intraswitched C-side channels or to host  
0 located packet handler via C-side host umbilicals.

0 \* Routing switched B channels, if host destined via host  
0 umbilicals or if not via intraswitching.

0 \* handling all digit collection for CC.

0 \* physically terminating DCH via DS-1 slots on P-side.

0 Functions provided by the D-Channel Handler include:

0 - terminates signaling frames and routes them to ISP.

0 - statistically multiplexes packet frames and sends them to  
0 the packet handler (stat. mux ratio up to 64:1).

0 - reflects user to user loop around frames back towards  
0 user.

0 The DMS-100 Packet Handler can be co-located with the RCCI or co-  
0 located at the host DMS-100. The physical location of the Packet  
0 Handler is largely a tradeoff of ESA functionality and system

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0 cost. Links to the Packet Handler can be via one of the follow-  
0 ing:

- 0 \* P-side links off host XPM (not routed via network)
- 0 \* nailed up network connections terminating via DTC/DTCIs.
- 0 \* P-side links off RCCI.

0 The host XPM can be a LTC, LTCI, LGC or LGCI. The host XPM has the  
0 following capabilities:

- 0 \* terminates DS-1 umbilicals from RCCI and switches them  
0 through to the network (non-concentrating).
- 0 \* optionally can terminate LCMs directly. The host LGC/LTC need  
0 NOT be upgraded to a LGCI/LTCI unless it supports a separate  
0 LCME/LCMI in addition to the RCCI.
- 0 \* must be LTC or LTCI if there are trunks off of the RCCI.

0 The DS-1 umbilical for the RCCI must support 64Kbps clear chan-  
0 nels. The RCCI host umbilical restrictions are essentially the  
0 same as those for the RSC. The maximum distance is 100 miles. The  
0 intervening transmission network may be whatever the operating  
0 company chooses (e.g. copper, fiber, digital radio, etc.). Extended  
0 Super Frame format and Bipolar Coding with 8 Zeros Suppression  
0 (B8ZS) are required to support 64K clear channels.

0 The NT6X45 circuit pack requires new firmware to support 64Kbps  
0 clear channels to the host. This is provided by the NT6X45BC  
0 pack.

0 The RCCI is limited to the use of one Universal Tone Receiver  
0 (UTR) only when the CLASS Modem Resource card is required. Dual  
0 UTRs can be supported if that pack is not required.

0 If circuit pack NT6X78-- (CLASS Modem Resource) is present, a max-  
0 imum of ten NT6X50AB DS-1 cards can be supported, thereby limit-  
0 ing C-side and P-side to a maximum of 20 DS-1 ports in a RCCI.

0 The Remote Maintenance Module (RMM) datafill will be identical to  
0 the current RCC. Ports 0 and 1 will be reserved for RMM use.

0 The LCME does not support the AMI U-loop linecard nor coin lines  
0 at this time.

0 The 2B1Q requires the Multiline Test Unit (MTU) for the line test  
0 function. If 2B1Q lines home on the RCCI, the RMM must be

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0 equipped with an MTU pair (NT2X10BA/NT2X11BA). Refer to ECM-389  
0 for details.

0 Extended Super Frame (ESF) must be used when the Packet Handler  
0 is host located or when a high percentage of the circuit switched  
0 data traffic is host bound.

0 If this section is inapplicable or the information is unavail-  
0 able, use one of the following:

0 Not applicable.

0 This information is unavailable at this time.

#### 0 7.1.2 HARDWARE DEPENDENCIES

0  
0 The RCCI makes use of two new circuit packs developed for the  
0 CPCI; the NTB02AA D-Channel Handler and the NTB01AA ISDN Signal-  
0 ing Pre-Processor. The DCH will be mounted in DS-1 card slots and  
0 the ISP will utilize a spare slot on the RCC shelf (slot 16).  
0 Free DS-1 slots must be available to accept the provisionable DCH  
0 packs, with a minimum of two and an anticipated maximum of ten  
0 (nine active and one spare).

0 The Frame Supervisory Panel must supply a combined A/B power feed  
0 (C power) for use by the DCH packs. There are also other wiring  
0 changes to the frame required to distribute the C power and to  
0 provide ISP/DCH signal interconnection.

0 Specific varieties of common control circuit packs must be used  
0 to minimize the current demand placed on the central power con-  
0 verter. Refer to the Engineering Manual sections for specific  
0 packs.

0 RCCI XPM Plus modules must be equipped with the NTB01AB Enhanced  
0 ISDN Signal Pre-Processor. The NTB01AB is part of the NT6X12DE  
0 and NT6X12ZE kits.

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0 7.1.3 PROVISIONING CONSIDERATIONS

0  
0 The hardware design approach taken for the RCCI is to retrofit  
0 the existing RSC equipment with D-Channel Handler capability. The  
0 basic design changes which must be made to provide ISDN BRA on  
0 the RCCI are:

- 0 \* Application of frame level wiring and FSP modifications.
- 0 \* Installation of ISDN Signalling Pre-Processor (ISP) CP  
0 (NTBX01AA).
- 0 \* Installation of a provisionable number of D-Channel Handler  
0 (DCH) CPs (NTBX02AA)
- 0 \* Change C-side DS-1 cards to clear channel (NT6X50AB)
- 0 \* Change P-side DS-1 cards to clear channel (NT6X50AB) for P-  
0 Side Packet Handler connection (if used)
- 0 \* Add LCMI/LCME

0 LCMI/LCME Provisioning

0  
0 Provisioning information for the LCMI and LCME has been provided  
0 in ECM616. The LCMI or LCME used for the RCCI will be provisioned  
0 per the rules published in that ECM.

0 The C-side and P-side ports for the RCCI must be provisioned  
0 based on traffic considerations. Refer to ECM497 for port provi-  
0 sioning guidelines, and then configure the required equipment per  
0 the Engineering Manual. The information in the RCCI Provisioning  
0 section provides generic rules for provisioning an RCCI. Specific  
0 configuration will be based on the office configuration and re-  
0 quirements.

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## 0 RCCI Provisioning

0  
0 The NT6X1022 Product Change kit provides the capability to up-  
0 grade an existing RCC with NT6X12CA packfill to RCCI (with  
0 NT6X12AD). In order to apply this kit, the existing RCC must  
0 first be brought to NT6X12CA packfill level. This is accomplished  
0 using existing kits as described in ECM-618. The NT6X12CA RCC is  
0 converted to an RCCI by applying Product Change kit NT6X1022.  
0 This kit provides materials and circuit packs required for the  
0 RCCI and also provides instructions for using some of the circuit  
0 packs from the existing RCC in the new RCCI.

0 When this conversion is made, installers will move traffic from  
0 the existing RCC to a temporary RCC (supplied by Installation)  
0 and will then convert the RCC using the NT6X1022 kit. The FSP and  
0 ISDN Remote Controller Array shelves for the RCCI are included in  
0 the kit. After they have been mounted, existing circuit packs  
0 from the RCC will be relocated as follows:

| 0 CP PEC   | RCC Slot | Action             | RCCI Slot |
|------------|----------|--------------------|-----------|
| 0 -----    | -----    | -----              | -----     |
| 0 NT6X47AB | 11       | Move to            | 11        |
| 0 NT6X46BA | 12       | Move to            | 12        |
| 0 NT6X44AA | 15       | Move to            | 15        |
| 0 NT6X92BB | 16       | Move to            | 14        |
| 0 NT6X69AB | 17       | Move to            | 17        |
| 0 NT6X72AA | 19       | Return to customer |           |
| 0 NT0X50AA | 23       | Move to            | 24        |

0 Additional required circuit packs and mounting locations are pro-  
0 vided as part of the kit. All provisionable NT6X50AAs on the RCC  
0 must be replaced with NT6X50ABs for RCCI applications. Refer to  
0 the Engineering Manual insert for details of NT6X1022 contents  
0 and mounting locations.

0 RCCI packfill NT6X12DC is introduced as the replacement for  
0 NT6X12DA for all new RCCI orders. When this packfill is applied,  
0 the slots where the NT6X69-- (slot 17), NT6X46-- (slot 12) and  
0 NT6X47-- (slots 10 and 11) packs mount become provisionable. This  
0 allows the latest versions of these packs to be provided. Refer  
0 to the Engineering Manual section for NT6X10AD for details.

0 If there is an LCME subtending the RCCI, NT6X46BB circuit packs  
0 must be provided with the NT6X12DC packfill. Existing NT6X46BA

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0 packs may be used if there is no LCME subtending but are not to  
0 be provided for new orders.

0 Product Change kit NT6X12ZB allows an existing NT6X12DA packfill  
0 to be upgraded to NT6X12DC in the field. This kit makes slots  
0 10,11,12 and 17 on the RCCI shelves provisionable. Refer to the  
0 Engineering Manual section for NT6X10AD for provisioning details.

0 Refer to the Engineering Manual for RCCI (NT6X10AD) provisioning  
0 rules.

0 Refer to ECM 282 for details of RSC engineering. The ISDN RSC  
0 will use the same equipment as the standard RSC except as de-  
0 scribed above.

0 Engineering for the RCCI must take several factors into account:

- 0 \* number of C-side ports
- 0 \* number of P-side ports and slots (DS-30A and DS-1)
- 0 \* number of DS-1 slots (incl. DCH)
- 0 \* Speech Bus bandwidth
- 0 \* MP, SP and ISP real time

0 Refer to the Engineering Manual section for provisioning informa-  
0 tion.

0 For the RCCI application, a new Frame Supervisory Panel (FSP) is  
0 required to supply a "C Power Feed" for use by D-Channel Han-  
0 dlers. This FSP is the NT0X28EC, which is Always Provided on the  
0 RCEI frame.

0 The RCCI has 20 accessible P-side ports shared between DS-30A,  
0 DS-1 and optional PH interface. DCH use 1 P-side port and 1 DS-1  
0 slot per DCH. The basic rules are:

0 # DS-30A ports + # DS-1 ports + # DCH <= 19 (excl. RMM)

0 # DS-1 slots <= 9 (with each DCH using one slot)

0 Due to power limitations, use of NT6X78-- CLASS CMR will add  
0 the following rule:

0 DS-1 cards (C-side) + DS-1 cards (P-side) <= 10 maximum

0 D-channels are multiplexed 4:1 and together with Bd and Bb links  
0 destined for the PH (if PH interface is from the P-side) are con-



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0 nected to the P-side using the intra switching capability of the  
0 RCCI.

0 Each DCH occupies a single P-side port and consumes one P-side  
0 DS-1 slot on the RCCI. The number of DCHs required depends on the  
0 number of D terminals per loop, user packet throughput on each  
0 D-channel and the stat mux ratio used in the DCH.

0 Refer to ECM465 and ECM497 for DCH and link provisioning informa-  
0 tion.

0 Each provisioned DCH reduces the number of available P-side DS-1  
0 slots by one.

0 The number of LCMIs that can be supported by the available P-side  
0 DS-30A ports will depend on the number of ISDN loops per LCMI,  
0 the number of provisioned B packet channels and circuit switched  
0 B channel traffic levels.

#### 0 RCEI Labels

0  
0 The following labels should be provisioned for all RCEI applica-  
0 tions:

0 RCEI FSP Shelf labels: Order one of each P0715228 and  
0 P0715229

0 RCEI PDC Frame labels: Order one of each P0715232, P0715233  
0 and P0715234

0 RCEI FSP Frame labels: Order one of each P0715235 and  
0 P0715236

#### 0 D-Channel Handler Provisioning

0  
0 The 16Kbps D-channels from each ISDN line are time division mul-  
0 tiplexed (TDM) 4:1 by the LCMI and are presented to the RCCI as a

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0 single 64Kbps channel. These channels consume capacity on the  
0 DS-30A links from the LCMI.

0 At the DCH, D-channels having a "Service Access Point Identifier"  
0 (SAPI) indicating packet data are statistically multiplexed and  
0 routed on DS-1 links to the PH. Messages with SAPI 0 frames are  
0 routed to the ISP. Each DCH has 32 channels which are used as  
0 follows:

0 1 for messaging to ISP  
0 X for incoming 4:1 TDM D-channels  
0 Y for outgoing stat mux'd packet data (Bd)

0 If there is no Bd, then 31 channels can be used for multiplexed  
0 (mux'd) D-channels, meaning a D-Channel Handler can support a  
0 maximum of 124 lines. Typically, a DCH will support about 108 D-  
0 channels.

0 Refer to ECM 616 for information regarding Packet Handler provi-  
0 sioning.

#### 0 7.1.4 OFFICE LAYOUT INFORMATION

0  
0 ISDN Packet Services on a RCCI are the same as those on a host  
0 LTCI, making use of the same Packet Handler (PH) at the host. If  
0 ESA is needed, either a complete remote PH or a remote access  
0 module may be deployed. If the availability benefits afforded in  
0 ESA are not required, the RCCI can use the PH deployed at the  
0 host. There are three ways the RCCI can be linked to the host PH  
0 for provisioned packet data services:

- 0 \* direct P-side DS-1 port off RCCI
- 0 \* nailed up via host umbilical but looped back in host XPM and  
0 routed out on DS-1 links to PH
- 0 \* nailed up via host umbilical and host network

0 Remote deployment of a DMS-100 Packet Handler at the remote lo-  
0 cation maximizes the remote's ESA functionality but a more cost  
0 effective option is to deploy only a remote Access Module (AM).

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0 The remote AM is recommended only under the following circum-  
0 stances:

- 0 \* majority of packet traffic is local to the remote.
- 0 \* ESA is required for packet services.
- 0 \* reduced connectivity in ESA is acceptable.

0 During ESA, the Access Module will maintain all calls local to  
0 that AM and will allow the set-up of new calls local to that AM,  
0 provided that the link to the AM remains intact.

#### 0 7.1.5 TRAFFIC TABLES

##### 0 \* RCCI Characteristics

0 RCCI traffic information is provided in ECM465 and ECM497 and  
0 should be referenced for all applications of the RCCI.

##### 0 \* LCMI Characteristics

0 The LCMI supports up to a maximum of 160 AMI U-linecards or  
0 192 S/T-linecards from a single LCMI. The LCMI also supports  
0 up to eighteen DS-30As for connection to the RCCI and these  
0 links can carry both B- and D-channel traffic. The LCMI will  
0 support eight line drawers containing a maximum of 48 Type  
0 A,B or C linecards OR 24 Type D or S/T linecards OR 20  
0 0-linecards per drawer. Different line types can be mixed  
0 within the same physical drawer as long as ISDN line types  
0 are not mixed with other line types within the same logical  
0 drawer.

##### 0 \* D-channel Characteristics

0 The D-Channel Handler function is an integrated part of the  
0 RCCI, handling the termination of D-channel messages from BRA  
0 terminals. The RCCI supports a maximum of nine (8 active + 1  
0 hot spare) provisionable DCHs. Each DCH typically supports  
0 108 D-channels. The D-channels are multiplexed 4:1 onto DS-0  
0 channels on these links. A minimum of two DS-30A links are  
0 required per LCMI.

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0 7.2 PRODUCT/SYSTEM SPECIFICATION

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0 7.2.1 PHYSICAL CHARACTERISTICS

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0 7.2.2 CHARACTERISTICS

0  
0 The Remote Controller Equipment ISDN Frame physical specifica-  
0 tions are as follows:

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0 - RCE Frame ISDN (RCEI)

0  
0 Input Voltage..... 48Vdc  
0 Power Consumption..... watts  
0 Current Drain.....23 Amps D.C. Fully Equipped  
0 Thermal Dissipation..... BTU/hr  
0 Fusing Requirements.....3 each 20 amp Fuses

0 MECHANICAL DIMENSIONS

0 Height \_\_\_\_\_ Width \_\_\_\_\_ Length \_\_\_\_\_  
0 Weight \_\_\_\_\_ Depth \_\_\_\_\_

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0 7.2.3 EMI/EARTHQUAKE INFORMATION

0  
0 Refer to ECM-125 For RSCI EMI requirements.

0 7.2.4 SPARING INFORMATION

0  
0 Standard sparing algorithms shall apply.

0 7.3 SOFTWARE PROVISIONING

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0 7.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The CC memory requirements for the RCCI are identical to those  
0 already established for the LGCI.

0 7.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 The base software for the RCCI will include support for eighteen  
0 (18) LCMI C-side links, messaging, DCH maintenance and processing  
0 via the ISP and intraswitching for ISDN lines.

0 The following software packages will be required in addition to  
0 the base RSC software:

0 NTX750AB - ISDN Base Package

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0 NTXJ00AA - ISDN on RSC (includes BCS-31 enhancements)

0 NTXJ00AA has been replaced by NTXJ00AB effective BCS-34 and  
0 later.

0 NTXJ00AB - ISDN on RSC (Replaces NTXJ00AB Effective in  
0 BCS-34)

0 Optional Package:

0 NTX143AA includes Extended Super Frame capability

0 NTXR34AA - XPM Plus (Product Life Upgrade) Basic(RATE CHANGE  
0 PENDING)

0 Note:

0 - NTRX34AA is MD'ed effect BCS-35 and replaced by  
0 NTRX34AB.

0 - The above package is optional for Non-XPM Plus jobs  
0 and always required for XPM Plus Jobs.

0 7.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 7.4 REAL TIME IMPACT

0 Refer to ECM 497 for real time calculations

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0 8.0 Building Block/Detail RSC-SONET

0 The RSCS is a cabinetized Remote Switching Center based on the Remote  
0 Cluster Controller 2 (RCC2), a new controller with more P-side ports  
0 than the standard RCC. The RCC2 shelf mounts in the CRSC cabinet. The  
0 RCC2 will replace the RCC and the RCCI for new systems (BCS-33).

0 RCC2 key characteristics

- 0 - 54 P-Side ports (instead of 20) which can be a mix of DS1s,  
0 DS30As and DCHs. A maximum of 46 DS1s, 32 DS30As or 10 DCHs  
0 may be provided in various combinations. Restrictions on  
0 mixing these interfaces will be detailed in this ECM.
- 0 - Handles ISDN 2B1Q and POTS traffic

0 The RCC2 shelf utilizes a Quad Carrier circuit pack which mounts four  
0 DS1 "packlets". Each packlet provides two DS1 interfaces so each slot  
0 with a Quad Carrier provisioned may have up to eight DS1s.

0 The RSCS may be deployed in single or multi- cabinet configurations.  
0 The single cabinet configuration consists of the CRSC cabinet powered  
0 by the office power board. The multi-cabinet configuration may con-  
0 sist of:

- 0 - one or two CRSC Cabinets (Mono RCC2 or Dual RCC2)
- 0 - CPDC, CMIS and CMSS Cabinets as needed
- 0 - One CEXT cabinet per two CRSC cabinets
- 0 - up to 5 Line Cabinets (CLCEs) (in Mono RCC2)

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0 The Remote Switching Center - SONET (RSCS) shall be introduced in two  
0 (2) phases. The plan announced earlier has been changed to combine  
0 Phases 2 and 3. The current plan is as follows:

0 - Phase I (BCS-33):

- 0 o Single cabinet configuration with a maximum of 480
- 0 lines mounted in the integral LCME (2B1Q, POTS, MDC).
- 0 Standard RMM provides maintenance and service circuits.
- 0 Supports all current RSC and RSCI features.
- 0 Maximum of 16 C-side and 52 P-side ports.
- 0 o Multi-cabinet configuration with CPDC and provisionable
- 0 CEXT, which extends the capabilities of the CRSC by
- 0 providing increased mounting flexibility. A CMIS
- 0 may be provisioned for miscellaneous equipment.
- 0 Additional lines can be housed in CLCEs.
- 0 o P-side Interlinks for Dual RSCS.
- 0 o OPM/RLCM off RCC2
- 0 - maximum of seven OPM+RLCM equipped with ESA

0 Notes: If Coin Lines are required an LCM must be  
0 provisioned to support them. This LCM can  
0 be in a separate CLCE/LCE or in the CRSC  
0 with a provisionable LCM.

0 This ECM covers provisioning of the CRSC  
0 and CEXT only. Refer to ECM-600 for  
0 provisioning of CLCE, ECM-655 for CMIS,  
0 and ECM-631 for CPDC provisioning. Provide  
0 NTRX49AA Cabinetized Miscellaneous Spare  
0 Storage for spares storage in RSC-S  
0 applications.

0 - Phase I Enhancements (BCS-34)

- 0 o SMSR support
- 0 o Downloadable firmware support for NTMX77AA

0 - Phase II (Schedule To Be Determined)

- 0 o Cabinetized LCME (CLMI)
- 0 o RLCM to RSCS upgrades (in Conversions program)
- 0 o RSC to RSCS upgrades (in Conversions program)
- 0 o full fiberization (OC-3 interface card)
- 0 o Fiber multiplex interface (STS-1) (BCS-38)
- 0 o Cabinetized Direct SONET Interface (CDSI) (BCS-38)
- 0 o Development of Fiber Interface Module (FIM) and RMM2

0 - Other Developments

- 0 o Products and services for International Markets



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0 Phase II developments are being Gated separately and the provisioning  
0 and configuration rules for SMS-R are included herein.

0 The SONET RSC default color will be FiberWorld Grey. Codes for provid-  
0 ing DMS brown equipment are included herein.

0 Extended Distance Capability

0 A RSC-SONET can be upgraded to operate beyond the present 100 mile  
0 (150 mile in Canada) distance limit by changing the messaging protocol  
0 used by the remote and the host. These modifications increase the al-  
0 lowable signal delay to 6.5 milliseconds (one way), which provides the  
0 capability of about 500 miles from the host. This is useful both for  
0 remotes situated more than 100 miles from the host and for fiber ring  
0 applications where the transmission delay is increased without in-  
0 creasing the actual distance. The increase is provided by changing the  
0 DMSX messaging protocol to HDLC. The Extended Distance Capability  
0 (EDC) is intended for use over any physical transmission medium, pro-  
0 vided that no existing RSC-S specification (for example, jitter or Bit  
0 Error Rate) is violated. The RSC-S with EDC must be hosted by an XPM  
0 PLUS-equipped peripheral that is equipped with the HDLC messaging  
0 packs (NTMX76AA).

0 RSC-SONET EDC is introduced for domestic applications in BCS-35 and  
0 international applications in BCS-36.

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0 Cabinetized RSC with Provisionable LCM

0 The LCM in CRSC project introduces a version of the Cabinetized Remote  
0 Switching Center (CRSC) which has the originally-equipped LCME re-  
0 placed by one LCM. This change increases the number of POTS lines that  
0 may be equipped in a single cabinet to 640 and provides for COIN/ANI  
0 support in single cabinet configurations. Connectors for line cabling  
0 have been changed to accomodate the additional lines. All other provi-  
0 sioning information for the CRSC remains unchanged. Refer to the Engi-  
0 neering Manual sections for details.

|   |                       |                           |
|---|-----------------------|---------------------------|
| 0 |                       |                           |
| 0 |                       |                           |
| 0 | Ringin Generators     | (Provisionable)           |
| 0 | FSP                   | (Provisionable)           |
| 0 |                       | 61                        |
| 0 |                       | (Always Provided)         |
| 0 | Provisionable LCM     | NT6X0431 Enhanced Line    |
| 0 | Packfill OR           | Module Shelf              |
| 0 | - - - - -             | 47                        |
| 0 | Provisionable Fillers | (Always Provided)         |
| 0 | If LCM Not Equipped   | NT6X0431 Enhanced Line    |
| 0 |                       | Module Shelf              |
| 0 |                       | 33                        |
| 0 | Provisionable RMM     | (Always Provided)         |
| 0 | Packfill and CPs      | NT6X1306 RMM Shelf Assy.  |
| 0 |                       | 19                        |
| 0 | Provisionable RCC2    | (Always Provided)         |
| 0 | Packfill and CPs      | NTMX8501 RCC2 Shelf Assy. |
| 0 |                       | 06                        |
| 0 | NTNX27CA Cooling Unit | (Provisionable)           |
| 0 |                       | 00                        |

0 NTMX89CA Layout

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0 8.1 HARDWARE PROVISIONING

0

0 8.1.1 HARDWARE USAGE RESTRICTIONS

0

0 RSCS Hardware Usage Restrictions are as follows:

- 0 - The Maximum Cable Distance Between the RCC2 Shelf located  
0 on the CRSC Cabinet and the EXT shelf located on the CEXT  
0 Cabinet is 20 feet.
- 0 - The maximum distance from the host to the farthest remote  
0 off the RCC2 when using DMSX messaging (NTZZ12XA packfill  
0 with NT6X69 messaging CP) is 100 miles for U.S. applications  
0 and 150 miles for Canadian applications. The RCC2 shelf may  
0 be equipped for HDLC messaging (NTZZ12ZA packfill with  
0 NTMX76AA messaging CP) to achieve greater distances. This  
0 configuration has the following additional restrictions:
  - 0 o The EDC RSC-S is limited to 5 milliseconds  
0 transmission delay to its host XPM PLUS. Together  
0 with switching delays, this limitation gives up to  
0 6.5 ms delay from the subscriber line to the host  
0 network.
  - 0 o Bit Error Rate (BER) on the host link should be  
0 better than  $(10 \exp -9)$  for data service and  
0  $(10 \exp -6)$  for voice only service.
  - 0 o Only B8ZC DS-1 protocol is supported. ZCS is not  
0 supported.
  - 0 o Firmware patching for the NTMX76 is not  
0 supported.
  - 0 o To improve voice quality, a 6 db loss is inserted  
0 in the remote line card on each connection going  
0 through the host to offset echo.

0

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- 0 - Max 10 LCMS and 2 LCMEs are provisionable on the P-Side  
0 links of the RCC2. In combination, no more than ten (10)  
0 LCMS and LCMEs may be provided (For ex.:2 LCMEs + 8 LCMS).  
0 If ten (10) LCMS are provided, no RMMs can be used due to  
0 the limits defined in the Software Restrictions section.  
0 LCMS in RLCM/OPMS remoted from the RCC2 must be included  
0 in the ten maximum. Refer to Software Restrictions section  
0 for details.
- 0 - CDO or PBX trunks may be assigned only on the first  
0 20 P-Side T1 links on RCC2. These links are physically  
0 located in slots 12:0-3, 16:0-3 and 14:0-1. However, a  
0 maximum of ten DS1s for CDO/PBX trunks or SMS-R Special  
0 connections are currently supported.
- 0 - Connection to the Packet Handler is from the RCC2  
0 C-side as part of the host links and then a host  
0 XPM. Rules in this ECM support this configuration  
0 only. Support for P-side connection will be added  
0 at a later date.
- 0 - The RCC2 P-Side Ports may be allocated as follows:
  - 0 o The first two interlinks in a Dual configuration  
0 must be Port 0 (Slot 12:0) and Port 8 (Slot 16:0).  
0 Subsequent interlinks may use any DS-1 ports and  
0 do not require dynamic trunking capability.
  - 0 o DS-1s are allowed on links 0-21 and 24-47.
  - 0 o DS-30A Links may be defined on Links 22 thru 53,  
0 where links 22 and 23 are reserved for the Remote  
0 Maintenance Module (RMM).
  - 0 o DS-30A Links are to be assigned beginning with  
0 port 53 and descending.
  - 0 o DS1 Trunking to CDO/PBX facilities and SMS-R  
0 Special connections is limited to a total of  
0 10 DS1s due to a limited number of Call Header  
0 Blocks (CHBs).
  - 0 o A maximum of nine SMS-R modules may be hosted by a  
0 single RCC2 shelf. Each SMS-R may home a maximum of  
0 six Remote Concentrator Units (RCSs/SLC-96s). An RCC2  
0 with this configuration would not be able to support  
0 anything else due to XPM nodal limits.

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0  
0 o When the RCC2 shelf is NOT equipped with an EISP pack  
0 (requires BCS-35 or higher), the NTMX8947 strapping  
0 kit must be applied. If the EISP is subsequently added,  
0 the straps must be removed.

#### 0 RCC2 and EXT Slot to P-Side DS1 Port Assignments

| Port # | Shelf                                | Slot    | Usable for Dynamic Trunk? |
|--------|--------------------------------------|---------|---------------------------|
| -----  | -----                                | ----    | -----                     |
| 0-1    | RCC2                                 | 12:0    | Yes                       |
| 2-3    | RCC2                                 | 12:1    | Yes                       |
| 4-5    | RCC2                                 | 12:2    | Yes                       |
| 6-7    | RCC2                                 | 12:3    | Yes                       |
| 8-9    | RCC2                                 | 16:0    | Yes                       |
| 10-11  | RCC2                                 | 16:1    | Yes                       |
| 12-13  | RCC2                                 | 16:2    | Yes                       |
| 14-15  | RCC2                                 | 16:3    | Yes                       |
| 16-17  | RCC2                                 | 14:0    | Yes                       |
| 18-19  | RCC2                                 | 14:1    | Yes                       |
| 20-21  | RCC2                                 | 14:2    | No                        |
| 22-23  | Reserved for RMM. No DS1 assignment. |         |                           |
| 24-25  | EXT                                  | 4(23):0 | No                        |
| 26-27  | EXT                                  | 4(23):1 | No                        |
| 28-29  | EXT                                  | 4(23):2 | No                        |
| 30-31  | EXT                                  | 4(23):3 | No                        |
| 32-33  | EXT                                  | 6(21):0 | No                        |
| 34-35  | EXT                                  | 6(21):1 | No                        |
| 36-37  | EXT                                  | 6(21):2 | No                        |
| 38-39  | EXT                                  | 6(21):3 | No                        |
| 40-41  | EXT                                  | 8(19):0 | No                        |
| 42-43  | EXT                                  | 8(19):1 | No                        |
| 44-45  | EXT                                  | 8(19):2 | No                        |
| 46-47  | EXT                                  | 8(19):3 | No                        |

0 Note: Numbers in parenthesis are for the  
0 right half of the Extension shelf.  
0 Note: Check Table H for port interactions.  
0 Use of some DS1 ports disables DS30A ports.

#### 0 C-Side Port Assignments

0 C-side interfaces are provided by the packlets in slots 9 and 19  
0 on the RCC2 shelf. Specific port assignments are as follows:

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| slot | packlet | ports | slot | packlet | ports |
|------|---------|-------|------|---------|-------|
| 9    | : 0     | 0,1   | 19   | : 0     | 2,3   |
| 9    | : 1     | 4,5   | 19   | : 1     | 6,7   |
| 9    | : 2     | 8,9   | 19   | : 2     | 10,11 |
| 9    | : 3     | 12,13 | 19   | : 3     | 14,15 |

### DCH Port Assignments

Assignment of a D Channel Handler to a slot uses a specific port for the DCH traffic. This slot/port relationship is as follows: (Numbers in parenthesis are for the right side of the EXT shelf.)

| DCH shelf/slot | Port used | DCH shelf/slot | Port used |
|----------------|-----------|----------------|-----------|
| RCC2/12        | 1         | EXT/7(20)      | 12        |
| RCC2/14        | 17        | EXT/8(19)      | 13        |
| RCC2/16        | 9         | EXT/4(23)      | 14        |
| EXT/3(24)      | 10        | EXT/6(21)      | 15        |
| EXT/5(22)      | 11        | EXT/9(18)      | 18        |

### DS-30A Port Assignments

Each NTMX74AA DS-30A Interface pack includes the capability of supporting all thirty-two available DS-30A interfaces. In the event of circuit pack failure, the surviving NTMX74AA will take over support of all thirty-two DS-30A ports. However, in normal operation, ports are distributed across both circuit packs as follows:

NTMX74AA in slot 13:

Ports 53,52,49,48,45,44,41,40,37,36,33,32,29,28,25 and 24

NTMX74AA in slot 15:

Ports 51,50,47,46,43,42,39,38,35,34,31,30,27,26,23 and 22

### RMM Provisioning and Configuration

Due to limitations imposed by cabling through a bulkhead, the RMMs in RSC-SONET applications must conform to specific restrictions. The standard RMM layout described in the provisioning section meets these restrictions. Customized RMM layouts must configure slots 3-10 with the allowed packs. Slots 11-16 can mount any provisionable RMM pack but all existing RMM circuit pack mounting rules in Section 14 of the Engineering Manual also apply to an RMM in an RSC-S application. Slots 3-6 can mount ONLY the packs shown below. Slots 7-10 can mount ONLY the packs shown,

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0 used for the indicated function ONLY. Any card requiring con-  
0 nection to the Distributing Frame must mount in slots 11-16.  
0 There is no mandatory requirement for any of these packs to be  
0 present but, if used, they must use the indicated positions.

0 The capability of provisioning RMM shelves in the CMIS provides  
0 options for RSC-S configurations. The first RMM at a RSC-S site  
0 will mount in the CRSC. Subsequent RMMs can mount either on the  
0 CEXT (if it is present) or on a CMIS. If office requirements dic-  
0 tate the need for a CEXT to mount DCHs or DS1 ports, the RMM  
0 shelf position provides the logical location for the second RMM.  
0 If the CEXT is not needed for capacity or if additional RMMs are  
0 needed, they can be mounted on a CMIS. Refer to ECM-655 for de-  
0 tails of provisioning RMM shelves on the CMIS.

0 The RMM in the CRSC is currently powered from an "A" feed. The  
0 RMM in the CEXT is powered from a "B" feed. An RMM in a CMIS may  
0 be configured as either "A" or "B" powered. If the telco requires  
0 two or more RMMs and wants them powered from different feeds but  
0 the office does not require a CEXT, the CMIS must be used and the  
0 powering requirement specified in a note so that Equipment Engi-  
0 neering can properly configure the power.

0 When provisioning a custom RMM layout, slots must be used as fol-  
0 lows:

| RMM SLOT | CIRCUIT PACK ALLOWED             |
|----------|----------------------------------|
| -----    | -----                            |
| 3        | NT2X10BA                         |
| 4        | NT2X11BA                         |
| 5        | NT0X10AA                         |
| 6        | NT3X09BA                         |
| 7        | NT2X90AD for MONTALK             |
| 8        | NT2X90AD for MONTACK             |
| 9        | NT2X90AD for VERIFICATION 90     |
| 10       | NT2X90AD for VERIFICATION 90     |
| 11       | FULLY PROVISIONABLE WITHIN RULES |
| 12       | FULLY PROVISIONABLE WITHIN RULES |
| 13       | FULLY PROVISIONABLE WITHIN RULES |
| 14       | FULLY PROVISIONABLE WITHIN RULES |
| 15       | FULLY PROVISIONABLE WITHIN RULES |
| 16       | FULLY PROVISIONABLE WITHIN RULES |

0 Internal cabling from the RMM to the bulkhead connects slots 5  
0 and 6 to connector C00 on the shelf 19 bulkhead, slots 11 and 12  
0 to C01, slots 13 and 14 to C02 and slots 15 and 16 to C03 (all on  
0 the shelf 19 bulkhead).

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0 The resistor networks associated with DCHs have been made an Al-  
0 ways Provided part of the RCC2 and CEXT shelves and no longer  
0 need to be provisioned. Rules for providing these resistor net-  
0 works have been removed from this document.

#### 0 8.1.2 HARDWARE DEPENDENCIES

0  
0 Not Applicable

#### 0 P AND C SIDE PORT REQUIREMENTS

0  
0 The RSC-S has a minimum of two and a maximum of sixteen DS-1  
0 ports to the host on its C-side. A maximum of fifty-four P-side  
0 ports may be provisioned, consisting of DS30A, DCH and DS-1  
0 interfaces in various combinations. Refer to ECM-497 for traffic  
0 provisioning information and to Table H in the Engineering Manual  
0 for physical assignment locations and valid interface mix data.

#### 0 DMS BUS PORT REQUIREMENTS

0  
0 The RSCS does not connect to the DMS Bus.

#### 0 CIRCUITS PER CARD

0  
0 The NTMX81AA packlet contains two DS-1 circuits.  
0 The NTMX74AA pack contains thirty-two DS30A ports.  
0 The NTMX87AA Quad Carrier mounts four packlets.



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## 0 DISCRIMINATION NUMBERING

0  
0 The following frame numbering procedure must be used in RSC-SONET  
0 offices:

## 0 LINE MODULE FRAME NUMBERING IN SONET RSC OFFICES

0 1) The frame numbering of an RSCS office must conform to  
0 a specific numbering scheme due to software tables that  
0 contain LCM/LCME information. The following rules should  
0 be observed when numbering these frames:

0 A) All types of frames in an office that contain  
0 an LCM or LCME must be uniquely numbered. For  
0 example, CRSC 00 and CLCE 00 cannot reside in  
0 the same office.

0 B) The frames in an office that contain line modules  
0 (whether configured or not) must be numbered  
0 according to their priority on the following list:

| 0 | NUMBERING |            |
|---|-----------|------------|
| 0 | PRIORITY  | FRAME TYPE |
| 0 | -----     |            |
| 0 | 1         | LCEI *     |
| 0 | 2         | LCE *      |
| 0 | 3         | CRSC       |
| 0 | 4         | CEXT       |
| 0 | 5         | CLMI *     |
| 0 | 6         | CLCE       |

0 \* May now be used but special consideration required.  
0 LCEI and CLMI require check of LTID availability.  
0 See Software Usage Restrictions section. LCE requires  
0 mix of frames and cabinets using Vertical Power option.

0 C) On a conversion of any office to an RSCS, existing  
0 frames should not be renumbered (hence their higher  
0 priority in the above list). No frames should be  
0 renumbered on an extension of an existing RSCS.

## 0 EXAMPLES

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0 Example of initial RSCS with (2) CRSC,(1) CEXT  
0 and (3) CLCE:

0 CRSC 00  
0 CRSC 01  
0 CEXT 02  
0 CLCE 03  
0 CLCE 04  
0 CLCE 05

0 Example of conversion office that has (1) LCEI 00,  
0 and (1) LCE 01 existing and adds (2) CRSC,(1) CEXT  
0 and (1) CLCE.

0 LCEI 00 (EXISTING)  
0 LCE 01 (EXISTING)  
0 CRSC 02  
0 CRSC 03  
0 CEXT 04  
0 CLCE 05

### 0 8.1.3 PROVISIONING CONSIDERATIONS

0 The RSCS may be deployed in a Single Cabinet Configuration by  
0 providing the CRSC only and powering it from the Power Board. A  
0 kit containing power cable, filter adapters, straps, etc. must be  
0 provisioned for this application to equip the CRSC. This kit is  
0 NTMX8943.

0 The RSCS also may be provisioned in a Multi-Cabinet Configuration  
0 consisting of the CRSC, CPDC, CLCE, CMIS, MCSS, and CEXT Cabi-  
0 nets.

0 While the preferred configuration for RSC-S offices is  
0 cabinetized, it is now permissible to mix LCEs, PDC/RMEs, MIS and  
0 CPCE frames with the CRSC and CEXT. The CRSC and CEXT will re-  
0 quire an external power filter module kit (NTMX8943) when using a  
0 7' frame (i.e. PDC or RME) for power. Cables for connecting  
0 lines in frames to the CRSC are available in the Cable Assembly  
0 drawings. Refer to the appropriate CA drawing for details.

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0 If the RSC-S requires Extended Distance Capability, it may be  
0 equipped with the EDC packfill (NTZZ12ZA), which includes the  
0 HDLC messaging circuit pack (NTMX76AA). The host XPM for a RSC-S  
0 with EDC must also be equipped for HDLC messaging (NTMX76 instead  
0 of NT6X69) and must utilize the Unified Processor (XPM PLUS). Re-  
0 fer to ECM-678 for details of provisioning XPM PLUS. The host DS1  
0 interfaces must be 64Kb clear channel (NT6X50AB). NTZZ12ZA in-  
0 cludes the EISP packs.

0 The RSC-S may also be equipped for Extended Distance Capability  
0 by using the NTZZ12XB packfill and provisioning the NTMX76AA  
0 packs. The EISP packs are provisionable with this packfill but  
0 must be present for all pre-BCS35 applications. The EISP packs  
0 become optional (based on ISDN support) in BCS-35. If EISP packs  
0 are NOT equipped, the NTMX8947 kit must be applied to properly  
0 strap the backplane.

#### 0 Cabinetized RSC with Provisionable LCM

0 This product is intended mainly for applications similar to the  
0 existing RLCM. The CRSC with LCM provides all the RLCM capabili-  
0 ties and adds remote off remote and remote CDO/PBX trunking capa-  
0 bilities.

#### 0 Building Block Provisioning

0 The NTZZ46CA CRSC with LCM Building Block provides the NTMX89CA  
0 cabinet and the equipment required for base applications in gray.  
0 The labels and minimum host links are included in the Building  
0 Block. The LCM module, line drawers, line cards, ringing genera-  
0 tors, RMM service circuits, DCHs, P-side interfaces and addi-  
0 tional host links are provisioned based on office requirements.  
0 Refer to the NTZZ46CA Engineering Manual section for additional  
0 details.

0 The NTZZ46DA CRSC with LCM Building Block provides the NTMX89CA  
0 cabinet and the equipment required for base applications in  
0 brown. The labels and minimum host links are included in the  
0 Building Block. The LCM module, line drawers, line cards, ringing  
0 generators, RMM service circuits, DCHs, P-side interfaces and ad-  
0 ditional host links are provisioned based on office requirements.  
0 Refer to the NTZZ46DA Engineering Manual section for additional  
0 details.

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## 0 Remote Cluster Controller 2 (RCC2)

0  
0 Provisioning the RCC2 is described below in terms of Always Pro-  
0 vided (AP) CPs and Provisionable (PROV) CPs.

0 Slots 12, 14 and 16 may be equipped with a D-Channel Handler  
0 (BX02AA) or PCM Quad Carrier CP (MX87AA). The MX87AA may be  
0 equipped with up to four "packlets" which may be dual DS-1  
0 (MX81AA) or a filler plate (MX83AA). An additional packlet type  
0 for International support is planned for a future phase.

0 Unequipped provisionable slots (5,7,12,14,16,22,23) must be  
0 equipped with filler plates.

RCC2 Unit 0 Physical Layout

| SLOT            | CP DESCRIPTION                                                    | PEC                        | STATUS               |
|-----------------|-------------------------------------------------------------------|----------------------------|----------------------|
| 1-2             | POWER CONVERTER                                                   | MX72AA                     | PROV                 |
| 3               | UNIFIED PROCESSOR                                                 | MX77AA                     | PROV                 |
| 4               | ISDN SIG. PREPROCESSOR                                            | BX01AB                     | PROV                 |
| 5               | CLASS MODEM RESOURCE                                              | 6X78AB                     | PROV                 |
| 6               | UNIVERSAL TONE REC                                                | 6X92BB                     | PROV                 |
| 7               | UNIVERSAL TONE REC                                                | 6X92BB                     | PROV                 |
| 8               | ENHANCE MSG CP<br>OR<br>HDLC MSG CP (for EDC)                     | 6X69AC<br>MX76AA           | PROV<br>PROV         |
| 9<br>0-3<br>0-3 | QUAD CARRIER C-SIDE<br>DUAL DS1 PACKLET<br>PACKLET FILLER FACE PL | MX87AA<br>MX81AA<br>MX83AA | PROV<br>PROV<br>PROV |
| 10              | MATRIX CP                                                         | MX75AA                     | PROV                 |
| 11              | SIGNALLING CP                                                     | MX73AA                     | PROV                 |
| 12              | D-CHANNEL HANDLER(DCH)<br>QUAD CARRIER                            | BX02AA<br>MX87AA           | PROV<br>PROV         |

RCC2 XXX  
UNIT: 0

0 NORTHERN TELECOM  
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|   |     |                        |        |      |  |
|---|-----|------------------------|--------|------|--|
| 0 | 0-3 | DUAL DS1 PACKLET       | MX81AA | PROV |  |
| 0 | 0-3 | PACKLET FILLER FACE PL | MX83AA | PROV |  |
| 0 | 13  | DS-30A I/F CP          | MX74AA | PROV |  |

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## RCC2 Unit 1 Physical Layout

| SLOT  | CP DESCRIPTION         | PEC    | STATUS |
|-------|------------------------|--------|--------|
| 14    | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
|       | QUAD CARRIER           | MX87AA | PROV   |
| 0-2   | DUAL DS1 PACKLET       | MX81AA | PROV   |
| 0-3   | PACKLET FILLER FACE PL | MX83AA | PROV   |
| 15    | DS 30A I/F CP          | MX74AA | PROV   |
| 16    | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
|       | QUAD CARRIER           | MX87AA | PROV   |
| 0-3   | DUAL DS1 PACKLET       | MX81AA | PROV   |
| 0-3   | PACKLET FILLER FACE PL | MX83AA | PROV   |
| 17    | SIGNALLING CP          | MX73AA | PROV   |
| 18    | MATRIX CP              | MX75AA | PROV   |
| 19    | QUAD CARRIER C-SIDE    | MX87AA | PROV   |
| 0-3   | DUAL DS1 PACKLET       | MX81AA | PROV   |
| 0-3   | PACKLET FILLER FACE PL | MX83AA | PROV   |
| 20    | ENHANCED MSG CP        | 6X69AC | PROV   |
|       | OR                     |        |        |
|       | HDLC MSG CP (for EDC)  | MX76AA | PROV   |
| 21    | UNIVERSAL TONE REC'VR  | 6X92BB | PROV   |
| 22    | UNIVERSAL TONE REC'VR  | 6X92BB | PROV   |
| 23    | CLASS MODEM RESOURCE   | 6X78AB | PROV   |
| 24    | ISDN SIG. PREPROCESSOR | BX01AB | PROV   |
| 25    | UNIFIED PROCESSOR CP   | MX77AA | PROV   |
| 26-27 | POWER CONVERTER CP     | MX72AA | PROV   |

RCC2: XXX  
UNIT: 1

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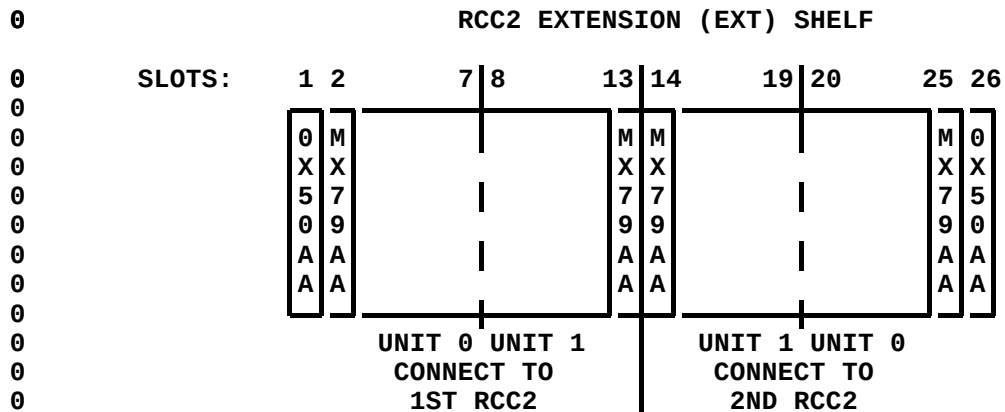
# 0 Provisioning Host Interface

0  
0 The C-Side interface is provided via up to sixteen DS1 links.  
0 These links provide up to 384 Channels for host traffic. The two  
0 Quad Carrier packs and packlets are Provisionable based on traf-  
0 fic requirements. Refer to the Engineering Manual section for de-  
0 tails.

0 The host peripheral module must be equipped with Common Circuit  
0 Pack Fills per BCS-33 standards. The host controller must be a  
0 LTC/LTCI if the RCC2 terminates CDO or PBX trunks and may be a  
0 LGC/LGCI if the RCC2 terminates lines only. The ISDN capability  
0 of LTCI and LGCI controllers is not required by the RCC2. The  
0 host peripheral must utilize clear channel DS-1s (NT6X50AB) in  
0 order to support ISDN connections to the Packet Handler via the  
0 host umbilical.

## 0 The Extension (EXT) Shelf

0  
0 The Extension Layout is as follows:



0

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0 Note: The Extension Shelf is actually two functional modules  
0 on a single card cage, where slots 1-13 constitute mod-  
0 ule zero and slots 14-26 make up module one.

0 Each module is further broken down into two logical  
0 units (0 & 1) which provide redundancy. Each module on  
0 the EXT shelf is provisioned independently. The left  
0 module is provisioned in support of the first RCC2  
0 shelf and the right module is provisioned to support  
0 the second RCC2 shelf.

0 Like slots 12, 14, and 16 on the RCC2 Shelf, the EXT  
0 shelf slots 4, 6, 8, 19, 21, and 23 may be equipped  
0 with a D-Channel Handler (BX02AA) or PCM Quad Carrier  
0 CP (MX87AA).

0 Provisionable slots not equipped with a circuit pack  
0 must be equipped with the NT0X50AA Filler Face Plate.

0 EXT Shelf Left Side Physical Layout

| SLOT | DESCRIPTION              | PEC    | STATUS |
|------|--------------------------|--------|--------|
| 1    | FILLER FACE PLATE        | 0X50AA | PROV   |
| 2    | DS60 EXTENDER CP         | MX79AA | PROV   |
| 3    | D-CHANNEL HANDLER(DCH)   | BX02AA | PROV   |
| 4    | D-CHANNEL HANDLER(DCH)   | BX02AA | PROV   |
|      | QUAD CARRIER             | MX87AA | PROV   |
| 0-3  | DUAL DS1 PACKLET         | MX81AA | PROV   |
| 0-3  | PACKLET FILLER FACE PL M | 83AA   | PROV   |
| 5    | D-CHANNEL HANDLER(DCH)   | BX02AA | PROV   |
| 6    | D-CHANNEL HANDLER(DCH)   | BX02AA | PROV   |
|      | QUAD FRAME CARRIER       | MX87AA | PROV   |
| 0-3  | DUAL DS1 PACKLET         | MX81AA | PROV   |
| 0-3  | PACKLET FACE PLATE       | MX83AA | PROV   |
| 7    | D-CHANNEL HANDLER(DCH)   | BX02AA | PROV   |
| 8    | D-CHANNEL HANDLER(DCH)   | BX02AA | PROV   |
|      | QUAD FRAME CARRIER       | MX87AA | PROV   |
| 0-3  | DUAL DS1 PACKLET         | MX81AA | PROV   |

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|---|-----|------------------------|--------|------|--|---|---|
| 0 | 0-3 | PACKLET FACE PLATE     | MX83AA | PROV |  | N | C |
| 0 | 9   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV |  | I | C |
| 0 | 10  | D-CHANNEL HANDLER(DCH) | BX02AA | PROV |  | T | 2 |
| 0 | 11  | D-CHANNEL HANDLER(DCH) | BX02AA | PROV |  | 1 |   |
| 0 | 12  | D-CHANNEL HANDLER(DCH) | BX02AA | PROV |  |   |   |
| 0 | 13  | DS60 EXTENDER CP       | MX79AA | PROV |  |   |   |

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EXT Shelf Right Side Physical Layout

| SLOT | DESCRIPTION            | PEC    | STATUS |
|------|------------------------|--------|--------|
| 14   | DS60 EXTENDER CP       | MX79AA | PROV   |
| 15   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 16   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 17   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 18   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 19   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
|      | QUAD FRAME CARRIER     | MX87AA | PROV   |
| 0-3  | DUAL DS1 PACKLET       | MX81AA | PROV   |
| 0-3  | PACKLET FACE PLATE     | MX83AA | PROV   |
| 20   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 21   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
|      | QUAD FRAME CARRIER     | MX87AA | PROV   |
| 0-3  | DUAL DS1 PACKLET       | MX81AA | PROV   |
| 0-3  | PACKLET FACE PLATE     | MX83AA | PROV   |
| 22   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 23   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
|      | QUAD FRAME CARRIER     | MX87AA | PROV   |
| 0-3  | DUAL DS1 PACKLET       | MX81AA | PROV   |
| 0-3  | PACKLET FACE PLATE     | MX83AA | PROV   |
| 24   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 25   | DS60 EXTENDER CP       | MX79AA | PROV   |
| 26   | FILLER FACE PLATE      | 0X50AA | PROV   |

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## EXTENSION SHELF LAYOUT

Provision the EXT shelf to increase the number of DS1s assignable on the RCC2 by a maximum of 24 or the number of D-Channel Handlers which may be assigned on the RSC-S to 10.

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0 The following PECs and quantities are provisionable on the EXT:

| 0 Qty     | 0 Pack                                   |
|-----------|------------------------------------------|
| 0 ---     | 0 ----                                   |
| 0 0 to 3  | 0 Quad PCM Carrier (NTMX87AA)            |
| 0 0 to 12 | 0 Dual DS-1 Packlet (NTMX81AA)           |
| 0 0 to 12 | 0 Packlet Face Plate (NTMX83AA)          |
| 0 0 to 10 | 0 D-Channel Handler for ISDN (NTBX02AA)  |
| 0 0 to 10 | 0 Filler Face Plate (NT0X50AA) Per Side. |

## 0 P-Side Port Provisioning

0  
0 The RCC2 offers a maximum of 54 P-Side Ports for use with local  
0 and remote lines, trunking, DCHs and RMMs. The hardware require-  
0 ment to support the 54 ports is greater than the physical capac-  
0 ity of the RCC2 so the Extension (EXT) shelf was developed.

0 The RCC2 and EXT shelves are housed in different cabinets and  
0 linked via a cable limited to 20 feet in length. Provisioning the  
0 EXT Shelf enables the assignment of up to 46 DS-1 P-Side ports  
0 at a cost of DS-30A ports or up to 10 DCH Ports at a cost of  
0 DS-1 Ports.

0 Since RCC2 physical maximum (i.e. 54 p-side ports) is exceeded by  
0 the combined individual maximums, balancing the allocation of  
0 these ports must be performed to fit the combined individual max-  
0 imums into the shelf.

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## 0 TABLE H: RSC-SONET PROVISIONING AND CONFIGURATION TABLE

0  
0 Table Z1 has been renamed TABLE H (to avoid confusion with an-  
0 other TABLE Z) and incorporated into the Engineering Manual. Re-  
0 fer to Section EMA14-08-000 for RSC-SONET Provisioning and  
0 Configuration.

## 0 RSCS Service Circuits

0  
0 The RSCS can support up to two (2) Remote Maintenance Modules  
0 (RMM) within the CRSC and CEXT. Additional RMMs may be mounted in  
0 a CMIS. Refer to ECM-655 for details. Detailed below are the RMM  
0 Circuit Packs:

0 The following packs are required for all RMMs used with the RCC2:

## 0 NT6X13AB RMM Always Provided Circuit Packs

0 -----  
0 NT6X74AA - Control Card  
0 NT2X59AA - Group Codec  
0 NT2X06AA - 5V @ 40A Power Converter  
0 NT2X09AA - +-5V, +-12V @ 8A Power Converter

## 0 RMM Provision As Required CPs

0 -----  
0 NT2X90AD - INC/OG Test Trunk (Required For Metallic Testing)

0 In order for this CP to function it must be equipped with a Bal-  
0 ance Network. Provision either NT2X77AA/AB/AC/AD or NT2X80AA.

0 NT3X09BA - Remote Metallic Test Access  
0 -Required for MTU  
0 -Interfaces up to four LCMs or LCME  
0 -Contains eight test ports  
0 NT0X10AA - Scan (SC) Point Card  
0 -14 SC Points Per Card  
0 NT2X10BA/NT2X11BA - MTU  
0 NT2X57AA - Signal Distribution (SD) Card  
0 -14 SD Points Per Card

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0  
0 RMM Optional - Provision As Required CPs  
0 -----

0 NT3X04AA - AECO Local Test Board Interface

0 RSCS Subscriber Lines

0  
0 The RSCS supports POTS, MDC and ISDN subscriber lines via the Al-  
0 ways Provided LCME modules in the CRSC and CEXT, CLCE cabinets  
0 and LCE frames. LCMs must be provisioned if coin lines are re-  
0 quired. LCMes can support NT6X18 line card types only if they are  
0 not configured as high voltage lines (Coin,ANI,etc.).

0 Phase 1 limits ISDN modules to the CRSC and CEXT only. Ten (10)  
0 LCMs max are provisionable in five (5) CLCE cabinets or LCE  
0 frames for a Mono RSCS configuration (see Software Restrictions  
0 for a Dual RCC2) for Phase 1. All line card types with the excep-  
0 tion of coin lines are provisionable in the ISDN line drawer. The  
0 ISDN line card cannot be mounted in a POTS line drawer/LCM.

0 RSCS Miscellaneous Equipment

0  
0 Limitations placed on this equipment were not completed in time  
0 to make this release. Refer to ECM-655 for CMIS provisioning.

0 Provision the NTRX49AA per Telco requirements for Spare Card  
0 storage. Note: An NTMX87 must be provisioned as required to  
0 store spare DS1 packets.

0 8.1.4 OFFICE LAYOUT INFORMATION

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0 Either the CPDC or the PDC/RME may be used to power RSC-S  
0 lineups. The standalone CRSC configuration is available for sin-  
0 gle cabinet applications. The CPDC must be the first cabinet in  
0 any lineup it powers. Therefore, when providing a standalone  
0 CRSC in an office that will ultimately grow to require additional  
0 cabinets (CLCE, CEXT, etc.), space should be left for the CPDC to  
0 be the first cabinet in the lineup.

0 Fully cabinetized RSC-S lineups will not exceed eleven cabinets.  
0 As office configurations are determined, this restriction will be  
0 reviewed.

0 When using a PDC or RME frame to power a CRSC or CEXT, an ex-  
0 ternal power kit (NTMX8943) must be provided for each CRSC/CEXT  
0 cabinet.

0 CRSC and CEXT cabinets must be located so that the DS60 cables  
0 between them do not exceed twenty feet in length. Since one CEXT  
0 can support two CRSCs, in Dual configurations, each CRSC would  
0 need to be within 20 feet of the CEXT (assuming both CRSCs re-  
0 quire CEXT facilities).

0 The availability of power filter kits makes it possible to power  
0 two or more lineups from one CPDC, rather than using one CPDC per  
0 lineup. When using power filter kits (vertical power option),  
0 the number of CPDCs required is based on the number of circuit  
0 breakers required to power equipment, not the number of lineups.  
0 Vertical powering is to be used for all new RSC-S offices.

#### 0 8.1.5 TRAFFIC TABLES

0 The traffic rules and tables for RSC-SONET have been incorporated  
0 into the Simplified Traffic rules. Refer to ECM-497 for RSC-SONET  
0 traffic provisioning rules and tables. These rules include doc-  
0 umentation for the SMS-R.

0 The following provisioning considerations were previously imbed-  
0 ded in the traffic calculations for RSC-SONET. Since traffic  
0 rules have been consolidated in ECM-497, the following consider-  
0 ations are now documented as follows:

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- 0 1. The number of links required and number of DCHs needed  
0 for an application are determined by using the worksheets  
0 in ECM-497. Both the RSC-SONET and its subtending LCMs,  
0 LCMes, SMS-Rs and remotes are covered in ECM-497. After  
0 the number of DS30As, DS1s and DCHs has been determined  
0 in ECM-497, the RSC-SONET Provisioning and Configuration  
0 Table (in Engineering Manual as TABLE H ) describes the  
0 equipment required and mounting locations.
- 0 2. CLASS Modem Resource Circuit Packs:  
0 If the RSC-SONET is to support Calling Number Delivery,  
0 two CLASS Modem Resource circuit packs must be mounted  
0 in each CRSC. Refer to the Engineering Manual section  
0 for the CRSC (either detail or Building Block) for  
0 mounting position.
- 0 3. Warning Labels:  
0 Warning labels are available in both French and English.  
0 Refer to the Engineering Manual section for the CRSC  
0 (either detail or Building Block) for ordering codes.
- 0 4. Standalone CRSC:  
0 The NTMX8943 kit is available for applications when ONLY  
0 the CRSC is required and it is to be powered from the  
0 office power board. Provide one kit for the CRSC when this  
0 configuration is required.
- 0 5. Standard RMM:  
0 An RMM for typical remote applications has been  
0 assembled for use when exact customer requirements  
0 have not been specified. In addition to the RMM  
0 packfill, it contains the following:

| Slot Card PEC            | Slot Card PEC    |
|--------------------------|------------------|
| 3 NT2X10BA               | 9R NT2X77AA      |
| 4 NT2X11BA               | 10 NT2X90AD      |
| 5 NT0X10AA               | 10R NT2X77AA     |
| 6 NT3X09BA               | 11 NT2X90AD      |
| 7 NT2X90AD               | 11R NT2X77AA     |
| 7R NT2X77AA              | 12 NT3X09BA      |
| 8 NT2X90AD               | 13 NT2X57AA      |
| 8R NT2X77AA              | 14 NT2X57AA      |
| 9 NT2X90AD               | 15 NT0X10AA      |
| NT6X1438 (-48V SP Strap) | 16 Provisionable |

0 Provide the Standard RMM as required when it  
0 satisfies office requirements. Otherwise, the

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0 NT6X13AB RMM shelf can be supplied and equipped  
0 as needed, subject to the restrictions described  
0 previously due to bulkhead cabling. One RMM may  
0 be provisioned in each CRSC, one in each CEXT  
0 and up to four RMMs may mount in a CMIS.

0 6. Total Quantity of DCHs Required: (Previously R131)  
0 The total quantity of DCHs required equals the  
0 number needed for support of LCMEs plus one spare.

0 7. Total Quantity of DS30As Required: (Previously R132)  
0 The total quantity of DS30As required equals the  
0 number needed for interface to LCMS, LCMEs and  
0 SMS-Rs plus two (for dedicated RMM ports).

0 8. Quantity of Extension shelves required (Previously R133)  
0 is determined by referring to Column D in the RSC-SONET  
0 Provisioning and Configuration Table (Table TABLE H ) for  
0 the row selected for a specific configuration.

0 9. Quantity of Quad Carriers required for the Extension  
0 Shelf (Previously R134) is determined by referring to  
0 Column D in the RSC-SONET Provisioning and Configuration  
0 Table (Table TABLE H ) for the row selected for a  
0 specific configuration.

0 10. Quantity of Quad Carriers required for the Main  
0 Shelf (Previously R135) is determined by referring to  
0 Column G in the RSC-SONET Provisioning and Configuration  
0 Table (Table TABLE H ) for the row selected for a  
0 specific configuration. One Quad Carrier is required  
0 for each different slot used (slots 12, 14 and 16). A  
0 maximum of three Quad Carriers will be needed.

0 11. Quantity of CEXT cabinets required (Previously R138):  
0 One CEXT is required if an Extension Shelf is needed.  
0 (One CEXT can support both halves of a Dual RCC2.)

0 12. Quantity of EXT packfills required (Previously R139):  
0 Column D of Table TABLE H specifies the requirement  
0 for an Extension Shelf. In a Dual RCC2, if both RCC2s  
0 use a configuration requiring an EXT shelf, two EXT  
0 packfills are needed. Otherwise, the requirement  
0 equals the number in Column D for the row used.

0 13. Quantity of DS1 packets required for host interface  
0 (Previously R140):



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0 Calculations in ECM-497 determine the number of  
0 host links needed for each RCC2 controller. The  
0 number of DS1 packlets needed equals the number  
0 of links divided by two and rounded up.

0 14. Quantity of DS1 packlets required for P-side interface  
0 (Previously R141):

0 Calculations in ECM-497 determine the number of  
0 host links needed for each remote and DS1s needed  
0 for SMS-R Special connections. The P-side DS-1  
0 interface for an RCC2 equals the sum of the ports  
0 for RLCMs, OPMS, CDO/PBX trunks, SMS-R Specials  
0 and, in a Dual configuration, Interlinks. The  
0 number of DS1 packlets needed equals this number  
0 of links divided by two and rounded up.

0 15. Quantity of RCC2 Shelf packfills required (Previously R142):  
0 One required for Mono RCC2; two required for a Dual RCC2.

0 16. Quantity of EXT Shelf fillers required  
0 (Previously R143/R143a):  
0 Provide fillers as needed to cover unequipped EXT shelf.  
0 Filler kits are available for both left and right sides.

0 17. Quantity of LCME packfills needed (Previously R144):  
0 ECM-497 calculates the number of LCMEs required. Each  
0 LCME requires one packfill. Each CRSC can mount one  
0 LCME and the CEXT can mount one so there is a maximum  
0 of two LCMEs in a Mono configuration and three in a Dual.

0 18. Quantity of Enhanced Line Drawers (Previously R145):  
0 Provide eight Enhanced Line Drawers for each LCME  
0 packfill equipped.

0 19. Quantity of Universal Tone Receivers (Previously R147):  
0 The Always Provided pair of UTRs will handle the vast  
0 majority of offices. If UTR traffic exceeds 765 CCS,  
0 provide the second pair. See CRSC Engineering Manual  
0 section for assignment location.

0 20. Packlet fillers required (Previously R156):  
0 Provide fillers for each unequipped position on every  
0 Quad Carrier provisioned.

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0 8.2 PRODUCT/SYSTEM SPECIFICATIONS

0

0 8.2.1 PHYSICAL CHARACTERISTICS

0  
0 The issue of Circuit Protection and Grounding must be addressed  
0 as follows:

0 -Circuit Protection

0 Any wire or wire pair other than battery supply or ground which  
0 is connected to the RSCS and leaves the building must be pro-  
0 tected against lightning by suitable arrestors.

0 DS1 input and output ports will be protected against the follow-  
0 ing conditions:

- 0 - Shorts to ground, input to output, and across the pair.
- 0 - DC voltages: +/- 100 VDC with respect to ground, and
- 0 +/- 60 VDC between the leads.
- 0 - AC voltage to 110 VAC 50/60 Hz with respect to ground

0 - Grounding

0 All RSCS configurations will incorporate the grounding systems as  
0 specified in the DMS-100F Technical Specification. Grounding  
0 methods will comply with Isolated System Grounding rules.

0 - Fuses

0 In the RCC2 shelf there are fuses on individual packs. Their  
0 value will be added once the design is complete.

0 BATTERY FEED FROM THE FSP

0 - RCC2 Shelf

0 Max current from -48V feed is 8.1A

0 RCC2 power requirement is 340 Watts.

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## 0 NTMX89AA - Cabinetized Remote Switching Center

0  
0 Input Voltage..... -48VDC  
0 Power Consumption.....1142 Watts (worst case)  
0 Current Drain.....25 Amps (at -42VDC)  
0 Thermal Dissipation.....3897 BTU/hour (worst case)  
0 CPDC Requirements.....(3) 20 Amp Breakers on "A" Feed  
0 .....(3) 20 Amp Breakers on "B" Feed  
0 NOTE: 30 Amp Breakers will be used until 20 Amp  
0 Breakers are available for the CPDC.

## 0 MECHANICAL DIMENSIONS

0 Height 72" Width 28.5"  
0 Weight 810 lb. Depth 28.5"

## 0 NTMX88AA - CRSC Extension Cabinet

0  
0 Input Voltage..... -48VDC  
0 Power Consumption.....1142 Watts (worst case)  
0 Current Drain.....25 Amps (at -42VDC)  
0 Thermal Dissipation.....3897 BTU/hour (worst case)  
0 CPDC Requirements.....(3) 20 Amp Breakers on "A" Feed  
0 .....(3) 20 Amp Breakers on "B" Feed  
0 NOTE: 30 Amp Breakers will be used until 20 Amp  
0 Breakers are available for the CPDC.

## 0 MECHANICAL DIMENSIONS

0 Height 72" Width 28.5"  
0 Weight 810 lb. Depth 28.5"

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0 8.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 All EMI/Earthquake requirements are integral to the cabinet. An-  
0 chors for earthquake applications are supplied by providing the  
0 NTRX2512 Earthquake Anchor kit for each cabinet. Earthquake an-  
0 choring equipment is normally supplied by Building Studies.

0 8.2.3 SPARING INFORMATION

0  
0 The CMSS Cabinet shall be supplied to house spare circuit packs.  
0 Standard sparing algorithms apply.

0 The following packs are considered critical spares for the RCC2  
0 and EXT shelves:

0 RCC2 : NTMX72AA, NTMX73AA, NTMX74AA, NTMX75AA,  
0 NTMX77AA, NTMX81AA, NTMX87AA, NT6X92BB,  
0 NT6X69AC or NTMX76AA, NTB01AB  
0 Also, if provisioned : NT6X78AB  
0 NTB02AA

0 EXT : NTMX79AA  
0 Additional NTMX81AA, NTMX87AA and NTB02AA  
0 should be provided if used on the EXT shelf.

0 FSP : NT6X36AA, NT6X36AB

0 8.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 The fusing for both the CRSC and CEXT is as follows:

0 CPDC Requirements (3) 20 Amp Breakers on "A" Feed  
0 (3) 20 Amp Breakers on "B" Feed  
0 NOTE: 30 Amp Breakers will be used until 20 Amp

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0 Breakers are available for the CPDC.

0 8.2.5 CURRENT DRAIN INFORMATION

0  
0 Power information for both the CRSC and CEXT is as follows:

0 Power Consumption 1142 Watts (worst case)  
0 Current Drain 25 Amps (at -42VDC)

0 8.3 SOFTWARE PROVISIONING

0 NOTE: The existing RSC-SONET software accomodates the versions of  
0 the CRSC with provisionable LCM.

0 8.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Software packages specifically required for the Phase 1 RSCS are  
0 as follows:

- 0 - NTXP92AA
- 0 - NTX750AB is required at the host for all RSC-SONET applications  
0 (both ISDN and non-ISDN) for BCS-33 only.
- 0 - NTXJ00AB is required for all applications for BCS-33 only.
- 0 - Neither NTX750 nor NTXJ00 is a prerequisite for NTXP92 for  
0 BCS-34 or later. With BCS-34 or later, these packages  
0 will be ordered only when ISDN is needed.
- 0 - NTX145AA Basic RSC Features must also be included in the load for  
0 all RSC-SONET applications (both ISDN and non-ISDN).
- 0 - NTXR42AA Firmware Downloading is required in BCS-34 as a  
0 prerequisite for NTXP92AA.

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0  
0 Optional Packages :

- 0 - NTXR71AA RSC-S Extended Distance Capability
- 0 - NTXA85AB Basic SMS-R Features (Mono & Dual RCC/RCC2)
- 0 - NTXA86AA SMS-R Special Services (Including SPOTS)
- 0 - NTXE38AB CLASS - Calling Number Delivery on SMS-R  
0 (NTXE38 requires CMR card in host RCC2)
- 0 - NTXR34-- XPM Plus Basic (Limited Availability in BCS-34)  
0 (NTXR34AA is replaced by NTXR34AB in BCS-35.)

0 Software previously required for RSC is also applicable to RSC-S.

0 Refer to Software Management System (SMS) for interdependencies.

0 8.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Prior to BCS-35, the RSC-S software requires the presence of the  
0 EISP packs for all applications. With BCS-35 or higher, the EISP  
0 is required only when the RSC-S is to support ISDN. If the EISP  
0 is not equipped, the NTMX8947 EISP Strapping kit must be applied.

0 Because of restrictions imposed by software structuring,  
0 RSC-SONET hardware configurations will need to be checked against  
0 the following software limits. Any configuration exceeding these  
0 limits is invalid.

0 For the office configuration, determine total software ports and  
0 terminals as follows:

0 PORTS

- 0 -----
- 0 1 . Add one port for each RMM required.  
0 Include RMMs in RLCM/OPMs homing on RCC2.
  - 0 2 . Add sixteen ports for each RCC2 required.
  - 0 3 . Add eight ports for each LCM required.  
0 Include LCMs in RLCM/OPMs homing on RCC2.
  - 0 4 . Add nineteen ports for each LCME required.
  - 0 5 . Add fifty-four ports for each RCC2 shelf if

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0 part of a Dual configuration.

- 0 6. Add four ports for each SMS-R subtending the RCC2.

0 IF BCS-33,  $1+2+3+4+5+6 < \text{or} = 159$  (per RCC2)

0 IF BCS-34,  $1+2+3+4+5+6 < \text{or} = 259$  (per RCC2)

0 TERMINALS:

0 -----

- 0 6 . Add 641 terminals for each LCM.  
0 Include LCMs in RLCM/OPMs homing on RCC2.  
0 7 . Add 513 terminals for each LCME.  
0 8 . Add 31 terminals for each RMM.  
0 Include RMMs in RLCM/OPMs homing on RCC2.  
0 9 . Add 641 terminals for the RCC2 itself.  
0 10. Add one terminal for each B channel used for voice  
0 in an LCME.  
0 11. Add 31 terminals for PRA if RSC-S is handling ISDN.  
0 (i.e. if at least one ISDN line card is equipped)  
0 12. Add 589 terminals for each SMS-R homing on the RCC2.

0  $6+7+8+9+10+11+12 < \text{or} = 7055$  (per RCC2 in BCS-33)

0  $6+7+8+9+10+11+12 < \text{or} = 7884$  (per RCC2 in BCS-34)

0  $6+7+8+9+10+11+12 < \text{or} = 8676$  (per RCC2 in BCS-35)

0 In addition to this limit, there are a limited number of  
0 Logical Terminal Identifiers (LTIDs) available for the  
0 ISDN B channels. (LTIDs for D channels draw on a different  
0 resource.) The following maximums must not be exceeded:

0 BCS-33: maximum of 972 ISDN loops per RCC2  
0 maximum of 960 ISDN B channel LTIDs

0 BCS-34/35: maximum of 972 ISDN loops per RCC2  
0 maximum of 1024 ISDN B channel LTIDs

0 EXAMPLES:

0 For RCC2 with 2 LCMEs, 2 RMMs and 8 LCMs in BCS-33:

|          |                  |            |                |
|----------|------------------|------------|----------------|
| 0 Ports: | 16 for the RCC2  | Terminals: | 641 for RCC2   |
| 0        | 2 for the RMMs   |            | 62 for RMMs    |
| 0        | 64 for the LCMs  |            | 5128 for LCMs  |
| 0        | 38 for the LCMEs |            | 1026 for LCMEs |
| 0        |                  |            | 31 for PRA     |
| 0        |                  |            | 167 B channels |
| 0        | ----             |            | ----           |

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0 120 (within limit) 7055 (within limit)  
0 Only 167 B channels could be used since  
0 more would exceed the software limit.

0 For RCC2 with 0 LCMEs, 0 RMMs and 10 LCMS in BCS-33:

|                          |                         |
|--------------------------|-------------------------|
| 0 Ports: 16 for the RCC2 | Terminals: 641 for RCC2 |
| 0 0 for RMM              | 0 for RMMs              |
| 0 80 for the LCMS        | 6410 for LCMS           |
| 0 00 for LCME            | 0 for LCME              |
| 0 ----                   | ----                    |
| 0 96 (within limit)      | 7051 (within limit)     |

0 Due to the limit in CC and XPM software on the maximum number of  
0 nodes during ESA warm exit, if the maximum of nine SMS-Rs with  
0 six RCSs each are defined on an RCC2, no other P-side nodes  
0 (LCMS, LCMEs, etc.) may be defined.

0 As indicated by the previous checks, the maximum number of P-side  
0 modules that may be supported off an RCC2 is limited in some  
0 cases by the software structures, rather than the physical ports  
0 or channel capacity. This is particularly true for those config-  
0 urations supporting ISDN lines. The following tables provide the  
0 information needed to determine if a particular P-side configura-  
0 tion can be supported.

0 Table 1 lists the static resources used by each P-side module and  
0 Table 2 shows the maximum for each category, based on BCS level.  
0 Table 3 lists the maximums for the host XPM supporting an RCC2.  
0 Tables 4-6 show the number of Logical Terminal Identifiers  
0 (LTIDs) available for support of ISDN lines when using various  
0 mixes of P-side equipment. Table 4 is for BCS-35, Table 5 is for  
0 BCS-34 and Table 6 is for BCS-33.

0 For a configuration to be valid, it must be within the limits  
0 given in the appropriate table.



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**Table 1: RCC2 Static Resource Usage**

| Entity            | Ports | TID | Nodes | Msg_Lk | LCD | W.Exit |
|-------------------|-------|-----|-------|--------|-----|--------|
| Self              | 16    | 641 | 1     | 0      | 0   | 2      |
| Dual Spouse       | 54    | 1   | 1     | 2      | 0   | 0      |
| LCM               | 8     | 641 | 1     | 2      | 1   | 1      |
| RLCM/OPM          | 8     | 641 | 1     | 2      | 1   | 1      |
| ESA of RLCM/OPM   | 2     | 1   | 1     | 2      | 0   | 1      |
| RMM (own)         | 1     | 31  | 1     | 1      | 0   | 1      |
| RMM (at RLCM/OPM) | 1     | 31  | 1     | 1      | 0   | 1      |
| Extra if ISDN     | 0     | 32  | 0     | 0      | 0   | 0      |
| LCME              | 19    | 513 | 1     | 2      | 1   | 1      |
| Ckt-Sw LTID       | 0     | 1   | 0     | 0      | 0   | 0      |
| DCH               | 0     | 0   | 0     | 0      | 0   | 0      |
| SMS-R             | 4     | 1   | 1     | 2      | 0   | 1      |
| RCS at SMS-R      | 0     | 98  | 1     | 0      | 0   | 1      |

**Table 2: RCC2 Static Resource Capacities by BCS**

| BCS    | Ports | TIDs | Nodes | Msg_Lk | LCDs | W.Exit | LTID | DNs  | SMSRs |
|--------|-------|------|-------|--------|------|--------|------|------|-------|
| BCS-33 | 159   | 7055 | 117   | 39     | 10   | 66     | 960  |      | 9     |
| BCS-34 | 255   | 7884 | 117   | 39     | 10   | 66     | 1024 | 3276 | 9     |
| BCS-35 | 255   | 8676 | 117   | 39     | 10   | 66     | 1944 | 6552 | 9     |

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0 BCS-36 | 255 | 8676 | 117 | 39 | 10 | 66 | 1944 | 6552 | 9 |  
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| Entity                    | Ports | TID | Nodes | Msg_Lk | LCD |
|---------------------------|-------|-----|-------|--------|-----|
| Self                      | 16    | 641 | 1     | 0      | 0   |
| RCC2                      | 16    | 641 | 1     | 2      | 0   |
| LCM (own)                 | 8     | 641 | 1     | 2      | 1   |
| LCM at RCC2               | 0     | 0   | 1     | 0      | 0   |
| RLCM/OPM (own)            | 8     | 641 | 1     | 2      | 1   |
| RLCM/OPM at RCC2          | 0     | 0   | 1     | 0      | 0   |
| ESA of own RLCM           | 2     | 1   | 1     | 2      | 0   |
| ESA of RCC2 RLCM          | 0     | 0   | 1     | 0      | 0   |
| RMM at own RLCM           | 2     | 31  | 1     | 2      | 0   |
| RMM at RCC2               | 0     | 0   | 1     | 0      | 0   |
| RMM at RCC2's<br>RLCM/OPM | 0     | 0   | 1     | 0      | 0   |
| LCME off RCC2             | 0     | 0   | 1     | 0      | 0   |
| SMS-R off RCC2            | 0     | 0   | 1     | 0      | 0   |
| RCS at SMS-R              | 0     | 0   | 1     | 0      | 0   |

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**Table 4: TID Motivated Limitations: BCS-35**

| ISDN | Dual | #LCME | #RLCM | #LCD | #LCD+SMSR | # LTID  |
|------|------|-------|-------|------|-----------|---------|
| Yes  | No   | = 1   |       |      |           | =< 960  |
| Yes  | No   | = 2   | = 0   | =< 9 | =< 9      | =< 1920 |
| Yes  | No   | = 2   | = 0   | =< 7 | = 10      | =< 1920 |
| Yes  | No   | = 2   | = 0   | = 8  | = 10      | =< 1890 |
| Yes  | No   | = 2   | = 0   | = 9  | = 10      | =< 1838 |
| Yes  | No   | = 2   | = 0   | =10  | = 10      | =< 1786 |
| Yes  | No   | = 2   | =< 3  | =< 9 | =<10      | =< 1728 |
| Yes  | No   | = 2   | =< 3  | = 10 | = 10      | =< 1690 |
| Yes  | No   | = 2   | = 4   | =< 9 | =< 9      | =< 1728 |
| Yes  | No   | = 2   | = 4   | =< 8 | = 10      | =< 1728 |
| Yes  | No   | = 2   | = 4   | = 9  | = 10      | =< 1710 |
| Yes  | No   | = 2   | = 4   | = 10 | = 10      | =< 1658 |
| Yes  | No   | = 2   |       |      |           | =< 1512 |
| Yes  | No   | >= 3  | = 0   | =< 8 |           | =< 1944 |
| Yes  | No   | >= 3  | =< 4  |      |           | =< 1728 |
| Yes  | No   | >= 3  |       |      |           | =< 1512 |
| Yes  | Yes  | = 1   |       |      |           | =< 960  |
| Yes  | Yes  | >= 2  | =< 4  |      |           | =< 1512 |
| Yes  | Yes  | >= 2  |       |      |           | =< 1296 |

RELEASE 28.01  
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| LCD+SMSR | LCD | RLCM | Number of LTIDs when Configured with: |       |       |       |
|----------|-----|------|---------------------------------------|-------|-------|-------|
|          |     |      | 1LCME                                 | 2LCME | 3LCME | 4LCME |
| 9        | 9   | 7    | 960                                   | 1024  | -     | -     |
| 10       | 5   | 4    | 960                                   | -     | -     | -     |
| 10       | 6   | 3    | 960                                   | 1024  | 1024  | -     |
| 10       | 6   | 4    | 946                                   | 1024  | -     | -     |
| 10       | 6   | 5    | 914                                   | -     | -     | -     |
| 10       | 7   | 1    | 960                                   | 1024  | 1024  | 1024  |
| 10       | 7   | 2    | 958                                   | 1024  | 1024  | 1024  |
| 10       | 7   | 3    | 926                                   | 1024  | 1024  | 1024  |
| 10       | 7   | 4    | 894                                   | 1022  | 1024  | -     |
| 10       | 7   | 5    | 862                                   | 990   | -     | -     |
| 10       | 7   | 6    | 830                                   |       | -     | -     |
| 10       | 8   | 0    | 960                                   | 1024  | 1024  | 1024  |
| 10       | 8   | 1    | 938                                   | 1024  | 1024  | 1024  |
| 10       | 8   | 2    | 906                                   | 1024  | 1024  | 1024  |
| 10       | 8   | 3    | 874                                   | 1002  | 1024  | 1024  |
| 10       | 8   | 4    | 842                                   | 970   | 1024  | 1024  |
| 10       | 8   | 5    | 810                                   | 938   | 1024  | -     |
| 10       | 8   | 6    | 778                                   | 906   | -     | -     |
| 10       | 8   | 7    | 746                                   | -     | -     | -     |

Continued on next page...

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| LCD+SMSR | LCD | RLCM | Number of LTIDs when<br>Configured with: |       |       |       |
|----------|-----|------|------------------------------------------|-------|-------|-------|
|          |     |      | 1LCME                                    | 2LCME | 3LCME | 4LCME |
| 10       | 9   | 0    | 918                                      | 1024  | 1024  | 1024  |
| 10       | 9   | 1    | 886                                      | 1014  | 1024  | 1024  |
| 10       | 9   | 2    | 854                                      | 982   | 1024  | 1024  |
| 10       | 9   | 3    | 822                                      | 950   | 1024  | 1024  |
| 10       | 9   | 4    | 790                                      | 918   | 1024  | 1024  |
| 10       | 9   | 5    | 758                                      | 886   | 1014  | 1024  |
| 10       | 9   | 6    | 726                                      | 854   | 982   | -     |
| 10       | 9   | 7    | 694                                      | 822   | -     | -     |
| 10       | 10  | 0    | 866                                      | 994   | 1024  | 1024  |
| 10       | 10  | 1    | 834                                      | 962   | 1024  | 1024  |
| 10       | 10  | 2    | 802                                      | 930   | 1024  | 1024  |
| 10       | 10  | 3    | 770                                      | 898   | 1024  | 1024  |
| 10       | 10  | 4    | 738                                      | 866   | 994   | 1024  |
| 10       | 10  | 5    | 706                                      | 834   | 962   | 1024  |
| 10       | 10  | 6    | 674                                      | 802   | 930   | 1024  |
| 10       | 10  | 7    | 642                                      | 770   | 898   | -     |

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**Table 6: TID Motivated Limitations: BCS-33**

| LCD | RLCM | Number LTID When Number of LCME Is: |     |     |     |     |     |     |     |     |
|-----|------|-------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
|     |      | 1                                   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   |
| 8   | 7    | 960                                 |     |     |     |     |     |     |     |     |
| 9   | 0    | 678                                 | 806 | 934 | 960 | 960 | 960 | 960 | 960 | 960 |
| 9   | 1    | 646                                 | 774 | 902 | 960 | 960 | 960 | 960 | 960 | -   |
| 9   | 2    | 614                                 | 742 | 870 | 960 | 960 | 960 | 960 | -   | -   |
| 9   | 3    | 582                                 | 710 | 838 | 960 | 960 | 960 | -   | -   | -   |
| 9   | 4    | 550                                 | 678 | 806 | 934 | 960 | -   | -   | -   | -   |
| 9   | 5    | 518                                 | 646 | 774 | 902 | -   | -   | -   | -   | -   |
| 9   | 6    | 486                                 | 614 | 742 | -   | -   | -   | -   | -   | -   |
| 9   | 7    | 454                                 | 582 | -   | -   | -   | -   | -   | -   | -   |
| 10  | 0    | 36                                  | 164 | 292 | 420 | 548 | 676 | 804 | 932 | 960 |
| 10  | 1    | 4                                   | 132 | 260 | 388 | 516 | 644 | 772 | 900 | 960 |
| 10  | 2    | 0                                   | 100 | 228 | 356 | 484 | 612 | 740 | 868 | -   |
| 10  | 3    | 0                                   | 68  | 196 | 324 | 452 | 580 | 708 | -   | -   |
| 10  | 4    | 0                                   | 36  | 164 | 292 | 420 | 548 | -   | -   | -   |
| 10  | 5    | 0                                   | 4   | 132 | 260 | 388 | -   | -   | -   | -   |
| 10  | 6    | 0                                   | 0   | 100 | 228 | -   | -   | -   | -   | -   |
| 10  | 7    | 0                                   | 0   | 68  | -   | -   | -   | -   | -   | -   |

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0 8.3.3 MEMORY PROVISIONING

0  
0 The Unified Processor Pack in the RCC2 shelf is equipped with 8M  
0 of memory. Expansion of the memory to 16 megabytes will also be  
0 possible.

0 8.3.4 Operational Measurements

0  
0 Basic OMs for the XPM have been applied to the RCC2.

0 8.3.5 Logs/Tools

0  
0 Existing PM Logs are updated to reflect the RSCS. Resident tools  
0 are updated for the CC/XPM as well.

0 8.4 REAL TIME IMPACT

0 The RCC2 combines the Master Processor and Signal Processor func-  
0 tions of the RCC/RCCI into the Unified Processor hardware. The  
0 Unified Processor is capable of handling 1.6 times the call at-  
0 tempts of the existing MP and SP hardware at the recommended en-  
0 gineering level of 80%, assuming the RCC is not equipped with per  
0 trunk signaling trunks. The real time cost at the host XPM is  
0 the same as for the RCC/RCCI hardware configuration. Refer to SEB  
0 91-05-001 (Issue 02 or later) for additional information.

0 Real time impact of SMS-R off RCC2 is included in PRTCALC Version  
0 2G.

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0 9.0 Detailed/Building Block Engineering - RSC

0 The RCE frame contains a two (2) shelf Remote Control Cluster (RCC)  
0 module which is an LTC type peripheral. The controller side (C-Side)  
0 interfaces to the host over DS-1 links to an LGC/LTC.

0 NOTE:

0 Software Translations require from 3 to 16 ports to interface to  
0 an RSC. Hardware facilitates a host interface requirement of  
0 from 2 to 16 DS-1 links, with a third link reserved.)

0 The peripheral side (P-Side) of an RCC consists of 20 ports that cur-  
0 rently support LCMs (each 2 to 6 DS-30A links), DS-1 trunks (8 Max)  
0 and two(2) Remote Maintenance Modules (each 1 DS-30A link).

0 The RCE Frame contains a maximum of two (2) Remote Maintenance Modules  
0 (RMM). Each RMM occupies one (1) shelf in the RCE frame. At least  
0 one RMM shelf is required at each site to provide service circuits and  
0 diagnostic tests. The RMM shelf can be shared between co-located  
0 RSCs, provided they share the same host. The RMM can be shared with a  
0 co-located RLCM, provided they share the same host as the RSC and only  
0 if the RLCM does not have the Emergency Stand Alone (ESA) feature op-  
0 tion specified.

0 9.1 HARDWARE PROVISIONING

0

0 9.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 There are RSC usage restrictions on the Host LGC/LTC and the RSC  
0 P-Side Port Configuration as follows:

- 0 1. LGC/LTC P-SIDE CONFIGURATION  
0 2. RSC P-SIDE CONFIGURATION  
0 3. SOFTWARE NODAL REQUIREMENTS  
0 4. Enhanced Office Recovery

0 \* LGC/LTC P-SIDE CONFIGURATION

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0 When provisioning the P-Side of an LGC/LTC, the P-Side ports  
0 can be configured for a maximum of two (2) RSCs if the fol-  
0 lowing conditions are met:

- 0 1. 2 RSCs from a Mono RSC configuration
- 0 2. 1 RSC from a dual configuration and 1 RSC from a single  
0 configuration
- 0 3. Traffic, Real Time and software Nodal requirements do not  
0 exceed the recommended engineering limits.
- 0 4. All DS-1 links from a RCC must terminate on the same  
0 LGC/LTC.
- 0 5. LTC required when CDO/PBX Trunking is required.

0 In addition, the remaining P-Side ports can be configured for  
0 two RLCMs or OPMS if the Traffic, Real Time and software  
0 Nodal requirements do not exceed the recommended engineering  
0 limits.

0 \* RSC P-SIDE CONFIGURATION

0 The P-Side of an RSC can be configured for the following max-  
0 imums if the Traffic, Real Time and software Nodal require-  
0 ments do not exceed the recommended engineering limits:

- 0 1. Maximum of 9 LCMs (using 2 ports per LCM)
- 0 2. Maximum of 8 DS1s assigned to CDO/PBX Trunking Functions;  
0 DS1s may be assigned to the CDO and or PBX function in  
0 any combination not to exceed eight (8).
- 0 3. Maximum of 18 DS1s for any combination of RLCMs and OPMS
- 0 4. Any combination of the above not to exceed the stated in-  
0 dividual maximums

0 \* SOFTWARE NODAL REQUIREMENTS

0 A host LGC/LTC can support a maximum software datafilling of  
0 18 Peripheral Side (P-Side) software nodes with BCS 22. In  
0 BCS 23 and later, the capacity increases to 62 P-Side nodes.

0 A node is defined as follows:

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0 Host LCMs, RSC LCMs, RMMs, RCCs, RLCMs, OPMs, ESA  
0 processors (for the RLCM or OPM), and dummy software  
0 nodes.

0 An example of counting software nodes follows;

0 A host LGC configured with two (2) host LCMs, one (1)  
0 RLCM, one (1) OPM and one (1) RSC (remotes configured  
0 below) would constitute a total of 15 software nodes.

0 - The host LCM would constitute two (2) software nodes.

0 - An RLCM configured with one (1) RMM and ESA processor  
0 would constitute three (3) software nodes.

0 - An OPM configured with one (1) RMM would constitute two  
0 (2) software nodes.

0 - An RSC configured with one (1) RCC, two (2) RMMs and five  
0 (5) LCMs would constitute eight (8) software nodes.

0 \* Enhanced Office Recovery

0 The feature NTXA66AA - Enhanced Office Recovery has been in-  
0 corporated into the DMS-100 Basic S/W Package - NTX001.  
0 Therefore, the NT6X45BA and later LGC Processors are required  
0 to support Enhanced Office Recovery Feature.

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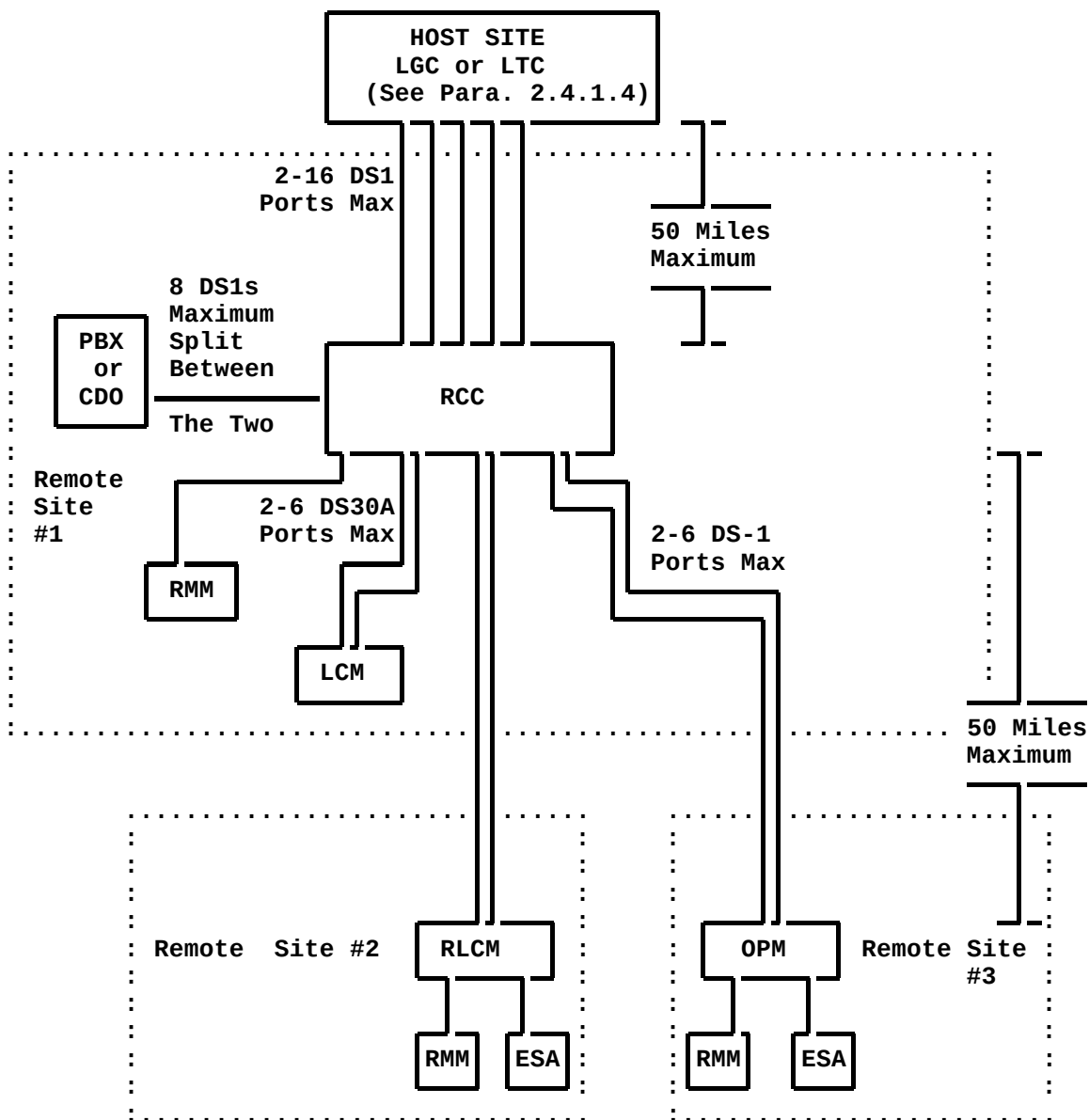
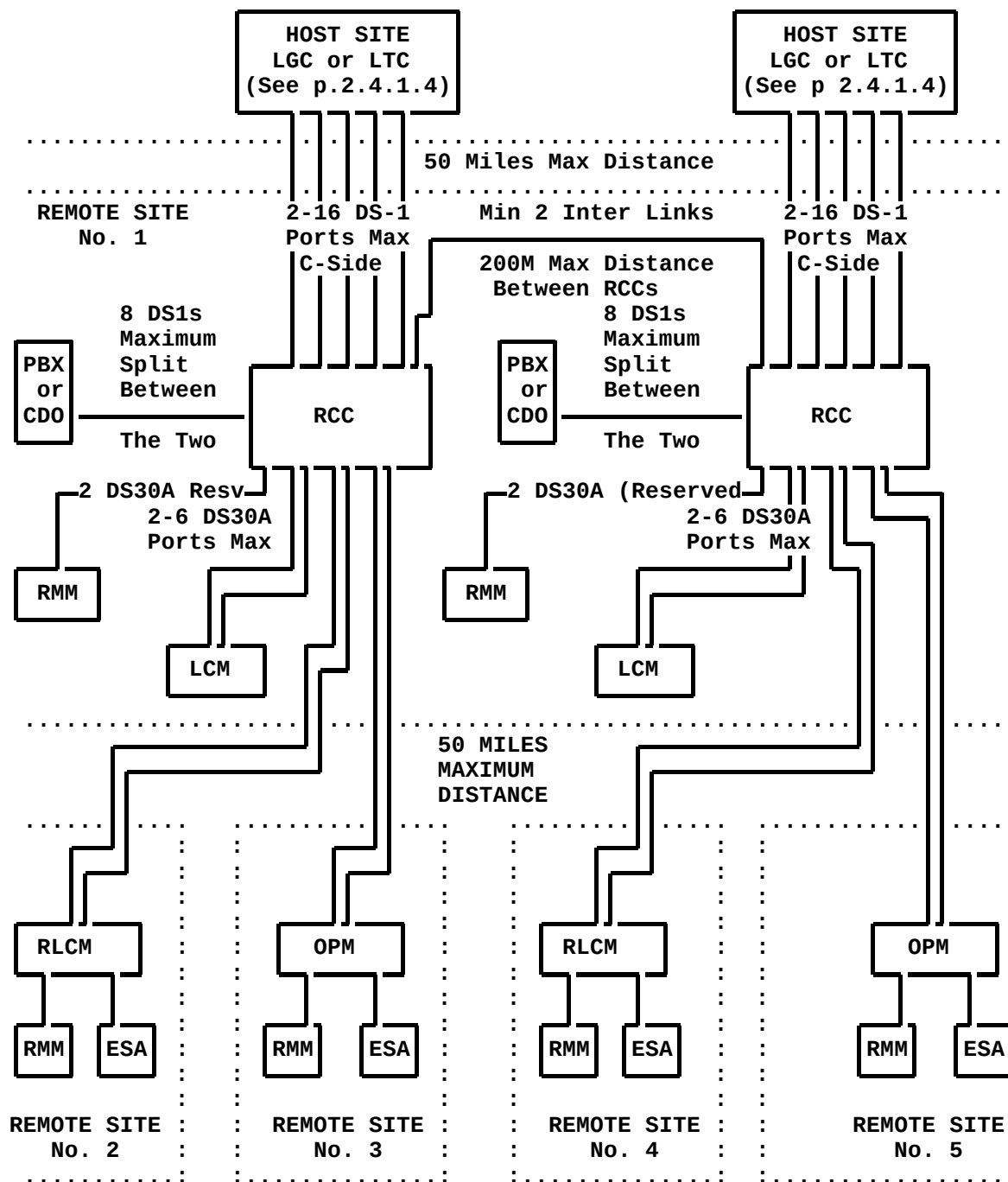


Figure 1: Typical Mono RCC Remote Off Remote C & P-Sided Configuration

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0 Figure 2: Typical DUAL RCC Remote Off Remote C &amp; P-Sided Configuration

0 9.1.2 HARDWARE DEPENDENCIES REQUIREMENTS

0

0 Refer to Section 3. Provisioning Information

0 9.1.3 PROVISIONING CONSIDERATIONS

0

## 0 GENERAL RSC PROVISIONING

0

0 The RSC may be provisioned with the following Hardware (H/W),  
0 where specific quantities are restrained by Traffic, REAL-TIME,  
0 and Capacity issues unique to the service mix required:

0 RCE FRAME One per Mono RSC, two per Dual RSC, two Mono RSCs  
0 may be located on/in the same floor/building. The  
0 RCE consists of one Remote Maintenance Module  
0 (RMM) Card Cage, one double shelf Remote Custer  
0 Controller (RCC),

0 LCE FRAME Line Concentration Equipment (LCE) is provisioned  
0 in the RSC as follows:

0 \* Max 5 LCEs (9 LCMS) per Mono RSC, Max 10 LCEs  
0 (18 LCMS) per Dual RSC. A maximum of 5,760  
0 Lines per Mono RSC or 11,520 per Dual RSC. The  
0 exact quantities provisionable according to a  
0 specific service mix are limited by Traffic,  
0 REAL TIME, and Capacity issues (Refer to  
0 ECM-497).

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0 \* The LCE may consist of two LCM, each LCM may  
0 have up to 10 Line Drawers, each line drawer  
0 may house up to 64 Line Card.

0 PDC Frame The Power Distribution Center (PDC) frame is re-  
0 quired in the RSC when the total number of fuses  
0 needed exceeds 56. Otherwise provide the RME  
0 frame below.

0 RME Frame The Remote Miscellaneous Equipment (RME) Frame is  
0 provisioned in sufficient quantities to house  
0 equipment as follows:

0 Power Distribution Equipment consisting of:

0 \* Max 2 each Fuse Panel A and B  
0 \* PDC Frame, Frame Supervisory Panel (FSP)  
0 \* Frame fuses not to exceed 56.  
0 \* Miscellaneous Frame Grounding hardware

0 Miscellaneous Frame Mounted Equipment such as:

0 \* MIS Frame, Frame Supervision Panel (FSP)  
0 \* Inverter  
0 \* Common Equipment Shelf  
0 \* Modem Shelves  
0 \* etc, Refer to MIS/RME Frame Engr Manual Sec-  
0 tion

0 REMOTES RLCMs and OPMs 256/640 REMOTES may home on the RSC  
0 via 2-6 DS30A ports. Up to five (5) REMOTES may be  
0 connected to a Mono RSC, 10 for a Dual RSC.

0 MISC EQPT Other miscellaneous equipment provisionable is as  
0 follows: Maintenance Tools and Alarm Panels.

0 MONO RSC

0 The Mono RSC is comprised of a Remote Controller Equipment (RCE)  
0 Frame. Also required but custom provisioned are the Line Concen-  
0 trating Equipment (LCE) Frames, Remote Miscellaneous Equipment  
0 (RME) Frames, Remote VDU, Remote Printer, Modems, Alarm Panel,  
0 Inverter, and Maintenance Tools.

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## 0 DUAL RSC

## 0 Dual RCC Memory

0 Minimum Dual RCC processor memory requirements are as follows:

0 \* The RCC must have 1 megabyte of SP memory (NT6X46AC or  
0 NT6X46BA).

0 \* The RCC must have 4 megabyte of MP memory via 2 NT6X47ABs per  
0 shelf or 1 NT6X47AC per shelf.

0 For dual RCCs, there is a requirement for additional Signal  
0 Processor (SP) and Master Processor (MP) memory that is applica-  
0 ble to XPMs generically. The following upgrades are required:

## 0 UPGRADE DESCRIPTION

0 SP Memory NT6X46BA (1 Meg.) or NT6X46AC (which is an up-  
0 graded NT6X46AB to 1 Meg.)

0 MP Memory Each RCA shelf, which is part of a dual RCA con-  
0 figuration, will require two NT6X47ABs per shelf  
0 in BCS 26 (V0). All RSCs will require the 4mb of  
0 MP Memory via a two NT6X47AB per shelf or one  
0 NT6X47AC per shelf. This became a requirement as  
0 of BCS27.

0 Refer to Figure 1 and 2 for a block diagram of a typical Mono-RSC  
0 and Dual-RSC deployment, respectively.

## 0 HOST INTERFACE MODULE REQUIREMENTS

0 The RSC must be connected to a LTC peripheral module when Commu-  
0 nity Dial Office (CDO) and/or Private Branch Exchange (PBX) traf-  
0 fic is routed to the RSC.

0 Trunking Features for RSCs are available in BCS-22 and later.

0 If software feature package NTX152AA/AB RSC Digital Trunking is  
0 specified then the RSC must interface to a host LTC.

0



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0 The RSC supports limited trunking. Specifically, local (non  
0 toll) interoffice trunking (EAS), Private Branch Exchange (PBX),  
0 Direct Inward/Outward Dial (DID/DOD) Trunking.

0 ECD 024-00317 started 891215 released 900605 introduced the fol-  
0 lowing:

|   |          |                                  |
|---|----------|----------------------------------|
| 0 | NT6X12AG | REMOTE CLUSTER CONTROLLER        |
| 0 | NT6X12AH | NT6X50AB UPGRADE KIT             |
| 0 | NT6X1201 | REMOTE CONTROL ARRAY SHELF ASSY  |
| 0 | P0713149 | RSC DESIGNATION STRIP            |
| 0 | P0713576 | RSC DESIGNATION LABEL (NT6X45BC) |

0 to add NT6X45BC, NT6X46BB, NT6X47AC, NT6X50AB, NT6X69AC, and  
0 NT6X72AB in the RSC packfill. Also, to realize a Cost Improve-  
0 ment and to reduce RCC power consumption.

0 The ECD introduces the NT6X12AG packfill for the RCC (NT6X10AC)  
0 which has the following circuit packs.

| 0 | PEC      | SLOT(S) | NOTE |
|---|----------|---------|------|
| 0 | -----    |         |      |
| 0 | NT6X50AA | 1-5     | 1    |
| 0 | NT6X50AB | 1-5     | 1    |
| 0 | NT6X48AA | 6-7     | 2    |
| 0 | NT6X45BC | 8       | 3    |
| 0 | NT0X50AA | 9-10    |      |
| 0 | NT6X47AC | 11      |      |
| 0 | NT6X46BB | 12      |      |
| 0 | NT6X45BC | 13      | 3    |
| 0 | NT0X50AA | 14      |      |
| 0 | NT6X44AA | 15      |      |
| 0 | NT6X92BB | 16      |      |
| 0 | NT6X69AC | 17      | 4    |
| 0 | NT0X50AA | 18      |      |
| 0 | NT6X72AB | 19      | 5    |
| 0 | NT6X50AA | 20-23   | 1    |
| 0 | NT6X50AB | 20-23   | 1    |
| 0 | NT0X50AA | 24      |      |
| 0 | NT2X70AD | 25      | 6    |
| 0 | NT2X70AE | 25      | 6    |

0 Note:

- 0 1. Either a NT6X50AA or a NT6X50AB may be provisioned for  
0 these slots. The slots that are not equipped with ei-  
0 ther pack are provisioned with NT0X50AAs.

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0 2. These packs are provisionable. NT0X50AAs are used for  
0 non-provisioned slots.

0 3. NT6X45BCs must be used in slots 8 and 13 when an  
0 NT6X50AB is provisioned for the messaging link in slot  
0 20. Otherwise the existing NT6X45 may be used.

0 For offices with BCS 29 or lower, a software patch is  
0 necessary to install the NT6X45BC. Contact TAS for  
0 proper patches and installation of patches. A patch is  
0 not needed for offices with BCS 30 or higher.

0 4. The pack is required in an ENET office. It may be used  
0 upon availability in place of the NT6X69AB in a  
0 non-ENET office. The NT6X69AB may be used in a  
0 non-ENET office.

0 5. The pack replaces the NT6X72AA upon availability. The  
0 NT6X72AA may be used if the NT6X72AB is not yet avail-  
0 able.

0 6. Equip with either NT2X70

0 TRUNKING CHARACTERISTICS

0 \* DS-1 Trunking Only

0 \* Multi-Frequency (MF), Dial Pulse (DP), Dual Tone Multi-  
0 Frequency (DTMF), Wink Start, Delay Dial and Immediate Dial  
0 Supervision

0 \* Trunks may have Local Call Detail Recording (LCDR) and/or  
0 Multi-Unit Message Rate (MUMR) recorded at the host (non-  
0 functional during ESA)

0 \* up to 48 members/trunk group

0 \* 8 trunk groups Maximum to a total of 4 NT6X50AA DS-1 I/F CPs  
0 for trunks (192 trunks) per RCC

0 \* RSCs supporting trunks will require a LTC at the Host Office

0 Trunking Characteristics NOT SUPPORTED and their associated defi-  
0 nitions:

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| 0 | UNSUPPORT FUNCTION       | FUNCTION DESCRIPTION                                                                                                                                                                                                                                                                                                                                      |
|---|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 | Coin or ANI Signalling   | Definition Pending                                                                                                                                                                                                                                                                                                                                        |
| 0 | Common Channel Signaling | System which makes use of an independent signaling network for the transmission of telephony messages related to groups of speech circuits.                                                                                                                                                                                                               |
| 0 | Cut Through Dialing      | The Cut Through Dialing feature allows the DMS-100 to process calls in cut through mode which allows the digits dialed by the originator to directly control the selection of routes used to complete the call.                                                                                                                                           |
| 0 | Echo Suppressors         | Hardware used to attenuate echos on trunks over substantial distances.                                                                                                                                                                                                                                                                                    |
| 0 | Revertive Pulsing        | Pulsing over a trunk in reverse direction. That is, from the terminating office instead of from the originating office. When the incoming office trunk is seized, it sends open or group pulses to the office that originated the call. The originating office counts the pulses and opens the trunk when the correct number of pulses has been received. |
| 0 | Tandem through RSC       | Tandem through RSC is defined as follows:<br><br>* Calls that originate one RSC and terminate on the another RSC of which both RSC's home off the same host.<br><br>* Calls that come into the RSC on the P-Side Trunks and Tandem through back to the Host or another Remote.                                                                            |

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0 \* EAS Trunks originating from one  
0 RSC and terminate on another  
0 RSC of which both RSCs home off  
0 of the same Host.

0 Toll Long Distance calls made outside of  
0 the local serving area that termi-  
0 nate to a long distance carrier.  
0 Also, the associated billing of  
0 Toll, Toll Completing, and Inter-  
0 toll transactions is not supported.

0 Toll Completing (TC) A trunk function identifying a  
0 trunk circuit capable of interfacing  
0 with a toll connecting trunk  
0 facility in a TC application.

0 InterToll (IT) A trunk function abbreviation re-  
0 ferring to a type of trunk circuit  
0 used to interface with an intertoll  
0 office trunk.

0 Offices that received Software Package NTX152AA RSC Digital  
0 Trunking (currently rated A&M) must provide, on a one-to-one ded-  
0 icated span basis, one span back to the host for every span ter-  
0 minating on the P-Side for trunking (from the RSC to other CDOs).  
0 In addition, the dedicated spans back to the host must terminate  
0 on the same controller (LTC) as the host-RSC DS-1 links.

0 In order to support RSC, the host office controller must be  
0 equipped with the following common circuit pack fills or later  
0 (refer to ECM 373):

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| COMMON CIRCUIT<br>PACK FILL | PERIPHERAL<br>CONTROLLER<br>MODULE |
|-----------------------------|------------------------------------|
| NT6X02AH, AL                | LGC                                |
| NT6X02AG, AK                | LTC                                |

The following table will identify the minimum additional hardware required at the host to support RSC's.

| FROM COMMON<br>CP FILL | TO RSC-SUPPORT<br>CP FILL | ADD PRODUCT<br>CHANGE KIT | MODULE<br>TYPE | NOTE |
|------------------------|---------------------------|---------------------------|----------------|------|
| NT6X02AC               | NT6X02AH                  | NT6X02ZW/ZL               | LGC            | 1    |
| NT6X02AC               | NT6X02AG                  | NT6X02ZW/ZL               | LTC            | 1    |
| NT6X02AE               | NT6X02AH                  | NT6X02ZY/ZL               | LGC            | 1    |
| NT6X02AD               | NT6X02AG                  | NT6X02ZY/ZL               | LTC            | 1    |
| NT6X02AA               | NT6X02AH                  | NT6X02ZV/ZY/ZL            | LGC            | 1    |
| NT6X02AA               | NT6X02AG                  | NT6X02ZV/ZY/ZL            | LTC            | 1    |
| NT6X02AA               | NT6X02AH                  | NT6X02ZT/ZL               | LGC            | 2    |
| NT6X02AA               | NT6X02AG                  | NT6X02ZT/ZL               | LTC            | 2    |

Note 1 - For U.S. offices apply these PC kits when upgrading a NT6X02AA LGC or LTC.

Note 2 - For Canadian offices apply one (1) PC kit when upgrading a NT6X02AA LGC or LTC.

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## 0 HOST/RSC C-SIDE PORTS/LINKS

0 The following is a table of valid host LGC/LTC P-Side links that  
0 can be used for LGC/LTC to RCC links versus the number of LGC/LTC  
0 C-Side links (network ports).

| 0 No. of     |  |                                                   |
|--------------|--|---------------------------------------------------|
| 0 Ntwk ports |  | Valid LGC/LTC P-Side links                        |
| 0 (C-Side)   |  | (links to peripherals)                            |
| 0            |  |                                                   |
| 0 3          |  | 0,1,2                                             |
| 0 4          |  | 0,1,2,3,4                                         |
| 0 5          |  | 0,1,2,3,4,5                                       |
| 0 6          |  | 0,1,2,3,4,5,6                                     |
| 0 7          |  | 0,1,2,3,4,5,6,7                                   |
| 0 8          |  | 0,1,2,3,4,5,6,7,8,9                               |
| 0 9          |  | 0,1,2,3,4,5,6,7,8,9,10                            |
| 0 10         |  | 0,1,2,3,4,5,6,7,8,9,10,11                         |
| 0 11         |  | 0,1,2,3,4,5,6,7,8,9,10,11,12                      |
| 0 12         |  | 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14                |
| 0 13         |  | 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15             |
| 0 14         |  | 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16          |
| 0 15         |  | 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17       |
| 0 16         |  | 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19 |

0 For example: If you had a host LTC/LGC with 10 Network links you  
0 could have an RCC with 4 C-Side links connected to  
0 LGC/LTC P-Side links 9,11,3,6. (or 0,1,2,3) etc.

0 In other words, you can select any or all of the  
0 valid links in the list to go to an RCC.

0 The P-Side links available for assignment to the RCC increases  
0 with the number of network ports. Sequential assignment of links  
0 from the LGC/LTC to the RCC is not a technical requirement. Thus,  
0 the LGC/LTC assignment of P-Side links to an RCC can follow any  
0 order within the valid LGC/LTC window of P-Side links constrained  
0 by the number of network ports.

0 DS-1 links on the RCC (C-Side) interfacing to the host LGC/LTC  
0 must be assigned in circuit order as follows:

0 C-SIDE PORT: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,  
0 15.

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0 The RCC (C-Side) message links, 0 and 2 may be assigned to the  
0 same LGA/LTA, however, this method shall be used by special re-  
0 quest only. Standard Engineering Practice is to assign RCC C-  
0 Side Ports to port on different LGA/LTA at the host office (i.e.  
0 assign message link 0 to LGA/LTA shelf array 0 and assign message  
0 link 2 to LGA/LTA shelf array 1).

#### 0 Dual RCC InterLinks

0 For the Dual RCC configuration, links 1 and 3 must be configured  
0 as inter-RCC links (1 and 3 on the C-Side of one RCC must be con-  
0 nected to links 1 and 3 on the interconnected RCC). Additional  
0 interlinks may be provisioned as well, to a maximum of 14 inter-  
0 links.

0 Currently, the RSC requires that links 0, 1 and 2 be configured as  
0 links to the host. This must be changed to allow either single  
0 or dual RCC configurations. As part of the dual RCC development,  
0 the capability for any RCC to be configured with only links 0 and  
0 2 serving as links to the host will be included in BCS-24.

#### 0 RSC P-SIDE PORTS

0 The RSC has 20 peripheral side (P-Side) ports in Mono-RSC config-  
0 uration via the one RCE Frame RCC Module or 40 P-Side Ports in  
0 the Dual-RSC configuration. The following equipment may be con-  
0 nected to these ports:

0 LCMs Up to five (5) LCE Frames (09 LCMs) in a Mono-RSC  
0 or ten (10) LCE Frames (18 LCMs) in a Dual Config-  
0 uration. Each LCM may have from 2 to 6 DS-30A  
0 Links/P-SIDE Ports.

0 DS-1 Trunks DS-1 Trunks refer to CDO/PBX Connections. A total  
0 of eight (8) DS-1 Links/P-SIDE Ports may be as-  
0 signed. These ports may be used in any combina-  
0 tion not to exceed eight (eg 8-CDO 0-PBX, 4-CDO  
0 4-PBX, etc.).

0 RMMs The RSC may contain a maximum of two (2) Remote  
0 Maintenance Modules (RMM) in a Mono-RSC or four  
0 (4) in a Dual-RSC. Each RMM requires one (1)  
0 DS-30A link. P-SIDE Port zero (0 & 1) are dedi-  
0 cated to RMMs on each RCC. Each RMM occupies one  
0 (1) shelf in the RCE frame. At least one RMM

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0 shelf is always required at each site to provide  
0 service circuits and diagnostic tests.

0 The RMM shelf can be shared in the RSC when it is  
0 configured in a Dual RCEs or co-located RCEs con-  
0 figuration, provided they share the same host. The  
0 RMM can be shared with a co-located RLCM, provided  
0 they share the same host as the RSC and only if  
0 the RLCM does not have the Emergency Stand Alone  
0 (ESA) feature option specified.

0 REMOTES Via the Remote-Off-Remote feature the following  
0 Remotes may be connected to the RSC with 2 to 6  
0 DS-1 Links: RLCM, RLCC, and OPM256/640.

## 0 DETAILED RSC PROVISIONING

0 Refer to ECM-497 to provision the RSC based on Traffic,  
0 REAL-TIME, and RSC Capacity. The following components should be  
0 derived from ECM-497 (Refer to Engr Manual Section EMA2-15-000  
0 for RCC P-Side and C-Side Ports PEC assignments):

- 0 \* RSC Configuration Required (e.g. Mono, Co-Located, Dual,  
0 etc.).
- 0 \* Quantity of RCCs Required.
- 0 \* Quantity of LCMs Required. Refer to ECM-425 to equip LCE  
0 frames and to Provision PECs.
- 0 \* Quantity of Links per LCM Required.
- 0 \* Quantity of C-Side Links To Host Required.
- 0 \* Quantity of RCC InterLinks Required for Dual RSC applica-  
0 tions.

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## 0 REMOTE CONTROLLER FRAME

0 The RCE frame hardware is provisioned via the Engineering Manual  
0 Section EMA2-15-000 for Detailed Engineering. The following mod-  
0 ules reside on the RCE frame:

## 0 MODULE DESCRIPTION

0 RMM Remote Maintenance Module (RMM) which houses the ser-  
0 vice and diagnostic circuits. One RMM Card Cage is al-  
0 ways provided at shelf position 51, a second optional  
0 RMM may be provisioned at shelf position 65. The RMM  
0 has 14 provisionable card slots. Slot 10 must always be  
0 equipped with an NT0X10 Scan Card. The always provided  
0 slots are populated via common PEC. One fully config-  
0 ured RMM is always required in the RSC.

0 RCC Remote Cluster Controller (RCC) is the brains of the  
0 RSC. It is a two shelf module. Each shelf is called a  
0 Remote Controller Array (RCA). Circuits provisionable  
0 on the RCC are DS-1s, DS-30A, Shelf Power Card, CLASS  
0 Modem Resource CP, Universal Tone Receivers (UTR), and  
0 Labels.

0 CU Cooling Unit (CU) is always required when provisioning  
0 the RCE Frame.

## 0 RCC UPGRADE KITS

0 The following RCC upgrade scenarios exist:

## 0 \* NT6X12AB TO NT6X12AD w/NT6X02ZJ (US Only)

0 In order to upgrade existing RCC modules NT6X12AB to  
0 NT6X12AD, use the PC Kit NT6X02ZJ. This kit contains two (2)  
0 NT6X46AC circuit packs for expanding the processor memory and  
0 two (2) new designation strips.

0 This upgrade kit changes slots 8 and 13 to provisionable  
0 slots for NT6X45AF cards. Also, slot 10 is changed to allow  
0 for the provisioning of the second NT6X47AB (The first  
0 NT6X47AB (slot 11) remains AP).

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0 For U.S. offices, provide one (1) NT6X02ZJ, Product Change  
0 Kit, for each existing RCC module NT6X12AB to be upgraded to  
0 NT6X12AD.

0 In Canada, Change Application Dept. 1955 BRW will field up-  
0 grade existing peripheral modules as required (i.e. Systems  
0 Application Engineering will not order this kit). However,  
0 after Change Application field upgrades an office, Systems  
0 Application Engineering will update the office records ac-  
0 cordingly.

0 \* NT6X12AB TO NT6X12AE (Canadian Only)

0 Canadian Change Application Dept. 1955 BRW will field upgrade  
0 existing NT6X12AB modules to the NT6X12AE vintage as re-  
0 quired. However, after Change Application field upgrades an  
0 office, Systems Application Engineering will update the of-  
0 fice records accordingly.

0 \* NT6X12AC TO NT6X12CA w/NT6X02ZF PC-Kit

0 In order to upgrade existing RCC modules NT6X12AC to  
0 NT6X12CA, use the Product Change Kit NT6X02ZF. It contains  
0 four (4) NT6X45BA circuit packs to replace the existing four  
0 (4) NT6X45AF cards. It also contains four (4) new designation  
0 labels.

0 \* NT6X12AD TO NT6X12AF w/NT6X12ZY PC Kit

0 In order to upgrade existing RCC modules NT6X12AD to  
0 NT6X12AF, use the Product Change Kit NT6X12ZY. It contains  
0 two (2) NT6X69AB circuit packs to replace the existing two  
0 (2) each NT6X69AA and NT6X79AA cards. It also contains two  
0 (2) new designation labels.

0 This upgrade kit allows card slot 18 to be provisioned with  
0 the CLASS Modem Resource (CMR) card NT6X78AA which is used  
0 for the CND feature. The power-reduced NT6X78AB replaces  
0 NT6X78AA.

0 For more information concerning upgrading the host process-  
0 ors, refer to ECM 373.

0 \* NT6X12AE TO NT6X12CA w/NT6X12ZY (Canadian Only)

0 In order to upgrade existing Canadian RCC modules NT6X12AE to  
0 NT6X12CA, use the Product Change Kit NT6X12ZY. It contains

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0 two (2) NT6X69AB circuit packs to replace the existing two  
0 (2) NT6X69AA and two (2) NT6X79AA cards. It also contains  
0 two (2) new designation labels.

0 This upgrade kit allows card slot 18 to be provisioned with  
0 the CLASS Modem Resource (CMR) card NT6X78AA which is used  
0 for the CND feature. The power-reduced NT6X78AB replaces  
0 NT6X78AA.

0 For more information concerning upgrading the host process-  
0 ors, refer to ECM 373.

0 \* NT6X12AD TO NT6X12AG w/NT6X12ZC

0 This PC Kit provides information required for upgrading the  
0 NT6X12AD Packfill to a NT6X12AG Packfill.

0 \* NT6X12CA TO NT6X12AG w/NT6X12ZD

0 This pc kit provides information required for upgrading the  
0 NT6X12CA packfill to a NT6X12AG Packfill.

0 \* NT6X12AF TO NT6X12CA w/NT6X12ZZ

0 This pc kit provides information required for upgrading the  
0 NT6X12AF packfill to a NT6X12CA packfill.

0 \* NT6X12AH NT6X50AH Upgrade Kit

0 This kit is designed for NT6X12CA and earlier RCC Common Cir-  
0 cuit Pack Fills. It upgrades the existing NT6X45 to the  
0 NT6X45BC vintage and replaces the NT6X50AA in the RCC Slot 20  
0 with a NT6X50AB. The remaining NT6X50ABs must be provisioned  
0 as required.

## 0 SUBSCRIBER LINE CIRCUITS

0 The LCE frame at the remote site contains the same Line Concen-  
0 trating Modules (LCM), ringing generators and line drawer cutoff  
0 straps as provisioned in the host. Each LCM will serve up to 640  
0 subscribers. The LCM will interface to the RCC module via DS-30A  
0 links (each 2 to 6).

0 For provisioning LCEs, refer to ECM 425.

0

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0 Canadian offices will maintain current individual ordering of LCE  
0 on NT6X03AA equipment for the entire RSC application.

0 An RCC Module must be provisioned with four (4) DS-30A LCM Inter-  
0 face CP (NT6X48AA) (i.e. a CP in card slot 6 & 7). The ports  
0 from each LCM must be spread evenly across both circuit packs.

0 DS-30A ports 0 & 1 (found on the NT6X48AA CP equipped in card  
0 slot 07 of the RCC) are reserved for control of the RMM shelf.  
0 Thus all RSCs equipped with RMM shelf(s) and interfacing to LCM  
0 must be configured with four (4) DS-30A LCM Interface CP  
0 (NT6X48AA).

0 The RSC supports all current line features that are supported by  
0 host LCM's. This includes POTS, IBN stations, IBN consoles,  
0 DATAPATH and IBN Business Sets.

0 The dual RCC configuration supports the same subscriber line fea-  
0 ture set provided by the current RSC except when in ESA mode.

#### 0 RME/PDC FRAME PROVISIONING

0 The RME Frame is provisioned in the RSC to house Power Distrib-  
0 ution equipment and/or other miscellaneous assemblies. The RME  
0 may serve as RSC's power distribution center, if the total number  
0 of fuses does not exceed 56.

0 When extending an office equipped an RME frame configured as a  
0 PDC, provision one NT0X58DA (ABS Alarm Kit) to convert from a 10  
0 Amp fuse to a 20 Amp fuse. This change is always required on a  
0 one time basis when extending an office.

0 The RME may not serve as the RSC power distribution center, if  
0 the office is engineered for Electromagnetic Interference (EMI).  
0 This is due to an inability to equip the RME with EMI-Shielding.

#### 0 Remote Miscellaneous Equipment (RME) Frame

0 The RME Frame (NT0X02AB) will serve as frame space for the power  
0 distribution fuse panels, spare circuit pack cages or other Telco  
0 defined miscellaneous frame space.

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## 0 OTHER MISCELLANEOUS H/W PROVISIONING

0 A tool kit (NT0X58AD - RLCM/RSC maintenance tool kit) is now  
0 available for RSC and RLCM offices. Provisioning information is  
0 similar to the tool kits currently ordered for host offices.

0 The Remote Alarm Panel (NT0X63AC) may now be provided for a RSC  
0 Site.

0 Standard sparing algorithms shall apply.

## 0 BUILDING BLOCK PROVISIONING - RSC

0  
0 RSC BUILDING BLOCK DEFINITIONS

0 The following Building Block PECs in conjunction with Detailed  
0 PEC may be used to provision a DMS-100 Remote Switching Center  
0 (RSC):

0 \* NTZZ03GA - DS-1 P-Side Interface

0 NTZZ03GA contains P-Side DS-1s to be mounted on the RCC in  
0 slot positions 1 thru 5 as required.

0 \* NTZZ12AB - Remote Controller Equipment (RCE) Frame Canadian

0 NTZZ12AB contains the RCE frame, one RMM Card Cage and space  
0 available for a second, 80% of required equipment for the  
0 RCC, and a fan cooling unit.

0 \* NTZZ12HC - Remote Controller Equipment (RCE) Frame US Appli-  
0 cations

0 NTZZ12HC contains the RCE frame, one RMM Card Cage and space  
0 available for a second, and a fan cooling unit. Provisionable  
0 to this unit are the Framework Common or Earthquake, RCC  
0 electronics, RMM Service circuits, RMM Shelf in position 65,  
0 and local cables.

0 \* NTZZ12YB - Remote Cluster Controller (RCC) US Applications

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0 NTZZ12YB contains 100% of RCC required circuits.  
0 Provisionable on in conjunction with this PEC are the C & P-  
0 Side DS-1s and CMR CP,

0 \* NTZZ12BB - Remote Maintenance Module (RMM) Standard

0 NTZZ12BB contains 6-I/O Tst Ckts, 28-each Signal Distribution  
0 and Scan Ckts, 4-Odd/Even LTU Pairs, and 2 8X8 RMTAs.

0 \* NTZZ12CB - Remote Maintenance Module (RMM) Custom

0 \* NTZZ12DA - DS-1 C-Side Interface

0 \* NTZZ15DA - Remote Maintenance Equipment Frame (US)

0 \* NTZZ15AA - Remote Maintenance Equipment Frame W/PDC  
0 (Canadian)

0 \* NTZZ15BA - Remote Maintenance Equipment Frame (Canadian)

0 The following Building Block PECs are provisionable on the  
0 NTZZ15AA/BA/DA as applicable:

- 0 - NTZZ12GA - RME Power Distrib. Module
- 0 - NTZZ15CB - UL RME Power Distrib. Module
- 0 - NTZZ18BA - Inverter
- 0 - NTZZ14HA - LaMarche Inverter
- 0 - NTZZ18CA - Metallic Test Access Unit
- 0 - NTZZ18DA - Alarm Extension Panel
- 0 - NTZZ14GA - 1A2 Key System

## 0 BUILDING BLOCKS QUESTIONNAIRE

### 0 ECM-497 IMPORTS

0 Refer to the following ECMs to provision equipment as defined:

#### 0 1. ECM-497 - Simplified Traffic Provisioning

##### 0 a. RCCs/RCEs

##### 0 b. RCC C-Side Port Utilizations

- 0 1) Qty of host links
- 0 2) Qty of Dual RCC interlinks

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0 3) Total C-side links

0 c. RCC P-Side Port Utilizations

0 1) Links Per Local LCM Nodes

0 2) Links Per Local CDO/PBX Nodes

0 3) Links Per Remotes Off Remote (i.e.

0 a) RLCMS 2-6 Max

0 b) RLCCs 2-6 Max

0 c) OPMS 2-6 Max

0 4) Total peripheral links (P-Side)

0 d. Total\_UTR\_CCS

0 2. ECM-619 - Building Block Engineering/LCE

0 Use this document for LCE required/provisionable PECs and  
0 their corresponding configuration rules.

0 3. ECM-631 - Building Block Engineering/PDC

0 Use this document for PDC required/provisionable PECs and  
0 their corresponding configuration rules.

0 4. ECM-125 - DMS Common Equipment STD & EMI

0 Use this document to provision ancilliary equipment for  
0 all frames provisioned in the RSC (e.g. frame doors, trim  
0 panels, grilles, etc.).

0 5. ECM-607 - Building Block Engineering/MAP

0 Use this document for MAP VDUs, Printers, and other re-  
0 lated equipment PECs.

0 The other standard equipment provisionable with the RSC may be provi-  
0 sioned using this Building Blocks ECM.

0 - RMMS

0 - RSC Power Distribution

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## 0 GENERAL RSC

0 Select General Job Type:

0 1. Is this a U.S. Non-Earthquake job  
0 Enter (Y/N) \_\_\_\_\_0 2. Is this a U.S. Earthquake job  
0 Enter (Y/N) \_\_\_\_\_0 3. Is this a Canadian job  
0 Enter (Y/N) \_\_\_\_\_0 4. Are Extended Frame Format DS-1 CPs to be Provided  
0 Enter (Y/N) \_\_\_\_\_

## 0 RCC RELATED QUESTIONS

0 1. Is Custom Local Area Signalling Services  
0 (CLASS) Required At This RSC \_\_\_\_\_

0 2. Remote Maintenance Module (RMM)

0 NOTE: Minimum 1 RMM per RSC, 0-2 RMMs Max Per RCC

0 a. A Standard RSC Service Circuits

0 For The RMM. This Layout Contains 6-I/O Tst Ckts,  
0 28-each SD&SC Ckts, 4-Odd/Even LTU Pairs, and 2 8X8  
0 RMTAs. The CPs are Configured As Follows:

| Slot | Card     | Pec | Slot | Card     | Pec |
|------|----------|-----|------|----------|-----|
| 3    | Blank    |     | 9R   | NT2X77AA |     |
| 4    | NT2X90AD |     | 10   | NT0X10AA |     |
| 4R   | NT2X77AA |     | 11   | NT2X10BA |     |
| 5    | NT2X90AD |     | 12   | NT2X11BA |     |
| 5R   | NT2X77AA |     | 13   | NT2X90AD |     |
| 6    | NT0X10AA |     | 13R  | NT2X77AA |     |
| 7    | NT2X90AD |     | 14   | NT2X57AA |     |
| 7R   | NT2X77AA |     | 15   | NT3X09BA |     |
| 8    | NT3X09BA |     | 16   | NT2X57AA |     |
| 9    | NT2X90AD |     |      |          |     |

0 Enter the Quantity Of STD RMMs  
0 Required (Range 0 - 4) \_\_\_\_\_



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0 93 12 030 If '0' Skip to Next Question (Custom RMM)  
0 Provisioning or do both for Standard  
0 And Custom Provisioning:

0 b. State the quantity of Scan (SC) Point Required For:

- 0 1) Telco Alarms \_\_\_\_\_
- 
- 0 2) DMS Alarms \_\_\_\_\_
- 
- 0 3) Hunting Functions \_\_\_\_\_
- 
- 0 4) Board-To-Board Test \_\_\_\_\_
- 
- 0 5) Other \_\_\_\_\_
- 
- 0 6) Total SC Point Required \_\_\_\_\_

0 c. State the quantity Of Signal Distribution (SD)  
0 Points Required For:

- 0 1) Telco Alarms \_\_\_\_\_
- 
- 0 2) DMS Alarms \_\_\_\_\_
- 
- 0 3) Hunting Functions \_\_\_\_\_
- 
- 0 4) Board-To-Board Test \_\_\_\_\_
- 
- 0 5) Other \_\_\_\_\_
- 
- 0 6) Total SD Point Required \_\_\_\_\_

0 d. State Quantity Of Incoming/Outgoing Test  
0 Trunks (NT2X90AD) Required For:

- 0 1) # 3 Line Test Cabinet \_\_\_\_\_
- 
- 0 2) #14 Line Test Cabinet \_\_\_\_\_
- 
- 0 3) Digital Remote Test Unit (DRTU) \_\_\_\_\_
- 
- 0 4) Verification Access \_\_\_\_\_
- 
- 0 5) Coin Line Test Interface \_\_\_\_\_
- 
- 0 6) Mechanized Loop Test (MLT) \_\_\_\_\_
- 
- 0 7) Total INC/OG Test Trunks \_\_\_\_\_

0 e. Incoming Test Trunk Access For AECO Local  
0 Test Board Required (Y/N) \_\_\_\_\_

0 f. Select Type Of Cable Balance Network Required:

- 0 1) Precision Balance Network - H88 (NT2X80AA),
- 
- 0 (Enter Y/N) \_\_\_\_\_
- 
- 0 2) Other Non-Loaded or Loaded Arrangements
- 
- 0 a) 600ohm at 750 Feet - NT2X77AD (Y/N) \_\_\_\_\_
- 
- 0 b) 600ohm at 9000 Feet - NT2X77AC (Y/N) \_\_\_\_\_
- 
- 0 c) 900ohm at 750 Feet - NT2X77AB (Y/N) \_\_\_\_\_

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0 d) 900ohm at 9000 Feet - NT2X77AA (Y/N) \_\_\_\_\_

0 3. Is Clear Channel Capabilities Required for DS-1s  
0 Enter Y/N  
0 \_\_\_\_\_

## 0 OTHER MISCELLANEOUS EQUIPMENT

0 1. Refer to ECM-607 For Video Display Unit (VDU)  
0 provisioning. Enter PEC and Quantity Here \_\_\_\_\_0 2. Refer to ECM-607 For Remote Printer Provisioning  
0 Enter PEC and Quantity Here \_\_\_\_\_0 3. Refer to API-243 for modems applicable to Remote  
0 MAP VDU & KSR Printer0 4. Refer to ECM-607 For provisioning Protected AC for all  
0 equipment requiring it (e.g. Remote MAP VDU and Printer  
0 modems, 1A2 Key System, etc.)

0 5. Digital Remote Test Unit (DRTU) Required(Y/N) \_\_\_\_\_

0 6. Tellabs Conference/Alerting System Required  
0 Enter (Y/N) \_\_\_\_\_

0 a. Select one of the Ring Down Options below:

0 1) Automatic Ring Down \_\_\_\_\_

0 2) Manual Ring Down \_\_\_\_\_

0 3) Automatic and Manual Ring Down  
0 \_\_\_\_\_0 b. Remote Answer Option Required, Max 3 Callers  
0 Enter Quantity 0, 1, 2, or 3 \_\_\_\_\_

0 c. Community Siren Option Required, Enter Y/N \_\_\_\_\_

0 d. Selective Signalling Required, Enter Y/N \_\_\_\_\_

0 e. Enter Quantity Of Conf. Lines Required Greater  
0 Than 10 - Max, 50 Range 0 to 50 \_\_\_\_\_0 7. Spare Card Storage chassis for Line Cards required.  
0 Enter Y/N \_\_\_\_\_

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- 0 8. Enter Quantity Of Inactive System Ckts Required \_\_\_\_\_  
0 9. If CP MTA Version is not supplied then Stand alone \_\_\_\_\_  
0 MTA is Required Enter Y/N \_\_\_\_\_

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0 10. Is 1A2 Key System Required. Enter Y/N \_\_\_\_\_

0 RSC PROVISIONING CALCULATIONS

0 Calculation Description

0 The naming convention of calculations variables expressed in this  
0 section are derived as follows:

0 If Quantity of 2.4.3.2.1.Q1 > 1, then RSC = Dual else  
0 RSC = Mono. Where 2.4.3.2.1. = section number, Q of Q1  
0 = Question, and 1 = of Q1 = the first question in the  
0 section (1.).

0 RCE Frame

0 The RCE Frame requirements are calculated below are arranged from  
0 the top down (i.e. RCE FR, RMM-51, RMM-65, RCC Module, RCC Module  
0 feature specifics).

0 \*\*\*\*\*

0 NOTE: In the Rules/Calculations below, the NTZZ12CB has been  
0 changed FROM: NTZZ12CB TO: NTZZ12CC and all requirements for  
0 the NT6X1435 Cable have been REMOVED:

0 \*\*\*\*\*

| 0 | RULE | PARAMETER | CALCULATION                                                                                                                                                                              | RESULT  |
|---|------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 0 | ---- | -----     | -----                                                                                                                                                                                    | -----   |
| 0 | R001 | RSC       | GOTO ECM-497, GET<br>DUAL RCC Required<br>IF DUAL RCC Required = N, THEN<br>RCE = 1 each NTZZ12HC,<br>AND RSC = MONO<br>ELSE RCE = 2 each NTZZ12AC<br>AND NT6X45BD = 2<br>AND RSC = DUAL | = _____ |
| 0 | R002 | FRAMEWORK | IF 2.4.3.2.2.Q1 = Y, THEN<br>Common Frwk = 1 each<br>NT0X25AA per RCE,<br>OR 2.4.3.2.2.Q2= Y, THEN                                                                                       |         |

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| 0 | RULE   | PARAMETER | CALCULATION                       | RESULT  |
|---|--------|-----------|-----------------------------------|---------|
| 0 | ----   | -----     | -----                             | -----   |
| 0 |        |           | Common Frwk = 1 each              |         |
| 0 |        |           | NT0X25AH per RCE,                 |         |
| 0 |        |           | OR 2.4.3.2.2.Q3= Y, THEN          |         |
| 0 |        |           | Common Frwk = 1 each              |         |
| 0 |        |           | NT0X25AH per RCE,                 | =_____  |
| 0 | R003   | RMM_STD   | RMM_STD = 2.4.3.2.3.Q2a           | =_____  |
| 0 | R004   | CUST_RMM  | IF RSC = DUAL, AND                |         |
| 0 |        |           | R003 =< 3 OR                      |         |
| 0 |        |           | IF RSC = MONO, AND                |         |
| 0 |        |           | R003 =< 1 THEN                    |         |
| 0 | R004.1 | NT0X10AA  | NT0X10AA = 2.4.3.2.3.Q2b6 DIVIDED |         |
| 0 |        |           | BY 14 (Round Up)                  | =_____  |
| 0 | R004.2 | NT2X57AA  | NT2X57AA = 2.4.3.2.3.Q2c6 DIVIDED |         |
| 0 |        |           | BY 14 (Round Up)                  | =_____  |
| 0 | R004.3 | NT2X90AD  | NT2X90AD = 2.4.3.2.3.Q2d7         | =_____  |
| 0 | R004.4 | NT3X04AA  | NT3X04AA = 2.4.3.2.3.Q2e          | =_____  |
| 0 | R004.5 | BAL_NTWK  | IF 2.4.3.2.3.Q2f1 = Y THEN        |         |
| 0 |        |           | BAL_NTWK = NT2X80AA               |         |
| 0 |        |           | OR                                |         |
| 0 |        |           | IF 2.4.3.2.3.Q2f2a = Y THEN       |         |
| 0 |        |           | BAL_NTWK = NT2X77AD               |         |
| 0 |        |           | OR                                |         |
| 0 |        |           | IF 2.4.3.2.3.Q2f2b = Y THEN       |         |
| 0 |        |           | BAL_NTWK = NT2X77AB               |         |
| 0 |        |           | OR                                |         |
| 0 |        |           | IF 2.4.3.2.3.Q2f2c = Y THEN       |         |
| 0 |        |           | BAL_NTWK = NT2X77AC               |         |
| 0 |        |           | OR                                |         |
| 0 |        |           | IF 2.4.3.2.3.Q2f2d = Y THEN       |         |
| 0 |        |           | BAL_NTWK = NT2X77AA               |         |
| 0 |        |           | ELSE                              |         |
| 0 |        |           | BAL_NTWK = NT2X77AA               | = _____ |
| 0 | R004.6 | NT3X09BA  | NT3X09BA = Extract From ECM497    |         |
| 0 |        |           | #LCM, THEN #LCM Divided By 4      |         |
| 0 |        |           | (Round UP)                        | = _____ |

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| 0 | RULE    | PARAMETER    | CALCULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                    | RESULT  |
|---|---------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 0 | ----    | -----        | -----                                                                                                                                                                                                                                                                                                                                                                                                                                                          | -----   |
| 0 | R004.7  | NT2X10BA     | NT2X10BA = R004.6 + 1                                                                                                                                                                                                                                                                                                                                                                                                                                          | = _____ |
| 0 | R004.8  | NT2X11BA     | NT2X11BA = R004.6 + 1                                                                                                                                                                                                                                                                                                                                                                                                                                          | = _____ |
| 0 | R004.9  | NO_RMMs      | NO_RMMs = (R004.1 + R004.2 +<br>R004.4 + R004.6 + R004.7 + R004.8)<br>Divided By 14 (Round Up)                                                                                                                                                                                                                                                                                                                                                                 | = _____ |
| 0 | R004.10 | NT0X50AC     | NT0X50AC = (R004.9 * 14) Minus<br>(R004.1 + R004.2 + R004.3 + R004.4<br>R004.6 + R004.7 + R004.8)                                                                                                                                                                                                                                                                                                                                                              | = _____ |
| 0 | R004.11 | RMM_MONO_RSC | IF RSC = MONO AND R003 = 0, AND<br>R004.9 = 1, NT6X13AB = 1, AND<br>P0575239 = 1<br>OR<br>IF RSC = MONO AND R003 = 0, AND<br>R004.9 = 2, NT6X13AB = 2,<br>AND NTZZ12CC = 1<br>OR<br>IF RSC = MONO AND R003 = 1, AND<br>R004.9 = 1 THEN NTZZ12CC = 1,<br>NT6X13AB = 1,                                                                                                                                                                                          | = _____ |
| 0 | R004.12 | RMM_DUAL_RSC | IF RSC = DUAL AND R003 = 3, AND<br>R004.9 = 1 THEN NTZZ12CC = 1,<br>NT6X13AB = 1,<br>OR<br>IF RSC = DUAL AND R003 = 2, AND<br>R004.9 = 2 THEN NTZZ12CC = 2,<br>NT6X13AB = 2,<br>OR<br>IF RSC = DUAL AND R003 = 1, AND<br>R004.9 = 3 THEN NTZZ12CC = 2,<br>NT6X13AB = 3,<br>OR<br>IF RSC = DUAL AND R003 = 0, AND<br>R004.9 = 4, THEN NTZZ12CC = 2,<br>NT6X13AB = 4,<br>OR<br>IF = DUAL AND R003 = 0, AND<br>R004.9 = 2 THEN NT6X13AB = 2,<br>P0575239 = 2, AND |         |

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| 0 | RULE   | PARAMETER           | CALCULATION                       | RESULT  |
|---|--------|---------------------|-----------------------------------|---------|
| 0 | ----   | -----               | -----                             | -----   |
| 0 |        |                     | NT0X50AC = 28 - R0047             |         |
| 0 |        |                     | IF R0047 => 2,                    |         |
| 0 |        |                     | WHEN RSC = DUAL AND R003 = 0, AND |         |
| 0 |        |                     | R0048 = 3 THEN NT6X13AB = 3,      |         |
| 0 |        |                     | NTZZ12CC = 1, P0575239 = 1, AND   |         |
| 0 |        |                     | NT0X50AC = 42 - R0047             |         |
| 0 |        |                     | IF R0047 => 3,                    |         |
| 0 |        |                     | WHEN RSC = DUAL AND R003 = 0, AND |         |
| 0 |        |                     | R0048 = 4 THEN NT6X13AB = 4,      |         |
| 0 |        |                     | NTZZ12CC = 2, AND                 |         |
| 0 |        |                     | NT0X50AC = 56 - R0047             |         |
| 0 |        |                     | IF R0047 => 4,                    | = _____ |
| 0 | R005   | RCC_DS1_PSIDE_PORTS | GOTO ECM-497, GET Total #Ports    |         |
| 0 |        |                     | For ALL RLCMs, OPMs, CDO, AND     |         |
| 0 |        |                     | PBX, THEN SUM Values and Divide   |         |
| 0 |        |                     | SUM by 2                          | = _____ |
| 0 | R005.1 | RCC_DS1_PSIDE_TRKS  | IF 2.4.3.2.3.Q3 = Y THEN          |         |
| 0 |        |                     | QTY OF NTZZ03GA = R005            |         |
| 0 |        |                     | ELSE                              |         |
| 0 |        |                     | QTY OF NTZZ02DA = R005            | = _____ |
| 0 | R006   | 2nd_UTR             | GOTO ECM-497, GET Total_UTR_CCS   |         |
| 0 |        |                     | IF > 765 , THEN                   |         |
| 0 |        |                     | 1 NTZZ02FA Is Required            | = _____ |
| 0 | R007   | CMR_CP              | IF 2.4.3.2.3.Q1 = Y, AND          |         |
| 0 |        |                     | 2.4.3.2.2.Q3 = Y, THEN            |         |
| 0 |        |                     | CMR_CP = 1 each NTZZ02EA          |         |
| 0 |        |                     | per Mono RSC 2 each per Dual      |         |
| 0 |        |                     | ELSE                              |         |
| 0 |        |                     | IF 2.4.3.2.3.Q1 = Y, AND          |         |
| 0 |        |                     | 2.4.3.2.2.Q1 OR Q2 = Y, THEN      |         |
| 0 |        |                     | CMR_CP = 1 each NTZZ97AA          |         |
| 0 |        |                     | per Mono RSC 2 each per Dual      | = _____ |
| 0 | R008   | RCC_DS1_CSIDE_PORTS | GOTO ECM-497, GET #RCC Of Host    |         |
| 0 |        |                     | Links Divide by 2                 | = _____ |
| 0 | R008.1 | RCC_DS1_CSIDE_TRKS  | IF 2.4.3.2.3.Q3 = Y, THEN         |         |
| 0 |        |                     | QTY OF NTZZ12EA = R008            |         |

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| 0 RULE | PARAMETER | CALCULATION            | RESULT  |
|--------|-----------|------------------------|---------|
| 0 ---- | -----     | -----                  | -----   |
| 0      |           | ELSE                   |         |
| 0      |           | QTY OF NTZZ12DA = R008 | = _____ |

## 0 LINE Frame

0 Line frames shall be provisioned for the RSC per ECM-619. In-  
0 cluded in this ECM is all question and calculations necessary to  
0 completely provision the line frame, shelves, circuits, and aux-  
0 iliary equipment. The result of calculations performed in  
0 ECM-619 are required here for RSC Power Distribution Center cal-  
0 culations.

| 0 RULE | PARAMETER     | CALCULATION                                                                                                                                                                                                                                                                                                                                                                                                         | RESULT  |
|--------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 0 ---- | -----         | -----                                                                                                                                                                                                                                                                                                                                                                                                               | -----   |
| 0 R009 | Quanty_OF_LCE | IF 2.4.3.2.2.Q1 = Y, THEN<br>GOTO ECM-619, GET SUM OF<br>TOTAL NON_EARTHQUAKE LCEs<br>AND LCMS<br>OR 2.4.3.2.2.Q2 = Y, THEN<br>GOTO ECM-619, GET SUM OF<br>TOTAL EARTHQUAKE LCE'S<br>AND LCMS<br>OR 2.4.3.2.2.Q1 AND Q2 = Y,<br>THEN GOTO ECM-619, GET SUM<br>OF TOTAL EARTHQUAKE LCE'S,<br>TOTAL NON_EARTHQUAKE LCEs<br>AND LCMS<br>OR 2.4.3.2.2.Q3 = Y, THEN<br>GOTO ECM-619, GET TOTAL<br>CANADIAN LCE' AND LCMS | = _____ |

## 0 Other Miscellaneous Equipment

| 0 RULE | PARAMETER           | CALCULATION                            | RESULT  |
|--------|---------------------|----------------------------------------|---------|
| 0 ---- | -----               | -----                                  | -----   |
| 0 R010 | REMOTE_MAP VDU      | GOTO ECM-607, GET<br>MAP VDUs REQUIRED | = _____ |
| 0 R011 | REMOTE_MAP KSR PRTR | GOTO ECM-607, GET<br>MAP KSRs REQUIRED | = _____ |



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| 0 | RULE   | PARAMETER               | CALCULATION                                                                                                                                                                                                                                                                 | RESULT  |
|---|--------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 0 | ----   | -----                   | -----                                                                                                                                                                                                                                                                       | -----   |
| 0 | R012   | REMOTE_MAP FURNITURE    | GOTO ECM-607, GET<br>MAP REQUIRED                                                                                                                                                                                                                                           | = _____ |
| 0 | R013   | REMOTE_MAP INVERTER     | GOTO ECM-607, GET<br>Quantity Q6                                                                                                                                                                                                                                            | = _____ |
| 0 | R014   | DRTU_REQUIREMENT        | IF 2.4.3.2.5.Q5 = Y, THEN<br>DRTU = 1 each NT0J04EB                                                                                                                                                                                                                         | = _____ |
| 0 | R015   | TELLABS_292             | IF 2.4.3.2.5.Q6 = Y, THEN<br>NTZZ18FA = 1,<br>ELSE<br>Skip To Next Calculation                                                                                                                                                                                              |         |
| 0 | R015.1 | 292_ARD_OPTION          | IF 2.4.3.2.5.Q6a1 = Y, THEN<br>9296 = 2 each<br>ELSE 0<br>IF 2.4.3.2.5.Q6a2 = Y, THEN<br>9293 = 1 each<br>ELSE 0<br>IF 2.4.3.2.5.Q6a3 = Y, THEN<br>9293 = 1 each and 9296 = 1 each<br>ELSE 0<br>IF 2.4.3.2.5.Q6a1 Thru Q6a3 = N, THEN<br>9293 = 1 each<br>AND 9296 = 1 each | = _____ |
| 0 | R015.2 | 292_REMOTE_ANSWER_OPT   | Total Qty of 9296 = R015 plus<br>Qty Requested in 2.4.3.2.5.Q6b                                                                                                                                                                                                             | = _____ |
| 0 | R015.3 | 292_COMMUNITY_SIREN_OPT | IF 2.4.3.2.5.Q6c = Y THEN<br>9133 = 1 each<br>ELSE 0                                                                                                                                                                                                                        | = _____ |
| 0 | R015.4 | 292_SELECTIVE_RING_OPT  | IF 2.4.3.2.5.Q6d = Y, AND<br>IF 2.4.3.2.5.Q6c = Y THEN<br>6072 = 1 each<br>OR IF 2.4.3.2.5.Q6d = Y, AND<br>IF 2.4.3.2.5.Q6c = N THEN<br>9133 = 1 each AND<br>6072 = 1 each<br>ELSE 0                                                                                        | = _____ |

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| 0 | RULE   | PARAMETER             | CALCULATION                                                                                                                                                                                       | RESULT  |
|---|--------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 0 | ----   | -----                 | -----                                                                                                                                                                                             | -----   |
| 0 | R015.5 | 292_EXPANSION_OPTION  | VALUE OF 2.4.3.2.5.Q6e DIVIDED<br>BY 10 (Round Up) = NTZZ18GA<br>ELSE 0                                                                                                                           | = _____ |
| 0 | R016   | LINE_CP_SPARE_STORAGE | IF 2.4.3.2.5.Q7 = Y, THEN<br>DO Calculation R016.1 thru<br>R016.<br>ELSE GOTO R017                                                                                                                |         |
| 0 | R016.1 | NT3X55AA              | NT3X55AA = (QTY NT2X17,18 / 22)<br>+ (NT2X16 / 4)<br>ELSE 0                                                                                                                                       | = _____ |
| 0 | R016.2 | NT3X55BA              | NT3X55BA = (QTY NT6X17,18/30)                                                                                                                                                                     | = _____ |
| 0 | R016.3 | NT0X8503              | NT0X8503 = (R016.1 + R016.2) / 5<br>ELSE 0                                                                                                                                                        | = _____ |
| 0 | R017   | NT5X69AA              | IF 2.4.3.2.5.Q8 = Y, THEN<br>NT5X69AA = 1<br>ELSE 0                                                                                                                                               | = _____ |
| 0 | R018   | MTA                   | IF 2.4.3.2.5.Q9 = Y, THEN<br>NTZZ18CA = (R009 / 5)<br>Round Up ELSE 0                                                                                                                             | = _____ |
| 0 | R019   | 1A2_KEY_SYSTEM        | IF 2.4.3.2.5.Q10 = Y, THEN<br>NTZZ14GA = 1<br>ELSE 0                                                                                                                                              | = _____ |
| 0 | R020   | RME_FRAME_MISC_SPACE  | SPACE = (R013 * 7) + (R014 * 4) +<br>(R15 * 6) + (R15.5 * 6) +<br>(R16.3 * 14) + (R17 * 4)<br>Divided By 67 (Round Up)                                                                            | = _____ |
| 0 | R021   | QTY_MISC_RME_FRAMES   | IF 2.4.3.2.2.Q1 = Y, THEN<br>QTY OF NTZZ15DB AND<br>NT0X25AA = R020<br>OR IF 2.4.3.2.2.Q2 = Y THEN<br>QTY OF NTZZ15DB AND<br>NT0X25AH = R020<br>OR IF 2.4.3.2.2.Q3 = Y THEN<br>NTZZ15BA<br>ELSE 0 | = _____ |

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0 RME/PDC Frame

| 0 | RULE | PARAMETER       | CALCULATION                    | RESULT  |
|---|------|-----------------|--------------------------------|---------|
| 0 | ---- | -----           | -----                          | -----   |
| 0 | R021 | QTY_RCE_FRAMES  | IF RSC = Dual THEN QTY OF RCEs |         |
| 0 |      |                 | = 2                            |         |
| 0 |      |                 | ELSE Qty Of RCEs = 1           | = _____ |
| 0 | R022 | RSC_POWER_FRAME | (R009 * 8) + (R020 * 2) +      |         |
| 0 |      |                 | (R022 * 5) + 2 = A             |         |
| 0 |      |                 | IF = < 56 THEN RSC_POWER_FRAME |         |
| 0 |      |                 | = (R020 + )                    |         |
| 0 |      |                 | ELSE                           |         |
| 0 |      |                 | REFER TO ECM-631 AND Provision |         |
| 0 |      |                 | PDC Frame.                     |         |

0 9.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not Applicable.

0 9.1.5 TRAFFIC TABLES

0  
0 See ECM 497 For Traffic Data.

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0 9.2 PRODUCT/SYSTEM SPECIFICATION

0

0 9.2.1 PHYSICAL CHARACTERISTICS

0

## 0 Remote Controller Equipment Frame (RCE)

0

0 Input Voltage -48vdc  
0 Power Consumption 1000 watts  
0 Current Drain 22 amps  
0 Thermal Dissipation Content Variable  
0 Fusing Requirements 3 each 20 amps

## 0 MECHANICAL DIMENSIONS

0 Height 84" Width 27"

## 0 Remote Miscellaneous Equipment Frame (RME)

0

0 Input Voltage -48vdc  
0 Power Consumption Content Variable  
0 Current Drain Content Variable  
0 Thermal Dissipation Content Variable  
0 Fusing Requirements 2 each 20 amps

## 0 MECHANICAL DIMENSIONS

0 Height 84" Width 26

0

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0 9.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 - ELECTROMAGNETIC INTERFERENCE (EMI)

0 When the EMI option is specified for a RSC, all power  
0 equipment must reside in a Power Distribution Center  
0 (PDC) Frame. The RME may not be equipped with power fuse  
0 panels when the EMI option is specified. Reference all  
0 EMI hardware provisioning information in ECM-125.

0 - EARTHQUAKE INFORMATION

0 When provisioning the RSC for an Earthquake environment  
0 provision according to the following Market variables:

0 — Canadian Market - Provide the Universal Framework  
0 (NT0X25AH) for all frame types.

0 — U.S. Market - Provide the Earthquake Framework  
0 (NT0X25AH) for all frame types.

0 — Other framing requirements are defined by the Build-  
0 ing Studies organizations.

0 9.2.3 SPARING INFORMATION

0  
0 Standard Spary algorithms apply.

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0 9.3 SOFTWARE PROVISIONING

0

0 9.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 The RSC software packages and their interdependencies are out-  
0 lined as follows:

0 RSC basic NTX145AA - RSC Basic

0 Needs NTX269AA - Universal Tone Receiver (UTR)  
0 NTX270AA - New Peripheral Maintenance  
0 NTX901AA - Local Basic  
0 NTX001AA - Common Basic

0 Optional RSC S/W

0 NTX149AA - Emergency Stand Alone (ESA) (lines only)  
0 NTX150AA - Intra RSC Calling  
0 NTX152AB - RSC Digital Trunking  
0 NTX152AA - RSC Digital Trunking (A&M only)  
0 NTX149AB - ESA Lines & Trunks  
0 NTX381AA - RSC-Remote off Remote

0 Dual RCC S/W

0 NTX380AA - Dual RCC

0 Needs NTX145AA - RSC Basic  
0 NTX150AA - Intra RSC Calling

0 NOTE: In BCS 34 - The Following ESA S/W Pkgs Are Required, If  
0 the ESA Option Is Selected:

0 .us;FOR ESA Lines Only

0 NTX149AA - ESA RSC Lines Only ESA (Pre-Requisite)  
0 NTXQ12AA - Enhanced RSC (Line Only) ESA

0 .us;FOR ESA Lines And Trunks

0 NTX149AB - ESA Lines & Trunks (Pre-Requisite)  
0 NTXN82AB - Enhanced RSC ESA (Lines & Trunks)

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## 0 Dual RCC Software

0  
0 The following software information is provided for the Dual RCC  
0 feature only; for further software information on RSCs, refer to  
0 the appropriate NTPs and General Feature Descriptions.

### 0 Dual RCC ESA (DESA)

0  
0 Dual RCC ESA increases the line capacity from a maximum of 5,760  
0 lines to 11,520 lines while in ESA. The two RCCs coordinate their  
0 individual resources with one another by utilizing interprocessor  
0 messages over the digital links that connect the RCCs. The number  
0 of digital links between RCCs is engineered according to traffic  
0 characteristics, but a minimum of two is required.

0 This feature provides the capability for a line subscriber origi-  
0 nating off of an RCC to call a subscriber terminating off of the  
0 mate RCC while in DESA. When it is not possible to process a re-  
0 quest, because the call is destined for lines reached through the  
0 host or because features require host resources not available at  
0 either RCC, the subscriber will be connected to reorder tone.

0 Interswitching of calls while in ESA is possible since all calls  
0 between subscribers subtending one Remote Cluster Controller or  
0 its spouse (e.g., the other RCC) are completely processed within  
0 the dual configuration.

0 An emergency call (such as 0 or 911) that normally terminates at  
0 the host can be routed to a special termination specified in Ta-  
0 ble ESAPXLA. The TELCO can specify alternate routing, on a per  
0 RCC basis, for up to sixteen entries for POTS and a maximum of  
0 eight entries for each IBN customer group.

0 Automatic activation of dual ESA call control will occur whenever  
0 both RCCs have entered ESA and at least one messaging interlink  
0 is serviceable. Should only one RCC enter ESA, then interlink  
0 call processing will not be activated. Only intracalling will be  
0 possible.

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0 An RCC will enter ESA when it has the correct datafill and can no  
0 longer message to the CC over its C-Side host links. This may be  
0 due to faults on its host links, or because the LTC/LGC is out of  
0 service for some reason.

0 The two RCCs in a Dual configuration communicate via the Inter-  
0 links. When an RCC in a Dual configuration enters ESA, it que-  
0 ries the other RCC as to whether or not the conditions for Dual  
0 ESA (DESA) are present. If DESA conditions are not present then  
0 the mate can be forced into ESA (BCS 27). If DESA conditions are  
0 present, then DESA is entered and interswitching can proceed. The  
0 conditions for DESA are:

- 0 1. Each RCC is in ESA.
- 0 2. DS1 Frame Synchronization is verified on the Interlinks.
- 0 3. Each RCC can message to the other via the Interlinks.

0 During ESA the host DMS switch will continually try to reestab-  
0 lish communications with both RCCs. Upon restoration of commu-  
0 nications, the host will exit the RCCs from ESA. If both RCCs  
0 are in a system or C-Side busy state and Office Parameter  
0 ESAEXIT is not zero, the system will automatically initiate  
0 ESA exit. Otherwise, manual exit will be necessary.

0 Exit from ESA will result in all intra- and intercalls being  
0 dropped. Typically, it will take approximately eight minutes  
0 to fully restore call processing per each RCC after exiting  
0 ESA.

#### 0 Dual RCC ESA Force Down Option

0 The Force Down Option is chosen via a flag in the IRLNKINV TABLE,  
0 where the interlinks are datafilled. If the flag is "y", then  
0 whenever one RCC in the Dual configuration enters ESA, the other  
0 also enters ESA. When an RCC enters Force Down, it sends a PM189  
0 info log to the CC with the text "FORCE DOWN", and simulates link  
0 faults on its host messaging links (C-Side link numbers 0 and 2).  
0 If these links are posted at the Carrier level of the Maintenance  
0 and Administration Position (MAP), they will show Remote Carrier  
0 Group Alarms (RCGAs).



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0 If for some reason the RCCs can no longer message over the Inter-  
0 links during DESA with one RCC in Force Down, then the RCC which  
0 is in Force Down will start a timer. If Interlink messaging is  
0 not restored before the timer expires, then that RCC will stop  
0 simulating link faults, and exit ESA. If Interlink messaging is  
0 restored before the timer expires, then the timer is cancelled,  
0 and DESA is re-established. If after the timer expires and the  
0 RCC exits ESA, Interlink communication is restored, then the RCC  
0 will be forced into ESA again.

0 The reason for the timer is to avoid exiting Force Down due to  
0 bouncing interlinks. The amount of time that the RCC waits is  
0 determined by the office parameter RSC\_ESAENTRY\_BADLINK in table  
0 OFCENG, which is used to filter bouncing host links for ESA entry  
0 and defaults to 30 seconds.

### 0 9.3.2 SOFTWARE USAGE RESTRICTIONS

0

#### 0 Dual RCC Interlink Restrictions

0  
0 Interlinks can only be assigned in Table IRLNKINV if the port is  
0 not already equipped as a C-Side link, or allocated for dynamic  
0 trunks.

0 Each member of a trunk group in an RSC must belong to the same  
0 RCC. Also, Table IRLNKINV (interlink table) must be datafilled  
0 to establish a dual relationship between two RCCs before their  
0 route entries can be datafilled in Table ESARTE to use each other's  
0 trunk groups.

0 There will not be any Automatic Number Identification (ANI) out-  
0 pulsed for a line terminating on an Emergency Service Bureau  
0 (ESB) trunk on the spouse RCC.

0 Additionally, the office must be configured with package NTX152AB  
0 for trunk interswitching calls to work.

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## 0 POTS Call Limitations

- 0  
0 Dual RCC S/W adheres to the following limitations for POTS calls:
- 0 1. Only one Home Numbering Plan Area code will be supported  
0 per dual RCC configuration while in ESA mode.
  - 0 2. Billing information is not recorded while in ESA.
  - 0 3. No custom calling features are supported while in ESA.
  - 0 4. No dial tone speed measurements are taken while in ESA.
  - 0 5. Equal access features are not supported while in ESA.
  - 0 6. Foreign exchange calls are not supported while in ESA.
  - 0 7. All calls will be dropped during ESA entry and exit.

## 0 Dual RCC IBN Call Limitations

- 0  
0 Dual RCC S/W adheres to the following limitations for POTS calls:
- 0 1. Network Class Of Service is not supported for IBN lines.
  - 0 2. Custom calling features are not supported. EBS and Data  
0 Unit feature keys will not operate, flash is not recog-  
0 nized, no action will be taken when feature keys are  
0 pressed, and conferencing is not supported.
  - 0 3. All calls will be dropped during ESA entry and exit.

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## 0 POTS/IBN Call Unsupported Services

0  
0 The following POTS/IBN line services are not supported in a Dual  
0 ESA mode:

- 0 1. Automatic lines (AUL) originating on one RCC and termi-  
0 nating on the spouse.
- 0 2. Calls originating on one RCC and terminating to a hunt  
0 group on the spouse. For BCS25 the originating sub-  
0 scriber will only be capable of terminating on the spouse  
0 if the group member that was associated to the DN by CC  
0 static data is idle (i.e. the group is not searched).

## 0 POTS/IBN Call Supported Services

0  
0 The following POTS/IBN line services are supported in a Dual ESA  
0 mode:

- 0 1. Basic line-to-line dialling: A subscriber can make calls  
0 to any other subscriber serviced within the dual RCC con-  
0 figuration.
- 0 2. Invalid termination is routed to reorder.
- 0 3. POTS Line Services Supported in a Dual ESA Mode of opera-  
0 tion are the same as those supported for a single RCC  
0 configuration while in ESA.
- 0 4. Supported Customer Services While in a Dual ESA Mode

0 In addition to the IBN customer group services sup-  
0 ported on a per RCC basis, five more are also sup-  
0 ported on a dual RCC configuration basis which are:

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- 0 a. Only the treatments strip and translate (SRPXL A); and  
0 strip, second dial tone and translate (SRPDXLA) are  
0 supported using table ESAPXLA.
- 0 b. Direct outward dialling with or without second dial  
0 tone for terminating on a POTS line.
- 0 c. Denied incoming call for a station.
- 0 d. Termination to the primary directory number of a Mul-  
0 tiple Appearance Directory Number (MADN) group.
- 0 e. Origination by all lines within a MADN group.

0 5. Supported POTS Line Types While in a Dual ESA Mode

- 0 a. Single party flat rate.
- 0 b. Two party flat rate.
- 0 c. Four party flat rate without ANI.
- 0 d. Eight party flat rate without ANI.
- 0 e. Multi-party flat rate without ANI.
- 0 f. Individual message rate lines are treated as single  
0 party flat rate.
- 0 g. Coin dialtone first service with coin returned.
- 0 h. Coin coin first service with coin returned.
- 0 i. Semi-postpay coin service with no coin refund while  
0 in ESA.
- 0 j. Cutoff on disconnect option - cutoff relay is oper-  
0 ated for 300 milliseconds.
- 0 k. PBX message rate lines treated as PBX flat rate.

0 6. Supported IBN Line Types while in a Dual ESA Mode

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a. Standard 500 and 2500 sets.

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b. An IBN supported electronic business set is treated like a 2500 set with the primary directory number (PDN) as the directory number. Only the PDN and RELEASE keys are supported.

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c. Only the primary directory number is supported for a data unit (i.e., no modem pool).

0

d. Attendant consoles are not supported.

## 0 Emergency Stand Alone (ESA)

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The ESA software feature (NTX149AA) (lines only) in the RSC provides sufficient intelligence in the RSC to allow continued limited POTS service for intraswitched calls when the message DS-1 links to the host LGC/LTC are out of service, such as:

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| SUPPORTED SYSTEMS             | NON-SUPPORTED SYSTEMS  |
|-------------------------------|------------------------|
| POTS calls (Intra-RSC)        | IBN Attendant Consoles |
| IBN Station calls (Intra-RSC) | Datapath               |
| IBN Business Set's            | Station features       |
| primary numbers               | Feature Activation     |

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Up to 16 directory numbers or prefixes may be datafilled for special routing during ESA. Up to eight (8) prefixes or special numbers may be datafilled per IBN customer group for special routing during ESA. Calls in progress are taken down during entry to and exit from ESA. Billing info is lost for calls during ESA takeover. Local coin calls are free during ESA. No additional hardware is required for operation of the ESA feature.

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ESA for both lines and trunks (NTX149AB) is scheduled for availability in BCS23.

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## 0 Dual RCC ESA

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0 When both RSCs in a dual RCC configuration are in ESA mode, line  
0 and trunk intracalling within each RSC and line and trunk inter-  
0 switching between the RCCs via the DS1 interlinks are supported.  
0 If either RSC in a dual RCC configuration loses communication  
0 with the host, the customer will be given the option of having  
0 both RSCs enter ESA or of having one in ESA and the other in  
0 normal operation with interswitching not supported. Support for  
0 a dual RCC configuration with one RSC in ESA mode and the other  
0 RSC in normal operation with full interswitch capabilities cannot  
0 be provided currently.

## 0 NTX381AA Feature Remote-off-Remote

0  
0 \* General

0 This feature is currently available at BCS-23 in feature  
0 package NTX381AA and is compatible with the dual RCC. How-  
0 ever, each RLCM or OPM must still home on only one RCC. The  
0 number of remotes supported by two RCCs in a dual RCC config-  
0 uration is twice that supported by a single RCC. As is true  
0 now, loss can be inserted at the line card when either or  
0 both RSCs are in a remote-off-remote configuration.

0  
0 \* RLCM/OPM Off RSC

0 The Remote Off Remote feature provides for connecting an  
0 RLCM/OPM to the P-Side of an RCC which will provide the same  
0 features that are available to an LCM off the RCC.

0 The Remote-off-Remote configuration allows several smaller  
0 sites to be remotated off the site served by the RCC. This fa-  
0 cilitates the conversion of small offices to DMS-100, and  
0 with intraswitching the usage of DS-1 facilities is kept to a  
0 minimum. The same features that are provided for an RLCM off  
0 a Line Trunk Controller (LTC) (such as intraswitching, ESA,

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0 RMM, and carrier maintenance) are supported on a RLCM off an  
0 RCC.

0 \* Intraswitching

0 Intraswitching provides the capability of switching calls at  
0 a remote location without requiring transmission back to the  
0 host. Both the RCC and the RLCM have line to line intra-  
0 switching capabilities which operate as follows:

0 1. For intraswitched line to line calls a loss of 0dB is in-  
0 serted. This loss value is valid for up to 100 miles on a  
0 line to line call. This feature supports a maximum dis-  
0 tance on intraswitched calls of 100 miles. Therefore, for  
0 intraswitching purposes the RCC and the RLCM must be  
0 within a distance of 100 miles from the host LTC.

0 2. Furthermore, the RLCM must be within 50 miles of the host  
0 RCC because an intraswitched call at the RLCM level could  
0 be blocked and then an attempt is made to intraswitch at  
0 the RCC level. This would result in a path of 100 miles  
0 (2 X 50) and is within the 100 mile limit. The same sit-  
0 uation occurs if a call is made between two RLCMs on the  
0 same RCC (See Typical Remote-Off-Remote Configuration di-  
0 agram).

0 \* Emergency Stand Alone (ESA) Issues

0 Both the RCC and the RLCM have ESA capabilities. Entry into  
0 ESA occurs when communication to the host node is lost. Se-  
0 veral points are of special importance when considering RCC  
0 and RLCM ESA entrance and exit:

0 - It is the breaking of the PM's message links or the ina-  
0 bility of a host processor to return the ESA looparound  
0 message that triggers ESA entrance. Both the CC and the  
0 RCC (when in ESA mode) can return the looparound message.  
0 So as long as the RLCM can talk to either of these it  
0 does not enter ESA.

0 - The RLCM cannot exit ESA if the RCC is still in ESA. This  
0 is because the RLCM ESA exit involves a system Return to  
0 Service (RTS) of the RLCM and this cannot be handled by  
0 the RCC resident software.

0 - The RLCM\_ESAENTRY\_BADCSIDE timeout control in table  
0 OFCENG, has to be long enough to prevent the RLCM from

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0 entering ESA while its C-Side modules (CC-LTC-RCC) are  
0 performing a restart.

0 \* Software Interdependencies

0 The RSC Remote Off Remote feature is provided in feature  
0 package NTX381AA. Package NTX381AA requires the following  
0 packages :

0 9.3.3 MEMORY PROVISIONING

0  
0 Refer to MEMCALC for Host Office Memory Requirements as they re-  
0 late to the Host Based Remote Switching Center (RSC) software.

0 9.4 REAL TIME IMPACT

0 Refer to MEMCALC for Real Time provisioning requirements.

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0 10.0 International RSC-S Provisioning

0 The International Remote Switching Center - SDH (RSC-S ) provides remote lines from medium to large size remotes (240 lines single RSC-S configuration up to 8000 lines dual RSC-S configuration).

0 (SDH stands for Synchronized Digital Hierarchy).

0 The International RSC-S configuration terminates in the host to Line Group Controller with up to 16 PCM-30 links.

0 The CRSC cabinet consists of a Frame Supervisory Panel (FSP), a Line Concentrating Module Enhanced (LCME), a Remote Maintenance Module (RMM), a one shelf (main shelf) Remote Cluster Controller (RCC2), and a Cooling Unit (CU). A single CRSC cabinet can support up to 480 lines (maximum 216 ISDN lines).

0 The extension cabinet (CEXT) will be used to expand the capacity of the CRSC. It consists of a Frame Supervisory Panel (FSP), a Line Concentrating Module Enhanced (LCME), a Remote Maintenance Module (RMM), a RCC2 Extension Shelf (EXT), and a Cooling Unit (CU).

0 One CEXT can support 2 CRSC cabinets.

0 Both the CRSC and the CEXT use the "Streamline" cabinet.

0 The International RSC-S hardware differs from the North American RSC-S as follows:

- 0 - PCM30 Packlet,
- 0 - New coaxial Bulkhead,
- 0 - Coaxial cabling,
- 0 - Inclusion of International LCME and RMM.

0 The RSC-S default color will be FiberWorld Grey. Codes for providing DMS brown equipment will be added as soon as available.

0 The issue04 of this ECM introduces brown door kit, frame fail lamp and cable trough.

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0 The International Remote Switching Center - SDH (RSC-S) shall be in-  
0 troduced in three (3) phases. These phases and a tentative schedule  
0 are detailed as follows:

0 Phase 1 (V.O. BCS-34) :

|                                                              | General Availability | Market |
|--------------------------------------------------------------|----------------------|--------|
| 0 - Basic CRSC with RCC2+ shelf                              | 3Q92/BCS-35          | UK     |
| 0 - CEXT with EXT shelf                                      | 3Q92/BCS-35          | UK     |
| 0 - ESA                                                      | 3Q92/BCS-35          | UK     |
| 0 + labelled -"CPM" in the Commercial Specification (Ref. 1) |                      |        |

0 Phase 2 (V.O. BCS-35) :

|                           |             |    |
|---------------------------|-------------|----|
| 0 - Metering RSC-S        | 1Q93/BCS-36 | UK |
| 0 - Dual RSC-S (P-side)   | 1Q93/BCS-36 | UK |
| 0 - 800 Km Host to Remote | 1Q93/BCS-36 | UK |

0 Phase 3 (V.O. BCS-36) :

|                       |             |        |
|-----------------------|-------------|--------|
| 0 - Int'l POTS RSC-S  | 3Q93/BCS-37 | T.B.D. |
| 0 - DFI Capability    | 3Q93/BCS-37 | T.B.D. |
| 0 - Remote off Remote | 3Q93/BCS-37 | T.B.D. |

0 It should be noted that the Int'l roll-out is one BCS later than the  
0 domestic RSC-S roll-out and the hardware introduction is to be syn-  
0 chronized with the BCS release. This plan addresses hardware roll-  
0 outs for Phase 1 only (i.e. BCS-34). Phase 2 and 3 which will be  
0 funded by separate DA's (Development Agreements) will be covered in  
0 separate stand-alone plans later.

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0 10.1 HARDWARE PROVISIONING

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0 10.1.1 HARDWARE USAGE RESTRICTIONS

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0 International RSC-S Hardware Usage Restrictions are as follows:

- 0 - The Maximum Cable Distance Between the RCC2 Shelf located  
0 on the CRSC Cabinet and the EXT shelf located on the CEXT  
0 Cabinet is 20 feet.
- 0 - The RSC-S Maximum Distance from the Host to the farthest  
0 remote off the RCC2 is 150 miles.
- 0 - Max 10 LCMs and 2 LCMEs are provisionable on the P-Side  
0 links of the RCC2. (P-Side links not functional in Phase I)
- 0 - CDO or PBX trunks may be assigned only on the first  
0 20 P-Side PCM30 links on RCC2. (P-Side links not functional  
0 in Phase I).
- 0 - Connection to the Packet Handler is from the RCC2  
0 C-side. Rules in this NTP support this configuration  
0 only. Support for P-side connection will be added  
0 when the ECM for RCC2 is produced.
- 0 - The RCC2 P-Side Ports may be allocated as follows:  
0 (P-Side links not functional in Phase I)
  - 0 - PCM30s are allowed on links 0-21 and 24-47.
  - 0 - DS-30A Links may be defined on Links 22 thru 53,  
0 where links 22 and 23 are reserved for the Remote  
0 Maintenance Module (RMM).
  - 0 - PCM30 Trunking to CDO/PBX facilities is limited to a  
0 combined total of 8 PCM30s. These PCM30s may be  
0 allocated between CDO/PBX in any numerical  
0 configuration not to exceed 8.

0

0 10.1.2 HARDWARE DEPENDENCIES

0  
0 The NTMX82AA requires a communication path using the NT6X27BA  
0 circuit pack to communicate with a host peripheral (LGC0).

0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not Applicable

0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

0 CIRCUITS PER CARD

0  
0 Not Applicable

0 DISCRIMINATION NUMBERING

0  
0 Not Applicable

0

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0 10.1.3 PROVISIONING CONSIDERATIONS

0  
0 The International RSC-S may be deployed in a Single Cabinet Con-  
0 figuration by providing the CRSC only and powering it from the  
0 Power Board. A kit containing power cable, filter adapters,  
0 straps, etc. must be provisioned for this application to equip  
0 the CRSC Offshore. This kit is NTMX8943.

0 The International RSC-S also may be provisioned in a Multi-  
0 Cabinet Configuration consisting of the CRSC, CPDC, CLCE, CMIS,  
0 MCSS, and CEXT Cabinets.

0 The introduction of the RSC-S Office Conversions will allow flex-  
0 ibility for the International market. The new equipment must be  
0 fully installed and commissioned before the conversion process  
0 begins. As part of the RSC-S conversions process, development was  
0 undertaken at BNR to support the System Level Interconnect re-  
0 quirements necessary for the standard International RSC office  
0 conversion to RSC-S using both the cabinets and 7ft frames. The  
0 CA Drawings will support all the interconnect cables developed  
0 for the RSC-S conversions.

0 The CRSC cabinet would be required in all applications. The CEXT  
0 cabinet would only be needed if the CRSC could not carry the re-  
0 quired amount of ports needed for the office. The CRSC cabinet  
0 will conserve floor space and offer international LCM POTS and  
0 ISDN with the option of using existing LCE and LCEI 7ft frames.

0 Also, the CRSC and CEXT will accept power from existing PDC as  
0 well as a newly installed CPDC cabinet. The NTMX89 and NTMX88  
0 products will require an external power filter module kit  
0 (NTMX8943) when using a 7ft PDC frame for powering.

0 All RSC-S configurations will comply with the ISG rules for  
0 Grounding (ref. DSZX16CA, ISZX16CA, 'Cabinetized DMS-100 Family  
0 Power and Grounding' documents).

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## 0 Remote Cluster Controller Offshore2 (RCC2)

0  
0 Provisioning the RCC2 is described below in terms of Always Pro-  
0 vided (AP) CPs and Provisionable (PROV) CPs.

0 Slots 12, 14 and 16 may be equipped with a D-Channel Handler  
0 (BX02AA) or PCM Quad Carrier CP (MX87AA). The MX87AA may be  
0 equipped with up to four "packlets" which may be dual PCM30  
0 (MX82AA) or a filler plate (MX83AA).

0 Unequipped provisionable slots (4,5,7,12,14,16,22-24) must be  
0 equipped with filler plates.

## 0 RCC2 Unit 0 Physical Layout

| SLOT | CP DESCRIPTION                | PEC       | STATUS |
|------|-------------------------------|-----------|--------|
| 1-2  | POWER CONVERTER               | MX72AA    | AP     |
| 3    | UNIFIED PROCESSOR             | MX77AA    | AP     |
| 4    | ISDN SIG. PREPROCESSOR BX01AB |           | AP     |
| 5    | CLASS MODEM RESOURCE          | 6X78AA    | PROV   |
| 6    | UNIVERSAL TONE REC            | 6X92CA/BB | PROV   |
| 7    | UNIVERSAL TONE REC            | 6X92CA/BB | PROV   |
| 8    | ENHANCED MSG CP               | 6X69LB    | AP     |
| 9    | QUAD CARRIER C-SIDE           | MX87AA    | AP     |
| 0    | DUAL PCM30 PACKLET            | MX82AA    | AP     |
| 1-3  | DUAL PCM30 PACKLET            | MX82AA    | PROV   |
| 1-3  | PACKLET FILLER FACE PL        | MX83AA    | PROV   |
| 10   | MATRIX CP                     | MX75AA    | AP     |
| 11   | SIGNALLING CP                 | MX73AA    | AP     |
| 12   | D-CHANNEL HANDLER(DCH) BX02AA |           | PROV   |

RCC2 XXX  
UNIT: 0

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0 | QUAD CARRIER MX87AA | PROV |  
0 0-3 DUAL PCM30 PACKLET MX82AA | PROV |  
0 0-3 PACKLET FILLER FACE PL MX83AA | PROV |  
0 DS-30A I/F CP MX74AA | AP | 13

## 0 RCC2 Unit 1 Physical Layout

| SLOT  | CP DESCRIPTION         | PEC       | STATUS |
|-------|------------------------|-----------|--------|
| 14    | D-CHANNEL HANDLER(DCH) | BX02AA    | PROV   |
|       | QUAD CARRIER           | MX87AA    | PROV   |
| 0-3   | DUAL PCM30 PACKLET     | MX82AA    | PROV   |
| 0-3   | PACKLET FILLER FACE PL | MX83AA    | PROV   |
| 15    | DS 30A I/F CP          | MX74AA    | AP     |
| 16    | D-CHANNEL HANDLER(DCH) | BX02AA    | PROV   |
|       | QUAD CARRIER           | MX87AA    | PROV   |
| 0-3   | DUAL PCM30 PACKLET     | MX82AA    | PROV   |
| 0-3   | PACKLET FILLER FACE PL | MX83AA    | PROV   |
| 17    | SIGNALLING CP          | MX73AA    | AP     |
| 18    | MATRIX CP              | MX75AA    | AP     |
| 19    | QUAD CARRIER C-SIDE    | MX87AA    | AP     |
| 0     | DUAL PCM30 PACKLET     | MX82AA    | AP     |
| 1-3   | DUAL PCM30 PACKLET     | MX82AA    | PROV   |
| 1-3   | PACKLET FILLER FACE PL | MX83AA    | PROV   |
| 20    | ENHANCED MSG CP        | 6X69LB    | AP     |
| 21    | UNIVERSAL TONE REC'VR  | 6X92CA/BB | PROV   |
| 22    | UNIVERSAL TONE REC'VR  | 6X92CA/BB | PROV   |
| 23    | CLASS MODEM RESOURCE   | 6X78AA    | PROV   |
| 24    | ISDN SIG. PREPROCESSOR | BX01AB    | AP     |
| 25    | UNIFIED PROCESSOR CP   | MX77AA    | AP     |
| 26-27 | POWER CONVERTER CP     | MX72AA    | AP     |

RCC2: XXX  
UNIT: 1

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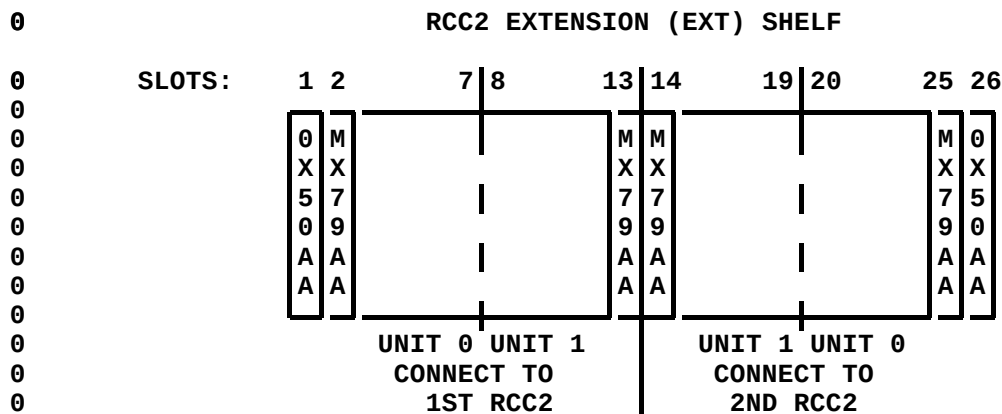
# 0 Provisioning Host Interface

0  
0 The C-Side interface is provided via up to sixteen PCM30 links.  
0 These links provide up to 512 Channels for host traffic.  
0 The two Quad Carrier packs and the first PCM30 packet on each  
0 are Always Provided using building block NTZZ37JA.  
0 Additional PCM30 packets for C-Side links are Provisionable.

0 The host peripheral module must be equipped with Common Circuit  
0 Pack Fills per BCS-33 standards. The host controller must be a  
0 LTCI if the RCC2 terminates CDO or PBX trunks and may be a LGCI  
0 if the RCC2 terminates lines only. The ISDN capability of LTCI  
0 and LGCI controllers is not required by the RCC2.

## 0 The Extension (EXT) Shelf

0  
0 The Extension Layout is as follows:



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0 Note:

0 The Extension Shelf is actually two functional modules on a  
0 single card cage, where slots 1-13 constitute module zero and  
0 slots 14-26 make up module one.

0 Each module is further broken down into two logical units (0 &  
0 1) which provide redundancy. Each module on the EXT shelf is  
0 provisioned independently. The left module is provisioned in  
0 support of the first RCC2 shelf and the right module is provi-  
0 sioned to support the second RCC2 shelf.

0 Like slots 12, 14, and 16 on the RCC2 Shelf, the EXT shelf  
0 slots 4, 6, 8, 19, 21, and 23 may be equipped with a D-Channel  
0 Handler (BX02AA) or PCM Quad Carrier CP (MX87AA).

0 Provisionable slots not equipped with a circuit pack must be  
0 equipped with the NT0X50AA Filler Face Plate.

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**QUESTION**

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0  
0 EXT Shelf Right Side Physical Layout

| SLOT | DESCRIPTION            | PEC    | STATUS |
|------|------------------------|--------|--------|
| 14   | DS60 EXTENDER CP       | MX79AA | AP     |
| 15   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 16   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 17   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 18   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 19   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
|      | QUAD FRAME CARRIER     | MX87AA | PROV   |
| 0-3  | DUAL PCM30 PACKLET     | MX82AA | PROV   |
| 0-3  | PACKLET FACE PLATE     | MX83AA | PROV   |
| 20   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 21   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
|      | QUAD FRAME CARRIER     | MX87AA | PROV   |
| 0-3  | DUAL PCM30 PACKLET     | MX82AA | PROV   |
| 0-3  | PACKLET FACE PLATE     | MX83AA | PROV   |
| 22   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 23   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
|      | QUAD FRAME CARRIER     | MX87AA | PROV   |
| 0-3  | DUAL PCM30 PACKLET     | MX82AA | PROV   |
| 0-3  | PACKLET FACE PLATE     | MX83AA | PROV   |
| 24   | D-CHANNEL HANDLER(DCH) | BX02AA | PROV   |
| 25   | DS60 EXTENDER CP       | MX79AA | AP     |
| 26   | FILLER FACE PLATE      | 0X50AA | AP     |

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## 0 RSC-S Service Circuits

0  
0 Please refer to the Engineering Manual Inserts.

## 0 RSC-S Subscriber Lines

0  
0 The RSC-S supports POTS, MDC and ISDN subscriber lines via the  
0 Always Provided LCME modules in the CRSC and CEXT and the CLCE  
0 Cabinets. LCMS must be provisioned if coin lines are required.  
0 LCMEs can support NT6X18 line card types only if they are not  
0 configured as high voltage lines (Coin,ANI,etc.).

0 Phase 1 limits ISDN modules to the CRSC and CEXT only. Ten (10)  
0 LCMS max are provisionable in five (5) CLCE cabinets for a Mono  
0 RSC-S configuration for Phase 1. (double this for a Dual RCC2 in  
0 Phase 2) All line card types with the exception of coin lines are  
0 provisionable on the ISDN line drawer. The ISDN line card cannot  
0 be mounted in a POTS line drawer/LCM.

## 0 RSC-S Miscellaneous Equipment

0  
0 Limitations placed on this equipment was not completed in time to  
0 make this release. Refer to API-251 for CMIS provisioning.

0 Provision the MCSS per Telco requirements for Spare Card storage.

0 Note:  
0 An NTMX87 must be provisioned as required to store spare PCM30  
0 packets.

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0 10.1.4 OFFICE LAYOUT INFORMATION

0  
0 The CPDC will be used to power RSC-S lineups for all applications  
0 except the standalone CRSC configuration. The CPDC must be the  
0 first cabinet in any lineup it powers. Therefore, when providing  
0 a standalone CRSC in an office that will ultimately grow to re-  
0 quire additional cabinets (CLCE,CEXT,etc.), space should be left  
0 for the CPDC to be the first cabinet in the lineup.

0 RSC-S lineups will not exceed eleven cabinets. As office config-  
0 urations are determined, this restriction will be reviewed.

0 CRSC and CEXT cabinets must be located so that the DS60 cables  
0 between them do not exceed twenty feet in length. Since one CEXT  
0 can support two CRSCs, in Dual configurations, each CRSC would  
0 need to be within 20 feet of the CEXT (assuming both CRSCs re-  
0 quire CEXT facilities).

0 See above, the Section on Provisioning Considerations, also.

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0 10.1.5 TRAFFIC TABLES

0  
0 The following table illustrates the Host to RSC-Sonet theoretical  
0 traffic capacity.

0 Using the Traffic Tables

0 For:

0 2 PCM30s providing,  
0 60 Channels with  
0 2.00% Grade of Service,  
0 provides

0 48.65 erlangs

0 of traffic carrying capacity.

0 Assumption: Delay/Loss System: 55.0/ 45.0

| PCM<br>30s | Channels | Grade of Service |        |        |        |        |
|------------|----------|------------------|--------|--------|--------|--------|
|            |          | 0.001%           | 0.100% | 0.500% | 1.00%  | 2.00%  |
| 2          | 60       | 36.62            | 40.76  | 44.53  | 46.48  | 48.65  |
| 3          | 90       | 60.92            | 66.42  | 71.40  | 73.94  | 76.74  |
| 4          | 120      | 86.19            | 92.87  | 98.88  | 101.93 | 105.27 |
| 5          | 150      | 112.09           | 119.82 | 126.76 | 130.26 | 134.07 |
| 6          | 180      | 138.42           | 147.11 | 154.90 | 158.81 | 163.04 |
| 7          | 210      | 165.08           | 174.67 | 183.24 | 187.53 | 192.15 |
| 8          | 240      | 191.99           | 202.42 | 211.73 | 216.38 | 221.36 |
| 9          | 270      | 219.12           | 230.34 | 240.34 | 245.32 | 250.64 |
| 10         | 300      | 246.42           | 258.39 | 269.06 | 274.36 | 280.00 |
| 11         | 330      | 273.86           | 286.56 | 297.86 | 303.44 | 309.39 |
| 12         | 360      | 301.42           | 314.83 | 326.72 | 332.61 | 338.83 |
| 13         | 390      | 329.11           | 343.17 | 355.67 | 361.83 | 368.33 |
| 14         | 420      | 356.89           | 371.61 | 384.67 | 391.08 | 397.86 |

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0 15 | 450 | 384.75 | 400.08 | 413.69 | 420.39 | 427.42 |  
0 16 | 480 | 412.69 | 428.64 | 442.78 | 449.72 | 456.97 |  
0

| PCM<br>30s | Channels | Grade of Service |        |        |        |        |
|------------|----------|------------------|--------|--------|--------|--------|
|            |          | 3.00%            | 4.00%  | 5.00%  | 6.00%  | 7.00%  |
| 2          | 60       | 50.02            | 51.04  | 51.84  | 52.50  | 53.06  |
| 3          | 90       | 78.49            | 79.76  | 80.76  | 81.58  | 82.27  |
| 4          | 120      | 107.33           | 108.82 | 109.98 | 110.93 | 111.71 |
| 5          | 150      | 136.40           | 138.08 | 139.37 | 140.42 | 141.29 |
| 6          | 180      | 165.62           | 167.46 | 168.87 | 170.01 | 170.94 |
| 7          | 210      | 194.94           | 196.93 | 198.45 | 199.66 | 200.66 |
| 8          | 240      | 224.35           | 226.47 | 228.09 | 229.37 | 230.42 |
| 9          | 270      | 253.83           | 256.07 | 257.77 | 259.11 | 260.22 |
| 10         | 300      | 283.36           | 285.69 | 287.47 | 288.89 | 290.03 |
| 11         | 330      | 312.92           | 315.39 | 317.22 | 318.69 | 319.89 |
| 12         | 360      | 342.53           | 345.08 | 347.00 | 348.50 | 349.72 |
| 13         | 390      | 372.17           | 374.81 | 376.81 | 378.36 | 379.61 |
| 14         | 420      | 401.83           | 404.56 | 406.61 | 408.19 | 409.50 |
| 15         | 450      | 431.50           | 434.33 | 436.42 | 438.06 | 439.39 |
| 16         | 480      | 461.22           | 464.11 | 466.28 | 467.94 | 469.28 |

[illegible]

| PCM<br>30s | Channels | Grade of Service |        |        |        |
|------------|----------|------------------|--------|--------|--------|
|            |          | 8.00%            | 9.00%  | 10.00% | 20.00% |
| 2          | 60       | 53.55            | 53.98  | 54.36  | 56.72  |
| 3          | 90       | 82.86            | 83.38  | 83.83  | 86.55  |
| 4          | 120      | 112.38           | 112.96 | 113.48 | 116.45 |
| 5          | 150      | 142.02           | 142.66 | 143.21 | 146.38 |
| 6          | 180      | 171.74           | 172.41 | 173.01 | 176.33 |
| 7          | 210      | 201.50           | 202.22 | 202.84 | 206.29 |
| 8          | 240      | 231.30           | 232.05 | 232.70 | 236.26 |
| 9          | 270      | 261.13           | 261.91 | 262.58 | 266.24 |
| 10         | 300      | 291.00           | 291.81 | 292.47 | 296.22 |
| 11         | 330      | 320.86           | 321.69 | 322.39 | 326.19 |
| 12         | 360      | 350.75           | 351.58 | 352.33 | 356.19 |
| 13         | 390      | 380.64           | 381.50 | 382.25 | 386.17 |
| 14         | 420      | 410.56           | 411.44 | 412.19 | 416.17 |
| 15         | 450      | 440.47           | 441.36 | 442.14 | 446.17 |
| 16         | 480      | 470.39           | 471.31 | 472.08 | 476.14 |



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0 10.2 PRODUCT/SYSTEM SPECIFICATION

0

0 10.2.1 PHYSICAL CHARACTERISTICS

0

0 The issue of Circuit Protection and Grounding must be addressed  
0 as follows:

0 - Circuit Protection

0 Any wire or wire pair other than battery supply or ground which  
0 is connected to the RSC-S and leaves the building must be pro-  
0 tected against lightning by suitable arrestors.

0 PCM30 input and output ports will be protected against the fol-  
0 lowing conditions:

0 1. Shorts to ground, input to output, and across the pair.

0 2. DC voltages: +/- 100 VDC with respect to ground, and  
0 +/- 60 VDC between the leads.

0 3. AC voltage to 110 VAC 50/60 Hz with respect to ground

0 - Grounding

0 All RSC-S configurations will incorporate the grounding systems  
0 as specified in the DMS-100F Technical Specification. Grounding  
0 methods will comply with Isolated System Grounding rules.

0 - Fuses

0 In the RCC2 shelf there are fuses on individual packs. Their  
0 value will be added once the design is complete.

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0 - BATTERY FEED FROM THE FSP

0 1. RCC2 Shelf

0 Max current from -48V feed is 8.1A

0 RCC2 power requirement is 340 Watts.

0 NTMX89BA - Cabinetized Remote Switching Center

0 Input Voltage.....-48VDC  
0 Power Consumption.....1142 Watts (worst case)  
0 Current Drain.....25 Amps (at -42VDC)  
0 Thermal Dissipation.....3897 BTU/hour (worst case)  
0 CPDC Requirements.....(3) 20 Amp Breakers on "A" Feed  
0 (3) 20 Amp Breakers on "B" Feed

0 MECHANICAL DIMENSIONS

0 Height 72"  
0 Width 28.5"  
0 Depth 28.5"  
0 Weight 810 lb.

0 NTMX88BA - CRSC Extension Cabinet

0 Input Voltage.....-48VDC  
0 Power Consumption.....1142 Watts (worst case)  
0 Current Drain.....25 Amps (at -42VDC)  
0 Thermal Dissipation.....3897 BTU/hour (worst case)  
0 CPDC Requirements.....(3) 20 Amp Breakers on "A" Feed  
0 (3) 20 Amp Breakers on "B" Feed

0 MECHANICAL DIMENSIONS

0 Height 72"  
0 Width 28.5"  
0 Depth 28.5"  
0 Weight 810 lb.

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0 10.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 All EMI/Earthquake requirements are integral to the cabinet.

0 10.2.3 SPARING INFORMATION

0  
0 The MCSS Cabinet shall be supplied to house spare circuit packs.  
0 Standard sparing algorithms apply.

0 The following packs are considered critical spares for the RCC2  
0 and EXT shelves:

0 RCC2 : NTMX72AA, NTMX73AA, NTMX74AA, NTMX75AA,  
0 NTMX77AA, NTMX82AA, NTMX87AA, NT6X92CA/BB,  
0 NT6X69LB, NTB01AB  
0 Also, if provisioned : NT6X78AA  
0 NTB02AA

0 EXT : NTMX79AA  
0 Additional NTMX82AA, NTMX87AA and NTB02AA  
0 should be provided if used on the EXT shelf.

0 10.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 See above Section on Physical Characteristics.

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0 10.2.5 CURRENT DRAIN INFORMATION

0  
0 See above Section on Physical Characteristics.

0 10.3 SOFTWARE PROVISIONING

0

0 10.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Software packages specifically required for the Phase 1 RSC-S  
0 Offshore are as follows:

- 0 - NTXP92AA RSC-S BASIC
- 0 - NTXK77AA PCM30 RSC-S SUPPORT

0 Note:  
0 NTX145AA Basic RSC Features must also be included in the  
0 load.

0 Refer to Software Management System (SMS) for interdependencies.

0 10.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not Applicable

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0 10.3.3 MEMORY PROVISIONING

0  
0 The Unified Processor Pack in the RCC2 shelf is equipped with 8M  
0 of memory. Expansion of the memory to 16 megabytes will also be  
0 possible.

0 10.3.4 Operational Measurements

0  
0 Basic OMs for the XPM have been applied to the RCC2.

0 10.3.5 Logs/Tools

0  
0 Existing PM Logs are updated to reflect the RSC-S. Resident tools  
0 are updated for the CC/XPM as well.

0 10.4 REAL TIME IMPACT

0 The RCC2 processor is capable of handling 8.5 Calls Per Second.

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0 11.0 Small Remote Unit

0 The Small Remote Unit (SRU) is a cabinetized DMS-100 remote whose  
0 hardware and software are based on the DMS Series-II peripherals. The  
0 SRU is a hybrid product, merging the LCME subscriber ISDN access capa-  
0 bility with the remote maintenance and host interface deployment capa-  
0 bilities of the Remote Line Concentrating Module (RLCM).

0 The SRU provides remote access for up to 240 subscriber lines. It  
0 communicates with a DMS-100 Host using PCM30 links. The service pro-  
0 vided by the SRU on the subscriber lines can be a mix of POTS,  
0 Centrex, and eventually ISDN to be delivered via the SRU Phase2 pro-  
0 gram. The SRU does not support a Trunk interface.

0 The SRU's most significant feature is that it is intended to be lo-  
0 cated in a customer premises environment. The design objectives are  
0 to make full use of the existing DMS-100 hardware. The major elements  
0 housed in the SRU cabinet are:

- 0 - Duplicated SRU control units, LCME based.
- 0 - Up to 4 2B1Q Line Drawers.
- 0 - Host Interface using PCM30 or DS1 links.
- 0 - Remote Maintenance Unit.
- 0 - Duplicated Ringing.
- 0 - Frame Supervisory Panel.
- 0 - Cooling Unit (fans).
- 0 - AC to DC rectifier (optional).
- 0 - Battery Charging Unit and batteries (optional).
- 0 - EMI terminations.

0 The SRU is packaged in a cabinet.

0 The SRU is currently engineerable for the U.K. market only.

0 Note:

0 Software is currently unavailable for the SRU to function in the do-  
0 mestic market. Domestic market software for the SRU may be available  
0 at a later date. Additionally, software is currently unavailable to  
0 provide the ISDN-BRI functionality for the SRU. ISDN-BRI is the key  
0 deliverable for the SRU Phase 2 program, currently in the early plan-  
0 ning stages. This program's Gate 0A is planned for 2Q 1993.

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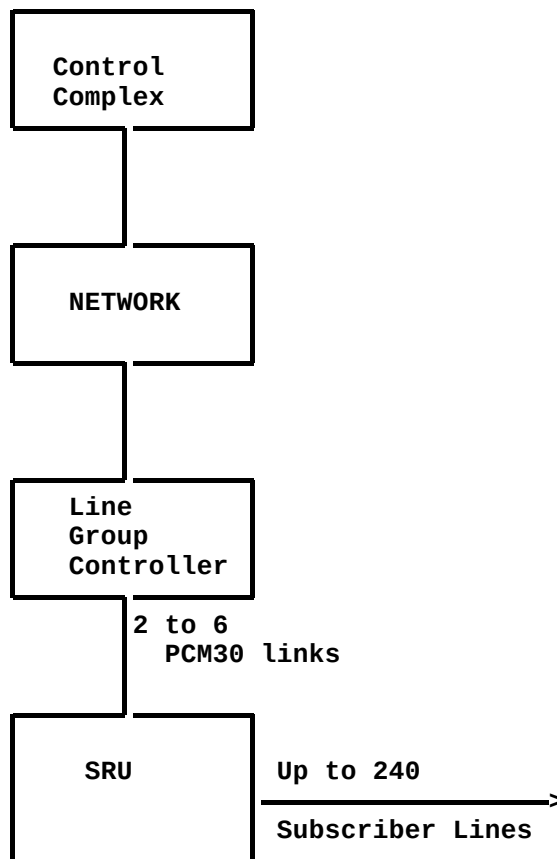


FIGURE 1: DMS view of SRU.

## 11.1 HARDWARE PROVISIONING

### 11.1.1 HARDWARE USAGE RESTRICTIONS

The SRU meets the same host to remote distance requirements as the existing IRLCM remote, ie., 150 miles. Three (3) factors

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0 have to be considered in order to extend the host to remote dis-  
0 tance to 500 miles. They are:

0 ECHO: A loss has to be inserted in the transmission path in or-  
0 der to reduce echo. For countries with less than 6dB loss,  
0 echo cancellor devices are required. For countries with a  
0 loss of greater than 6 dB, ie., UK, echo will not be a prob-  
0 lem.

0 PROPAGATION TIME: The messaging time on the links increases as  
0 the host to remote distance increases. This reduces the num-  
0 ber of Call Attempts per Second that the remote can handle.

0 TRANSMISSION ERRORS: As the distance between host and remote in-  
0 creases, the quality of the transmission media becomes very  
0 important. Every errored message has to be re-transmitted and  
0 results in reduced call processing capacity.

0 PCM30 Line Drawer is not supported.

0 PCM30 repeaters and Lightning arrestor are not housed in the  
0 SRU cabinet. There is also no backup rectifier.

0 Please note that for British Telecom (UK market) applications, NT  
0 has worked with the customer to demonstrate extended range ap-  
0 plications with the SRU. This is based on the BT Transmission  
0 Plan and is not applicable to other customers. Upto approxi-  
0 mately 1000 miles has been demonstrated for BT. The UK pre-  
0 pared Engineering Guidelines for ACD indicated positive BER  
0 results for improved SRU capability with upto 10mSec transit  
0 delay. Also, for Centrex applications testing was performed to  
0 demonstrate the current level of extended range performance  
0 (using typical traffic rate figures).

0

0 11.1.2 HARDWARE DEPENDENCIES

0  
0 None.

0



0 | P AND C SIDE PORT REQUIREMENTS

0  
0 | Not applicable.

0 | DMS BUS PORT REQUIREMENTS

0  
0 | Not applicable.

0 | CIRCUITS PER CARD

0  
0 | Not applicable.

0 | DISCRIMINATION NUMBERING

0  
0 | Not applicable.

0 11.1.3 PROVISIONING CONSIDERATIONS

0  
0 The SRU integrates into the overall DMS architecture in the same  
0 manner as a Remote (ie IRLCM) (ref. Figure 1). The SRU can be  
0 provisioned to provide:

- 0 - Cabinetized SRU for end User premises (AC powered (rectifier)  
0 with or without battery back-up).

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- Cabinetized SRU for Telco premises (DC powered without battery back-up).

The SRU consists of six (6) basic functional blocks; these are:

- the Host Interface Unit (HIU)
- duplicated SRU Control Units (SRU)
- Ringing Unit
- Line Drawers
- Remote Maintenance Unit (RMU)
- Power Supply Unit (PSU)

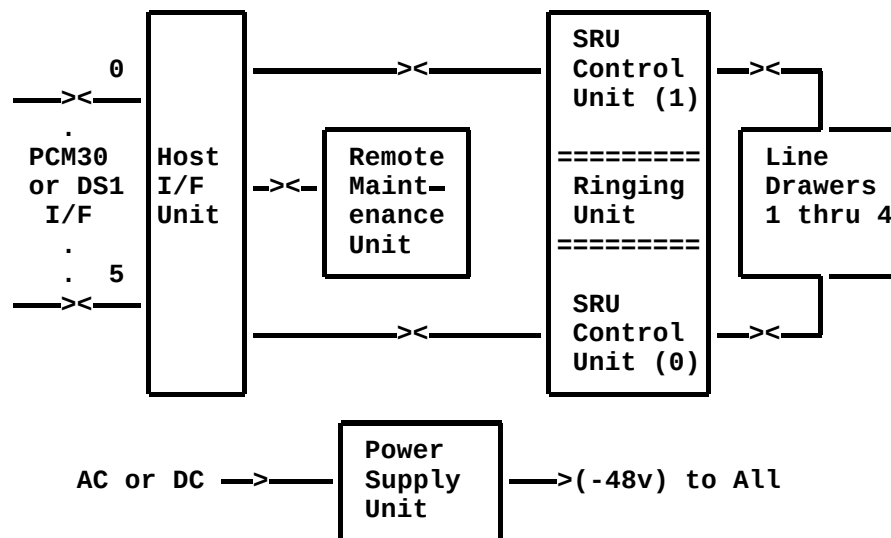


FIGURE 2: SRU Architecture.

The SRU cabinet has a front door to allow access to the equipment installed inside. Opening of the front door reveals a frame. This frame contains a Cooling unit, Service & Interface, LCME & FSP shelves. An optional Battery Charging Unit (BCU) and a Rectifier is mounted on the right hand side inside the SRU cabinet. Battery strings are mounted in two trays at the bottom of the SRU Cabinet. Each Battery string consists of four Batteries. Above the Battery trays, a connector field is provided. Basic functions of each equipment are described below.

- Cooling Unit: This contains an air filter and fans to force air cool the SRU equipment.

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- 0 - Service & Interface Shelf: This contains the circuit packs for  
0 the Host Interface Unit (HIU), the Remote Maintenance Unit  
0 (RMU), one of SRU Control Unit (SCU) and two Ringing Genera-  
0 tors.
- 0 - SCU Shelf. This shelf contains the other SCU and contains four  
0 (4) line Drawers.
- 0 - Frame Supervisory Panel: This contains the power distribution  
0 and a visual power frame fail indicator.
- 0 - Battery Charge Unit. This unit provides the capability to  
0 charge each battery string either under the control of the  
0 craftperson, or automatically by the system.
- 0 - Rectifier: This provides AC to DC power conversion.
- 0 - Batteries: Two battery strings can be housed in the SRU cabi-  
0 net, to provide power backup. Each battery string is good for  
0 two hours.

0 All external connections to the SRU are made at the connector  
0 field located in front and just below the Cooling Unit and behind  
0 the protective cover. The connector field contains 3 areas. The  
0 first, for PCM30 connection to the Host; the second, for Tip-Ring  
0 pairs, each connector having 25 pair; the third, for either an AC  
0 inlet or with -48 vdc A and B feeds. In addition a Frame Ground  
0 connection is provided.

0 The Cabinetized SRU for Telco premises need not be equipped with  
0 battery back-up, a Rectifier (Telco to provide -48 Vdc power), or  
0 a RMU as the Remote Maintenance Unit packs can be provided by the  
0 MTM (if co-located with a DMS).

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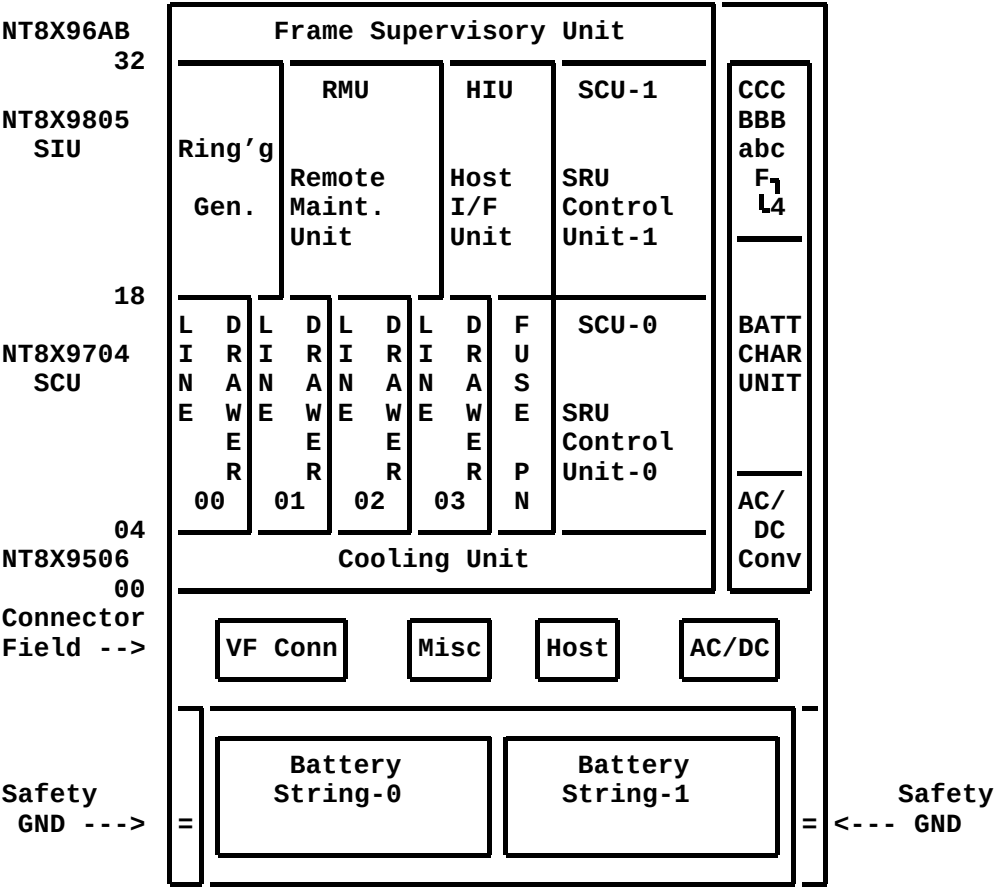


FIGURE 3: Small Remote Unit (NT8X95AB) Equipment Location

Host Interface Unit

The Host Interface Unit (HIU) provides the interface from the SRU to the DMS100 host. The HIU is power spared from both SRU Control Units (SCU) - it gets power from both SCUs. The HIU requires +5Vdc, +12Vdc, and -12Vdc for the power. The HIU consists of up to three (3) NT6X27 packs and two (2) NT6X73 packs.

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0 PCM30 INTERFACE CARD (NT6X27BB)

0 This card provides two (2) 2.048 Mbits/s PCM30 interface between  
0 the host and the SRU. Total of six (6) PCM30 interface ports are  
0 provided by the SRU. The SRU requires a minimum of two (2) PCM30  
0 links to the host. These links are designated as primary links  
0 and must terminate on a different PCM30 card on the SRU and the  
0 Host. Therefore, provide a minimum of two (2), maximum of three  
0 (3) NT6X27BB CPs for the SRU (depending on traffic requirements).

0 The LCME portion of the SRU requires two (2) message channels to  
0 the Host. These channels occupy ch#16 on each primary PCM30  
0 link. When a Remote Maintenance Equipment (optional) is pro-  
0 vided, it also requires a message channel on each of the primary  
0 PCM30 links, otherwise these channels are available for call  
0 processing. Failure of one of the primary PCM30 links results in  
0 the LCME portion of the SRU to go into TAKEOVER and force the  
0 LCME and RMU to use the remaining primary PCM30 link.

0 PCM30 LINK CONTROL CARD (NT6X73BA)

0 This card acts as the messaging interface and provides data rate  
0 conversion between the SCU, RMU, and the PCM30. It also acts as  
0 the clock source for the SRU.

0 Provide two (2) PCM30 Link Control Cards per SRU.

0 SRU Control Unit (SCU)

0  
0 The SCU is based on the existing ISDN LCM Controller (LCME).  
0 There are two SRU Control Units, and each SCU consists of a  
0 processor (NTBX34), two digroup controller (NTBX35) and a new  
0 power converter (NT8X99). There is a total of four (4) circuit  
0 packs per SCU.

0 In normal operation each SCU handles service for the lines in its  
0 own two line drawers. In the event one SCU fails, the remaining  
0 working SRU will handle service to all the lines. Each SCU unit  
0 requires +15 Vdc and +5 Vdc for power, and is power spared from  
0 the other SCU unit.

0

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0 Always provide one (1) SRU Common CP Fill NT8X95AQ per SRU. The  
0 NT8X95AQ provides two (2) NTB34CA, four (4) NTB35CA, two (2)  
0 NT0X50AC and two (2) NT8X99AB circuit packs; half in SCU-0, half  
0 in SCU-1. The function of each of these cards are outlined be-  
0 low.

0 LCME Processor (NTB34CA)

0 This card is responsible for processing associated with scanning  
0 the line cards for calls, setting up call connections through the  
0 digroup controller card (NTB35) and DMS-X messaging with the  
0 Host. This card also carries out background tasks for diagnos-  
0 tics.

0 LCME Diagroup Controller (NTB35CA)

0 This card provides time switching for external and internal chan-  
0 nel assignments, and provides digital loop around paths. It also  
0 interface with the Link Control Card (LCC) and the Line Drawers.

0 LCME Power converter (NT8X99AB)

0 This circuit pack provides +5v dc to the NTB34 and the two  
0 NTB35s for its own SCU, and provides +15v dc to the Line Drawers  
0 and has the capability to power the mate SCU for power redun-  
0 dancy.

0 This pack also contains the Ring, ANI and Coin  
0 detector/multiplexer circuit, and in addition, has isolating di-  
0 odes for serving the Line Drawer voltage needs.

0 Ringing Unit.

0  
0 Two Ringing Generators (RG) NT6X60 are used in the SRU. The  
0 NT6X60 Ringing Generators do not provide ANI and COIN voltages  
0 for Subscriber lines.

0 Provide 0, 1, or 2 Ringing Generators per SRU to be used with  
0 POTS line cards.

0 Provide the NT6X60GA Ringing Generator for U.K. applications.

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0 Provide the NT6X60EA Ringing Generator for Australian applica-  
0 tions.  
0 No Ringing Generators will be required when the SRU is installed  
0 with ISDN line cards only (following Phase 2 completion).

0 Line Drawer (NTBX32BA)

0  
0 This is a 2B1Q Enhanced Line Drawer, which provides the means to  
0 house a 2B1Q Bus Interface Card (NTBX36), a Point of Use Power  
0 Supply (PUPS) (NTBX71) and up to 60 application specific line  
0 Cards. Provide up to four (4) Line Drawers (depending on the  
0 need). Refer to the Engineering Manual for more information on  
0 configuring line cards on the NTBX32BA line drawers.

0 2B1Q Bus Interface Card (NTBX36)

0 The 2B1Q Bus Interface Card (BIC) provides interface between the  
0 SCU and up to 60 line Cards. The principal functions of the BIC  
0 are to scan line cards for change in state, communicate with the  
0 LCME processor (NTBX34), D-channel multiplexing/demultiplexing &  
0 time switching, PUPS voltage supervision, ringing voltages con-  
0 trol, and activity switching.

0 PUPS (NTBX71)

0 The Point of Use Power Supply (PUPS) occupies 4 line card slots  
0 in a two-by-two configuration. The PUPS converts the -48v Battery  
0 to +5v supply, which in turn is used to power the line Cards.

0 Line Cards

0 Line card that can be housed in the Line Drawer depends on the  
0 type of service required and the country in which the SRU will be  
0 used. POTS, CENTREX and ISDN lines should be equally divided be-  
0 tween the Line Drawers.

0 Following is a list line cards that is used in the Australian and  
0 United Kingdom markets. Further details regarding each card may  
0 be obtained from the Engineering Manual, section EMA14-03-000.

0

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| 0 Line Type | Australia | UK                   |
|-------------|-----------|----------------------|
| 0 -----     | -----     | --                   |
| 0 A         | NT6X17BA  | NT6X17BA POTS        |
| 0 B         | -         | -                    |
| 0 C         | NT6X21BC  | NT6X21BC (p-phone)   |
| 0 D         | -         | NT6X71AB (Data path) |
| 0 D         | -         | NT6X71BA (Data path) |
| 0           | -         | NT6X76AC/AD (AIM LC) |
| 0 ISDN      | NTBX26AA  | NTBX26AA (T I/F)     |
| 0           | NTBX27AA  | NTBX27AA (U I/F)     |

0 The NT6X17BA is currently available for all POTS applications on the  
0 SRU.

0 (NT6X17BA: World Line Card Type 'A')

0 Note: ISDN capability has not yet been delivered for the SRU.

0 Note: ISDN capability is planned for SRU Phase 2 program (ISDN-BRI)

0 Note: NT6X76AD Hayes Supported Asynchronous Line Cards is to  
0 replace NT6X76AC AILC.

0 Note: NT6X71BA Single Slot Data Line Card replaces NT6X71AB  
0 for offices with BCS-32 or higher.

#### 0 Remote Maintenance Unit (RMU)

0  
0 The RMU is based on the existing Remote Maintenance Module (RMM)  
0 that is used in the IRLCM/RLCM/RSC. The RMU, like the RMM, is a  
0 modified cost -reduced Trunk Module (TM). The RMU supports line  
0 maintenance, Scan points and Battery Charge Unit (BCU). The BCU  
0 is optional on the SRU. The Remote Maintenance Unit (RMU) con-  
0 sists of the following circuit packs:

##### 0 RMM Control Card (NT6X74)

0 This card provides processor, memory and I/O functions.

##### 0 Metallic Test Unit (NT4X97AA & NT4X98BB)

0 These cards are used to perform maintenance tests on the sub-  
0 scriber loops or the line cards. Provide one of each circuit  
0 pack (per SRU) if Metallic Testing is required.

##### 0 Miscellaneous Scan Detector Card (NT0X10AA)



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0 There are 14 scan detector circuits on this card, each of which  
0 may be configured as a loop, ground or battery detector. Provide  
0 one (1) (per SRU) if scan points are required.

0 Metallic Test access card (NT3X09BA) - Optional with BCU

0 This card provides 8 by 8 two wire metallic matrix for cross con-  
0 nection between the test equipment, test card, line and line  
0 card. Provide one (1) NT3X09BA (per SRU) if MTA is required.

0 Group Codec card (NT2X59) & Test Trunk card (NT2X90)

0 These packs can be provisioned on the RMU.

0 The following PECs for the Group Codec card can be provided for the  
0 following markets:

| 0 | PEC      | Market      |
|---|----------|-------------|
| 0 | -----    | Application |
| 0 | -----    | -----       |
| 0 | NT2X59AA | Domestic    |
| 0 | NT2X59BA | Turkey      |
| 0 | NT2X59CA | U.K.        |
| 0 | NT2X59DA | CEP*        |

0 \* The CEP (Caribbean Expansion Plan) CODEC was developed for  
0 Offshore markets. The NT2X59DA is used in the Australian  
0 market as well.

0 Power Supply Unit.

0 The SRU can be powered from external -48v DC supply. For reli-  
0 ability, both A & B feed are provided. DC power to each DC/DC  
0 converter in the SRU is controlled by the Frame Supervisory  
0 Panel, NT8X96AB, using circuit breakers.

0 Optionally the SRU may be powered from 240 Volt AC main. Provide  
0 one (1) NT5C06CA-1 Rectifier for the AC input. Batteries can  
0 also be housed in the SRU. This is done to provide power backup  
0 in the event either the AC power or rectifier fails. Provide  
0 A0376779 YUASA Batteries (quantity of 8) if this option is re-

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0 requested. Each string of batteries (quantity of 4) provide two  
0 hours of back-up power.

0 Where batteries are equipped then a Battery Charging Unit (BCU),  
0 NT8X02AA, shall also be provided. The BCU enables the batteries  
0 to be either automatically charged or under the control of a  
0 craftsperson. The batteries provide power back-up for up to 4  
0 hours (two hours per string).

0 Frame Supervisory Panel (NT8X96AB)

0 This unit provides -48v dc distribution to the equipment used in  
0 the SRU, provides Talk Battery filter and detection of DC/DC  
0 power converter failures. The FSP has 6 circuit breakers. The FSP  
0 provides the Automatic Recovery from Low Battery (ARLB) feature  
0 (through the NT6X36AF ARLB FSP Alarm Card CP) which prevents the  
0 circuit breakers on the FSP from tripping in case of low battery  
0 supply. This eliminates the need for a craftsperson to manually  
0 re-set the breakers on site.

0 Battery Charging Unit (NT8X02AA)

0 This unit enables the system and craftsperson with the ability to  
0 charge, determine the status of each battery string and also pro-  
0 vides low voltage disconnect. Provide one unit when batteries  
0 are provided.

0 Administration, Maintenance and Operations

0  
0 The SRU is an integral part of the host DMS-100 Office. It is  
0 centrally administered and maintained by the DMS-100 system from  
0 the MAP located at the host site. MAP access from a remote SRU  
0 site by using a dial up procedure currently established for DMS  
0 remotes, using modem on a working line.

0 For the SRU, the DMS supports integrated administration and main-  
0 tenance consistent with that for the LCME, but with the following  
0 additional facilities:

0 Remote maintenance and diagnostics  
0 Monitor SRU Alarms.  
0 Carrier Alarms

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## 0 Traffic Engineering

0  
0 Traffic engineering rules for SRU are different from that of the  
0 LCME, as the number of lines and p-side channels is different.  
0 The SRU provides up to 180 p-side channels for call processing.  
0 Out of these channels, 2 are used by the SRU Control Unit and 2  
0 by the RME. It must be noted that the SRU design is limited to  
0 maximum of 6 PCM-30 links to the host.

0 The following table presents approximate LCME line drawer load  
0 service for ISDN only, and mix service applications for the SRU.

|   | No of lines |      |         | PCM-30 links req'd | ccs achieved   |
|---|-------------|------|---------|--------------------|----------------|
|   | ISDN        | POTS | CENTREX | (@8ccs for ISDN)   | (with 6 links) |
|   | -----       | ---- | -----   | -----              | -----          |
| 0 | 240 (100%)  | 0    | 0       | 7                  | 6.44           |
| 0 | 216 (90%)   | 0    | 0       | 6                  | 7.76           |
| 0 | 192 (80%)   | 0    | 0       | 6                  | 9.41           |

|   | No of lines |           |          | PCM-30 links req'd |
|---|-------------|-----------|----------|--------------------|
|   | ISDN        | POTS      | CENTREX  |                    |
|   | -----       | ----      | -----    | -----              |
| 0 | 216 (90%)   | 12 (5%)   | 12 (5%)  | 6                  |
| 0 | 192 (80%)   | 24 (10%)  | 24 (10%) | 6                  |
| 0 | 168 (70%)   | 48 (20%)  | 24 (10%) | 6                  |
| 0 | 144 (60%)   | 72 (30%)  | 24 (10%) | 5                  |
| 0 | 120 (50%)   | 96 (40%)  | 24 (10%) | 5                  |
| 0 | 96 (40%)    | 120 (50%) | 24 (10%) | 4                  |
| 0 | 72 (30%)    | 144 (60%) | 24 (10%) | 4                  |
| 0 | 48 (20%)    | 168 (70%) | 24 (10%) | 3                  |
| 0 | 24 (10%)    | 192 (80%) | 24 (10%) | 3                  |
| 0 | 0 (0%)      | 216 (90%) | 24 (10%) | 2                  |

0 The above calculations are based upon the following assumptions,

- 0 - nailed connections on 10% ISDN lines
- 0 - 5% blocking (Grade of Service = 0.05)
- 0 - Traffic rate for ISDN = 8ccs
- 0 - Traffic rate for POTS = 6ccs
- 0 - Traffic rate for CENTREX = 6ccs

0

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0 11.1.4 OFFICE LAYOUT INFORMATION

0  
0 The SRU requires a minimum of 54" clearance at the front.

0 The maximum floor loading requirement is 4.5 kN applied with 50mm  
0 disc at a point.

0 For CPE installation, cables can be run down a wall and along ei-  
0 ther side of the SRU (behind the cover). For central office use,  
0 the pagoda top can be removed and the cables run to the top EMI  
0 bulkhead. Since the extra space at front in the case of wall in-  
0 stallation is needed in order to pull the SRU cabinet forward to  
0 be able to access the rear, leave enough cable slack so this can  
0 be done without disconnecting any cables, thereby minimizing ser-  
0 vice impact.

0 Though Installation Engineering recommends that the SRU not be  
0 placed against a wall, it accepts that this is sometimes a cus-  
0 tomer requirement. In such a situation, it is necessary that  
0 guidelines be followed to minimise the risk of outage during  
0 maintenance or upgrade.

0 When space limitation dictate that an SRU be positioned against a  
0 wall, the cabinet requires a minimum of 54" (1.37 m) of clearance  
0 at the front. Otherwise (when not positioned against a wall), the  
0 SRU cabinet requires only 27" (0.69 m) of clearance.

0 11.1.5 TRAFFIC TABLES

0  
0 None available.

0

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0 11.2 PRODUCT/SYSTEM SPECIFICATION

0

0 11.2.1 PHYSICAL CHARACTERISTICS

0

## 0 SRU Cabinet

0

|   |        |                                         |       |     |                    |     |
|---|--------|-----------------------------------------|-------|-----|--------------------|-----|
| 0 | Height | 56"                                     | Width | 38" | Depth              | 24" |
| 0 | Weight |                                         |       |     |                    |     |
| 0 |        | (SRU w/o power option, with linecards)  |       |     | 423.9 kg (approx.) |     |
| 0 |        | (SRU w/o power option, w/o linecards)   |       |     | 300.0 kg (approx.) |     |
| 0 |        | (SRU with power option, with linecards) |       |     | 555.9 kg (approx.) |     |
| 0 |        | (SRU with power option, w/o linecards)  |       |     | 403.0 kg (approx.) |     |

0 11.2.2 EMI/EARTHQUAKE INFORMATION

0

0 The SRU has an EMI compliant air inlet below the front door of  
0 the cabinet. The air exhaust outlet is on the top of the cabinet  
0 and is protected against accidental spillage.

0 11.2.3 SPARING INFORMATION

0

0 None.

0

0 | 11.2.4 POWER FEED AND FUSING REQUIREMENTS0  
0 | Not applicable.0 | 11.2.5 CURRENT DRAIN INFORMATION0  
0 | Not applicable.0 11.3 SOFTWARE PROVISIONING

0

0 11.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES0  
0 The SRU software is based on the existing LCME software. The  
0 base package for the SRU is:

0 NTXH96AA SRU BASIC

0 The SRU BASIC (NTXH96AA) software package needs the following  
0 software packages in order to function:0 NTX001AA COMMON BASIC  
0 NTX146AA REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 NTX147AB OUTSIDE PLANT MODULE MAINTENANCE(UPGRADE OF NTX147AA)  
0 NTX270AA NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA DTC 30 CARRIER MAINTENANCE  
0 NTX750AB ISDN BASIC ACCESS  
0 NTX901AA LOCAL FEATURES I  
0 NTX941AA CM COMMON

0

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0 The DMS-100 Data Schema NTP has been updated to include an inven-  
0 tory table that references the SRU. The Data Schema table OPMINV  
0 uniquely identifies the SRU in data fill.  
0 For general information relating to tables and table control, re-  
0 fer to NTP 297-1001-451 and NTP 297-1001-310.

0 ESA capability is not provided.

0 Intraswitching is not supported.

#### 0 11.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Software is currently unavailable for domestic applications. The  
0 current software only supports PCM-30 installations, A-LAW envi-  
0 ronment.

#### 0 11.3.3 MEMORY PROVISIONING

0  
0 None.

#### 0 11.4 REAL TIME IMPACT

0 There is no degradation on CC real-time as compared to a LCME  
0 working through LGCI.

0

0

0

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0 12.0 Remote Line Concentrating Cabinet (RLCC)

0 The Remote Line Concentrating Cabinet (RLCC) is a repackaged version  
0 of the Remote Line Concentrating Module (RLCM) Frame. The cabinet is  
0 design to meet all earthquake zone requirements without external brac-  
0 ing. However when the RLCC is mounted on raised floors, under floor  
0 bracing is required.

0 Note: RLCC, RLCM 100C and RLCM C are used interchangeably in refer-  
0 ence to the Remote Line Concentrating Cabinet. In this document the  
0 acronym used to refer to the Remote Line Concentrating Cabinet is  
0 RLCC.

0 The RLCC uses the following modules:

0 \* Remote Maintenance Module (RMM): Same as used on the existing  
0 RLCM Frame

0 \* Host Interface Equipment (HIE): Same as used on the existing RLCM  
0 Frame

0 \* Line Concentrating Equipment (LCE): The DMS-100F LCE shelves do  
0 not meet space requirements, therefore, the Meridian SL-100F LCE  
0 shelves (NTNX2802) are used. The heat baffles are removed from  
0 the Meridian LCE shelves, therefore cooling fans are used and  
0 fused from the FSP.

0 \* Frame Supervisory Panel (FSP): The RLCC uses the Meridian SL-100F  
0 FSP (NTNX26AA) which includes LCE fuses but does not include  
0 repeaters.

0 \* Fan Cooling Unit (FCU): The FCU will be essentially the same as  
0 used on the Meridian SL-100F but will use a nonmetallic fiber filter  
0 in place of the metal mesh filter.

0 Refer to Figure 1 below which provides a pictorial comparison of  
0 the RLCM and RLCC.

0

0

0

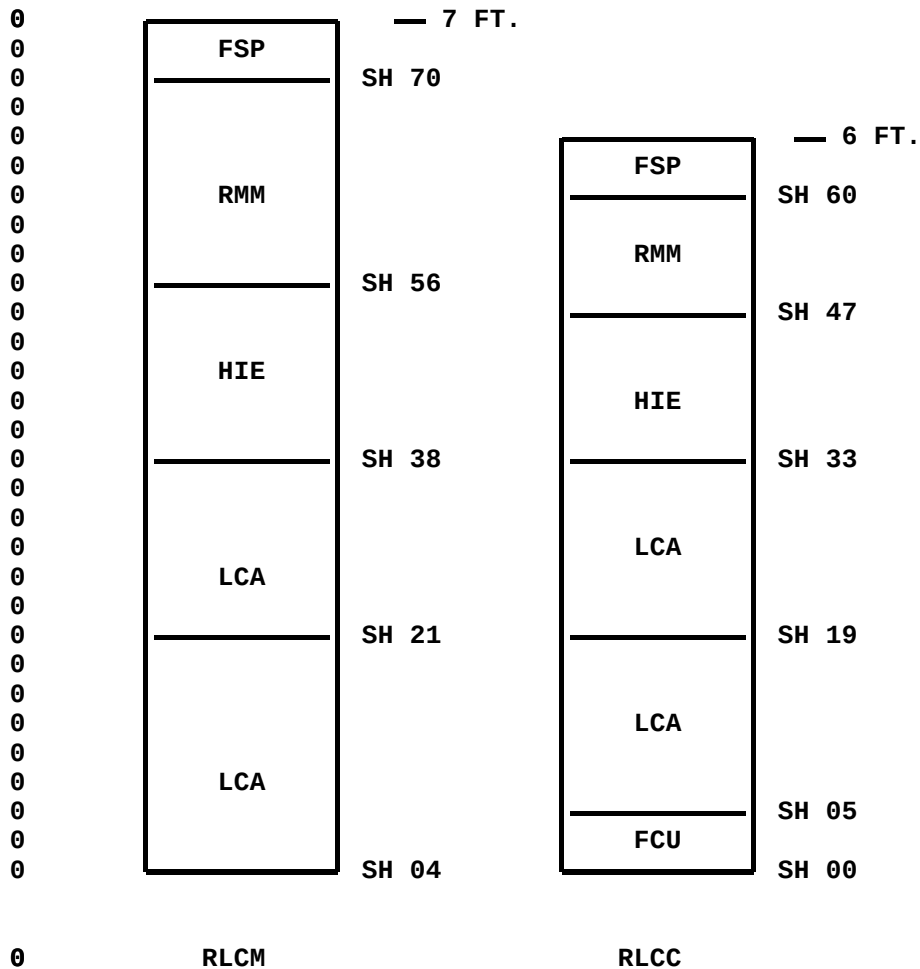
0

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Figure 1. RLCM and RLCC Frame Configuration Comparison

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## 0 12.1 HARDWARE PROVISIONING

### 0 12.1.1 HARDWARE USAGE RESTRICTIONS

0 RLCC restrictions are in the area of Trunk/Service circuit provi-  
0 sioning and assignments. These packs are restricted to card  
0 slots as illustrated in Figure 2. Note: Figure 2 does not re-  
0 flect all provisionable circuits, it reflects only Truck/Service  
0 Circuits.

|   | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0 | 2X10 | 2X11 | 2X90 | 3X09 | 2X90 | 0X10 | 2X48 | 2X57 | 2X10 | 2X11 | 2X90 | 3X09 | 2X57 | 0X10 |
| 0 |      |      |      |      |      |      |      |      |      |      |      | 3X04 |      |      |
| 0 | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   |

0 Figure 2. RMM Trunk Pack Assignment Chart

### 0 12.1.2 HARDWARE DEPENDENCIES

0 The RLCC consists of one Frame Supervisory Panel (FSP), one Fan  
0 Cooling Unit (FCU), one Remote Maintenance Module (RMM), one Host  
0 Interface Equipment shelf (HIE) and two Line Concentrating Equip-  
0 ment (LCE) shelves. Refer to Figure 1 for shelf locations. All

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0 connections for external cabling is located on a bulkhead in the  
0 rear of the cabinet.

0 MODULE DESCRIPTION

0 LCE The RLCC uses the MSL-100 LCE shelves NTNX2802. These  
0 shelves are the same as DMS-100 LCE shelves except the  
0 heat baffle is omitted and fuse holders are moved to  
0 the FSP.

0 HIE The RLCC uses the DMS-100 HIE Module NT6X1108.

0 RMM RLCC uses the DMS-100 RMM Module NT6X1301 (See Figure  
0 2).

0 FSP RLCC uses the MSL-100 FSP NTNX26AA. This FSP includes  
0 fusing for line drawers but no provision for mounting  
0 repeater cards. Repeaters must be mounted external to  
0 the RLCC.

0 FCU The RLCC uses a Fan Cooling Unit NTNX27AA because the  
0 baffels were removed from the LCE. The Fan Cooling  
0 Unit is not present in the frame mounted RLCM but is  
0 required for the RLCC. The FCU is the same as NTNX27AA  
0 except that a polyester filter is used.

0 Bulkhead The RLCC bulkhead is the same as MSL-RLCM except an ad-  
0 ditional connector is required for the bulkhead con-  
0 nections.

0 P AND C SIDE PORT REQUIREMENTS

0  
0 The RLCC requires a minimum of two and a maximum of six DS-1  
0 links to the host. The two minimum links are the primary links.  
0 Each DS-1 interface card (NT6X50AA) connects two DS-1 links be-  
0 tween the RLCC and the host XPM. All DS-1 links must terminate on  
0 the same host peripheral. For reliability, the primary links  
0 should terminate on different NT6X50AA interface cards at the  
0 host and on the RLCC.

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## 0 DMS BUS PORT REQUIREMENTS

0

## 0 CIRCUITS PER CARD

0

## 0 DISCRIMINATION NUMBERING

0

0 12.1.3 PROVISIONING CONSIDERATIONS

0

0 The RLCC is a cabinetized version of the frame mounted DMS-100  
0 RLCM which enables installation in earthquake zones without addi-  
0 tional bracing and simplifies EMI protection.

0 The RLCC consists of existing DMS and MSL modules and circuit  
0 packs mounted in an Earthquake and EMI protected cabinet. The  
0 RLCC is built in the same basic cabinet design as the MSL100 and  
0 DMS100 TOPS-MPC (NTNX25) and complies with earthquake zone re-  
0 quirements without additional frame bracing. However, in raised  
0 floor applications, additional bracing is required between the  
0 actual floor and the raised floor.

0 Additional framing or paneling is not required for EMI pro-  
0 tection. The RLCC can be provided with all EMI protection in-  
0 cluded or with all EMI protection except for line filters (power  
0 filtering is always included). Filter adapters are readily field  
0 installable.

0 The RLCC is intended for use on customer premises where EMI pro-  
0 tection is required to comply with FCC Regulation, Part 15, Subpart  
0 J for Class A computing devices. The functionality of the present

0

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0 DMS-100 RLCM is maintained except that the RLCC does not have the  
0 capability to install repeater cards in the Frame Supervisory  
0 Panel and the RLCC is equipped with a Fan Cooling Unit.

0 The RLCC RMM provisioning is standardized to a greater degree to  
0 simplify engineering and installation and all cabling is  
0 conectorized at the bulkhead.

0 12.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not Applicable

0 12.1.5 TRAFFIC TABLES

0  
0 For traffic provisioning for the RLCC, refer to the RLCM section  
0 of ECM 350.

0 12.2 PRODUCT/SYSTEM SPECIFICATION

0

0 12.2.1 PHYSICAL CHARACTERISTICS

0  
0 The RLCC cabinet physical specifications are:

0 Height - 72 inches (excludes mounting feet)  
0 Width - 28.5 inches  
0 Depth - 28.25 inches  
0 Weight - 925 pounds

0

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0 The maximum current drain for a cabinet is 20 amps for the "A"  
0 side and 17 amps for the "B" side. The maximum heat dissipation  
0 for one cabinet is 1360 watts/hour.

0 The RLCC complies with the ISG grounding requirements. The Per-  
0 sonal Hazard Ground (PHG) is cabled from the bulkhead to the  
0 ground reference point.

0 A cabinet requires four 20 amp fuses which mount in the FSP. The  
0 "A" and "B" sides of the RLCC cabinet are cabled to the power  
0 source.

#### 0 12.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 The RLCC Cabinet by design meets the requirements of all earth-  
0 quake zones. However, if the RLCC is installed in a raised floor  
0 environment earthquake bracing is required between the actual  
0 floor and the raised floor.

#### 0 12.2.3 SPARING INFORMATION

0  
0 Standard equipment sparing rules apply.

#### 0 12.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0

0

0

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0 12.2.5 CURRENT DRAIN INFORMATION0  
0 12.3 SOFTWARE PROVISIONING

0

0 12.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The RLCC utilizes the same software as the RLCM. The following is  
0 a list of software packages and the interdependencies for the  
0 RLCC:

0 \* NTX146AB - Remote Line Concentrating Module

0 requires - NTX901AA

0 \* NTX154AA - RLCM ESA Operation (Lines and Trunks)

0 requires - NTX146AA

0 requires - NTX901AA

0 \* NTX146AA - Remote Line Concentrating Module

0 requires - NTX901AA

0 \* NTX156AA - Intra RLCM Calling

0 requires - NTX146AA

0 requires - NTX901AA

0 12.3.2 SOFTWARE USAGE RESTRICTIONS

0

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0 12.3.3 MEMORY PROVISIONING

0  
0 Not Applicable

0 12.4 REAL TIME IMPACT

0 The real time requirements for the RLCC are identical to the  
0 RLCM.

0 Processing is distributed over the Central Processing Unit (CPU)  
0 and the Peripheral Processors (PP) in the peripheral modules.  
0 Real Time is one of the measurements that is utilized to deter-  
0 mine the loading characteristics of these devices for specific  
0 applications. Real Time is the amount of time required for these  
0 processors to perform a function such as establish a call or ac-  
0 tivate a feature. For a detailed calculation of CPU real time,  
0 use the REAL::TIME program issue 3E\_1 or later. Refer to the Real  
0 Time Manual for more details on REAL::TIME and operational in-  
0 structions. For a detailed calculation of PP real time, use the  
0 PRTCALC program issue 4A or later. Refer to the PRTCALC Manual  
0 for details on PRTCALC and its' operational instructions. To  
0 measure the CPU real time for an inservice switch, use the ACTIV-  
0 ITY TOOL. Refer to SEB 86-11-005 for more details on the ACTIVITY  
0 TOOL and operational instructions. To measure the PP real time  
0 for an inservice switch, use the NEW PERIPHERAL ACTIVITY and PER-  
0 FORMANCE TOOL for the new peripherals. Refer to the Real Time  
0 Manual for more details on the NEW PERIPHERAL ACTIVITY and PER-  
0 FORMANCE TOOL.

0 12.4.1 CPU Real Time

0  
0 Typically, the CPU has a maximum of 83% or 2,988,000 ms available  
0 for call processing and the remaining 17% or 612,000 ms is for  
0 overhead. Refer to the following SEBs for a complete listing of  
0 CPU call timings:

0 SEB 88-09-004 - For the NT40 Processor



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0 SEB 88-10-002 - For the DMS Core Processor

0 12.4.2 PP Real Time

0  
0 The new peripherals consist of the Line Concentrating Module  
0 (LCM), Remote Line Concentrating Module (RLCM), Outside Plant  
0 Module (OPM), Line Group Controller (LGC), Line Trunk Controller  
0 (LTC), Digital Trunk Controller (DTC), the Remote Cluster Con-  
0 troller (RCC) and the Subscriber Carrier Modules (SCM).

0 Processing in these devices is performed by the Signal Processor  
0 (SP) and the Master Processor (MP) except in the LCM, RLCM and  
0 the OPM. Separate studies must be performed for the SP and the  
0 MP to determine the limiting processor. The limiting processor is  
0 the processor with the higher percentage of occupancy. The real  
0 time is divided into overhead, maintenance, buffer and call proc-  
0 essing areas.

0 12.4.3 Call Timing

0  
0 There is NO additive for the LCM/RLCM call timings in a CLASS en-  
0 vironment.

0 The following call timings are typical BCS24 timings. These  
0 timings are reflected in the call processing allocation area.  
0 (measurements in milliseconds)

|                | ORIG    | RLCC | TERM    |
|----------------|---------|------|---------|
|                | Attempt |      | Attempt |
|                | =====   |      | =====   |
| 0 POTS         | 535     |      | 535     |
| 0 MDC w/o MADN | 535     |      | 535     |

0 Refer to SEB 88-11-003 for a complete listing of BCS 27 call  
0 timings for the new peripherals.

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0 CHAPTER 25

0 REMOTE OFFICE - OUTSIDE PLANT MODULE

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Remote Office - Outside Plant Module  
Chapter 25

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0 REMOTE OFFICE - OUTSIDE PLANT MODULE  
0 Section Contents

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0 1.0 OPM Engineering

0 The Outside Plant Module (OPM) is a reconfigured Remote Line Con-  
0 centration Module (RLCM) packaged in an environmentally con-  
0 trolled cabinet. The cabinet consists of a main compartment  
0 which houses the electronics, an Environmental control system,  
0 and batteries. The cabinet is also equipped with an end compart-  
0 ment containing the cable/wire termination, protection, and  
0 cross-connection facility.

0 The OPM cabinet is configured such that it has two equipment rows  
0 (ROW A & B). Each row has two bays (BAY 0 & 1) where the BAY 0s  
0 are on the Left and Bay 1s are on the right as you view the cabi-  
0 net from the front doors. The bays in the front row (Row 'A')  
0 are hinged to allow access to the equipment in the rear (Row  
0 'B').

0 The OPM is available in two configurations:

0 OPM-640 - This unit has a maximum Subscriber Line Capacity of 640  
0 Lines. (Refer to FIGURES 1 & 2).

0 OPM-256 - This unit may be provisioned with a maximum of 256  
0 lines, which may be upgraded to a maximum of 576 subscriber  
0 lines. This lower maximum line capacity is due to the ability to  
0 provision Fiber or Channel Bank shelves in lieu of the additional  
0 lines. (Refer to FIGURES 3 & 4).

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**LCM - Line Concentration Module**  
**HIE - Host Interface Equipment**  
**BFU - Booster Fan Unit**  
**ECU - Environmental Control Unit**

|      |                             |
|------|-----------------------------|
| RMM  | - Remote Maintenance Module |
| FSP  | - Frame Supervisory Panel   |
| PCU  | - Power Control Unit        |
| BCU  | - Battery Control Unit      |
| RECT | - One Rectifiers RECT 0     |

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0 FIGURE 1: OPM-640 ROW 'A' BAY 0 & 1 (Front Of Cabinet)

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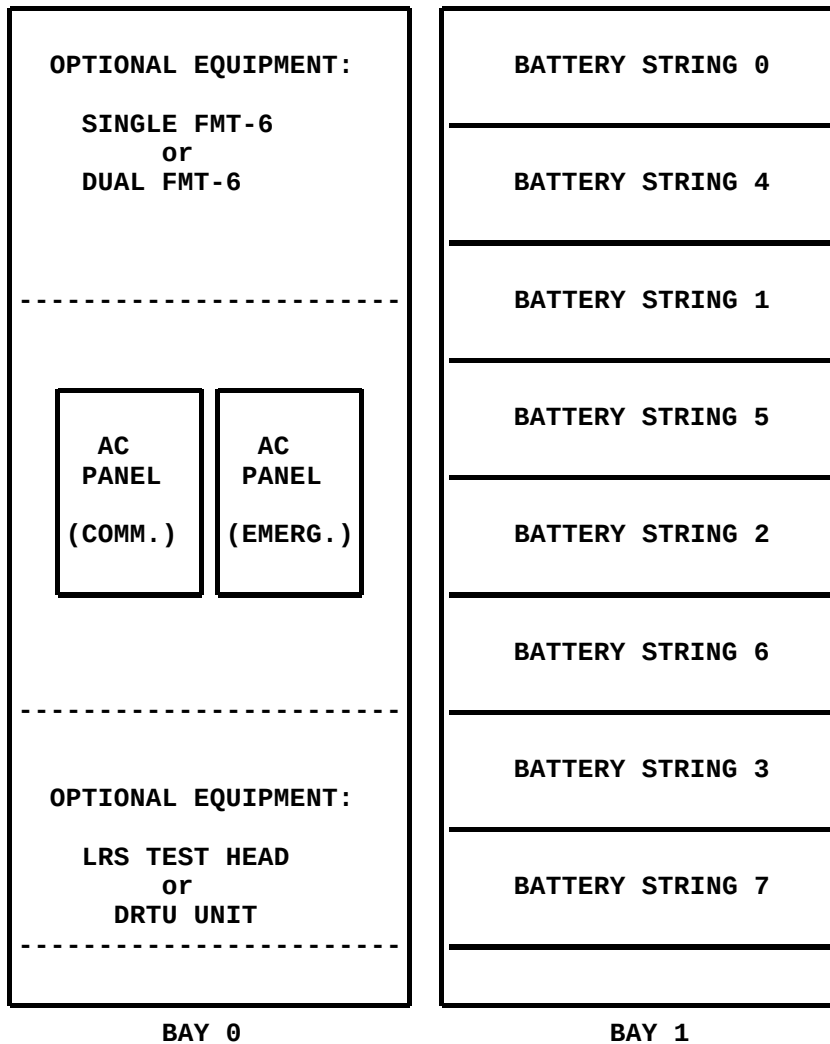
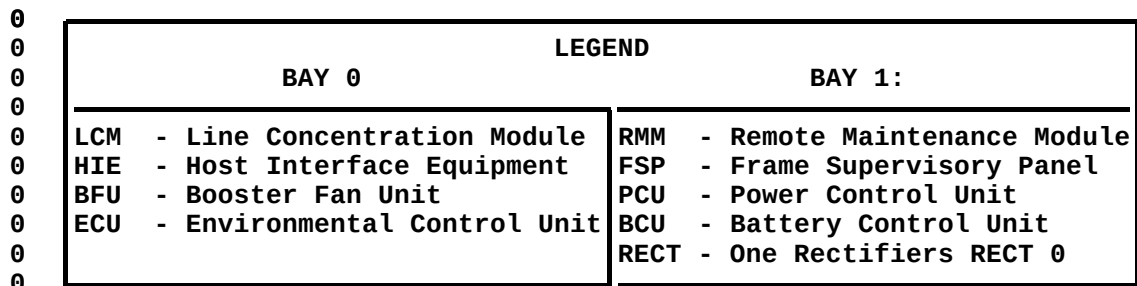


**FIGURE 2: OPM-640 ROW 'B' BAY 0 & 1 (Rear Wall Of Cabinet)**



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0 FIGURE 3: OPM-256 ROW 'A' BAY 0 & 1 (Front Of Cabinet)

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0 The Line Concentration Module (LCM) is identical to the host LCM  
0 supporting up to ten (10) line drawers at 64 line cards per  
0 drawer. The OPM LCM supports all of the line features available  
0 at the host. This includes POTS, Party Lines, Coin Lines, IBN  
0 stations, Business Sets, Data Units, Attendant Consoles and  
0 DataPath. Intra-Switching and Emergency Stand-Alone, are also  
0 available with the OPM.

0 The Extended LCM Processor, NT6X51AB, is being introduced to in-  
0 crease processor memory from 64KB to 256KB and to increase 'on-  
0 board' diagnostics. Existing LCM modules can be upgraded with  
0 the use of the NT6X04ZZ processor change kit.

0 The Host Interface Equipment (HIE) module houses the circuitry  
0 required to communicate with the host during normal operation and  
0 to support the OPM during the Emergency Stand Alone mode. Commu-  
0 nication with the host is via a minimum of 2 to a maximum of 6  
0 DS-1 links. Two DS-1 PCBs are always provided. The number of  
0 links required is traffic dependent. Optionally, Northern  
0 Telecom office repeaters may be provisioned and mounted in the  
0 Frame Supervisory Panel (FSP).

0 The NT2X70AE Power Converter is now provisionable on the OPM. The  
0 NT2X70AE combines increased current (50 Amps) with an  
0 electrostatically- shielded faceplate. Existing power converters  
0 can be telco optionally upgraded with the use of the NT2X70AZ  
0 product change kit.

0 Environmental Control equipment is provided to control the envi-  
0 ronment inside the OPM cabinet. This equipment includes air in-  
0 lets, air filters, fans, heaters and air outlets designed to  
0 protect the OPM's internal circuitry from extreme outdoor condi-  
0 tions such as extreme heat, cold and heavy dust areas.

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0 1.1 HARDWARE PROVISIONING

0

0 1.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The OPM may be equipped with any one of the following options  
0 without restrictions. However, when equipping the OPM with two  
0 (2) options some restrictions apply. Refer to the following  
0 charts to define which of any two (2) options that may be pro-  
0 vided on the OPM at one time.

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| OPM-256 Available Options |          |                  |                |      |     |       |
|---------------------------|----------|------------------|----------------|------|-----|-------|
| FMT-150B                  | DDM-1000 | DE-4E<br>Ch Bank | 320<br>Line UG | DRTU | LRS | FMT-6 |
| Y                         | N        | N                | N              | Y    | N   | N     |
| N                         | Y        | N                | N              | Y    | N   | N     |
| N                         | N        | Y                | N              | Y    | N   | Y     |
| N                         | N        | N                | Y              | Y    | N   | Y     |
| Y                         | N        | N                | N              | N    | Y   | N     |
| N                         | Y        | N                | N              | N    | Y   | N     |
| N                         | N        | Y                | N              | N    | Y   | Y     |
| N                         | N        | N                | Y              | N    | Y   | Y     |

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| OPM-640 Available Options |          |                  |                |      |     |       |
|---------------------------|----------|------------------|----------------|------|-----|-------|
| FMT-150B                  | DDM-1000 | DE-4E<br>Ch Bank | 320<br>Line UG | DRTU | LRS | FMT-6 |
|                           |          |                  |                |      |     |       |

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|    |    |    |    |   |   |   |
|----|----|----|----|---|---|---|
| -- | -- | -- | -- | Y | N | Y |
| -- | -- | -- | -- | N | Y | Y |

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0 1.1.2 HARDWARE DEPENDENCIES

0  
0 When Fiber Mounting Hardware is provisioned:

0 1) NT0X10AA is required in slot 07 of the RMM shelf.

0 2) The QRY18 (Office Repeater Circuitry) and QPP519 (Fault  
0 Locate/Order Wire Circuitry) are not required in the OPM FSP  
0 (NT6X25BB/BC).

0 3) NT6X2582 AC Circuit Breaker Kit is required for the NT6X25BB  
0 FSP. The NT6X2582 AC-Circuit Breaker Kit is applicable on the  
0 NT8X01BA OPM Only. The NT8X01BB/BC OPM are equipped with a new  
0 FSP NT6X25BC which has the Circuit Breaker Always Provided.

0 When Channel Bank Mounting Hardware is provisioned:

0 1) NT0X10AA is required in slot 07 of the RMM shelf.

0 2) The QRY18 (Office Repeater Circuitry) and QPP519 (Fault  
0 Locate/Order Wire Circuitry) are not required in the OPM FSP  
0 (NT6X25BB/BC).

0 3) NT6X2582 AC Circuit Breaker Kit is required for the NT6X25BB  
0 FSP. The NT6X2582 AC-Circuit Breaker Kit is applicable on the  
0 NT8X01BA OPM Only. The NT8X01BB/BC OPM are equipped with a new  
0 FSP NT6X25BC which has the Circuit Breaker Always Provided.

0

0 P AND C SIDE PORT REQUIREMENTS

0  
0 The OPM requires a minimum of three (3) and a maximum of six (6)  
0 DS-1 links to the Host Office.

0 When the FMT-6 Fiber Interface is provisioned in the OPM, a  
0 matching configuration is required for the Host Office end. Con-



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0 tact the Transmission Networks Division of Northern Telecom for  
0 ordering and provisioning the FMT-6 Fiber Interface in the Host  
0 Office.

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not Applicable

0

## 0 CIRCUITS PER CARD

0  
0 Not Applicable

0

## 0 DISCRIMINATION NUMBERING

0  
0 The OPE number may be unique per office or per site. The unique  
0 per office number must not conflict with existing RLM, LME, LCE,  
0 or RLCM numbers. The internal swinging equipment racks are iden-  
0 tified by OPE XX bay Y where X equals integers 0-9 and bay Y  
0 equals bays 0-1.

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0 1.1.3 PROVISIONING CONSIDERATIONS

0  
0 The OPE number may be unique per office or per site. The unique  
0 per office number must not conflict with existing RLM, LME, LCE,  
0 or RLCM numbers. The internal swinging equipment racks are iden-  
0 tified by OPE XX bay Y where X equals integers 0-9 and bay Y  
0 equals bays 0-1.

0 When provisioning the OPM the engineer must now select the de-  
0 sired cabinet color (Initials Only). The available colors are:

0 Maple Brown  
0 Grey-Green  
0 Ivory

0 Next select the desired mounting configuration. The choices are  
0 Indoor and two (2) styles of Outdoor Mounting (Concrete Pad or  
0 Railroad Ties). The recommended OPM mounting surface is on a  
0 concrete pad, located above local flood plains.  
0 NOTE: For all OPM installations engineered in the U.S., a Request  
0 For Schedule (RFS) for advance shipment of the mounting hardware  
0 and template should be initiated by the Systems Application Engi-  
0 neer (SAE) as soon as the OPM mounting arrangement is identified.  
0 An advance ship note must be placed in the appropriate Equipment  
0 Specification and referenced against the material.

0 Hardware requirements for the various OPM mounting configurations  
0 are as follows:

0 1) Outdoor Concrete Pad Mounting

0 - Provide One (1) NT0X1934 mounting template and one (1) NT0X1935  
0 mounting hardware kit - to facilitate construction of the pad by  
0 the telco. The concrete pad must be completed prior to the in-  
0 stallation date of the OPM.

0 2) Outdoor Railroad Tie Mounting

0 - Provide one (1) NT0X1929 mounting plate assembly and one (1)  
0 NT0X1935 mounting hardware kit per Telco specifications. Advance

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0 shipment is not required in this application. This is a Non-  
0 Preferred Outdoor Mounting Arrangement.

0 3) Indoor OPM Mounting

0 - Mounting hardware required for indoor mounting of the OPM is  
0 coordinated through the NT Building Studies Engineering (BSE)  
0 function.

0 Provide one (1) Installers Assembly Kit per Telco specifications.  
0 This kit is used for installation purposes. There is a choice  
0 between two kits, 4-Pin or 5-Pin, depending on the type of termi-  
0 nation scheme ordered for the End Compartment.

0

0 HOST INTERFACE EQUIPMENT (HIE)

0

0 Provision one(1) Host Interface Equipment Module (HIE) for each  
0 OPM ordered. The HIE module mounts in Bay 0 shelf position 05.

0 Provision two(2) NT6X60CA Ringing Generator Modules per HIE to  
0 mount in positions 01 & 05 for analog ringing. If no Ringing  
0 Generators (NT6X60CA) are to be ordered, then provision two(2)  
0 Filler Face Plates (NT0X50AH) to be mounted in the empty posi-  
0 tion.

0 Provision one(1) NT6X47AC (Master Processor Memory CP) in pos 14,  
0 one(1) NT6X45AF (LGC/DTC Processor) in pos 15, and one(1)  
0 NT6X75AA (ESA Clock and Tone Card) in pos 16, when the Emergency  
0 Stand-Alone(ESA) option is required. Also provide one NT2X48AB  
0 in the RMM Shelf when ESA is required.

0 For Canadian Applications - provide one NT8X01WA (Wiring Option)  
0 on the HIE when ESA Operation is required.

0 Provide two (1) NT6X50AA, DS-1 Interface, in position 19-20 of  
0 each OPM HIE. If the Telco prefers, provide instead two (2)  
0 NT6X50AB, DS-1 Interface, in position 19-20 of each OPM HIE.

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0 Provide one (1) NT6X50AA/AB, DS-1 Interface, in position 21 of  
0 each OPM HIE when the DS-1 links 5 and 6 are required to the  
0 Host. This NT6X50 CP MUST be the same vintage as already ordered  
0 for position 19-20.

0 Provision one(1) NT0X50AA Filler Face Plate for pos 13-16,& 21 of  
0 the HIE shelf, when these positions are unequipped. Provision  
0 one(1) NT0X50AG in pos 09 of the HIE shelf.

0 HIE Shelves may exist with the NT6X11AA packfill which specified  
0 the NT2X70AA (Power Pack) in Slots 22 & 25. Provision a NT2X70AZ  
0 Conversion Kit to replace the NT2X70AAs with NT2X70AEs which will  
0 make the NT6X11AA effectively a NT6X11AB.

0

0 LINE CONCENTRATING MODULE

0  
0 OPM-640 is capable of terminating up to 640-Lines. Provide one  
0 (1) NT8X04AB LCM Common CP in Bay 0, Sh Pos 19 for each OPM-640  
0 ordered.

0 OPM-256 is capable of terminating up to 576-Lines where a  
0 256-Line capacity is provisioned standard and the remaining  
0 320-Line capacity is provisioned optionally (See Restrictions in  
0 Section 2.2). The 320-Line addition is a field installed option  
0 which consists of an additional shelf and wiring only - all other  
0 components must be provisioned separately. Provisioning lines  
0 for the OPM-256 is accomplished as follows:

0 1) 256-Line Capacity

0 - Provide one (1) NT8X04BA LCM-C Common CP in Bay 0, Sh Pos 33  
0 for each OPM-256 ordered. Provision up to four (4) Line Drawers  
0 (NT6X05AA) as required to house Telco specified quantity of line  
0 cards. Also provision either a 4-Pin Stubless Protection Scheme,  
0 or a 5-Pin Stubless Protection Scheme, or a 5-Pin With 50ft Stub  
0 Protection Scheme per Telco specifications.

0 2) 320-Line Addition

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0 - Provide the 256-576 Line Upgrade kit in shelf position 19 with  
0 the appropriate stub option for field upgrades as follows:  
0 NT8X09AB (4-Pin Stubless), NT8X09AC (5-Pin Stubless), or NT8X09AD  
0 (5-Pin with 50 ft. Stub). These kits include the shelf and the  
0 required hardware and wiring to install the shelf. Provide up to  
0 five (5) Line Drawers (NT6X05AA), plus one NT8X04BB CP Fill per  
0 320-Line addition.

0 Provision one(1) NT6X05AX Line Drawer Filler Panel for each une-  
0 quipped line drawer position in shelf position 33 or 19 as appli-  
0 cable. Refer to Host LCM Provisioning rules for line card  
0 provisioning.

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## 0 REMOTE MAINTENANCE MODULE (RMM)

0  
0 Provision one(1) NT6X13AB (RMM Common CP) in bay 1 shelf position  
0 05 for each OPM ordered. The RMM Common CP provides the circuitry  
0 necessary to enable basic RMM functions. However, thirteen  
0 (13) slots remain open which may be filled with eleven (11) different  
0 service/maintenance circuits.

0 The service/maintenance detailed in the chart below are  
0 provisionable on the OPM-256 with specific card slot assignments.

0 PLEASE NOTE: The character ' X ' in each column of the chart indicates  
0 an invalid slot assignment for the pack. The numbers (1  
0 thru 9) indicate the valid slot assignment for the pack and the  
0 corresponding note number which defines the provisioning rule(s).  
0 Slot Assignments as detailed below are specific to the OPM-256.  
0 RMM Slot Assignments are different in other Remote Office applications  
0 including OPM-640:

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0 RMM CP Assignment Chart:

|   |      |   |   |   |   |   |   |   |   |   |   |   |
|---|------|---|---|---|---|---|---|---|---|---|---|---|
| 0 |      | 2 | 2 | 2 | 2 | 3 | 3 | 0 | 2 | 2 | 2 | 3 |
| 0 |      | X | X | X | X | X | X | X | X | X | X | X |
| 0 |      | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 5 | 9 | 4 | 0 |
| 0 |      | 0 | 1 | 0 | 1 | 9 | 9 | 0 | 7 | 0 | 8 | 4 |
| 0 |      | B | B | B | B | B | A | A | A | A | A | A |
| 0 |      | A | A | A | A | A | A | A | A | D | B | A |
| 0 | SLOT |   |   |   |   |   |   |   |   |   |   |   |
| 0 | 03   | 1 | X | 1 | X | X | X | X | X | X | X | X |
| 0 | 04   | X | 1 | X | 1 | X | X | X | X | X | X | X |
| 0 | 05   | X | X | X | X | 2 | X | X | X | X | X | X |
| 0 | 06   | X | X | X | X | X | 3 | X | X | X | X | X |
| 0 | 07   | X | X | X | X | X | X | 4 | X | X | X | X |
| 0 | 08   | X | X | X | X | X | X | 4 | X | X | X | X |
| 0 | 09   | X | X | X | X | X | X | X | X | 6 | 7 | X |
| 0 | 10   | X | X | X | X | X | X | X | X | 6 | 7 | X |
| 0 | 11   | X | X | X | X | X | X | X | X | X | 7 | X |
| 0 | 12   | X | X | X | X | X | X | X | X | X | 7 | X |
| 0 | 13   | X | X | X | X | X | X | 4 | 5 | 6 | 7 | 8 |
| 0 | 14   | X | X | X | X | X | X | 4 | 5 | 6 | 7 | 8 |
| 0 | 15   | X | X | X | X | X | X | 4 | 5 | 6 | 7 | 8 |
| 0 | 16   | X | X | X | X | X | X | 4 | 5 | 6 | X | 8 |

0 1) One MTU pair (NT2X10BA and NT2X11BA) is Always Required in  
0 slots 03 and 04. However, when the MTU is provisioned certain  
0 restrictions apply - see Item 2 below.

0 2) One (1) NT3X09BA is Always Required in slot 05 on all OPM-256  
0 systems for Battery Diagnostics and Line Testing. After



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0 standard assignments the NT3X09BA has one Horizontal Con-  
0 nection Left which may be used in one of three (3) ways:

0 a) For the third optional NT2X90AD assignable to slots 7, 10,  
0 and 13 thru 16, or

0 b) For an optional NT3X04AA assignable to slots 13 thru 16, or

0 c) For the second test multiple on a MTU pair  
0 (NT2X10BA/NT2X11BA).

0 3) One (1) NT3X09AA is Always Required in slot 06 on all OPM-256  
0 systems for Battery Control.

0 4) The NT0X10AA is provisionable in Slots 07, 08, and 13-16 as  
0 follows:

0 a) One (1) NT0X10AA is Always Required in slot 07 when the  
0 NT0X1978/79 is provisioned. Otherwise, provide one NT0X50AC  
0 in slot 07.

0 b) One (1) NT0X10AA Scan Card is Always Required in slot 08  
0 for the Alarm Detection. This CP is pre-wired to internal  
0 OPM-256 circuitry.

0 c) Additional NT0X10AAs may be provisioned in Slots 13-16 per  
0 Telco specifications.

0 5) The NT2X57AA is optional, provisionable slots are 13-16 per  
0 Telco specifications for an external device.

0 6) A Maximum of three (3) NT2X90ADs is optionally provisionable  
0 as follows (Note: Certain restrictions apply, refer to Item 2  
0 above for restrictions):

0 a) One in slot 9 for LTP/Talk Monitor function

0 b) One in slot 10 for Operator Verification function

0 c) One in slot 13, 14, 15, or 16 for a Telco Specified func-  
0 tion.

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0 If the restrictions per Item 2 above and Item 7 below are not  
0 in conflict, three NT2X90ADs may be provisioned on the  
0 OPM-256.

0 7) A maximum of four (4) NT2X48ABs (Digitone Receiver (DTR)) is  
0 provisionable on the OPM-256 given the following restrictions:

0 a) Only one NT2X90AD is provided in Slot 9 or 10.

0 b) Three NT2X48ABs may be provided if NT2X90ADs are provided  
0 in slots 9 and 10.

0 c) Calculate DTRs as follows:

0 Holding Time Divided by 100 (HT/100)

0 For Example: .079 divided by 100 = DTRs Required

0 NOTE: .079 is the average holding time for a 7-digit call. The  
0 NT2X48AB is a two slot card which occupies the assigned slot  
0 and the next slot.

0 A minimum of one NT2X48AB is Always Required when the ESA op-  
0 tion is provided. The NT2X48AB (Digitone Receiver) is a two  
0 slot card which occupies the assigned slot and the slot below  
0 it. This card is provisionable in slots 10 thru 15.

0 8) One NT3X04AA is optionally provisionable in Slots 13 thru 16  
0 for the Automate Electric (AE) #1 Local Test Desk (#1LTD)  
0 Interface. The specific slot used and/or the validity of its'  
0 use is dependent upon the restrictions defined in Items 2 & 7  
0 above.

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## 0 FRAME SUPERVISORY PANEL (FSP)

0  
0 The OPM FSP is located in Bay 1 Row A immediately above the RMM  
0 shelf at shelf position 19.

0 If any Fiber Shelf Mounting Kit is provided, do not provide the  
0 Office Repeaters or the Fault Locate/Order Wire Access CPs.

0 If NT0X1978/79 Fiber Shelf or Channel Bank Shelf is provided,  
0 provide the Additional AC-Circuit Breakers Kit (NT6X2582) on the  
0 NT6X25BB OPM FSP.

0 The NT6X2582 AC-Circuit Breaker Kit is applicable on the NT8X01BA  
0 OPM Only. The NT8X01BB/BC OPM are equipped with a new FSP  
0 NT6X25BC which has the Circuit Breaker Always Provided.

0 When the Fiber Shelf Mounting Kit (NT0X1979) is provided, it  
0 voids UL Approval of the entire OPM, because it is not a UL Ap-  
0 proved component.

## 0 1) Provisioning Fault Locate/Order Wire Access CP

0 Provision one(1) QPP519A or QPP519B for slot 01 of the FSP when  
0 the Fault Signal Loopback Feature is used. Provision one (1)  
0 Fault Locate Filter QFB127\_ or QFB128\_ for each QPP519\_ CP provi-  
0 sioned. Refer to the Engineering Manual Section of this ECM for  
0 required type and frequency per Telco requirements.

## 0 2) Provisioning Office Repeaters

0 Provision one(1) QRY18\_ Office Repeater for each DS-1 link to the  
0 Host. Refer to the Engineering Manual Section of the ECM for re-  
0 quired type per Telco requirements. Provision one(1) NT0X50AJ  
0 (Filler Face Plate) for each unequipped position 02-07 in the  
0 FSP.

## 0 3) Provisioning Additional AC-Circuit Breakers

0 When Telco requirements specify the provisioning of one of the  
0 optional Mounting Kits for the FMT-150B (NTs Fiber Shelf),  
0 DDM-1000 (AT&Ts Fiber Shelf), or the DE-4E Channel Bank Shelf and

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0 the NT6X25BB FSP is installed, then provide one NT6X2582 AC Cir-  
0 cuit Breaker Kit.

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## 0 BATTERY CHARGING UNIT (BCU)

0  
0 Always Provision one(1) NT8X03AC Battery Charger Common CP Kit in  
0 Bay 1, Sh Pos 32.

0 Battery Strings shall be provisioned in the OPM for Battery  
0 Backup. Refer to the Engineering Manual Section of this ECM for  
0 provisioning information on the available battery options and  
0 their required hardware.

0

## 0 END COMPARTMENT ACCESS

0  
0 The End Compartment must be provisioned per Telco specifications.  
0 The End Compartment has two columns (Left and Right). The Left  
0 Hand Column (LHC) provides up to 750 protected terminations for  
0 the LCM (Lines), HIE (DS-1 Links), and RMM (Special Service) cir-  
0 cuitry. The Right Hand Column (RHC) is provisioned for Outside  
0 Plant Pair terminations. However, protector blocks are not  
0 provisionable on the RHC.

0 The following components must be considered:

0 1) Left Hand Column (LHC) for protected circuit terminations.

0 Provision the Protector Block Assembly kit which contains the  
0 Telco specified Protector Block type, 16-BIX Connectors and  
0 Retainers for 4-Pin and 5-Pin w/o Stub arrangements only. The  
0 choices are:

0 NT8X08BB - 4-Pin Stubless Protector Block Assembly  
0 NT8X08BE - 5-Pin Protector Block Kit w/50' Stub Option  
0 NT8X08BF - 5-Pin Protector Block Kit  
0 NT8X0804 - 5-Pin Protector Block Cable Stub

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0 2) Provisioning Protector Modules

0 Protectors are provisioned on a one (1) per Outside Plant Pair  
0 basis, where Outside Plant Pairs = (No. of Lines + 96 Service  
0 Circuits + Telco Required Spares). The following protector mod-  
0 ules are available. Provision the appropriate protector modules  
0 based on the type of Protection Scheme ordered for the OPM (i.e.  
0 4-Pin or 5-Pin).

0 303M-08S1GA -Protector Module Gas Tube 5Pin  
0 QMP12A4 -Protector Module Solid State 4Pin W/ Heat Coil  
0 QMP11A5 -Protector Module Solid State 4Pin W/O Heat Coil  
0 303M-12A1GA -Protector Module Solid State 5Pin W/ Heat Coil  
0 303M-11A1GO -Protector Module Solid State 5Pin W/O Heat Coil

0 3) Provisioning BIX Connectors (QCB1B) and BIX Retainers (QRE3A)

0 A sufficient quantity of BIX Connectors/Retainers required to  
0 terminate the OPM Internal Circuitry in the LHC for 4/5-Pin  
0 Stubless configurations is always provided in the Protector Block  
0 Kits for the for the Initial 256 lines and the 320 Line Upgrade  
0 Kits.

0 In order to use the End Compartment as a cross-connect facility  
0 for outside plant pairs, additional BIX Connectors/Retainers must  
0 be provisioned. Each Bix Connector can terminate up to 25 pairs,  
0 and one Bix Retainer is required for every Bix Connector. The LHC  
0 can mount an additional 29 BIX Connectors/Retainers capable of  
0 terminating up to 725 outside plant pairs.

0 If more than 725 outside plant pairs need to be terminated, pro-  
0 vision the NT0X2005 Right Hand Column (RHC). The RHC can mount  
0 an additional 41 BIX Connectors/Retainers capable of terminating  
0 up to 1025 outside plant pairs.

0 Provision BIX/MPC Tools as required if the Installation Kit  
0 (NT8X0176) is not provisioned. Refer to Engineering Manual Sec-  
0 tion in this ECM for ordering information.

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## 0 OPTIONAL SHELVES

0  
0 The optionally provisionable equipment shelves for the OPM-256  
0 are as follows:

0 When adding the 320-Line Upgrade option ensure that the existing  
0 protector blocks match those originally provided. Line Drawers  
0 and Line Cards shall be shipped loose for field installation.

0 If any one of shelf options number 1 thru 6 is selected it auto-  
0 matically prohibits the use of any other shelf option from the  
0 first six in the same OPM Cabinet. However, item #7 may be pro-  
0 vided in conjunction with any shelf option numbered 1 thru 6.

0 1) NT8X09AB - 4-Pin Stubless Protector Assy 256-576 Line Upgrade  
0 Kit

0 4-Pin Stubless Protector Modules were Always Provided (AP) on the  
0 NT8X01BA (OPM-256). Now they are optionally provisionable on the  
0 NT8X01BB/BC (OPM-256).

0 Provide this shelf option at shelf position 19 of OPE 0 for field  
0 installation only. This kit contains the shelf and all required  
0 hardware and wiring to install the unit in the OPM. This option  
0 kit is provisionable for the OPM equipped with the 4-Pin stubless  
0 option only.

0 2) NT8X09AC - 5-Pin Stubless Protector Assy 256-576 Line Upgrade  
0 Kit

0 Provide this option for the NT8X01BA/BB (OPM-256 Cabinet) when  
0 the 256-576 Line upgrade is required and the cabinet was ori-  
0 ginally ordered with the 5-Pin Protector Module without 50 foot  
0 stub.

0 3) NT8X09AD - 5-Pin W/50' Stub Protector Assy 256-576 Line Up-  
0 grade Kit

0 Provide this shelf option for the OPM-256 when the 256-576 Line  
0 upgrade is required and the cabinet was originally ordered with  
0 the 5-Pin Protector Module with 50 foot stub.

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0 4) NT0X1978 - NT Fiber Shelf FMT-150B Mounting Kit

0 When the Telco specifies Fiber interface to the host then provide  
0 either Item #4 or 5. This option provides the mounting hardware  
0 and required wiring only. The actual fiber shelf must be pro-  
0 vided by the Telco. This option is provisionable on the OPM-256  
0 only.

0 5) NT0X1979 - AT&T Fiber Shelf DDM-1000 Mounting Kit

0 When the Telco specifies Fiber interface to the host then provide  
0 either Item #4 or 5. This option provides the mounting hardware  
0 and required wiring only. The actual fiber shelf must be pro-  
0 vided by the Telco. This option is provisionable on the OPM-256  
0 only.

0 6) NT0X1980/81/82 - DE-4E Channel Bank Hardware Mounting Kits

0 When the Telco specifies T1 interface to the host then provide  
0 one of these pecs. This option provides the mounting hardware  
0 and required wiring only. The actual DE-4E Channel Bank Shelf  
0 (NT4S42CA) must be provided by the Telco. This option is  
0 provisionable on the OPM-256 only.

0 7) NT0J42AA - Digital Remote Test Unit (DRTU)

0 The Digital Remote Test Unit (DRTU) is provisionable on the  
0 OPM-256 and the OPM-640. The unit is provisioned in OPM Bay 0  
0 Row 'B' shelf position 05 to serve as a slave loop measurement  
0 device for the Host office Local Test Cabinet.

0

0 TELCO RESPONSIBILITIES.

0

0 The Customer Engineer must insure that the TELCO is aware of the  
0 following items they are responsible for providing/completing:



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- 0  
0 - Site preparation.  
0 - Mounting pad construction.  
0 - Cabinet mounting.  
0 - Interfacing of outside cables.  
0 - Installation of Bix Covers.  
0 - Minimum of two(2) DS-1 lines.  
0 - FX Line for communication between OPM and Host equipment.  
0 - Temporary storage for Test equipment at OPM site.  
0 - Ground Tent(8 FT.X 8 FT.X 6 FT. HIGH), Pelsue Model 6508B se-  
0 ries or equivalent, with built-in ventilation/heater ports.  
0 - 500 type telephone sets.  
0 - 500 type ring party and tip party telephone sets.  
0 - Hand telephone set with alligator clips.  
0 - Engineer and Furnish the Telco provided optional equipment  
0 (e.g. FMT-150B, DDM-1000).

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0 1.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not Applicable

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0 1.1.5 TRAFFIC TABLES

0  
0 See ECM-497 - Simplified Traffic Provisioning

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0 Remote Office - Outside Plant Module  
0 Chapter 25

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0 1.2 PRODUCT/SYSTEM SPECIFICATION

0

0 1.2.1 PHYSICAL CHARACTERISTICS

0

0 Input Voltage Commercial AC 220V at 60Hz  
0 Fusing Requirements 30Amps

0 MECHANICAL DIMENSIONS

|          |         |       |      |
|----------|---------|-------|------|
| 0 Height | 5'6"    | Width | 5'6" |
| 0 Weight | 2200lbs | Depth | 24"  |

0

0 1.2.2 EMI/EARTHQUAKE INFORMATION

0

0 EMI/Earthquake requirements are built into the OPM cabinet.

0

0 1.2.3 SPARING INFORMATION

0

0 Spare circuit packs are provisioned per standard rules. The fol-  
0 lowing equipment may be ordered as required per the Telco.

0 NT0X1914 - Filter Assembly (Primary and Secondary)  
0 NT8X06AB - Environmental Control Unit  
0 NT8X06BA - Booster Fan Unit

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0 NT5C90DB - Rectifier  
0 A0205202 - 1 1/3 A fuse  
0 A0205204 - 3 A fuse  
0 A0345823 - 7 1/2 A fuse

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0 1.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not Applicable

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0 1.2.5 CURRENT DRAIN INFORMATION

0  
0 Not Applicable

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0 1.3 SOFTWARE PROVISIONING

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0 1.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

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0 Software Packages required for the OPM are the following:

0 NTX146AA : Remote Line Concentrating Module  
0 NTX147AB : Outside Plant Module Maintenance  
0 NTX154AA : RLCM - ESA Operation  
0 NTX156AA : Intra RLCM Calling

0 Refer to the SMS database for Software Package Interdependencies.

0

0 1.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not Applicable

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0 1.3.3 MEMORY PROVISIONING

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0 Refer to MEMCALC for memory provisioning.

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0 1.4 REAL TIME IMPACT

0 Refer to REAL:QUICK or PRTCALC.

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## 0 2.0 International Outside Plant Module (IOPM)

0 The INTL Outside Plant Module (IOPM) is a reconfigured INTL Remote  
0 Line Concentrating Module (IRLCM) packaged in an environmentally-  
0 controlled cabinet.

0 The main structural difference between the IOPM and the domestic OPM  
0 lies in its size. Extra space has been provided for PCM-30 repeaters(  
0 and potentially other future applications) by creating an Auxiliary  
0 Compartment at the rear which is equivalent to the size of the entire  
0 domestic OPM cabinet.

0 The main traffic capacity difference between the OPM and IOPM is that  
0 the OPM can support 640 lines whereas the IOPM can support a maximum  
0 of 550 lines only - due to thermal constraints.

0 The IOPM offers optional ESA(Emergency Stand-Alone) capability. It is  
0 connected to the host ILGC via 2-6 PCM-30 links.

0 The IOPM is a repackaged IRLCM but contains additional equipment such  
0 as AC inlet equipment, rectifiers, batteries, pairs termination, pairs  
0 protection, and environmental control equipment.

0 The IOPM is presently being marketed for the Caribbean Expansion  
0 Project (CEP). In future, the IOPM may be developed for other Inter-  
0 national markets.

0 The IOPM is composed of 3 compartments:

- 0 - MAIN COMPARTMENT
- 0 - END ACCESS COMPARTMENT
- 0 - AUXILIARY COMPARTMENT

### 0 2.1 HARDWARE PROVISIONING

0

#### 0 2.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The IOPM, NT8X40AA, is designed to withstand outside temperatures  
0 between 0 and 45 degrees Celcius and therefore should not be pro-  
0 visioned for conditions outside this temperature range. It is

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0 presently only to be provisioned for the CEP(Caribbean Expansion  
0 Project).

0 2.1.2 HARDWARE DEPENDENCIES

0  
0 Not Applicable.

0 2.1.3 PROVISIONING CONSIDERATIONS

0  
0 This section will cover the basic provisioning guidelines for the  
0 IOPM. Detailed provisioning rules are included in the attached  
0 Engineering Manual Inserts.

0 To order the IOPM, order one NT8X40AA(IOPM).

0 ILCM

0  
0 The IOPM contains one (1) ILCM Common CP Kit and up to ten (10)  
0 Line Drawers. The NT6X04BB contains the NT6X51AB upgraded LCM  
0 Processor.

0 For Bay 0 (Main Compartment) order one ILCM packfill(NT6X04BB).  
0 Order line cards and line drawers(NT6X05BA), as required (Refer-  
0 ence Engineering Manual section EMA2-07-000).

0 Due to thermal constraints, a maximum of 550 line cards can be  
0 provisioned. The line card provisioning algorithm to be followed  
0 is outlined in the attached Engineering Manual Insert  
0 (NT8X40AA).Take note that only the even slots are to be filled in  
0 the top-most line sub-groups - i.e. 11, 13, 15, 17, 19.

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## 0 HIE

0  
0 Order also one HIE packfill, NT6X11BB, and corresponding  
0 provisionable cards as follows:

| 0 | QTY | PEC      | DESCRIPTION       | REASON                       |
|---|-----|----------|-------------------|------------------------------|
| 0 | 2   | NT6X60AA | RinginG Generator | (if analog ringinG required) |
| 0 | 1   | NT6X47AB | Master Proc. Mem. | (when ESA required)          |
| 0 | 1   | NT6X45BA | LGC/DTC Processor | ( " " " )                    |
| 0 | 1   | NT6X75DA | ESA Clock/Tone CP | ( " " " )                    |
| 0 | 1   | NT6X27AB | PCM-30 I/F CP     | (when PCM30 links required)  |
| 0 | 2   | NT2X70AE | Power Converter   |                              |

## 0 RMM

0  
0 Order also one RMM packfill, NT6X13DA, and corresponding  
0 provisionable cards as follows:

| 0 | QTY | PEC      | DESCRIPTION       | REASON                       |
|---|-----|----------|-------------------|------------------------------|
| 0 | 1   | NT4X98BB | MTU Analog        |                              |
| 0 | 1   | NT4X97AA | MTU Ctrlr.        |                              |
| 0 | 1   | NT3X09BA | Remote MTA        |                              |
| 0 | 1   | NT3X09AA | Remote MTA        |                              |
| 0 | 1   | NT0X10AA | PCM-30 I/F CP     | (when PCM30 links 5,6 req'd) |
| 0 | 1   | NT2X90AC | I/C,O/G Test Trk  | (LTP/Talk Mon. & Oper.Ver.)  |
| 0 | 1   | NT2X48CC | Digitone Receiver | (when ESA required)          |
| 0 | 1   | NT0X10AA | PCM-30 I/F CP     | (when PCM30 links required)  |

0 Also order one RMM Cable Assembly(NT6X1438) to provide -48VSP  
0 supply needed by the MTU.

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## 0 POWER SUPPLY

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0 BATTERY

0 Order Battery Charger packfill(NT8X03AA) when battery back-up re-  
0 quired. Order YUASA batteries(A0323985), battery  
0 trays(P0661751), retainer bars(P0661753), screws(P097F813), cable  
0 assemblies as specified in the attached Engineering Manual in-  
0 serts.

0 Extended outside plant termination facilities are available by  
0 provisioning the right hand BIX mounting column and up to 41  
0 green BIX connectors or terminations for an additional 1025  
0 pairs.

0 For Bay 2 (Auxiliary Compartment) order Coax. Cable Connectors.

## 0 220 VAC POWER

0 Two 220 volt AC power configurations are available for the IOPM:  
0 a 3-wire, 220 VAC phase-to-phase configuration; and a 2-wire sin-  
0 gle phase configuration. Selection is determined by the cus-  
0 tomer. For the 3-wire configuration, provision the following:  
0 NT8X40WA Wiring For 3 Wire 220 Volts Phase to Phase Power  
0 P0703366 IOPM AC Power Schematic Label 3 Wire  
0 NT8X0123 IOPM AC Power Cable Assembly (H1)  
0 NT8X0124 IOPM AC Power Cable Assembly (H0)  
0 For the 2-wire configuration, provision the following:  
0 NT8X40WB Wiring For 2 Wire 220 Volts Single Phase Power  
0 P0711201 IOPM AC Power Schematic Label 2 Wire  
0 A0319292 Jumper (provision qty 2)

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## 0 MISCELLANEOUS

0  
0 Discrimination Numbering - The IOPM cabinet is identified using  
0 a OPE XX discrimination number where XX equals the integers  
0 00-09. The OPE numbers may be unique per office or unique per  
0 site. The unique per office number must not conflict with exist-  
0 ing ILCE or IRLCM numbers.

0 The internal swinging equipment racks are identified by OPE XX  
0 bay Y where XX equals integers 00-09 and bay Y equals bays 0-1.

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0 On New IOPM Systems provide (1) one NT8X0176 Installers Assembly Kit  
0 for each NT8X40AA IOPM ordered. This Kit is used for Installation  
0 purposes. Refer to Installation Manual IM925 for more information.

## 0 CONTENTS OF THE INSTALLATION KIT

0 =====

| 0 | QTY   | CPC CODE | PEC CODE    | DESCRIPTION               |
|---|-------|----------|-------------|---------------------------|
| 0 | ===== | =====    | =====       | =====                     |
| 0 | 1     | A0329853 | CPD12DP04   | CONN,PWR 3WIRE 4POLE 30A  |
| 0 | 1     | A0298292 | QTH57A      | SGL LINE CD RMV TOOL      |
| 0 | 1     | A0313317 | QTH58A      | DBL LN CD INSERT/RMV TOOL |
| 0 | 1     | A0277894 | QFE1A       | TERMINATING FIXTURE       |
| 0 | 1     | A0270172 | QGBIX23A    | BIX PLASTIC GUARD         |
| 0 | 1     | A0260364 | QGF4A       | PROTECTOR MODULE GUARD    |
| 0 | 2     | A0270165 | QTB1X16A    | BIX CONNECTION TOOL       |
| 0 | 2     | A0270166 | QTBIX17A    | BIX TEST PROBE            |
| 0 | 2     | A0298291 | QTH56A      | SGL LN CD INSERT/RMV TOOL |
| 0 | 10    | A0285591 | NPS25028L20 | LINE DRAWER CUT-OFF STRAP |
| 0 | 5     | A0205202 | QFF1A       | FUSE 1 1/3 AMP            |
| 0 | 5     | A0205204 | QFF1C       | FUSE 3 AMP                |
| 0 | 5     | A0345823 | QFF1J       | FUSE 7.5 AMP              |
| 0 | 1     | A0270170 | A0270170    | QTBIX21A TEST SHOE        |
| 0 | 2     | A0267477 | A0267477    | QTH52A MODULE TOOL        |
| 0 | 2     | A0267478 | A0267478    | QTH52B MODULE TOOL        |
| 0 | 2     | A0269848 | A0269848    | NE-W2QAJ TEST CORD        |
| 0 | 2     | A0259654 | A0259654    | NE-W2QT TEST CORD         |
| 0 | 2     | A0259656 | A0259656    | NE-W2QW TEST CORD         |
| 0 | 2     | A0276866 | A0276866    | NE-W4QD TEST CORD         |
| 0 | 1     | R0113260 | 585-904     | PAINT TOUCH UP-BROWN      |
| 0 | 6     | P0658004 | P0658004    | STIFFENING PLATE          |
| 0 | 6     | P0658003 | P0658003    | SPRING WASHER-BELLVILLE   |
| 0 | 6     | P0125614 | P0125614    | HEX NUT .500-13           |
| 0 | 20    | P0588406 | P0588406    | BLANK WHITE DESIG LABEL   |
| 0 | 2     | P0688296 | P0688296    | SLEEVE FILTER             |
| 0 | 1     | P0555288 | P0555288    | TERMINAL BLANK(SHORT)     |
| 0 | 1     | P0555289 | P0555289    | TERMINAL BLANK(LONG)      |

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0 Telco Responsibilities

0 The Customer Engineer must ensure that the Telco is aware of their responsibility for providing/completing the following items:

- 0 1) Site Preparation.
- 0 2) Mounting Pad Construction.
- 0 3) Cabinet Mounting.
- 0 4) Interfacing of outside cables.
- 0 5) Installation of BIX covers.
- 0 6) Minimum of two PCM-30 lines.
- 0 7) FX line for communication between IOPM and Host.
- 0 8) Transportation of IOPM line drawers, batteries and test equipment to IOPM site.
- 0 9) Temporary storage for test equipment at IOPM site.
- 0 10) 24 Awg wire.
- 0 11) Ground tent (8ft. x 8ft. x 6ft. high), Pelsue Model 6510B Series or equivalent, with built in ventilation/heater ports.
- 0 12) 2 - 500 type telephone sets.
- 0 13) 2 - 500 type ring party and tip party telephone sets.
- 0 14) 1 - hand telephone set with alligator clips.
- 0 15) Providing, installing and servicing PCM-30 repeaters.
- 0 16) Providing, installing and servicing cables from repeaters to PCM-30 patch panel.
- 0 (Reference) IM925-Section 14)

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0 2.1.4 OFFICE LAYOUT INFORMATION

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0 MOUNTING

0  
0 The recommended IOPM mounting surface is on a concrete pad lo-  
0 cated above local flood plains. One (1) NT0X1970 mounting tem-  
0 plate and one (1) NT0X1935 mounting hardware kit must be  
0 provisioned to facilitate construction of the pad by the Telco.  
0 The concrete pad must be completed prior to the installation date  
0 of the IOPM. For all offices engineered in Canada, the mounting  
0 kit NT0X1970 will be merchandise-ordered and the NT0X1935 will be  
0 shipped loose with the IOPM. The Customer Engineer must ensure  
0 that the Telco is aware of this requirement.

0 2.1.5 TRAFFIC TABLES

0  
0 Refer To ECM 382 For Traffic Capacity Tables. The IOPM will pro-  
0 vide the same traffic capacity as the IRLCM.

0 The total traffic capacity of a DMS-100 with all IOPM lines shall  
0 be equal to that of a DMS-100 with all co-located lines.

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0 2.2 PRODUCT/SYSTEM SPECIFICATION

0

0 2.2.1 PHYSICAL CHARACTERISTICS

0

0 POWER/HEAT DISSIPATION

0

0 Below is a breakdown of power dissipation on individual parts of  
0 the IOPM.

0 AC POWER SYSTEM (GENERAL)

0 In normal operation, the IOPM will be powered from commercial  
0 110/220 V AC, 110V only operation will not be provided for.

0 Commercial 110/220 V AC cables will enter the IOPM cabinet  
0 through a sealed cable entrance port mounted in the base of the  
0 compartment.

0 The IOPM will not provide space for the mounting of an AC KWHour  
0 meter. If, in a particular installation AC power metering is re-  
0 quired, the KWHour meter must be mounted elsewhere.

0 Within the IOPM's main compartment, the commercial and emergency  
0 power cables will terminate on individual lightning  
0 arrester/disconnection boxes, the two power sources will be ca-  
0 bled to the main breaker panel.

0 The breaker panel will contain an AC source/Emergency Generator  
0 switch and a series of resettable breakers for the individual AC  
0 loads in the IOPM. The switch allows manual selection between  
0 commercial AC and the emergency generator inlet.

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0 One 110V parallel blade "U" ground utility receptacle will be  
0 provided inside the main compartment.

0 A pair of rectifiers(NT-J2427B-1) will condition the AC inlet  
0 power, producing -52 V DC. The rectifier pair has the capacity  
0 for powering the IOPM at its full traffic capacity (8ccs/Line).  
0 In the event of one rectifier failing, the remaining rectifier  
0 will be capable of powering the IOPM at reduced traffic levels.

0 EMERGENCY POWERING

0 The IOPM provides for the attachment of an emergency generator  
0 through a plug located on the righthand side of the cabinet. The  
0 emergency generator plug will allow the attachment of a 110/220 V  
0 generator to supply power to the IOPM during commercial AC fail-  
0 ure. The standard emergency generator plug will be a Russell-  
0 Stollens 100A unit. Packaging allowances will be made to allow a  
0 variety of other plug styles.

0 HIE SHELF LOAD

0 Figures are given for both 8 ccs/line(worst case) and 5  
0 ccs/line(average).

| 0                            | 5 ccs/Line | 8 ccs/Line |
|------------------------------|------------|------------|
| 0 Ringers(internal)          | 25W        | 45W        |
| 0 Ringers(external)          | 10W        | 10W        |
| 0 PCM-30 I/F & ESA(internal) | 100W       | 110W       |
| 0                            |            |            |
| 0 TOTAL HIS -52V load        | 135W       | 165W       |
| 0                            |            |            |
| 0                            | (2.6A)     | (3.2A)     |

0 RMM SHELF LOAD

0 150 Watts  
0 (2.9A @ -52V)

0



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## 0 DC CONTROL PANEL(FSP)

0 -52V Supply to customer 66 Watts  
0 PCM-30 Repeaters (Aux.Cmpt) 1.3A

## 0 BATTERY CHARGING SYSTEM

0 50 Watts

## 0 FAN -52V LOAD

0 40 Watts

## 0 CURRENT DRAIN

0  
0 TOTAL -52V LOAD

| 0 |                    | 5 ccs/Line | 8 ccs/Line |
|---|--------------------|------------|------------|
| 0 | LCM                | 7.2A       | 10.62A     |
| 0 | HIS                | 2.6A       | 3.2A       |
| 0 | RMM                | 2.9A       | 2.9A       |
| 0 | FSP                | 1.3A       | 1.3A       |
| 0 | Battery Charge     | 1.0A       | 1.0A       |
| 0 | Fans in Main Cmpt. | .77A       | 1.0A       |
| 0 | Fans in Aux. Cmpt. | .77A       | 1.0A       |
| 0 |                    | <hr/>      | <hr/>      |
| 0 |                    | 16.54A     | 21.02A     |

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## 0 TOTAL AC POWER LOAD

| 0 |                             | 5 ccs/Line | 8 ccs/Line |
|---|-----------------------------|------------|------------|
| 0 | -52V load on rectifiers     | 1250 W     | 1600 W     |
| 0 | Rectifier inefficiency(10%) | 125 W      | 160 W      |
| 0 | AC Panel Load               | 50 W       | 50 W       |
| 0 |                             | <hr/>      | <hr/>      |
| 0 |                             | 1425 W     | 1810 W     |

## 0 BATTERY CAPACITY

0 The IOPM's back-up batteries are sized, in the event of loss of  
0 AC power, to provide the energy required to support the IOPM for  
0 8 hours at a traffic level of approximately 5 ccs/Line. At 5  
0 ccs/Line, the -52V DC load of the IOPM is approximately 25A. For  
0 8 hours of back-up power, this requires  $8 \times 25A = 200$  A-hours. A  
0 total of 8 strings of YUASA batteries are provisionable to obtain  
0 this capacity.

0 2.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Information not available.

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0 2.2.3 SPARING INFORMATION

0  
0 Spare circuit packs are provisioned per standard rules. The fol-  
0 lowing equipment may be ordered as required per the Telco.

0 NT0X1914 Filter Assembly (primary and secondary)  
0 NT8X06AB Environmental Control Unit  
0 NT8X06BA Booster Fan Unit  
0 J2427B-1 Rectifier  
  
0 QFF1A 1 1/3A fuse  
0 QFF1C 3A fuse  
0 QFF1J 7 1/2A Fuse

0 2.3 SOFTWARE PROVISIONING

0

0 2.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The following software packages are required for the IOPM:

0 NTX651AA INTL RLCM Basic  
0 NTX652AA INTL RLCM Intra-Switching  
0 NTX653AA INTL RLCM Emergency Stand-Alone  
0 NTX147AB OPM Maintenance Enhanced

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0 2.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable

0 2.3.3 MEMORY PROVISIONING

0  
0 Refer to MEMCALC for Memory Provisioning.

0 2.4 REAL TIME IMPACT

0 Information unavailable at this time.

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0 CHAPTER 26

0 REMOTE OFFICE - TRAFFIC OPERATOR POSITION EQUIP.

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Remote Office - Traffic Operator Position Equip.  
Chapter 26



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0 REMOTE OFFICE - TRAFFIC OPERATOR POSITION EQUIP.  
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## 0 1.0 TOPS Engineering

0 1.1 HARDWARE PROVISIONING

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0 1.1.1 HARDWARE USAGE RESTRICTIONS

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## 0 TOPS MP

0

0 The standard TOPS MP line-up will be as follows:

0

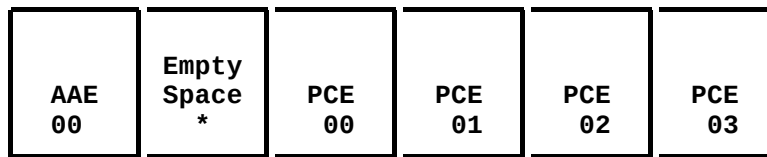
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Figure 9: Standard TOPS MP Line-up

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\* A 30 inch Empty Space between the AAE and PCE Cabinets  
is required for EMI and Earthquake requirements.

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TOPS MP - IBM DA requires TOPS MP equipped with the TOPS Message  
Switch (TMS).

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TOPS MP - IBM DA keyboards are currently available for English  
applications only.

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The maximum allowable number of operators depends on the office  
configuration. Refer to the Real Time section of this ECM for ad-  
ditional information.

0

0

While the IBM protocol does not provide for monitoring a DA call,  
the DMS allows for monitoring an operator. When monitoring a DA

0

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0 call, the supervisor receives a duplicate display of the billing  
0 screen of the operator position being monitored.

0 The IBM protocol does provide a list status field but it does not  
0 provide the listing detail required by the Extended Bellcore AMA  
0 Format (EBAF). Currently, DA or Intercept calls handled by the  
0 IBM vendor cannot fully populate the Listing Status fields for  
0 EBAF conforming AMA.

0 The ARUs used for TOPS MP - IBM DA are associated with the IBM  
0 DAS. The organization providing the ARUs must be notified of the  
0 number of DA operators to be served at 95% utilization and the  
0 ratio of traffic requiring call completion to traffic not requir-  
0 ing call completion. Call completion requires special ARUs capa-  
0 ble of performing the call completion function.

0 Dual HSDA is not available for TOPS MP with IBM DA.

0 In an integrated TMS configuration, there must NOT be an HSDA  
0 card in slot 8 of the TPC. Otherwise, the TPC will attempt to  
0 send search requests on the wrong HSDA card.

0 Dual HSDA is compatible with NTN61AB/AC/AD/AE/AF TPC packfills.

0  
0 TOPS MPX

0  
0 The TOPS MPX position is a dedicated Directory Assistance/ Inter-  
0 cept position. Toll and Assistance operation and ORDB access are  
0 not available from a TOPS MPX position at this time.

0 The TOPS Message Switch is required for all applications using  
0 TOPS MPX equipment.

0 The MPX positions require a timing signal which will be supplied  
0 by a Telco-provided Time Source Generator (TSG). The TSG should  
0 be located in or near the channel bank frame. Each Timing Output  
0 Card provides ten (10) ports. The following TSG equipment is re-  
0 quired:

| 0 Description | Part Number |
|---------------|-------------|
| 0 -----       | -----       |

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|   |                                |              |
|---|--------------------------------|--------------|
| 0 | DCD-400 Shelf Assembly         | 990-40000-01 |
| 0 | Fuse & Alarm Card              | 990-40014-01 |
| 0 | Clock Input Card               | 990-40010-01 |
| 0 | Stratum 3 Clock                | 990-40013-01 |
| 0 | Timing Output Card             | 990-40011-01 |
| 0 | Timing Output Card (Hot Spare) | 990-40011-01 |
| 0 | Matrix Control Card            | 990-40015-01 |

0 (Equipment manufactured by Telecom Solutions.)

0 The Force Management function must be implemented using TOPS MP  
0 equipment or Customer provided TOPS 4 equipment.

0 No Alternate Billing calls are currently handled by MPX posi-  
0 tions.

#### 0 TOPS QMS

0  
0 The TOPS QMS software feature (NTXR50AA) that provides for an ex-  
0 ternal MIS system must have the external MIS equipment provided  
0 by the Customer.

#### 0 1.1.2 HARDWARE DEPENDENCIES

0

#### 0 TOPS MP POSITION CONTROLLER EQUIPMENT (PCE)

0  
0 The PCE Cabinet consists of the following Always Provided equip-  
0 ment:

|   |   |                                      |
|---|---|--------------------------------------|
| 0 | 1 | SL-100 Cabinet                       |
| 0 | 1 | PCE EMI Bulkhead Assembly            |
| 0 | 1 | Frame Supervisory Panel (FSP)        |
| 0 | 4 | TOPS Position Controller (TPC) Shelf |

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0 Assemblies  
0 1 Cooling Unit (CU)

0 Associated PCE equipment includes the following:

0 PCE - allows an administrator to print  
0 Printer logs, help screens or program panels  
0 for TPC shelves.

0 TAMI - TPC Administration and Maintenance In-  
0 terface. This interface is a VT100  
0 compatible terminal connected to a TPC  
0 (via modems) which allows an administrator  
0 to perform maintenance or administrative  
0 functions as required. The TAMI (VDU) may  
0 be located remotely or locally. In either  
0 case an autoanswer, autodial modem will  
0 be required for the VDU).

0 - The TAMI position equipment may be customer  
0 supplied. The VDU is a VT100 compatible  
0 terminal with a Case or UDS standalone  
0 212 A/D compatible modem. The TAMI position  
0 equipment may also include a printer. If  
0 the customer requires NT to supply the TAMI  
0 position equipment, refer to ECM 607 for the  
0 terminal and printer, and ECM 633 for a modem.

0 Wicat - each CBT unit provides training for up to 16  
0 Computer operator positions and the dimensions for the  
0 Based unit are 44"(H) x 22.1"(W) x 31.8"(D). A  
0 Training cartridge tape will be used to load the TOPS  
0 (CBT) MP training S/W onto the CBT unit's hard disk  
0 Unit drive. A Wicat VDU will be used for  
0 administration on the CBT units.

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0 1 End Panel Assy, Left  
0 1 Modem Shelf  
0 1 Power Distribution Panel  
0 1 4" Filler Panel  
0 1 Hazard Plate Assy

0 Auxiliary Access Equipment:

0 Modem - One (1) Modem Shelf will be Always Provided on the  
0 Shelf AAE Cabinet. This is for TAMI modems.  
0 Up to four (4) additional modem shelves may be provisioned for  
0 access to the DMS, DA, and ORDB. Some or all of these accesses  
0 may be through the TMS.  
0 Each modem shelf is supplied with two power supplies. Up to  
0 16 UDS modem cards may be mounted on a UDS modem shelf.

0 Power - One (1) Power Distribution Panel (PDP) will be  
0 Distrib- Always Provided on the AAE Cabinet. The PDP will  
0 bution power PCEs, the UDS Modem Shelf & the Alarm  
0 Panel Battery Supply (ABS). The PDP can accomodate  
0 (PDP) up to 15 fuses for the A power feed and up to  
0 15 fuses for the B power feed. The PDP fuse are  
0 physically designated 00-29 with fuse 00 being the  
0 first A power fuse and fuse 15 being the first B  
0 power fuse. The UDS Modem shelf will come prewired  
0 for power. Each will be fused by 2 5A fuses(fuses  
0 are always provided as part of the PDP and are  
0 F11-F13 and F26-F28). The ABS will be supplied  
0 via one (1) 10A fuse on the PDP labeled FABS. (The  
0 10A fuse will be supplied as part of the PDP  
0 stocklist.) The FABS fuse is prewired to the  
0 bulkhead such that only the bulkhead connections  
0 are required from AAE to PCEs.

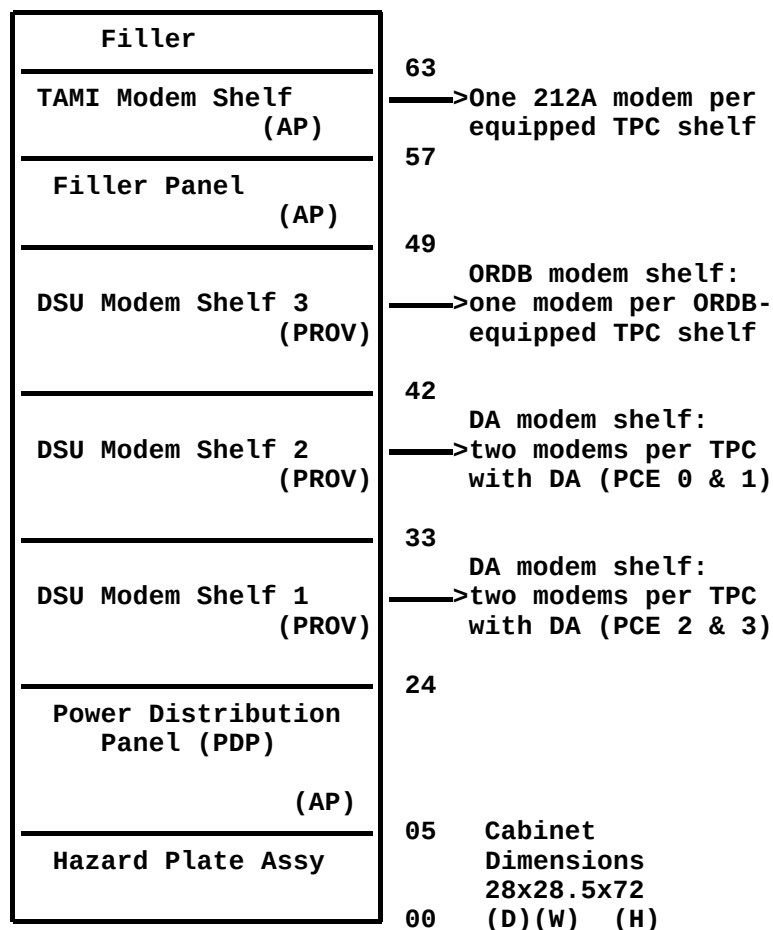
0 Dual HSDA requires a 12-port alarm CP in the PDP.  
0 The alarm CP which is included with the PDP does  
0 not provide enough ports for Dual HSDA. Provision  
0 a 12-port alarm CP for Dual HSDA (field application  
0 only). Refer to the AAE Engineering Manual Section  
0 for details.

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AAE 00

Figure 11: Auxiliary Access Equipment (AAE) Cabinet

Note: A filler panel will be provisioned wherever a modem shelf is not provisioned (shelf positions 24,33,42). When Dual HSDA is installed (field application only), the AP filler panel at position 49 is removed, and a modem shelf is installed at position 51. Also, the

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0 TAMI modem shelf is moved from position 57 to 60, and  
0 the filler panel at position 63 is removed.

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## 0 TOPS MP POSITIONS

0  
0 Since all TOPS Multipurpose Positions (operator or administration  
0 (in-charge, assistance, or force manager)) have the same hardware  
0 requirements, all TOPS Multipurpose Positions are available as a  
0 Modular or Integrated Position. The components of each type of  
0 Operator Position are as follows:

0 Modular TOPS MP Operator Position0 Qty./Position

0 1 TOPS MP Terminal Base Unit (NT0M90SA)  
0 1 Monitor (NT0M92FA)  
0 1 Gnd. Bar (NTNX5305)(1 per 128 positions)  
  
0 EITHER 1 Keyboard (NT0M36AE) - English Universal Keyboard  
0 OR 1 Keyboard (NT0M36AA) - French Universal Keyboard  
0 OR 1 Keyboard (NT0M36AH) - IBM DA English Keyboard  
0 \*\*\* Keyboard NT4X81DA is now Manufacture Discontinued. \*\*\*  
0 EITHER 2 Modular Headset Jack Assembly - 7.25 feet (NTNX5303)  
0 OR 2 Modular Headset Jack Assembly - 6.5 feet (NTNX5306)  
0 OR 2 Modular Headset Jack Assembly - 10 feet (NTNX5308)

0 Integrated TOPS MP Operator Position0 Qty./Position

0 1 TOPS MP Terminal Base Unit (NT0M90SA)  
0 1 Monitor (NT0M92FA)  
0 1 Gnd. Bar (NTNX5305)(1 per 128 positions)  
  
0 EITHER 1 Keyboard (NT0M36AE) - English Universal Keyboard  
0 OR 1 Keyboard (NT0M36AA) - French Universal Keyboard  
0 OR 1 Keyboard (NT0M36AH) - IBM DA English Keyboard  
  
0 \*\*\* Keyboard NT4X81DA is now Manufacture Discontinued. \*\*\*  
0 1 TOPS MP Adjustable Desk (A0343403)  
0 (Eng Code, NPS50684-01L01)

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0  
0 NOTE : The TOPS MP Adjustable Desk will come equipped with  
0 a headset jack assembly.

0 The CUSTOMER IS RESPONSIBLE for providing PRIVACY PANELS and/or  
0 CHAIRS for TOPS MP Positions. If required to match the TOPS MP  
0 furniture, the customer may order these from Herman Miller.

0 TOPS MP Position Description

0 Controller - The NT0M90SA Controller includes the digital  
0 (NT0M90SA) telephony circuit board which is compatible  
0 with all previous TOPS MP equipment. This  
0 controller provides improved noise performance  
0 when used with the NTNX62AB HSLI pack. When used  
0 with the NTNX62AA, performance equals that of  
0 previous controllers.

0 Change Kit - This change kit upgrades an existing NT0M90NA  
0 (NT0M96QE) controller to NT0M90SA.

0 Monitor - The video monitor provides a high resolution  
0 (NT0M92FA) display of eight different shades of grey.  
0 The screen consists of 29 lines of text with  
0 90 characters per line and a 12" diagonal  
0 screen.

0 Ground Bar - The Ground Bar Assembly provides a  
0 Assembly junction point for furniture grounds and one (1)  
0 (NTNX5305) system single point ground. Provide one Ground Bar  
0 Assembly for up to 128 positions.

0 Keyboard - The keyboard consists of 126 keys which are  
0 (NT0M36AE) configured to provide an efficient operator  
0 interface. The keys are designed using Hall-  
0 effect solid state switches. Keys on the  
0 keyboard are as follows:

0 57 typewriter keys  
0 34 call processing keys  
0 8 softkeys  
0 27 keys available for future applications

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0 (Note: All key caps are provided as part of the  
0 keyboard stocklist as no specially engraved  
0 key caps are possible.)

0 Keyboard - French version of the NT0M36AE keyboard  
0 (NT0M36AA) described above.

0 Keyboard - IBM DA (English) version of the TOPS MP  
0 (NT0M36AH) keyboard.

0 Keyboard NT4X81DA is Manufacture Discontinued.

0 Keyboard - Upgrades NT4X81DA keyboard to NT0M36AE  
0 Change Kit equivalence for Directory Assistance/  
0 (NT0M36AF) ORDB use. Application of NT0M36AF to an  
0 NT4X81DA keyboard produces an NT4X81DB  
0 (B0229511) keyboard which is functionally  
0 the same as NT0M36AE but uses different  
0 artwork.

0 Keyboard - Upgrades NT0M36AE Keyboard to NT0M36AH  
0 Change Kit for IBM DA use.  
0 (NT0M36AK)

0 The customer must provide headsets that meet the generic require-  
0 ments in the Proposed Generic Requirements for Telephone Headsets  
0 used at Bell Operating Companies (BOC) Operator Consoles, Issue  
0 1, August 1986, TA-EOP-000314, published by Bell Communications  
0 Research (Bell Core).

0 A TOPS MP Position will require approximately 25 square feet of  
0 office space (with NTI furniture, without privacy panels).

0 A TOPS MP Position will require approximately 28 square feet of  
0 office space (with NTI furniture and customer provided privacy  
0 panels).

0 Attenuation pads are not required for TOPS MP. Also, no optional  
0 key caps are orderable with TOPS MP.

0 A Computer Based Training (CBT) Unit is to be provided per the  
0 customer's request and NTI's Building Studies Engineer shall de-  
0 termine the location of this unit. The CBT Unit must be located  
0 within 100' of all associated PCEs.

0

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## 0 TOPS MP DIRECTORY ASSISTANCE APPLICATION

0  
0 The equipment described in this section is required in addition  
0 to the basic office configuration described elsewhere in this  
0 ECM. The main components of the DA system are the TOPS MP  
0 facility, the DMS-200 host office, the Announcement Recording Unit  
0 (ARU) facility and the Directory Assistance System / Computerized  
0 (DAS/C or Gateway), a vendor-supplied database. These facilities  
0 must be connected by voice or data links to provide DA service.  
0 Refer to Figure 3 or Figure 4 for TOPS MP DA without TMS or Fig-  
0 ure 7 for TOPS MP DA with TMS for the layout of the components of  
0 the TOPS MP DA system.

0 The NTNX62AB HSLI CP is required for the Directory Assistance ap-  
0 plication. While the NTNX62AB is the standard HSLI and is cur-  
0 rently supplied for all applications, offices previously using  
0 the NTNX62AA for Toll and Assistance service must convert to  
0 NTNX62AB when adding Directory Assistance service.

0 In an integrated TMS configuration, access to the DA database is  
0 through an HSDA in slot 13 (of the TPC). This HSDA requires two  
0 modems in the AAE, which connect to the TMS. The TMS connects to  
0 the DA database.

0 For access to DA in a standalone (no TMS) configuration, each TPC  
0 requires an HSDA CP in slot 13, and two modems in the AAE. These  
0 modems connect to the DA database.

0 For access to DA in a Dual HSDA configuration, each TPC requires  
0 an HSDA CP in slot 8, and two modems in the AAE. These modems  
0 connect to the DA database.

0 The DA application requires additional memory and this is pro-  
0 vided by an additional NTNX63AA CP mounted on each TPC shelf.  
0 Provide one (1) NTNX63AA in slot 5 of TPC shelves NTNX61AA -  
0 NTNX61AD. Refer to the Engineering Manual section. The NTNX61AE  
0 and NTNX61AF are equipped with sufficient memory (one NTNX63AB)  
0 for all current applications.

0

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## 0 TOPS MP OPERATOR REFERENCE DATABASE

0  
0 If TMS is not used, database access for ORDB requires a High  
0 Speed Data Access circuit pack and its associated modem. This  
0 NTNX66AA HSDA pack mounts in slot 8 of the TPC shelf being con-  
0 figured for ORDB and the UDS D56 modem required for the HSDA pack  
0 mounts on shelf 42 of the AAE cabinet. Refer to the Engineering  
0 Manual section for details of configuring the necessary HSDA and  
0 D56 modem. This HSDA pack and modem provide ORDB access for all  
0 four operator positions supported by the TPC. The HSDA pack pro-  
0 vides two V.35 ports but only one (Port 1) is used for the ORDB  
0 application and therefore only one (1) UDS D56 modem (per HSDA in  
0 slot 8) is required. If TMS is used, access to ORDB is through  
0 the HSDA in slot 13, which connects to the TMS. The TMS connects  
0 to the ORDB database.

0 The NTNX62AB HSLI CP is required for the Operator Reference Data-  
0 base application. While the NTNX62AB is the standard HSLI and is  
0 currently supplied for all applications, offices previously using  
0 the NTNX62AA for Toll and Assistance service must convert to  
0 NTNX62AB when adding Operator Reference Database service.

0 TOPS MP Operator positions for IBM DA are provisioned the same as  
0 for Directory Assistance via CCI except for the keyboard. Provide  
0 the NT0M36AH (English) keyboard for new IBM DA offices. Existing  
0 NT0M36AE keyboards may be upgraded for IBM DA applications with  
0 the NT0M36AK change kit.

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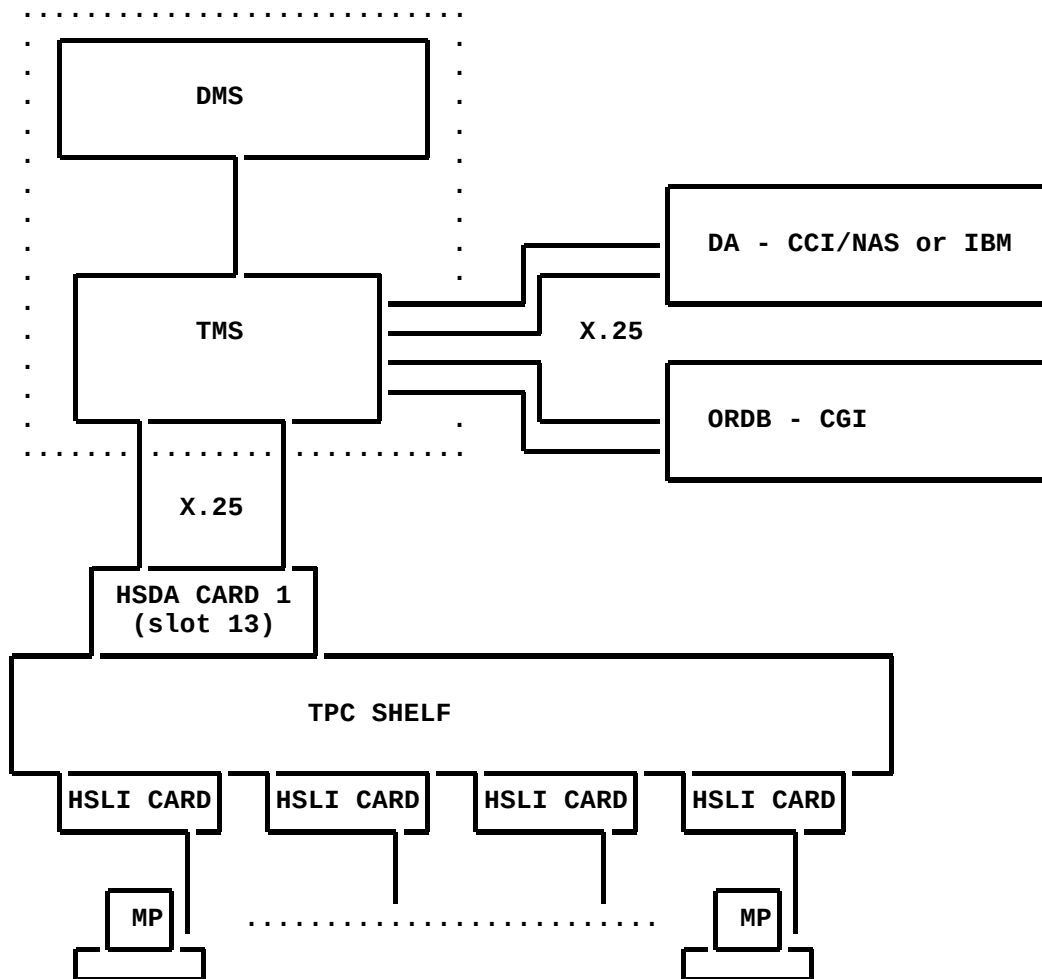
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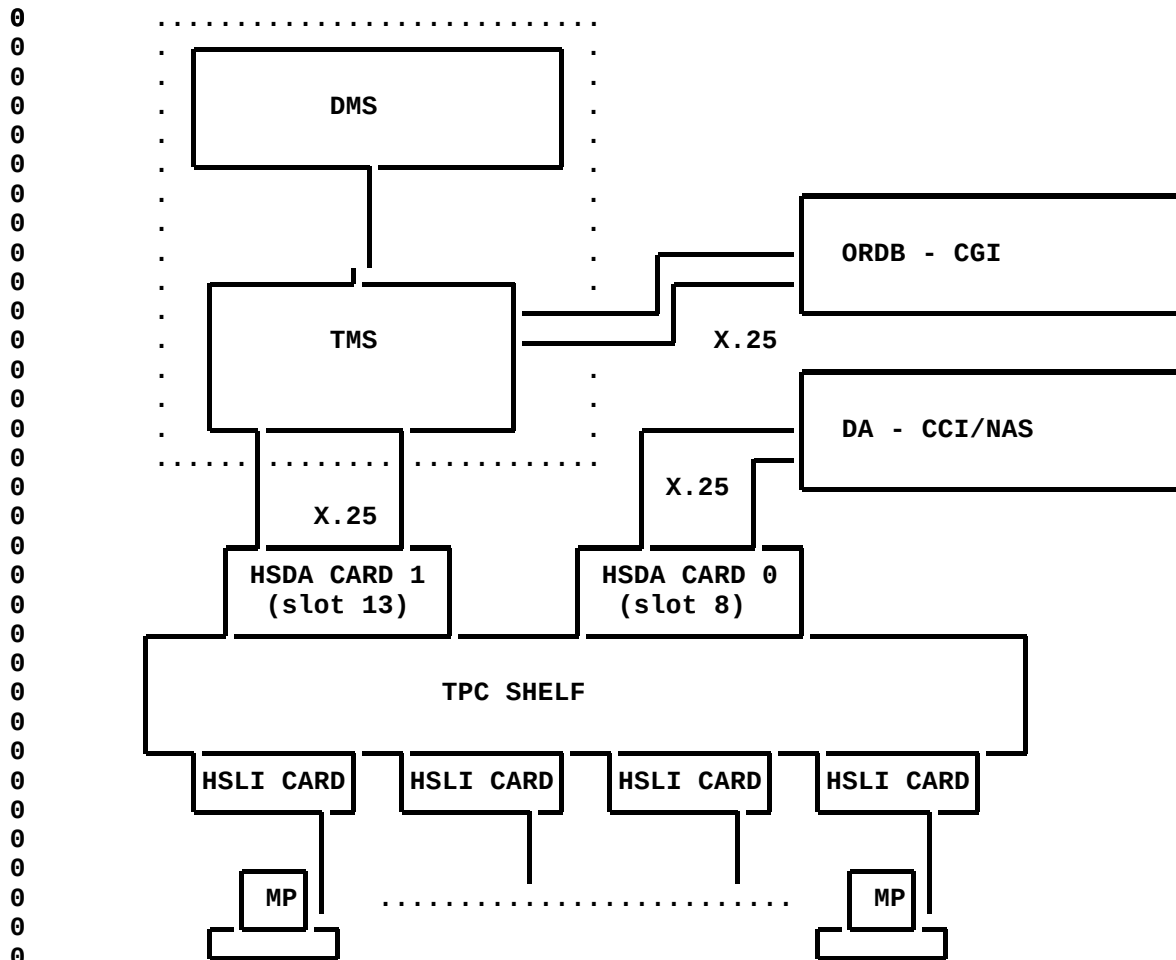
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The following diagram shows the topology of a TOPS MP integrated TMS configuration.



0        The following diagram shows the topology of TOPS MP dual HSDA  
0        configuration.





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0 A brief description of the components used for TOPS MPX is pro-  
0 vided for reference.

0 Token Ring: The token ring refers to the type of Local Area  
0 Network (LAN) which is used to group the MPX  
0 terminals so that information from databases, etc.  
0 can be shared within the group, without each  
0 position requiring a dedicated link. Operates  
0 at 4Mb/s.

0 Multistation Access Unit (MAU): Passive component in the token  
0 ring which interconnects up to eight MPX positions  
0 to form a star connection to the LAN. The MAUs are  
0 cabled together to form the token ring. The MAUs  
0 will mount in a MIS frame using two  
0 adapters per three MAUs.

0 BIX Block: One BIX block will be provided for each Token Ring  
0 to provide a connection point for the distribution  
0 of voice and data signals. The BIX block will mount  
0 in a MIS frame using one mounting plate for  
0 each two BIX blocks. The BIX block provides both  
0 connectorized input and output connections.

0 Data Set Unit (DSU): 56Kb/s standalone modem is used to convert  
0 V.35 interface to 4-wire for both the IBM DA links  
0 and the datalinks to the DMS. The data set unit  
0 cable will be job-engineered in length (minimum of  
0 four feet; maximum of nine feet).

0 MIS Frame equipment: The voice/data signals from operator  
0 positions will be cabled to a MIS frame which  
0 contains the MAUs and BIX blocks. This MIS frame  
0 should be provided without a Frame Supervisory  
0 Panel (FSP) since no power is required. A fully  
0 equipped MIS frame will support four Token Rings.  
0 The BIX block for each Token Ring will be  
0 connected to the outside world via four  
0 non-shielded 25 pair cables (one each Voice  
0 Transmit, Voice Receive, Data Transmit, Data Receive)  
0 and one shielded 25 pair cable (clock for Timing  
0 Source Gen.) If cabled via the Distributing Frame,  
0 terminations for the maximum of 100 pairs should  
0 be provided. The 25 pair TSG cable must be  
0 terminated on the Timing Source Generator rather  
0 than a DSX or DF for the purpose of grounding the  
0 shield.

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0  
0 Operator positions: The number of each position type required  
0 depends on the specific office configuration.

0 | -Type 1 position (now called "Database Gateway" position):  
0 Provides standard voice access to the  
0 DMS and a 56Kb/s datalink to the IBM Directory  
0 Assistance database. Information to/from the DA  
0 database is shared with other positions in the  
0 token ring via the Multistation Access Unit. There  
0 must be two Type 1 positions in each token ring  
0 for redundant IBM DA access.

0 | -Type 2 position (now called "DMS Gateway" position):  
0 Provides standard voice access to the  
0 DMS. A 56Kb/s datalink to DMS is shared with  
0 other positions in the token ring via the  
0 Multistation Access Unit. Two positions in  
0 each cluster of four must be Type 2  
0 positions for redundant configurations.

0 | -Type 3 position (now called "Operator" position):  
0 Provides standard voice access to the DMS.  
0 Additional information is accessible via the  
0 Token Ring.

0 Three port conference circuits: Each TOPS MPX position requires  
0 one three port conference circuit at the DMS. This  
0 is the same requirement as for other TOPS MP  
0 applications.

0 Power Strip: Each TOPS MPX position requires one power strip  
0 to supply AC power to the monitor, controller and  
0 modem. This strip uses a twist-lock connector  
0 on the power cord so a matching outlet must be  
0 provided. A power strip with a straight blade  
0 connector is available but the twist-lock type  
0 is the standard type.

0 TOPS MPX PS2 Bracket Assy: A bracket assembly required for the  
0 TOPS MPX positions. One bracket is required per  
0 TOPS MPX Type 1, Type 2 and Type 3 position. This  
0 bracket is included in the current MPX position  
0 building blocks. The bracket must be provided  
0 separately if positions are provisioned without  
0 building blocks.

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## 0 HOST AND REMOTE OPERATOR CENTRALIZATION

0  
0 OC data links are required between the host DMS200 and the remote  
0 DMS200. These OC data links must be assigned to a DCM at both of-  
0 fices. Each link must be assigned to the first circuit of slot 0  
0 on the DCM. Only one data link may be assigned per DCM. The other  
0 circuits on the DCM may be used for the connection of OC voice  
0 links or other type trunk circuits. A minimum of two OC  
0 datalinks are required per remote office and a maximum of four OC  
0 datalinks can be assigned per OC remote office. Each pair of OC  
0 datalinks has a traffic capacity equal to 50 positions. A host OC  
0 can be assigned a maximum of 15 remote OC offices.

## 0 TOPS QMS

0  
0 The TOPS QMS External MIS feature, if provided, requires one or  
0 more EMPC circuit packs on the IOC shelf.

0 The TOPS QMS Senior Operator feature requires a TOPS loop-around  
0 trunk for each Senior Operator established. This may require ad-  
0 ditional trunks or T1 connections in the TOPS office.

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable.

## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable.

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## 0 CIRCUITS PER CARD

0  
0 Not applicable.

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable.

0

0

0 1.1.3 PROVISIONING CONSIDERATIONS

0

## 0 TOPS MP PROVISIONING

0  
0 A list of equipment items and provisioning rules for TOPS MP fol-  
0 lows.

## 0 NTZZ29AA Position Controller Equipment Cabinet

0 Provide one PCE for each four TPC shelves required.

0 NTZZ29AA = Qty of NTZZ29VA/4 (round up).

## 0 NTZZ29BA Auxiliary Access Equipment Cabinet

0 Provide one AAE for each four PCE cabinets required.

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0 NTZZ29BA = Qty of NTZZ29AA/4 (round up).

0 NTZZ29CB Modular TOPS MP Position

0 Provide one for each TOPS MP position required including In-  
0 charge, Assistant and Force Manager positions. These positions  
0 do not include a desk for mounting the position equipment,  
0 headset jacks or keyboards. These items must be provisioned  
0 separately.

0 NTZZ29CB = Qty of Modular TOPS MP positions required.

0 The NTZZ29CA is no longer available for ordering.

0 NTZZ29CA Modular TOPS MP Position (MD, Do not order)

0 Provide one for each TOPS MP position required including In-  
0 charge, Assistant and Force Manager positions. These positions  
0 do not include a desk for mounting the position equipment or  
0 keyboards. These must be provisioned separately.

0 NTZZ29CA = Qty of Modular TOPS MP positions required.

0 NTZZ29ZA Headset Jack Assembly 6.5 Foot

0 Provide one for each TOPS MP position required for which the  
0 TOPS MP controller to headset jack location is 6.5 feet or  
0 less.

0 NTZZ29ZA = Qty of Modular TOPS MP positions required for  
0 which the TOPS MP controller to headset jack location is 6.5  
0 feet or less.

0 NTZZ36AA Integrated Headset Jack Assembly 10 Foot

0 Provide one for each TOPS MP position required for which the  
0 TOPS MP controller to headset jack location is greater than  
0 6,5 feet but less than or equal to 10 feet.

0 NTZZ36AA = Qty of Modular TOPS MP positions required for  
0 which the TOPS MP controller to headset jack location is  
0 greater than 6.5 feet but less than or equal to 10 feet.

0 NTZZ29DA Integrated TOPS MP Position.

0 Provide one for each TOPS MP position required including In-  
0 charge, Assistant and Force Manager positions. The keyboard

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0 and the desk equipped with headset jacks must be provisioned  
0 separately.

0 NTZZ29DA = Qty of Integrated TOPS MP positions required.

0 NT0M36AE English Universal Keyboard

0 Provide one for each TOPS MP position required including In-  
0 charge, Assistant and Force Manager positions. This is the  
0 standard English language keyboard.

0 NT0M36AE = Qty of TOPS MP positions (NTZZ29CB or NTZZ29DA)  
0 required.

0 NT0M36AA French Universal Keyboard

0 Provide one for each TOPS MP position required including In-  
0 charge, Assistant and Force Manager positions. This is the  
0 standard French language keyboard.

0 NT0M36AA = Qty of TOPS MP positions (NTZZ29CB or NTZZ29DA)  
0 required.

0 NT0M36AH English IBM DA Keyboard

0 Provide one for each TOPS MP position required including In-  
0 charge, Assistant and Force Manager positions. This is the  
0 keyboard for positions providing IBM DA service.

0 NT0M36AH = Qty of TOPS MP IBM DA positions (NTZZ29CB and  
0 NTZZ29DA) required.

0 NP154 Integrated TOPS MP Position Desk

0 Provide one for each NTZZ29DA provided.

0 NP154 = NTZZ29DA.

0 NTNX5305 Ground Bar

0 Provide one for a maximum of 128 positions.

0 NTNX5305 = NTZZ29CB or NTZZ29DA/128.

0 NTZZ29KA Computer Based Training System

0 Provide one for each Computer Based Training required.

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0 NTZZ29KA = Number of Computer Based Training Systems re-  
0 quired by the Customer.

0 NTZZ29VA 4 Operator TPC Shelf (SCSI)

0 Provide one for each four operator positions required in-  
0 cluding In-Charge, Assistant and Force Manager positions.

0 NTZZ29VA = Number of positions/4, round up.

0 NTZZ29MA UDS Modem Shelf Assembly

0 Provide up to four NTZZ29MA per AAE based on office features  
0 and PCE configuration. For a non-TMS office with the ORDB fea-  
0 ture, provide one NTZZ29MA per AAE. For a non-TMS office with  
0 the DA feature, provide one NTZZ29MA per AAE in a line-up with  
0 1 or 2 PCE and provide two NTZZ29MA per AAE in a line-up with  
0 3 or 4 PCE. For a non-TMS office with both the ORDB and DA  
0 feature, provide two NTZZ29MA per AAE in a line-up with 1 or 2  
0 PCE and three NTZZ29MA per AAE in a line-up with 3 or 4 PCE.  
0 The TOPS MP TA feature has no NTZZ29MA provisioning require-  
0 ment in a non-TMS office.

0 For an integrated TMS office provide one NTZZ29MA per AAE in  
0 a line-up with 1 or 2 PCE and provide two NTZZ29MA per AAE in  
0 a line-up with 3 or 4 PCE. The NTZZ29MA provisioning in a TMS  
0 office includes the TOPS MP TA, TOPS MP DA and TOPS MP ORDB  
0 features capability.

0 For a dual HSDA office (field application only), provide  
0 three NTZZ29MA per AAE in a line-up with 1 or 2 PCE, and pro-  
0 vide four NTZZ29MA per AAE in a line-up with 3 or 4 PCE.

0 NTZZ29MA = NTZZ29BA for a non-TMS office with the ORDB fea-  
0 ture only.

0 NTZZ29MA = NTZZ29AA/2 (round up) for a non-TMS office with  
0 the DA feature only.

0 NTZZ29MA = NTZZ29BA + ((NTZZ29AA/2 (round up))) for a non-TMS  
0 office with both the ORDB and DA features.

0 The presence of the TA feature in addition to the ORDB or  
0 the DA feature does not effect the calculations.

0 NTZZ29MA = NTZZ29AA/2 (round up) for a TMS office.

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0 NTZZ29MA = NTZZ29AA/2 (round up) + 2 for a dual HSDA office.

0 NTZZ29NA Modem Filler Assembly

0 Provide one for each unequipped UDS Modem Shelf mounting lo-  
0 cation on NTZZ29BA.

0 NTZZ29NA = (NTZZ29BA \* 3) - NTZZ29MA.

0 62125086 UDS 212A Modem Card

0 Provide one for each NTZZ29VA TPC for TAMI access.

0 62125086 = NTZZ29VA

0 64565007 UDS 56kbps DSU Card

0 Provide up to four 64565007 per NTZZ29VA based on office  
0 features and NTZZ29AA configuration. For a non-TMS office with  
0 the ORDB feature, provide one 64565007 per NTZZ29VA. For a  
0 non-TMS office with the DA feature, provide two 64565007 per  
0 NTZZ29VA. For a non-TMS office with both the ORDB and DA fea-  
0 ture, provide three 64565007 per NTZZ29VA.

0 For an integrated TMS office provide two 64565007 per  
0 NTZZ29VA.

0 For a dual HSDA office (field application only), provide  
0 four 64565007 per NTZZ29VA.

0 64565007 = NTZZ29VA for a non-TMS office with the ORDB fea-  
0 ture only.

0 64565007 = NTZZ29VA \* 2 for a non-TMS office with the DA  
0 feature only.

0 64565007 = NTZZ29VA \* 3 for a non-TMS office with both the  
0 ORDB and DA features.

0 The presence of the TA feature in addition to the ORDB or  
0 the DA feature does not effect the calculations.

0 64565007 = NTZZ29VA \* 2 for a TMS office.

0 64565007 = NTZZ29VA \* 4 for a dual HSDA office.

0 NT0X91AG TOPS MP AAE Alarm CP (12-port)

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0 Provide one NT0X91AG per NTZZ29BA for offices being upgraded  
0 to support Dual HSDA. Field application only.

0 NTZZ29TA High Speed Data Access

0 Provide one per NTZZ29VA for non-TMS offices with ORDB only,  
0 non-TMS offices with DA only or TMS offices. Provide two per  
0 NTZZ29VA for non-TMS offices with both ORDB and DA. Provide  
0 two per NTZZ29VA for dual HSDA offices.

0 NTZZ29TA = NTZZ29VA for non-TMS offices with ORDB only,  
0 non-TMS offices with DA only or TMS offices.

0 NTZZ29TA = NTZZ29VA \* 2 for non-TMS offices with both ORDB  
0 and DA.

0 NTZZ29TA = NTZZ29VA \* 2 for dual HSDA offices.

0 TOPS MP offices provisioned as TOPS MP TA only offices which  
0 add the DA or ORDB feature must provide enough NTZZ29TA to re-  
0 place any existing NTNX62AA HSDA.

0 TOPS MP offices provisioned as non-TMS offices which convert  
0 to TMS for any reason must provide enough NTZZ29TA to replace  
0 any existing NTNX62AA HSDA.

0 NTZZ29UA High Speed Line Access

0 Provide one for each TOPS MP position required including the  
0 In-Charge, Assistant and Force Manager positions.

0 NTZZ29UA = Number of TOPS MP positions required (NTZZ29CA  
0 and NTZZ29DA).

0 NT0X50AA Filler Face Plate

0 Provide one for each unequipped NTZZ29TA and NTZZ29UA slot  
0 position on the NTZZ29VA. Provide 14 NT0X50AA for any une-  
0 quipped TPC positions on a PCE cabinet (NTZZ29AA).

0 
$$\text{NT0X50AA} = ((\text{NTZZ29VA} * 6) - (\text{NTZZ29TA} + \text{NTZZ29UA})) +$$
  
0 
$$(((\text{NTZZ29AA} * 4) - \text{NTZZ29VA})) * 14)$$

0 NT0X50AE Filler Face Plate

0 Provide four NT0X50AE for each unequipped TPC position on a  
0 PCE cabinet (NTZZ29AA).

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0  $NT0X50AE = ((NTZZ29AA * 4) - NTZZ29VA) * 4$

0 NTNX54BA Aluminum Shield CP

0 Provide one NTNX54BA for each unequipped TPC position on a  
0 PCE cabinet (NTZZ29AA).

0  $NTNX54BA = (NTZZ29AA * 4) - NTZZ29VA$

0 A0355018 Modular (Teledapt) Adapter

0 Provide one per 8 TOPS MP position required.

0  $A0355018 = TOPS MP positions (NTZZ29CA or NTZZ29DA)/8$  (round  
0 up).

0 P0696402 Floor Mounting Template

0 Provide one per new TOPS MP office.

0  $P0696402 = One per new TOPS office.$

0 P0696219 Aisle Line-up Label

0 Provide one per two line-ups of PCE 0-7 and AAE 0-1.

0  $P0696219 = Number of line-ups/2.$

0 The following equipment items and provisioning are for informa-  
0 tion on provisioning Canadian jobs. For U.S. jobs this equipment  
0 is provisioned by the Building Studies Engineers.

0 NTNX55AA Cabinet Top Cable Trough

0 Provide one for each NTZZ29AA and NTZZ29BA.

0  $NTNX55AA = Qty of NTZZ29AA + NTZZ29BA - 1$

0 NTZZ29EA Cable Trough Cover Plates

0 Provide one for the gap between adjacent NTNX55AA.

0  $NTZZ29EA = Qty of NTZZ29AA + NTZZ29BA - 1$

0 NTZZ29FA Cable Trough End Plates (Canadian only)

0

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0 Provide one for each line-up. A line-up is an NTZZ29BA and  
0 from one to four NTZZ29AA.

0 NTZZ29FA = Qty of NTZZ29BA.

0 NTZZ29GA Cabinet Concrete EQ Floor Anchors Zone 1-3

0 Provide one for each NTZZ29AA or NTZZ29BA to be mounted on a  
0 concrete floor in an earthquake office in zone 1-3

0 NTZZ29GA = Qty of NTZZ29AA + NTZZ29BA in an office with a  
0 concrete floor in earthquake zone 1-3.

0 NTZZ29HA Cabinet Concrete EQ Floor Anchors Zone 4-7

0 Provide one for each NTZZ29AA or NTZZ29BA to be mounted on a  
0 concrete floor in an earthquake office in zone 4-7

0 NTZZ29HA = Qty of NTZZ29AA + NTZZ29BA in an office with a  
0 concrete floor in earthquake zone 4-7.

0 NTZZ29JA Cabinet Concrete Non-EQ Floor Anchors

0 Provide one for each NTZZ29AA or NTZZ29BA to be mounted on a  
0 concrete floor in a non-earthquake office.

0 NTZZ29JA = Qty of NTZZ29AA + NTZZ29BA in an office with a  
0 concrete floor in a non-earthquake office.

0 NTNX2531 Right End Panel

0 Provide one for each PCE line-up. A line-up is one to four  
0 NTZZ29AA and a NTZZ29BA.

0 NTNX2531 = NTZZ29AA/4 (round up).

0 NTNX2532 Left End Panel

0 Provide one for each PCE line-up. A line-up is one to four  
0 NTZZ29AA and a NTZZ29BA.

0 NTNX2532 = NTZZ29AA/4 (round-up)

0 NTNX2544 Adjacent Frame Attachment Hardware

0

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0 Provide four for each adjacent cabinet in a non-earthquake  
0 office and six for each adjacent frame in an earthquake of-  
0 fice.

0  $NTNX2544 = ((NTZZ29AA - ((NTZZ29AA/4 \text{ round down}) * 4) - 1) * 4) + (((NTZZ29AA/4 \text{ round down}) * 3) * 4)$  for non-earthquake  
0 offices.  
0

0  $NTNX2544 = ((NTZZ29AA - ((NTZZ29AA/4 \text{ round down}) * 4) - 1) * 6) + (((NTZZ29AA/4 \text{ round down}) * 3) * 6)$  for earthquake of-  
0 fices.  
0

0 **NTNX2545 Adjacent Frame Attachment Hardware EMI**

0 Provide one for each adjacent cabinet.

0  $NTNX2545 = (NTZZ29AA - ((NTZZ29AA/4 \text{ round down}) * 4) - 1) +$   
0  $((NTZZ29AA/4 \text{ round down}) * 3).$

0 **NTNX56AA Cabinet Raised Floor Anchor**

0 Provide four for each cabinet mounted on a raised floor.

0  $NTNX56AA = (NTZZ29AA + NTZZ29BA) * 4$  for cabinets mounted on  
0 a raised floor.

0 **NTNX56BA Furniture Concrete Floor Anchor**

0 Provide four for each Integrated TOPS MP position (NTZZ29DA)  
0 mounted on a concrete floor.

0  $NTNX56BA = NTZZ29DA * 4$  for concrete floor mounted Inte-  
0 grated TOPS MP positions.

0 **NTNX56CA Furniture Raised Floor Anchor.**

0 Provide four for each Integrated TOPS MP position (NTZZ29DA)  
0 mounted on a raised floor.

0  $NTNX56CA = NTZZ29DA * 4$  for raised floor mounted Integrated  
0 TOPS MP position.

0 **NT0M36AF NT4X81DA Keyboard Upgrade PC Kit**

0 Provide one NT0M36AF for each NT4X81DA keyboard requiring  
0 upgrade to a NT0M36AE keyboard for CCI DA, ORDB or both.

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0 NT0M36AK NT0M36AE Keyboard Upgrade PC Kit

0 Provide one NT0M36AK for each NT0M36AE keyboard requiring  
0 upgrade to a NT0M36AH keyboard for IBM DA, ORDB or both.

0 20000019-01 Wicat Computer Based Training System

0 Provide the customer specified quantity of CBT for training  
0 TOPS MP operators. One system can connect up to 16 TOPS MP po-  
0 sitions for training purposes.

0 940-001-001T Wicat Cabinet (Brown)

0 Provide one per each 20000019-01 Wicat CBT provided.

0 Wicat CBT Spare Circuit Boards

0 Provide any or all of the circuit boards listed below as  
0 spare if the Customer requires spare circuit boards for the  
0 Wicat CBT.

0 810-030-002 ICI Board

0 810-167-001 2MB Memory Board

0 810-220-001 PCM Audio Delivery Board

0 909-005-003 SCSI Hard Disk Drive

0 917-022-001 SCSI Host Interface

0 917-163-001 12.5 MHz CPU Board With 1MB Memory

0 919-003-001 SCSI Cartridge Tape Drive

0 TOPS MP Position Labels

0 Provide two sets of the following labels, choosing the range  
0 of position numbers to suit job requirements. The second set  
0 allows the customer to label spares when replacing failed  
0 equipment.

0 P0709162 TOPS Position Numbering Label (Pos 0000-0071)

0 P0709163 TOPS Position Numbering Label (Pos 0072-0143)

0 P0709164 TOPS Position Numbering Label (Pos 0144-0215)

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0 P0709165 TOPS Position Numbering Label (Pos 0216-0287)  
0 P0709166 TOPS Position Numbering Label (Pos 0288-0359)  
0 P0709167 TOPS Position Numbering Label (Pos 0360-0431)  
0 P0709168 TOPS Position Numbering Label (Pos 0432-0503)  
0 P0709169 TOPS Position Numbering Label (Pos 0504-0575)  
0 P0709170 TOPS Position Numbering Label (Pos 0576-0647)  
0 P0709171 TOPS Position Numbering Label (Pos 0648-0719)  
0 P0709172 TOPS Position Numbering Label (Pos 0720-0791)  
0 P0709173 TOPS Position Numbering Label (Pos 0792-0863)  
0 P0709174 TOPS Position Numbering Label (Pos 0864-0935)  
0 P0709175 TOPS Position Numbering Label (Pos 0936-1007)  
0 P0709176 TOPS Position Numbering Label (Pos 1008-1023)

0 62025201 UDS Stand-alone 202 S/T Modem

0 Provide one 62025201 for each SADS, FADS, TADS, HADS, NOTIS  
0 SNAC, QMFADS, QFADS or QTADS printer operating at 1200 baud.

0 61035119 UDS Stand-alone 108 Modem

0 Provide one 62025201 for each SADS, FADS, TADS, HADS, NOTIS,  
0 SNAC, QMFADS, QFADS, QTADS, Voice Quote, Auto Voice Quote or  
0 Record printer operating at 300 baud.

0 65001860 UDS Modem Shelf Spare Power Supply

0 Provide one or more UDS Modem Shelf Spare Power Supply per  
0 Customer request as a spare power supply for the UDS modem  
0 shelves mounted in the AAE cabinet (NTZZ29BA).

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## 0 TOPS MPX PROVISIONING

0  
0 TOPS MPX Position Type Calculation.

0 A. Quantity of positions required.

0 Range = 0 - 1024

0 B. Cluster size required.

0 Range = 4

0 C. Maximum positions per token ring.

0 Range = 16, 20. Default = 16

0 D. Redundant or non-redundant Type 2 positions

0 Range = redundant, non-redundant Default = redundant

0 For position availability reasons, non-redundant Type 2 po-  
0 sitions are not recommended, and are not supported by this  
0 document.

0 E. Growth by cluster or even growth

0 Range = cluster, even. Default = cluster

0 F.  $A/C = \text{Quantity of Token Rings required (round Up)}$

0 \*\*\*\*\*

0 IF using "Growth by cluster" (see item E) Proceed with item G-U.

0 IF using "Even growth" (see item E) Skip to item V-FF.

0 \*\*\*\*\*

0 G.  $A/4$  (round down) = FC (full clusters)

0 H.  $A - (FC * 4) = RP$

0 J. If  $RP > 0$ , then  $TR2QTY = 1$

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0 If  $RP = 0$ , then  $TR2QTY = 0$

0 K.  $FC/F$  (round down) =  $MIN\_C$

0 L.  $FC - (F * MIN\_C) = RC$

0 M.  $RC = TR1QTY$

0 N.  $F - TR1QTY - TR2QTY = TR3QTY$

0 P.  $TR1SIZE = (MIN\_C * 4) + 4$

0  $TR2SIZE = (MIN\_C * 4) + RP$

0  $TR3SIZE = (MIN\_C * 4)$

0 Q. Refer to Table C using the value of  $TR1SIZE$  to determine the  
0 quantity of Type 1, Type 2 and Type 3 positions required. The  
0 Type 1 position quantity from the table shall become  $TR1TYPE1$ ,  
0 the Type 2 position quantity from the table shall become  
0  $TR1TYPE2$  and the Type 3 position quantity from the table shall  
0 become  $TR1TYPE3$ . Repeat this process for the value of  $TR2SIZE$ ,  
0 creating  $TR2TYPE1$ ,  $TR2TYPE2$  and  $TR2TYPE3$  values. Repeat the  
0 process once more with the value of  $TR3SIZE$  to create the val-  
0 ues for  $TR3TYPE1$ ,  $TR3TYPE2$  and  $TR3TYPE3$ .

0 R. Total Type 1 position quantity =  $(TR1TYPE1 * TR1QTY) +$   
0  $(TR2TYPE1 * TR2QTY) + (TR3TYPE1 * TR3QTY)$

0 S. Total Type 2 position quantity =  $(TR1TYPE2 * TR1QTY) +$   
0  $(TR2TYPE2 * TR2QTY) + (TR3TYPE2 * TR3QTY)$

0 T. Total Type 3 position quantity =  $(TR1TYPE3 * TR1QTY) +$   
0  $(TR2TYPE3 * TR2QTY) + (TR3TYPE3 * TR3QTY)$

0 U.  $A_{must} = R + S + T$ .

0 \*\*\*\*\*

0 When using "Even growth" (see item E), proceed with item V-FF.

0 \*\*\*\*\*

0 V.  $A/F$  (round down) = Minimum positions per ring ( $MIN\_P$ ).

0 W.  $A - (MIN\_P * F) = XP$ .

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0 X.  $TR1QTY = F - XP.$

0 Y.  $TR2QTY = XP.$

0 Z.  $TR1SIZE = MIN\_P.$

0 AA.  $TR2SIZE = MIN\_P + 1.$

0 BB. Refer to TABLE C with TR1SIZE to determine the Type 1, Type  
0 2 and Type 3 position quantities required. The quantity of  
0 Type 1 positions shall be the value of TR1TYPE1, the quan-  
0 tity of Type 2 positions shall be the value of TR1TYPE2 and  
0 the quantity of Type 3 positions shall be the value of  
0 TR1TYPE3. Repeat this process for TR2SIZE with the Type 1,  
0 Type 2 and Type 3 position quantities becoming the values of  
0 TR2TYPE1, TR2TYPE2 and TR2TYPE3 respectively.

0 CC. Total Type 1 position quantity =  $(TR1TYPE1 * TR1QTY) +$   
0  $(TR2TYPE1 * TR2QTY).$

0 DD. Total Type 2 position quantity =  $(TR1TYPE2 * TR1QTY) +$   
0  $(TR2TYPE2 * TR2QTY).$

0 EE. Total Type 3 position quantity =  $(TR1TYPE3 * TR1QTY) +$   
0  $(TR2TYPE3 * TR2QTY).$

0 FF.  $A\ must = CC + DD + EE.$

0 Please note that these calculations do not address non-redundant  
0 Type 2 position calculations as that configuration is not sup-  
0 ported by this document.

0 For a list of equipment items and provisioning rules for TOPS  
0 MPX, refer to the NTN51BA and TOPS\_MPX Engineering Manual  
0 Sections.

## 0 MPC PROVISIONING

0  
0 Each MPC or EMPC used for DMS to DAS/C access will require one  
0 (1) 9600 baud modem. Refer to ECM 633 for appropriate modem or-  
0 dering information (See Case R96).

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0 The call control links from the DMS to the DAS are provided via  
0 either Multi-Protocol Controllers (MPCs) or Enhanced Multi-  
0 Protocol Controllers (EMPCs). The MPCs or EMPCs are mounted on  
0 IOC shelves and are provisioned based on traffic. Each MPC is ca-  
0 pable of handling 9000 Busy Hour Calls and each EMPC can handle  
0 18000 BHC. A maximum of sixteen MPCs or EMPCs is allowed per ap-  
0 plication. The total DA traffic should be divided by 9000 to de-  
0 termine how many MPCs are required, or by 18000 when using EMPCs.  
0 The number of MPCs/EMPCs should be doubled to provide redundancy  
0 and spread over as many IOCs as possible to minimize the impact  
0 of an IOC failure. Refer to ECM 482 for additional information  
0 about EMPC link provisioning and ECM 468 for a diagram showing  
0 system configuration.

0 The MultiProtocol Converters (MPC/EMPC) used for the datalink  
0 from the DMS to the DA database must be provisioned based on  
0 traffic. Each MPC/EMPC CP will use only one port.

0 LET BHC = total Busy Hour Calls requiring DA access  
0 N = preliminary Number of MPCs/EMPCs required  
0 TC = Total MPC CPs required

0 
$$N = BHC / 9,000 \quad (\text{Round Up}) \text{ MPC}$$

0 - or -

0 
$$N = BHC / 18,000 \quad (\text{Round Up}) \text{ EMPC}$$

0 
$$TC = N * 2$$

0 The preliminary number of MPCs/EMPCs is doubled to provide the  
0 necessary redundancy. In applications requiring more than eight  
0 MPCs/EMPCs for traffic, it is not possible to provide "N \* 2" re-  
0 dundancy, due to the limit of sixteen (maximum) MPCs/EMPCs per  
0 application. In such a configuration sparing should be based on  
0 the concept that no single point failure should degrade capacity.  
0 The MPCs/EMPCs should be spread over as many IOCs as possible and  
0 spares provisioned based on the number of MPCs/EMPCs that would  
0 be lost if the most heavily loaded IOC were to be lost. For exam-  
0 ple, if an office needed twelve MPCs and had four IOCs, three  
0 MPCs/EMPCs per IOC (12 total) would carry the traffic. By provi-  
0 sioning four MPCs/EMPCs per IOC the loss of any individual IOC  
0 would still leave twelve working MPCs/EMPCs. When possible, "N \*  
0 2" sparing shall be provisioned.

0

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## 0 ARU TRUNK PROVISIONING

0  
0 Directory Assistance/Intercept/ARU Trunk Provisioning

- 0 1. Calculate the quantity of DA/Intercept trunks required based  
0 on traffic requirements. Use standard CCS method.

0  $BHC \times HT/100 = CCS$  (Refer to the Poisson trunk capacity  
0 tables in NTP 297-1001-450)

0 Locate the CCS value in the table under the appropriate GOS  
0 to determine the number of trunks required.

- 0 2. Calculate the quantity of ARU trunks required based on  
0 DA/Intercept traffic requirements. Use standard CCS method.

0  $BHC \times HT/100 = CCS$  (Refer to the Poisson trunk capacity  
0 tables in NTP 297-1001-450)

0 Locate the CCS value in the table under the appropriate GOS  
0 to determine the number of trunks required.

0 Average ARU Holding Times are as follows:

0 - Calls not eligible for auto call completion = 12 sec.

0 - Calls eligible for auto call completion,  
0 call completion declined = 25 sec.

0 - Calls eligible for auto call completion,  
0 call completion accepted = 45 sec.

0 - Intercept calls = 12 sec.

- 0 3. Calculate the number of DA/Intercept DS1s required.

0  $DA/Intercept \text{ trunks required (Step 1)} / 24 = DS1s \text{ required}$

- 0 4. Calculate the number of ARU DS1s required.

0  $ARU \text{ trunks required (Step 2)} / 24 = DS1s \text{ required}$

- 0 5. Calculate the number of DTC required based on DTC real  
0 time capacity

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0  
0 DA/Intercept BHC x 90 ms / 612,000 ms = Number of DTC  
0 required.

- 0 6. Spread the DA/Intercept DS1s evenly over the number of  
0 required DTC. Spread the ARU DS1s evenly over the number of  
0 required DTC. Calculate the the number of attempts per DTC  
0 using the following formulas:

0 DA/Intercept trunks:  $28 \text{ CCS} \times 100 / \text{Holding time} = \text{Attempts}$   
0  $\text{per trunk} \times 24 \text{ trunks per DS1} \times \text{number}$   
0  $\text{of DS1} = \text{attempts per DTC}.$

0 ARU trunks :  $36 \text{ CCS} \times 100 / \text{Holding time} = \text{Attempts per}$   
0  $\text{trunk} \times 24 \text{ trunks per DS1} \times \text{number of DS1} =$   
0  $\text{attempts per DTC}.$

0 (36 CCS is used for the ARU trunks rather than 28 CCS  
0 because of the extremely low overhead associated with ARU  
0 connections.)

- 0 7. If any of the DTCs has attempts equal to more than 13,600,  
0 then add one or more DTC and recalculate attempts per DTC.  
0 Enough DTC must be provided to achieve attempts less than or  
0 or equal to 13,600.

0 Example :

0 (The numbers used are for this example only)

0 DA/Intercept BHC = 86,000  
0 DA/Intercept HT = 42 sec  
0 ARU HT = 14 sec

- 0 1. Total DA/Intercept trunks required = 1290 (Based on 28 CCS  
0 per trunk).  
0 2. Total ARU trunks required = 336 (Based on 28 CCS per trunk).  
0 3. DA/Intercept DS1s =  $1290/24 = 54 \text{ DS1s}$   
0 4. ARU DS1s =  $336/24 = 14 \text{ DS1s}$

0 (Note the total DS1s required divided by the DTC physical  
0 capacity of 20 DS1s = 4 DTC are required based on traffic).

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0 5.  $86000 \times 90 \text{ ms} / 612000 \text{ ms} = 13 \text{ DTC}$  (Based on real time  
0 capacity).

0 6. DS1s spread evenly over the 13 DTC =

0 DTC 1- 1 ARU DS1  $((36 \times 100 / 14) \times 24) \times 1 = 6172$   
0 11 4 DA/Intc DS1  $((28 \times 100 / 42) \times 24) \times 4 = 6400$   
0 Total attempts 12572

0 DTC 12 1 ARU DS1  $((36 \times 100 / 14) \times 24) \times 1 = 6172$   
0 5 DA/Intc DS1  $((28 \times 100 / 42) \times 24) \times 5 = 8000$   
0 Total attempts 14172

0 DTC 13 2 ARU DS1  $((36 \times 100 / 14) \times 24) \times 2 = 12344$   
0 5 DA/Intc DS1  $((28 \times 100 / 42) \times 24) \times 5 = 8000$   
0 Total attempts 20344

0 DTC 1-11 are well within the 13,600 attempts per DTC limit.  
0 DTC 12 and DTC 13 exceed this limit. A DTC must be added and  
0 the DS1s re-spread over 14 DTC.

0 DTC 1-11 remain the same.

0 DTC 12 is configured the same as DTC 1-11.

0 DTC 13 and 14 are configured with:

0 1 ARU DS1  $((36 \times 100 / 14) \times 24) \times 2 = 6172$   
0 3 DA/Intc DS1  $((28 \times 100 / 42) \times 24) \times 2 = 3200$   
0 Total attempts 9372

0 \*\*\*\*\*  
0 \* 14 DTC are required to accomdate the 68 DS1s for the \*  
0 \* DA/Intc/ARU trunks for this example \*  
0 \*\*\*\*\*

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## 0 TOPS MPX TABLES

## 0 TOKEN RING POSITION REQUIREMENTS

## 0 REDUNDANT CONFIGURATIONS

| SIZE_TR | TYPE 1 | TYPE 2 | TYPE 3 |
|---------|--------|--------|--------|
| 6       | 2      | 4      | 0      |
| 7       | 2      | 4      | 1      |
| 8       | 2      | 4      | 2      |
| 9       | 2      | 5      | 2      |
| 10      | 2      | 6      | 2      |
| 11      | 2      | 6      | 3      |
| 12      | 2      | 6      | 4      |
| 13      | 2      | 7      | 4      |
| 14      | 2      | 8      | 4      |
| 15      | 2      | 8      | 5      |
| 16      | 2      | 8      | 6      |
| 17      | 2      | 9      | 6      |
| 18      | 2      | 10     | 6      |
| 19      | 2      | 10     | 7      |
| 20      | 2      | 10     | 8      |

0 TABLE C

0 The table is based on four position cluster size.

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0 Positions must be provisioned for the MPX system to obtain the proper  
0 mix of position types to provide database access facilities for each  
0 token ring. Table A reflects token rings limited to sixteen positions,  
0 redundant Type 2 positions be provided four position cluster size and  
0 growth by clusters. The technical limitation is a maximum of twenty  
0 positions per ring. If a ring must be arranged for more than sixteen  
0 positions, the seventeenth and eighteenth positions must be Type 2 and  
0 the nineteenth and twentieth should be Type 3. When a token ring grows  
0 to more than sixteen positions, additional positions shall be added to  
0 that ring until the maximum of twenty positions is reached before add-  
0 ing to the next token ring. Provisioning from the table will minimize  
0 the number of Type 2 positions needed. Table A provides the most re-  
0 liable operational configuration as it includes redundant Type 2 posi-  
0 tions. This document does not support non-redundant Type 2  
0 provisioning information.

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0 Table A is arranged in columns, with Token Rings (TR) 0-5 subdivided  
0 to show how many Type 1,2 and 3 positions are required to provision  
0 the total number of positions indicated in the leftmost column. The  
0 columns labeled "M" indicates that three MAUs are required and the  
0 columns labeled "B" indicates that one BIX block is required for each  
0 Token Ring.

| QTY<br>MPX<br>POS | TR 0      | TR 1      | TR 2      | TR 3      | TR 4      | TR 5      |
|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|                   | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B |
| 4                 | 2 2 3 1   |           |           |           |           |           |
| 5                 | 2 3 3 1   |           |           |           |           |           |
| 6                 | 2 4 3 1   |           |           |           |           |           |
| 7                 | 2 4 1 3 1 |           |           |           |           |           |
| 8                 | 2 4 2 3 1 |           |           |           |           |           |
| 9                 | 2 5 2 3 1 |           |           |           |           |           |
| 10                | 2 6 2 3 1 |           |           |           |           |           |
| 11                | 2 6 3 3 1 |           |           |           |           |           |
| 12                | 2 6 4 3 1 |           |           |           |           |           |
| 13                | 2 7 4 3 1 |           |           |           |           |           |
| 14                | 2 8 4 3 1 |           |           |           |           |           |
| 15                | 2 8 5 3 1 |           |           |           |           |           |
| 16                | 2 8 6 3 1 |           |           |           |           |           |
| 17                | 2 5 2 3 1 | 2 4 2 3 1 |           |           |           |           |
| 18                | 2 6 2 3 1 | 2 4 2 3 1 |           |           |           |           |
| 19                | 2 6 3 3 1 | 2 4 2 3 1 |           |           |           |           |
| 20                | 2 6 4 3 1 | 2 4 2 3 1 |           |           |           |           |
| 21                | 2 6 4 3 1 | 2 5 2 3 1 |           |           |           |           |
| 22                | 2 6 4 3 1 | 2 6 2 3 1 |           |           |           |           |
| 23                | 2 6 4 3 1 | 2 6 3 3 1 |           |           |           |           |
| 24                | 2 6 4 3 1 | 2 6 4 3 1 |           |           |           |           |
| 25                | 2 7 4 3 1 | 2 6 4 3 1 |           |           |           |           |
| 26                | 2 8 4 3 1 | 2 6 4 3 1 |           |           |           |           |
| 27                | 2 8 5 3 1 | 2 6 4 3 1 |           |           |           |           |
| 28                | 2 8 6 3 1 | 2 6 4 3 1 |           |           |           |           |
| 29                | 2 8 6 3 1 | 2 7 4 3 1 |           |           |           |           |
| 30                | 2 8 6 3 1 | 2 8 4 3 1 |           |           |           |           |
| 31                | 2 8 6 3 1 | 2 8 5 3 1 |           |           |           |           |
| 32                | 2 8 6 3 1 | 2 8 6 3 1 |           |           |           |           |
| 33                | 2 6 4 3 1 | 2 6 4 3 1 | 2 5 2 3 1 |           |           |           |
| 34                | 2 6 4 3 1 | 2 6 4 3 1 | 2 6 2 3 1 |           |           |           |
| 35                | 2 6 4 3 1 | 2 6 4 3 1 | 2 6 3 3 1 |           |           |           |
| 36                | 2 6 4 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |           |           |           |
| 37                | 2 7 4 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |           |           |           |
| 38                | 2 8 4 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |           |           |           |

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|   |    |           |           |           |  |  |  |
|---|----|-----------|-----------|-----------|--|--|--|
| 0 | 39 | 2 8 5 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |  |  |  |
| 0 | 40 | 2 8 6 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |  |  |  |
| 0 |    |           |           |           |  |  |  |

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|    |           |           |           |           |           |           |
|----|-----------|-----------|-----------|-----------|-----------|-----------|
| 83 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 5 3 1 | 2 6 4 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |
| 84 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 6 4 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |



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| QTY<br>MPX<br>POS | TR 0      | TR 1      | TR 2      | TR 3      | TR 4      | TR 5      |
|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|                   | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B |
| 85                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 7 4 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |
| 86                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 4 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |
| 87                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 5 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |
| 88                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 6 4 3 1 | 2 6 4 3 1 |
| 89                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 7 4 3 1 | 2 6 4 3 1 |
| 90                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 4 3 1 | 2 6 4 3 1 |
| 91                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 5 3 1 | 2 6 4 3 1 |
| 92                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 6 4 3 1 |
| 93                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 7 4 3 1 |
| 94                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 4 3 1 |
| 95                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 5 3 1 |
| 96                | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 | 2 8 6 3 1 |

TABLE A : MPX Position Provisioning

Since a single TOPS Message Switch can support a maximum of ninety-six (96) positions, configurations for more than 96 operators will require more than one TMS. To maintain as balanced a traffic load as possible, operator positions should be evenly spread over available TMSs. For example, to configure an office for 100 operators, the configuration specified in Table A for fifty operators should be provided twice, to balance the traffic evenly on the two TOPS Message Switches.

To illustrate how Table A should be interpreted and implemented, the following example is provided. An office requires 26 MPX operator positions. For 26 positions, Table A states:

| QTY<br>MPX<br>POS | TR 0      | TR 1      | TR 2      | TR 3      | TR 4      | TR 5      |
|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|                   | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B | 1 2 3 M B |
| 26                | 2 8 4 3 1 | 2 6 4 3 1 |           |           |           |           |

For 26 positions, two rings are required. There will be two Type 1 positions in each ring, eight Type 2 positions in the first ring and six in the second, and four Type 3 positions in each ring. Each ring will have three MAUs and one BIX block.

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0 This example office would be configured as follows:

| 0 | Ring #0 |           | Ring #1   |
|---|---------|-----------|-----------|
| 0 |         | (1)Type 1 | (1)Type 1 |
| 0 | MAU     | (2)Type 2 | (4)Type 2 |
| 0 |         | (1)Type 3 | (3)Type 3 |
| 0 |         | (1)Type 1 | (1)Type 1 |
| 0 | MAU     | (4)Type 2 | (2)Type 2 |
| 0 |         | (1)Type 3 | (1)Type 3 |
| 0 |         | (0)Type 1 | (0)Type 1 |
| 0 | MAU     | (2)Type 2 | (0)Type 2 |
| 0 |         | (2)Type 3 | (0)Type 3 |

0 EXAMPLE Configuration

# 0 TOPS MPX NOTES

0  
0 Note 1:

0 Force Management functions will be implemented using TOPS 4 or  
0 TOPS MP equipment. Provide one TOPS 4 or TOPS MP Force Manager  
0 position for each TOPS MPX Host or Standalone office. Refer to  
0 the Engineering Manual for details. The customer may provide this  
0 equipment. If NT must provide an MP Force Manager position for  
0 TOPS MPX, a TOPS MP position, a PCE, AAE, and all other associ-  
0 ated hardware must be ordered

0 Note 2:

0 The position numbering labels shall be provided per the position  
0 numbering information in the TOPS\_NUMB mnemonic. If these numbers  
0 overlap two or more labels, all the necessary labels shall be or-  
0 dered.

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## 0 TOPS QMS

0  
0 Force management Basic Statistics are provided to devices QTADS,  
0 QFADS and QMFADS. These devices replace the TADS, FADS and MFADS  
0 of the TOPS ACD. The QTADS, QFADS and QMFADS hardware require-  
0 ments are the same the TADS, FADS and MFADS. This hardware in-  
0 cludes a DMODEM circuit (NT3X02AA, NT3X03AA), a BELL108 or  
0 BELL202 compatible modem and a TTY. The QTADS, QFADS and QMFADS  
0 can co-exist in an office during the transition period from TOPS  
0 ACD to TOPS QMS. TOPS QMS queue information can only be reported  
0 to the QTADS, QFADS or QMFADS devices.

0 The FMCRT (Force Manager) provisioning rules remain the same. The  
0 Force Manager position must be a TOPS MP position or a Customer  
0 provided TOPS 4 position. A TOPS MPX position cannot serve as a  
0 Force Manger position. Only one Force Manager can be provisioned  
0 per TOPS office.

0 The new external MIS system can replace the FMCRT, QTADS, QFADS  
0 and QMFADS, can be used in parallel with those devices, or not  
0 implemented at all. The link for sending the statistics to the  
0 external MIS system is an X.25 link. This link is implemented via  
0 an Enhanced Multi-Protocol Controller (EMPC) mounted on an  
0 Input/Output Controller shelf in the TOPS host office. One EMPC  
0 port is required per link. An EMPC can provide up to two 56 Kbps  
0 ports. An appropriate modem must be provided per link based on  
0 the speed of the link and the interface requirements of the ex-  
0 ternal MIS system. The limit of one application per EMPC applies  
0 to these links allowing only one port of any EMPC to be used for  
0 this feature. The TOPS QMS MIS is limited to 16 links. The ex-  
0 ternal MIS system shall be provided by the customer.

0 The following information provides a calculation for determining  
0 the quantity of EMPC links required for an external MIS system.

0 The following calculation determines the average rate at which  
0 message data buffers are transmitted per minute by the toll  
0 switch to the MIS device.

0 Average msg bytes/call \* HDBH call attempts  
0 ----- = Buffers/min.  
0 8192 bytes \* 60

0

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0 Average message bytes/call = average position event msgs/call  
0 \* 45 bytes + average queue  
0 event/call \* 26

0 As there are typically two queue event messages and three posi-  
0 tion event messages per call, assume 187 average msg bytes/call  
0 if specific message counts are not available.

0 Once HDBH data buffers/minute have been calculated, compare the  
0 data rate with the transmission rate of the selected EMPC port.  
0 An EMPC card transmitting at 56 Kbs can send 52.5 buffers/minute.  
0 A .8 Erlang adjustment for link overhead changes the rated capac-  
0 ity of the EMPC card to 42 buffers/minute.

0 Percentage of link utilization can be computed using the follow-  
0 ing formula:

0 Buffers/minute  
0 ----- \* 100 = % link utilization on EMPC port  
0 42 minutes

0 If % utilization is greater than 100% for one link, links shall  
0 be added to reduce the link utilization below 100% per link.

0 An additional link shall be provisioned to protect against loss  
0 of data during a single link failure. All links share the data  
0 traffic load under normal operating conditions.

0 The above computations do not take into account encoding of Force  
0 Management messages and messages generated by non-call events.

0 Each Senior Operator established under the TOPS QMS software fea-  
0 ture requires a TOPS loop-around trunk.

0

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0 Remote Office - Traffic Operator Position Equip.

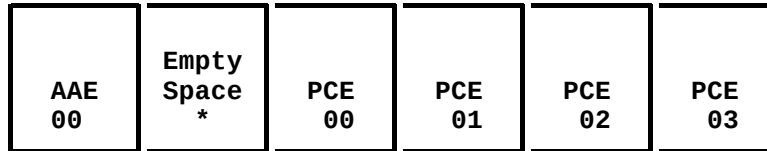
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0 1.1.4 OFFICE LAYOUT INFORMATION

0  
0 The standard TOPS MP line-up will be as follows:



0 Figure 13: Standard TOPS MP Line-up

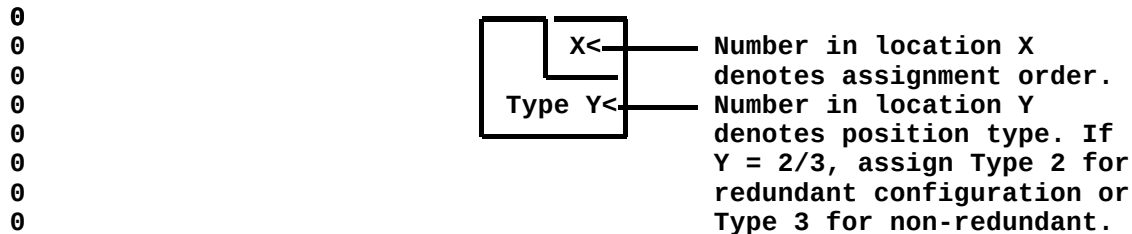
0 \* A 30 inch Empty Space between the AAE and PCE Cabinets  
0 is required for EMI and Earthquake requirements.

0 TOPS MPX positions must be located within 1200 feet of the MIS  
0 frame. The distance from the furthest position to the channel  
0 bank and Timing Source Generator (TSG) must not exceed 1500 feet.

0 The cables from each BIX block may be run via the Distributing  
0 Frame to the outside world. Terminations for 100 pairs per Token  
0 Ring must be provided for this configuration. Termination of the  
0 TSG cables should be done at the TSG to allow grounding directly  
0 on the Timing Source Generator.

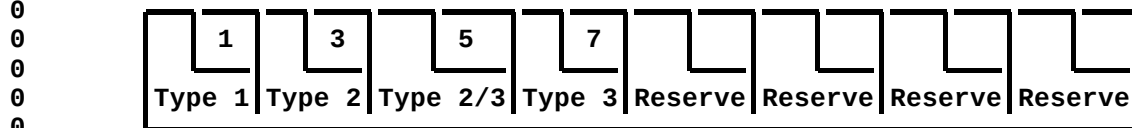
0 BIX blocks are used to terminate voice and data (not token ring)  
0 signals from the MPX positions. BIX blocks and MAUs mount on an  
0 MIS frame. Signals are cabled from this MIS frame to a channel  
0 bank (a distributing frame may be used between the MIS frame and  
0 the channel bank). Mounting hardware and adapter brackets are  
0 required to mount MAUs and BIX blocks in the MIS frame. Refer to  
0 the MIS Engineering Manual Section for provisioning details.

0 POSITION ASSIGNMENTS ACROSS MAUs

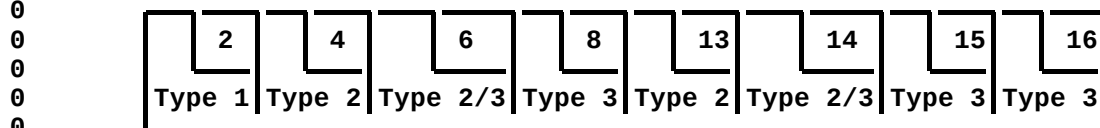


0 Assignments for Token Rings 00, 02 and 04:

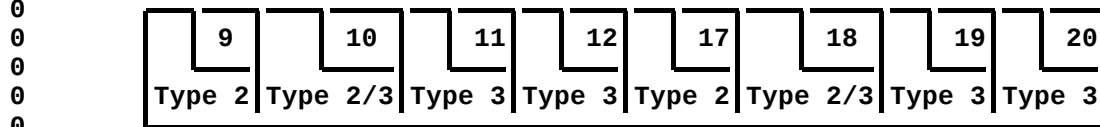
0 FIRST MAU



0 SECOND MAU



0 THIRD MAU



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0 Assignments for Token Rings 01, 03 and 05:

0 FIRST MAU

0  
0  
0  
0  
0  
0

|        |        |          |        |        |          |        |        |
|--------|--------|----------|--------|--------|----------|--------|--------|
| 1      | 3      | 5        | 7      | 9      | 10       | 11     | 12     |
| Type 1 | Type 2 | Type 2/3 | Type 3 | Type 2 | Type 2/3 | Type 3 | Type 3 |

0 SECOND MAU

0  
0  
0  
0  
0  
0

|        |        |          |        |        |          |        |        |
|--------|--------|----------|--------|--------|----------|--------|--------|
| 2      | 4      | 6        | 8      | 13     | 14       | 15     | 16     |
| Type 1 | Type 2 | Type 2/3 | Type 3 | Type 2 | Type 2/3 | Type 3 | Type 3 |

0 THIRD MAU

0  
0  
0  
0  
0  
0

|         |         |         |         |        |          |        |        |
|---------|---------|---------|---------|--------|----------|--------|--------|
|         |         |         |         | 17     | 18       | 19     | 20     |
| Reserve | Reserve | Reserve | Reserve | Type 2 | Type 2/3 | Type 3 | Type 3 |

0

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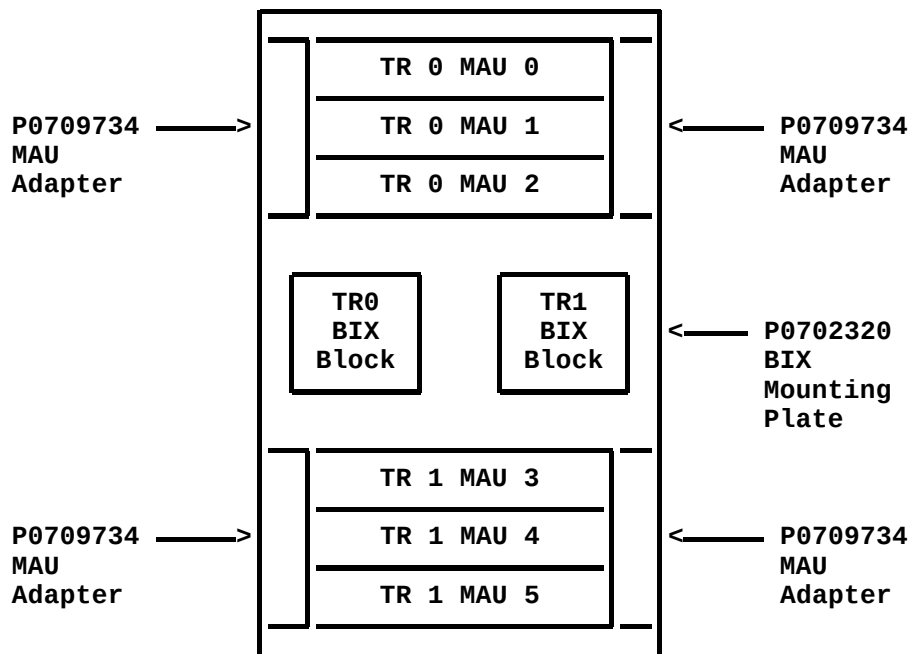
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0 Figure 14: WIRING CLOSET MIS FRAME LAYOUT  
0 (Front View)



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0 TR0 = Token Ring #0 MAU = Multistation Access Unit  
0 TR1 = Token Ring #1  
0 BIX Block = NTNX5103 (B0231179)

0 Note 1: MAUs and BIX Blocks will mount as shown on the front  
0 and back of the MIS frame. Equipment for Token Rings  
0 (TR) 2 and 3 will mount on the back.

0 Note 2: Using 16 position Token Rings, one MIS frame can  
0 accommodate 64 positions. Using 20 position Rings,  
0 one MIS frame can serve 80 positions.

0 Note 3: Provide two P0709734 adapters for each group of MAUs  
0 (maximum of three MAUs per two P0709734).

0 The mounting positions for MAUs and BIX equipment on the MIS frame are  
0 as follows:

|       | FRONT | BACK  |
|-------|-------|-------|
|       | ----- | ----- |
| 0 MAU | 74    | 71    |
| 0 MAU | 69    | 66    |
| 0 MAU | 63    | 60    |
| 0 BIX | 40    | 40    |
| 0 MAU | 32    | 29    |
| 0 MAU | 27    | 24    |
| 0 MAU | 21    | 18    |

#### 0 1.1.5 TRAFFIC TABLES

0

#### 0 TOPS MP AND TOPS MPX POSITIONS

0  
0 Complete Half-Hourly Force Capacity Tables are included in NTP  
0 297-2281-750. Generally, the number of positions required will  
0 be based upon telco estimates but the Tables are available for  
0 reference.

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## 0 TOPS TMS

0  
0 The TOPS MPX system requires the TOPS Message Switch (TMS) for  
0 operation. Provisioning of the TMS is not based on traffic but on  
0 the number of operator positions required. Provisioning the mix  
0 of MPX position types specified in this ECM (based on number of  
0 positions) and provisioning the TMS as described in ECM 468  
0 (based on number of positions), ensures that adequate channels  
0 are available so that traffic will not affect system performance.

0 1.2 PRODUCT/SYSTEM SPECIFICATION

0

0 1.2.1 PHYSICAL CHARACTERISTICS

0

## 0 FRAME AND LOGIC GROUNDING

0  
0 The Frame Ground is separate from the Logic Ground to conform to  
0 Isolated System Grounding (ISG) principles.

## 0 TOPS MP

0

|   |  |                  |               |        |
|---|--|------------------|---------------|--------|
| 0 |  | Heat Dissipation | Aisle Spacing | Weight |
| 0 |  |                  | 2' Back       |        |

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|             |            |                             |          |
|-------------|------------|-----------------------------|----------|
| AAE Cabinet | 170 Watts  | 3' Front                    | 1000 lbs |
| PCE Cabinet | 1200 Watts | 2' Back<br>3' Front         | 1000 lbs |
| CBT Unit    | 250 Watts  | 3' Front & Back<br>4' Sides | 150 lbs  |

Figure 15: Building Studies Information

#### POWER FEED AND FUSING REQUIREMENTS

The power requirements of TOPS MP equipment follows:

|                               | <u>Maximum Current Drain</u>   | <u>Fusing</u> |
|-------------------------------|--------------------------------|---------------|
| PCE Cabinet (-48V DC)         | 11 A (A Feed)<br>11 A (B Feed) | 20 A<br>20 A  |
| TOPS MP Position (115 AC)     | 0.85 A                         |               |
| CBT Unit (115 AC)             | 12.0 A                         |               |
| CBT VDU (115 AC)              | 1.0 A                          |               |
| AAE Frame                     | 3 A (A Feed)<br>3 A (B Feed)   | 5 A<br>5 A    |
| Alarm Battery (ABS) (-48V DC) | 6 A                            | 10 A          |

The PCE Cabinet is powered by 2 power feeds (one A & one B), with each feed fused at 20 A. (Fuses are always provided as part of the PDP stocklist.) The power source for the PCE Cabinet will be a Power Distribution Panel (PDP) in the AAE Cabinet. The AAE cabinet must be provided for both Local and Remote configured TOPS MP offices. The AAE will also supply ABS to the PCE cabinets.

The customer is required to provide the AC power for the TOPS MP System.

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0 A dedicated and protected AC power source shall be provided for  
0 the TOPS Multipurpose Positions, the CBT unit, the Printer used  
0 with the PCE Cabinet or a Local TAMI. The TOPS MP Monitor will  
0 have a twist lock plug which will require a twist lock power re-  
0 ceptacle. Any equipment not powered by the dedicated AC power  
0 source must t be located at least 7 feet from the TOPS MP  
0 Equipment and if this 7 feet requirement cannot be met, barriers  
0 to separate this equipment from the TOPS MP equipment must be in-  
0 stalled. This is necessary to eliminate the possibility of elec-  
0 trical shock due to grounding potential differences. Reference  
0 the TOPS MP Power and Grounding Requirements NTP 297-2281-156.

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## 0 TOPS MPX

0  
0 The components used for TOPS MPX have the following physical  
0 characteristics:

| 0 | Component     | Dimensions (HxWxD)    | Weight   |
|---|---------------|-----------------------|----------|
| 0 | -----         | -----                 | -----    |
| 0 | (*) C/D PS/2  | 4" X 16" X 15.6"      | 21 lb.   |
| 0 | NTNX51FB PS/2 | 6.5" X 17.2" X 15.5"  | 33 lb.   |
| 0 | Monitor 8512  | 10.75" X 12.4" X 15"  | 23 lb.   |
| 0 | Monitor 9518  | 13.6" X 13.9" X 15.4" | 28.6 lb. |
| 0 | MAU           | 17.6" X 8" X 2.66"    | 5.5 lb.  |
| 0 | MAU Housing   | 23" X 12" X 4"        | 4 lb.    |
| 0 | DSU           | 2" X 8" X 10"         | 1 lb.    |
| 0 | Keyboard      | 2" X 20.5" X 10"      | 7 lb.    |

0 | \* "C/D" PS/2 refers to NTNX51CB/CC/CD/DB/DC/DD.

## 0 CURRENT DRAIN INFORMATION

0 AC power must be supplied for TOPS MPX positions. Protected AC  
0 shall be used for this application.

0 Power consumption for the TOPS MPX components is as follows:

| 0 | Component     | Power Consumption   |
|---|---------------|---------------------|
| 0 | -----         | -----               |
| 0 | C/D PS/2      | 1.7 Amps at 120 VAC |
| 0 | Monitor 8512  | 400 mA at 120 VAC   |
| 0 | DSU           | 400 mA at 120 VAC   |
| 0 | NTNX51FB PS/2 | 70W (#)             |
| 0 | Monitor 9518  | 72W                 |

0 | # Does not include plug-in cards.

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0

0 1.2.2 EMI/EARTHQUAKE INFORMATION

0

0 A 30" empty space between the AAE and PCE frames is required  
0 for EMI and Earthquake requirements.

0 1.2.3 SPARING INFORMATION

0

## 0 TOPS MP

0

0 Sparing guidelines call for a minimum of one spare for each  
0 provisionable circuit pack.

0 Provide one or more UDS Modem Shelf Spare Power Supply per Cus-  
0 tomer request as a spare power supply for the UDS modem shelves  
0 mounted in the AAE cabinet.

## 0 TOPS MPX

0

0 The TOPS MPX positions are normally spared by ordering a complete  
0 position of each type or multiples of each type. The quantities  
0 are determined by the Customer. If required by the customer, the  
0 PS2 bases, monitor, keyboard, and plug-in cards can be ordered  
0 separately for spares. Refer to the Engineering Manual for part  
0 numbers.

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0 1.3 SOFTWARE PROVISIONING

0

0 1.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 The following software for TOPS MP applications may be ordered,  
0 based on office configuration requirements.

0 Packaging information is accurate at time of publication but, due  
0 to changes often made in packaging, should be checked in the  
0 Software Management System (SMS) database.

0 TOPS MP SOFTWARE

0

0 For offices with BCS24 or later order the following S/W Packages  
0 as required (if extending an existing TOPS 3 or 4 office to in-  
0 clude TOPS MP, replace the existing TOPS packages with the fol-  
0 lowing as TOPS MP Packages contain all required TOPS 3 and 4  
0 packages):

0 NTX704AA - TOPS Multipurpose Position Standard

0 NTX706AA - TOPS MP Remote (Remote OC)

0 NTXA60AA - TOPS Closedown

0 NTX873AA - Host TOPS MP OC Data-Link Handling

0 NTX039AA - Host OC Data-Link Handling

0

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0 The following packages/features are applicable to TOPS MP trans-  
0 lations:

0 NTX724AA TOPS MP Interface

0 For Software interdependencies, refer to the SMS database.

0 TOPS MP DIRECTORY ASSISTANCE

0  
0 The following software master packages are required for TOPS MP  
0 Directory Assistance applications.

0 TOPS MP CCI DIRECTORY ASSISTANCE MASTER PACKAGE

0  
0 NTNX708AA - TOPS MP - Toll and Directory Assistance Operation  
0 NTNX709AA - TOPS MP - Toll and Directory Assistance  
0 Operation/Remote

0 TOPS MP IBM DIRECTORY ASSISTANCE MASTER PACKAGE

0  
0 NTXD39AA : Host OC and SA applications (Master Package)  
0 NTXD40AA : Remote OC applications (Master Package)

0 Refer to the SMS database for package contents and interdependen-  
0 cies.

0

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## 0 TOPS MP ORDB FEATURE PACKAGES

0  
0 NTXA20AA - TOPS MP Interface to ORDB  
0 NTXA90AA - TOPS MP Terminal Handler High Speed

## 0 TOPS MESSAGE SWITCH FEATURE PACKAGES

0  
0 NTXA83AA : TOPS Message Switch (CC Software)  
0 NTXA90AA : TOPS Message Switch (TPC Software)  
0 All additional TMS software is in the BCS30 peripheral load.

## 0 | TOPS MPX SOFTWARE PACKAGES

0  
0 | NTXD37AA TOPS MPX (Host Master Package)  
0 | NTXD38AA TOPS MPX (Remote Master Package)  
0 | Prior to the introduction of the NTN51FB position, software for  
0 | MPX positions (Floppy Diskettes) was included in the host package  
0 | (NTXD37AA). With NTN51FB, the following package must be ordered  
0 | for EACH position. THIS PACKAGE MUST BE ORDERED AS A HARDWARE  
0 | ITEM BY THE SAE/EAE.  
0 | NTG324AA IBM DA (AOSS)

0

0

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## 0 TOPS QMS FEATURE PACKAGES

0  
0 NTXP41AA TOPS Host Queue Management System

0 NTXP42AA TOPS Remote Queue Management System

0 NTXR48AA QMS: Call And Agent Manager

0 NTXR50AA TOPS QMS External MIS Interface

0 Either of NTXP41AA and NTXR48AA or NTXP42AA and NTXR48AA is re-  
0 quired to implement the TOPS QMS feature in a TOPS office.  
0 NTXR50AA is optional based on the Customer requirement for and  
0 provision of an external MIS.

0 The packages listed above are provisioned in addition to the re-  
0 quired appropriate TOPS master software package.

0 Refer to the SMS database for software package inter-  
0 dependencies.

0 1.3.2 SOFTWARE USAGE RESTRICTIONS

0

## 0 TPC SOFTWARE

0  
0 Dual HSDA requires BCS 34 or higher. The Dual HSDA feature is  
0 included with the standard TPC software. No additional software  
0 packages need to be ordered for Dual HSDA.

0 The SCSI TPC shelf requires a BCS 33 TPC load for operation. Any  
0 existing TOPS MP jobs for which NTN61AF TPC shelves are added  
0 shall have BCS 33 TPC software loads.

0

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0 The TPC is a 68000 based system that controls up to four TOPS MP  
0 positions. It handles the distribution of voice and data from  
0 the CC and manages the screen display of each of its positions.

0 A twenty megabyte hard disk and a five and a quarter inch floppy  
0 disk are available on each TPC. The hard disk contains all the  
0 required software and data files to control the operator posi-  
0 tions and the interface to the DMS200 CC. Some floppy disks con-  
0 taining a copy of the load on the hard disk are also shipped with  
0 each TPC. These installation disks can be used to reconfigure  
0 the hard disk in case the TPC fails to start up during installa-  
0 tion.

0 Software upgrades are also shipped on floppy disks. To incorpo-  
0 rate the software upgrades, one must first disable all the MPs on  
0 the TPC from call processing using the BSY command at the MAP and  
0 TAMI. Secondly, one must insert the appropriate floppy disk in  
0 the drive and power on the TPC. The TPC will automatically boot  
0 from the floppy disk and copy the required files on to the hard  
0 disk.

0 It is mandatory to connect the TAMI terminal to the TPC before  
0 TPC installation and TPC software upgrades are begun. The TPC can  
0 then out- put messages on the TAMI indicating progress and re-  
0 quest the user to insert the next floppy disk.

## 0 DATALINKS

0  
0 In the TOPS 4 system data communication between the CC and posi-  
0 tions is via asynchronous links. The CC transmits data to the  
0 position at 300 baud and receives data from the position at the  
0 same rate.

0 In the TOPS MP system data communication between the CC and the  
0 TPC is also over asynchronous links, but the CC transmits data to  
0 the TPC at 1200 baud and receives data from TPC at 300 baud.

0 The data channels of the TOPS system are connected through the  
0 switching network to digital modems (NT3X02/NT3X03). These modem  
0 circuits provide the necessary D/A or A/D conversion for process-  
0 ing the data signals. One digital modem circuit is required for

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0 each TOPS operator position unless a TMS configuration is used.  
0 Digital modems are not required with the TMS.

## 0 RESTRICTIONS

0  
0 TOPS offices should have a maximum of four pairs (NT3X02AA,  
0 NT3X03AA) of digital modem cards per MTM, providing a maximum of  
0 16 modem circuits per MTM.

0 Combined IBN/TOPS offices should have a maximum of two pairs  
0 (NT3X02AA,NT3X03AA) of digital modem cards per MTM, providing a  
0 maximum of eight circuits per MTM.

0 In each case it is preferred to spread modem card pair evenly  
0 across all MTMs to ensure reliability.

0 Hosts and remotes with different versions of TOPS software can be  
0 incompatible. The existing procedure for updating Operator Cen-  
0 tralization (OC) software is that the host must be updated before  
0 the remote. This procedure will apply in TOPS MP as well as TOPS  
0 4. Also, the host cannot have any inservice TOPS MP positions un-  
0 til the remote is upgraded to TOPS MP software.

0 A TOPS MP remote cannot communicate with a TOPS 4 host because  
0 the host is not able to tell the remote what kind of position it  
0 has. The remote will not know whether to send TOPS 4 or TOPS MP  
0 commands.

0 A TOPS 4 remote cannot communicate with a TOPS MP host because if  
0 a TOPS MP position is associated with an OC call, the remote will  
0 not be able to send TOPS MP commands to the position. If there  
0 are no TOPS MP positions on the host this configuration does  
0 work.

0 Therefore, the procedure for upgrading OC offices to TOPS MP is  
0 to first update the software in the host without adding any in-  
0 service TOPS MP positions, second, update the software in all the  
0 remotes, and third, put the TOPS MP positions on the host into  
0 service.

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0 TOPS CC software changes that add or change fields on the TOPS  
0 position screen will require parallel changes in the TPC soft-  
0 ware.

0 Operator calls handled at TOPS MP positions can only be monitored  
0 by TOPS MP Assistance positions. Operator calls handled at TOPS  
0 4 positions can only be monitored by TOPS 4 Assistance positions.

0 To enable an MP for call processing, it must be first returned to  
0 service at the TPC using the TAMI terminal and then at the CC us-  
0 ing the MAP.

0 All MPs connected to the TPC must be disabled from call process-  
0 ing before attempting software upgrades. To disable an MP from  
0 call processing, it must be first busied at the CC using the MAP  
0 and then at the TPC using the TAMI terminal.

0 TAMI baud rate must be reset to 1200 BAUD after a power hit un-  
0 less it is already at 1200 baud. The TPC always boots up in RE-  
0 MOTE mode (1200 BAUD).

0 Once the TPC is configured completely with all the required  
0 datafill, accessing TAMI to perform TPC maintenance is necessary  
0 only when there are problems in the TPC. The TAMI shall not be  
0 accessed while CALL PROCESSING is enabled, as some performance  
0 degradation may result.

#### 0 DRAM ASSIGNMENT RESTRICTIONS

0  
0 Mechanized Calling Card Service (MCCS), provided in feature  
0 NTX171CA, requires at least one dedicated DRAM. The same DRAM is  
0 used for the Exchange Alternate Billing Service (EABS) feature  
0 (NTX825AA).

0 This DRAM is designated as MCCS type in Table ANNS and its con-  
0 troller card is dedicated to the CLLI for the MCCS type DRAM in  
0 Table DRAMS. Since the controller is dedicated in software to  
0 MCCS type announcements, the other cards on that DRAM cannot be  
0 used for any other type of announcement.

0

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## 0 TOPS MPX

0  
0 The TOPS MPX system currently supports only IBM Directory Assist-  
0 ance service. Toll and Assistance operation and ORDB are planned  
0 as future offerings.

0 The TOPS MPX system is designed to permit operation with differ-  
0 ent vendors for DA and Intercept services but the initial version  
0 of MPX must use the IBM DAS. Dual vendor operation is currently  
0 possible only where MPX positions provide the IBM service and  
0 TOPS MP positions are used to provide non-IBM service.

0 Call Completion will not be supported by the initial version of  
0 TOPS MPX.

0 In order to provide adequate billing records for DA calls, DMS  
0 features should include phase one or higher of the Expanded  
0 Bellcore AMA Format (EBAF).

## 0 THREE PORT CONFERENCE CIRCUITS

0  
0 Three port conference circuits are required in the DMS200 TOPS  
0 offices (both Host and Remote) on a one per position basis plus  
0 five percent spare. Through BCS33, a 2048 entry limit of the  
0 fixed CLLI table in software translations for three port confer-  
0 ence circuits limited the number of three port conference cir-  
0 cuits in an office to 682 (682 conference circuits x three ports  
0 each = 2046 entries). This limit would only allow provisioning of  
0 one three port conference circuit per position up to 682 posi-  
0 tions. As the TOPS position maximum is 1024 per office, three  
0 port conference circuit provisioning limits the number of TOPS  
0 positions to 682 or less in pre-BCS34 offices. A feature has been  
0 added in BCS34 to add a second fixed CLLI group dedicated to  
0 three port conference circuits. The second fixed CLLI group adds  
0 another 2048 entries. This increases the maximum number of three  
0 port conference circuits in a DMS 100 office to 1364. This allows  
0 the 1024 TOPS position maximum to be provisioned based on the re-  
0 quirement for one three port conference circuit per TOPS position

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0 plus five percent spare. This added feature is included in the  
0 NTX001AA Common Basic software package in BCS34 and later.

### 0 1.3.3 MEMORY PROVISIONING

0  
0 Refer to the MEMCALC program for the memory impact of all TOPS  
0 MP, TOPS MPX and TMS features.

### 0 1.4 REAL TIME IMPACT

0 TOPS MP provides no Central Control (CC) Real Time increase over  
0 TOPS 4 (Reference the CROSS-REFERENCE SECTION for SEA or SEB doc-  
0 umentation on Real Time).

0 TOPS MP Directory Assistance timings are estimated below. For  
0 customer dialed 0-,411 or 555-1212 from a non-coin station, a TOPS  
0 operator is attached and connection established to an external  
0 ARU. This example includes AMA billing.

| 0 | Standalone | Host OC   | Remote OC |
|---|------------|-----------|-----------|
| 0 | -----      | -----     | -----     |
| 0 | 75ms/Call  | 50ms/Call | 85ms/Call |

0 An additional 15ms/Call is required if either the standalone or  
0 remote office is equipped with an internal ARU.

0 When a customer dials a changed number, the call is routed to an  
0 intercept trunk within the DMS-200 TOPS equipped office and con-  
0 nected to an external ARU.

| 0 | Standalone | Host OC  | Remote OC |
|---|------------|----------|-----------|
| 0 | -----      | -----    | -----     |
| 0 | 45ms/Call  | See Note | 45ms/Call |

0 Note: Host OC has no timing in this example. A call from the  
0 Remote OC office would route directly to the ARU that  
0 is connected to the Remote OC office. No inter-office  
0 facilities would be utilized between the Host and Remote  
0 offices. (Reference SEA 87-09-004)

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0 The maximum number of TOPS Message Switches that can be served by  
0 a DMS 100/200 is physically limited by the number of network  
0 ports available in the DMS. The practical limit however is im-  
0 posed by DMS real time capacity. Refer to TABLE B for the maximum  
0 number of operators allowed using various office configurations.

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# Assumptions for TABLE B:

- Operator utilization 95%
- CC CP Occupancy 70%
- Average Work Time/DA Call 18 sec.
- Average Processing Time/DA Call, NT40:
  - o Stand Alone (SA) system 70 msec.
  - o Host Operator Centralization (HOC) 25 msec.
  - o Remote Operator Centralization (ROC) 75 msec.
- Average Processing Time/DA Call, Supernode(68020 at 20Mhz):
  - o Stand Alone system 35 msec.
  - o Host Operator Centralization 12.5 msec.
  - o Remote Operator Centralization 37.5 msec.
- Average Processing Time/DA Call, Supernode(68030 at 33Mhz):
  - o Stand Alone system 23.3 msec.
  - o Host Operator Centralization 8.3 msec.
  - o Remote Operator Centralization 25 msec.
- Average Work Time 18 sec.
- Operator Call Rate 190 calls/hr.
- 100% Directory Assistance calls

| SYSTEM                  | CONFIG | CC CP OCC<br>(Calls/hr.) | APT<br>(ms) | MAX NO.<br>OPERATORS |
|-------------------------|--------|--------------------------|-------------|----------------------|
| NT40                    | SA     | 36000                    | 70          | 189                  |
|                         | HOC    | 100800                   | 25          | 530                  |
|                         | ROC    | 33600                    | 75          | 117                  |
| SUPERNODE<br>(68020/20) | SA     | 72000                    | 35          | 379                  |
|                         | HOC    | 194180 *                 | 12.5        | 1022 *               |
|                         | ROC    | 67200                    | 37.5        | 354                  |
| SUPERNODE<br>(68030/30) | SA     | 108000                   | 23.3        | 568                  |
|                         | HOC    | 194180 *                 | 8.3         | 1022 *               |
|                         | ROC    | 100800                   | 25          | 531                  |

\* The DMS host handles 1022 calls simultaneously, limited by software design. The maximum number of operators by calculation exceeds this limit and is therefore invalid.

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0  
0 TABLE B: Operator Maximums

0 The Real Time impact imposed by TOPS MPX is identical to that of  
0 TOPS MP Directory Assistance using the CCI database.

0 Timings are estimated below. For customer dialed 0-,411 or  
0 555-1212 from a non-coin station, a TOPS operator is attached and  
0 connection established to an external ARU. This example includes  
0 AMA billing.

| 0 Standalone  | 0 Host OC   | 0 Remote OC   |
|---------------|-------------|---------------|
| 0 -----       | 0 -----     | 0 -----       |
| 0 37.5ms/Call | 0 25ms/Call | 0 42.5ms/Call |

0 An additional 15ms/Call is required if either the standalone or  
0 remote office is equipped with an internal ARU.

0 When a customer dials a disconnected number, the call is routed to  
0 an intercept trunk within the DMS-200 TOPS equipped office and  
0 connected to an external ARU.

| 0 Standalone  | 0 Host OC  | 0 Remote OC   |
|---------------|------------|---------------|
| 0 -----       | 0 -----    | 0 -----       |
| 0 22.5ms/Call | 0 See Note | 0 22.5ms/Call |

0 Note: Host OC has no timing in this example. A call from the  
0 Remote OC office would route directly to the ARU that  
0 is connected to the Remote OC office. No inter-office  
0 facilities would be utilized between the Host and Remote  
0 offices. (Reference latest issue of SEB 88-10-002)

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0 2.0 Automatic Coin Toll Service (ACTS)

0 2.1 Hardware Provisioning

0

0 2.1.1 Hardware Usage Restrictions

0

0 None identified.

0 2.1.2 Hardware Dependencies

0

0| None identified: refer to section 2.4.

0 2.1.3 Provisioning Considerations

0

0 Automatic Coin Toll Service DRAM Circuit Pack

0

0 The ACTS announcement cp mounts in a standard DRA-MTM and re-  
0 quires a DRA controller. ACTS requires a dedicated DRA-MTM, i.e.  
0 mixing of MCCS DRA announcement or standard office announcement  
0 with the ACTS cp's is not permitted.

0

0 The ACTS DRAM does not broadcast messages. Instead, any one of  
0 several announcements may be directed to 29 time slots available  
0 in each DRAM. It is considered a service circuit in that a par-

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0 ticular time slot or announcement port is connected to an ACTS  
0 call only when required.

0 The average announcement is approximately 12 seconds in length.  
0 However, the ACTS DRAM will remain connected as long as the coin  
0 detection circuit. Therefore the holding time for DRA provision-  
0 ing should be 38 seconds.

0 One (1) ACTS DRA cp is required on the ACTS DRAM. The slot lo-  
0 cation for the DRA cp should follow the controller cp. Recom-  
0 mended card slot locations are: :ul. :li. for the controller  
0 card slot five (5) :li. for the ACTS DRA circuit pack card slot  
0 six (6). :eul.

0 Assume regular DRA sparing procedures. MTBF (Mean Time Between  
0 Failure) and MTTR (Mean Time To Repair) parameters are not  
0 available for accurate sparing calculations.

#### 0 Coin Detection Circuit (CDC)

0  
0 A coin detection circuit pack physically occupies one card slot  
0 in an MTM.

0 A CDC uses eight time slots and, therefore, four (4) consecutive  
0 card slots are required. A maximum of three (3) CDC circuit  
0 pack's can be mounted in any MTM. the slot assignment being card  
0 slots 05,09 and 13. If desired, the CDC card may be placed on an  
0 MTM with other cards, provided the next three (3) slots following  
0 each CDC pack are empty and that the provisioning rules for these  
0 other packs are followed.

0 Digitone or rotary coin stations may be used, however all  
0 stations MUST be able to provide dual frequency coin deposit  
0 signals to allow detection by the CDC circuit pack.

0 The CDC contains eight (8) coin detection circuits provisionable  
0 for ACTS on each circuit pack.

0 The CDC requires no distributing frame cabling.

0 A 3-port conference circuit will be required for all "recall" ac-  
0 tivity (i.e. overtime notification, intercoin prompt, etc.). The

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0 current provisioning of 3-port conference circuits (for TOPS) is  
0 one per position plus five percent. This quantity is sufficient  
0 to handle the ACTS traffic. Therefore, no additional 3-port con-  
0 ference circuits will need to be provisioned.

0 Each NT1X76AE is a two virtual card credit, i.e. 256 kbyte,  
0 double-density cp. When provisioning an ACTS DRA-MTM, the total  
0 allowable virtual card credit limit is eight. The EEPROM  
0 (NT1X79AA) is a 128 kbyte, one (1) virtual card credit, single-  
0 density cp.

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## 0 ACTS CDC Provisioning

| CALL<br>TYPE | A<br>ABSBH<br>CCS | B<br>CALL<br>HT/100 | C=A/B<br>CALLS | D<br>CDC<br>HT/100 | E=CxD<br>CDC<br>CCS USAGE |
|--------------|-------------------|---------------------|----------------|--------------------|---------------------------|
| 1+7D         |                   |                     |                |                    | .38                       |
| 0+7D         |                   |                     |                |                    | .38                       |
| 1+10D        |                   |                     |                |                    | .38                       |
| 0+10D        |                   |                     |                |                    | .38                       |
| 1+12D        |                   |                     |                |                    | .38                       |
| 0+12D        |                   |                     |                |                    | .38                       |

TTL ABSBH  
CDC USAGE

0 :ol. :li. Number of Coin Detection Circuits, NT3X08, based on traf-  
0 fic (CCS Capacity Tables P.001) :li. Number of NT3X08 =  
0 ((1)\_\_\_\_)/8 ----- :eol.

0 NOTE The above calculations are required for both the ACTS feature  
0 running in the TOPS office and for the Improved Coin Service  
0 Revenue Collection Feature running in associated End Offices.

0 End Office CDC should be provisioned to accommodate the ex-  
0 pected inter- LATA originated coin call traffic.

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## 0 ACTS DRA Provisioning

0  
0 :ol. :li. Number of coin lines -----  
0 :li. Calling rate -----  
0 :li. Number of calls ((1)\*(2)) -----  
0 :li. HT/100 (Default=38 sec.) -----  
0 :li. CCS of announcements ((3)\*(4)) -----  
0 :li. Number of announcements based on traffic  
0 (CCS Capacity Tables P.001) ----- :li. Number  
0 of ACTS DRA ((6)\_\_\_\_)/29 ----- :eol

0 2.1.4 Office Layout Information

0  
0 Not applicable.

0 2.1.5 Traffic Tables

0  
0 Refer to CCS Capacity Tables, P.001.

0 2.2 Product/System Specification

0

0 2.2.1 Physical Characteristics

0  
0 Not applicable.

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## 0 Coin Detection Circuit NT3X08--

0  
0 Input Voltage..... V at \_\_\_\_ Hz  
0 Power Consumption.....15 watts  
0 Current Drain..... Amps  
0 Thermal Dissipation..... BTU/hr  
0 Fusing Requirements.....

## 0 MECHANICAL DIMENSIONS

0 Height \_\_\_\_ Width \_\_\_\_ Length \_\_\_\_  
0 Weight \_\_\_\_ Depth \_\_\_\_

0 2.2.2 EMI/Earthquake Information

0  
0 Not applicable.

0 2.2.3 Sparing Information

0  
0 Assume regular sparing procedures. MTBF (Mean Time Between Fail-  
0 | ure) and MTTR (Mean Time To Repair) for the ACTS DRAM (NT1X76AE)  
0 and the CDC (NT3X08--) cp's. Parameters are not available for ac-  
0 curate sparing calculations.

0

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0 2.3 Software Provisioning

0

0 2.3.1 Required Software Packages and Interdependencies

0  
0 The software package for ACTS is NTX208AA or NTX208AB.

0 | The NTX208AB software package contains maintenance related en-  
0 | hancements which are not provided with the NTX208AA package

0 | The NTX208AB enhancement provides telcos the capability of dial-  
0 | ing a seven- digit test number from a coin phone to determine  
0 | whether the coin box is sending the proper signaling to the ACTS  
0 | system. The feature also offers the capability of identifying  
0 | defective coin detection circuits from the MAP without having to  
0 | busy out all the circuits on the affected CDC. Only the circuit  
0 | under test need be busied.

0 | The maintenance enhancement of the NTX208AB package requires the  
0 | provisioning of CDC NT3X08AB. The NT3X08AA CDC will operate  
0 | compatibly with NTX208AB package but this configuration will not  
0 | have the enhanced maintenance capability. To get the full benefit  
0 | from the enhanced maintenance capability of the NTX208AB package,  
0 | all ACTS CDCs must be NT3X08AB.

0 | The NTX208AA package operates compatibly with either NT3X08AA or  
0 | NT3X08AB CDCs. The improved coin toll fraud prevention capability  
0 | of the NT3X08AB CDC card is effective when configured with either  
0 | the NTX208AA software package or the NTX208AB package.

0 | End Office CDCs

0  
0 | The CDCs required for the Improved Coin Service Revenue Col-  
0 | lection feature AF1400 in the end office are either NT3X08AA or  
0 | NT3X08AB. The use of NT3X08AB provides the improved fraud pre-

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0 | vention capability. The improved maintenance functionality of the  
0 NT3X08AB CDC is not implemented in the end office configuration.

0 For ACTS software status, refer to the SMS database.

0 MMCCS and CCIS are not software prerequisites for ACTS operation.

0 2.3.2 Software Usage Restrictions

0  
0 None identified.

0 2.3.3 Memory Provisioning

0  
0 The ACTS feature requires 3K words of program store.

0 2.4 Real Time Impact

0 The ACS feature has no real time impact.

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### 0 3.0 Traffic Operator Position System

0 The TOPS MP system supercedes the TOPS 03/04 product line and provides  
0 improvements and additional features not previously available.

0 Phase I of TOPS MP supports all the current features of TOPS 04 plus  
0 provides the basis for Directory Assistance (DA) support and future  
0 feature development. A DMS-200 office may support both TOPS MP and  
0 TOPS 04 but service monitoring must be performed by like equipment  
0 (i.e. TOPS MP monitors must monitor TOPS MP positions and TOPS 04  
0 monitors must monitor TOPS 04 positions). The exception to this moni-  
0 toring is the Force Manager Position. A TOPS MP Force Manager is able  
0 to monitor TOPS 03/04 as well as TOPS MP and a TOPS 03/04 Force Man-  
0 ager is able to monitor TOPS MP as well as TOPS 03/04. The TOPS Multi-  
0 purpose positions provide an improved Man-Machine Interface (MMI) over  
0 the TOPS 04 positions by allowing a more flexible position which will  
0 allow the same controller/ terminal configuration for:

- 0 - Traffic Operator Position
- 0 - In-Charge Position
- 0 - Assistance Operator Position
- 0 - Force Manager Position

0 The TOPS MP system introduction was done in phases as follows:

- 0 - Phase I - supports Toll and Assist (TA) traffic offices
- 0 - Phase II - supports TA and Directory Assistance (DA) offices

### 0 Directory Assistance Feature

0 Directory Assistance is an optional feature for the TOPS MP system  
0 that allows the Operator to access a vendor-supplied database for Di-  
0 rectory Assistance information. The equipment required to implement  
0 the DA feature is primarily for use in accessing this database. Di-  
0 rectory assistance with Computer Consoles, Inc. (CCI) as the database  
0 vendor was the first application of directory assistance on the TOPS  
0 MP.

0 TOPS MP - IBM Directory Assistance is an optional package for the TOPS  
0 MP system and will be offered in addition to the CCI Directory Assist-  
0 ance capability which is already available.

0 IBM DA is an optional software product for TOPS MP with the  
0 TOPS Message Switch (TMS). The only hardware change required for  
0 this access is a keyboard change to provide IBM DA keycaps.

0

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0 TOPS MP - IBM DA enables an operator to service DA calls using  
0 the IBM Directory Assistance Service (DAS) but retains the capa-  
0 bility of operating in other modes (i.e. Toll and Assist). Once a  
0 DA listing is located, the operator has the ability to complete  
0 the call.

0 Operator Reference Database Feature

0 Operator Reference Database (ORDB) is an optional feature for  
0 the TOPS MP system that allows the Operator to access a vendor-  
0 supplied database for various types of information, including rate  
0 quotes, emergency numbers, service codes, ticket information, etc.  
0 Additional services can be added as vendors develop additional  
0 information databases.

0 TOPS Message Switch (TMS)

0 The Tops Message Switch is an optional configuration for TOPS MP  
0 that provides facilities savings by replacing the direct links  
0 from each TPC to databases with consolidated links from the TMS  
0 controller. Previous TOPS MP configurations interface with the  
0 DMS via trunk modules on a DTE or TME frame. The TMS is an  
0 LTC-based peripheral that terminates links from Channel Banks  
0 (DS-1 signals) and interfaces them with the DMS host and various  
0 service-providing databases. The TMS is required for all applica-  
0 tions using TOPS MPX equipment (refer to API173). The digital  
0 modems required at the host for TOPS MP applications are no  
0 longer required with the TMS. Refer to ECM468 for additional TMS  
0 information.

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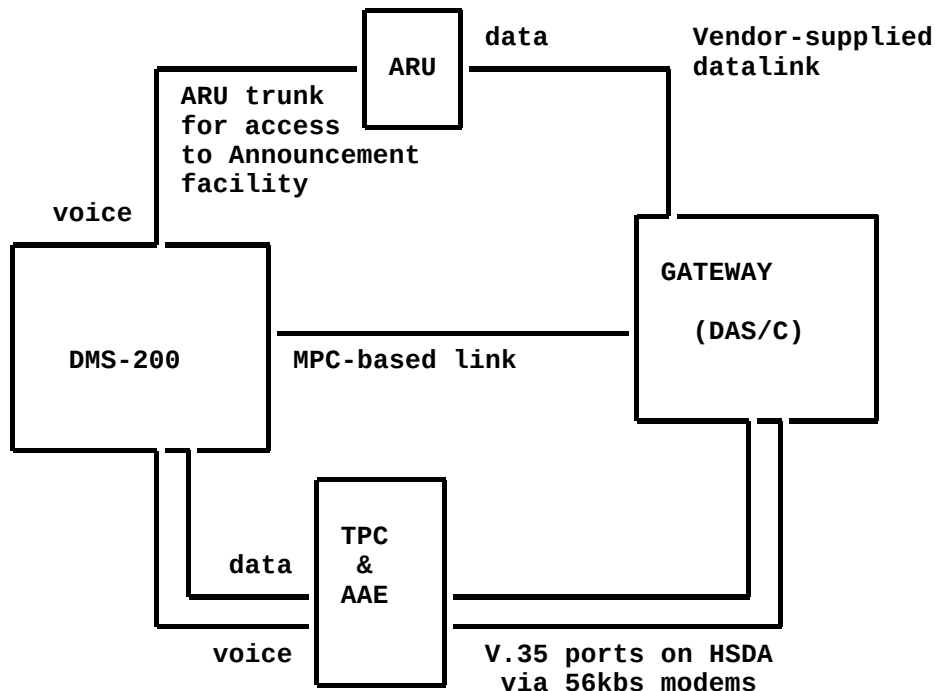
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Links established  
for TOPS MP Phase I.  
Required for DA also.

#### Notes:

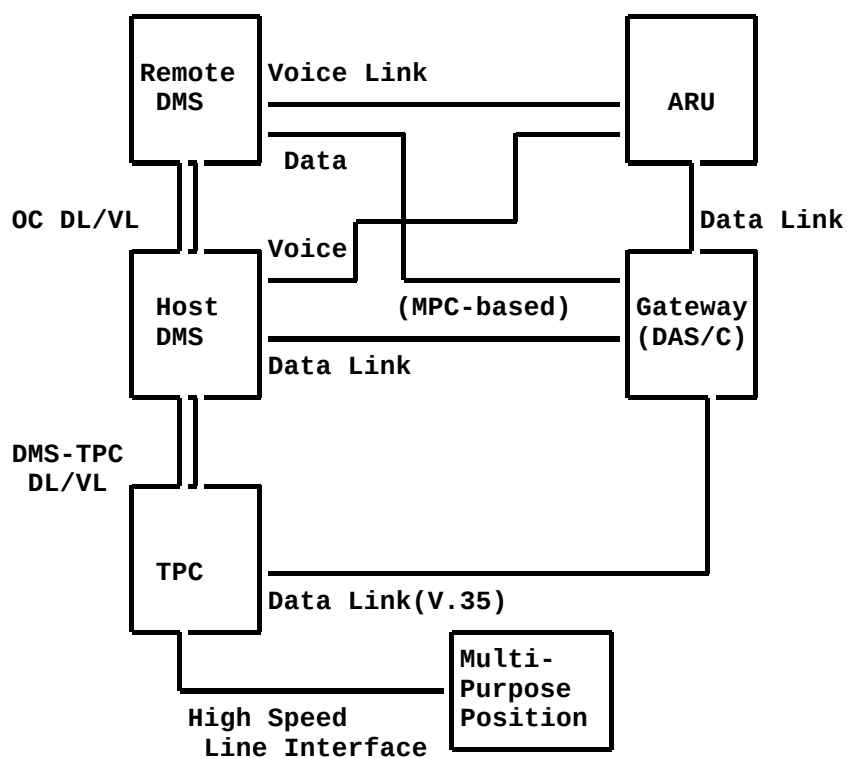
- MPC-based links consist of a minimum of two IOC-mounted Multi-Protocol Converters (NT1X89AA) with 9600 baud modems to provide call set-up/take-down data, billing information, etc.
- ARU trunk is a DS-1 channel for each equipped Directory Assistance position. Forty-eight positions can be handled by a single NT6X50AA CP. This CP is mounted on a DTC.
- The link from the ARU to the Gateway is vendor-supplied.
- The HSDA CP (NTNX66AA) mounts on the TPC shelf and provides two V.35 ports. Each V.35 port requires one D56 modem which mounts on a Data Set Unit on the AAE cabinet.

Figure 1a : TOPS MP Directory Assistance

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# 0 TOPS MP Directory Assistance with Operator Centralization

0 When the Operator Centralization (OC) feature is included, an additional DMS-DAS/C data link and DMS-ARS voice link are required to the remote DMS office. Additional remote offices require similar additional links. On an OC Directory Assistance call, DMS to Gateway (DAS/C) communication occurs between the remote office and the Gateway. Closedown is supported when all switches in the network are connected to a single Gateway. Provisioning for these links is based on the same guidelines as the Host links performing the same functions. See Figure 1b for OC System configuration for TOPS MP Directory Assistance.



0 Figure 1b : TOPS MP Directory Assistance with OC Feature

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0 | TOPS QMS

0 | TOPS QMS (Queuing Management System) is an enhanced queuing sys-  
0 | tem for TOPS that replaces the current ACD (Automatic Call Dis-  
0 | tribution) queuing system used with TOPS. The queuing  
0 | enhancements for TOPS provided by QMS include:

0 | TOPS QMS increases the maximum number of assignable call queues  
0 | available in TOPS from 4 to 255.

0 | TOPS QMS integrates absolute priority queuing of calls with as-  
0 | signable grade of service (AGS), on an operator profile basis.  
0 | This allows Telephone Operating Companies to introduce the con-  
0 | cept of primary and secondary responsibilities for its operators.  
0 | For example, a group of operators support Directory Assistance  
0 | service as a primary responsibility, but "help out" with Toll and  
0 | Assistance service as a secondary responsibility when required.

0 | TOPS QMS supports an enhanced set of force management statistics,  
0 | and supports reporting of these statistics continuously and imme-  
0 | diately, rather than only in periodic reports. TOPS QMS continues  
0 | to provide support for backup periodic FM reports, which can be  
0 | optionally activated and deactivated.

0 | TOPS QMS allows the Telephone Operating Companies to segregate  
0 | traffic across the 255 queues by a wide range of criteria, in-  
0 | cluding: time of day, called digits, incoming trunk group, call-  
0 | ing digits, inter-LATA carrier, class of service, restricted  
0 | billing index, prefix dialing and others. Furthermore, QMS is de-  
0 | signed to allow for extending this set of criteria as new queue-  
0 | ing capabilities are required.

0 | The new force management capability for sending continuous sta-  
0 | tistics is implemented with an external Management Information  
0 | System. The Management Information System is a Customer provided  
0 | computer system capable of storing and reports TOPS statistics.  
0 | Some new enhancements to the existing force management capabili-  
0 | ties are implemented with the current hardware including the  
0 | FMCRT. Both the new MIS system and the existing FMCRT may co-  
0 | exist in a TOPS host office.

0 | The TOPS QMS set of features also allows the Telephone Operating  
0 | Company to establish a new class of operators called Senior Oper-  
0 | ators. The Senior Operators have the capability to assist an-  
0 | other operator with a call and to even complete that call. This  
0 | assistance to other operators may serve as their primary task  
0 | while answering subscriber initiated traffic serves as a second-

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0 | ary task. Access by a regular operator to a Senior Operator is  
0 | accomplished via the OGT (outgoing trunk key function) causing an  
0 | incoming call to be queued for a Senior Operator. Completion of  
0 | a call of this type within the TOPS office requires a loop-around  
0 | trunk.

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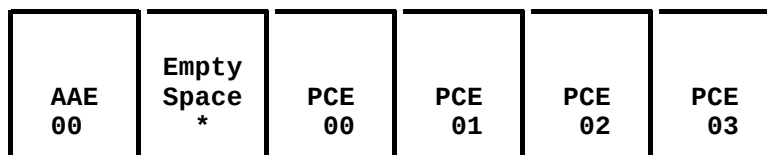
The following chart is a comparison of the Senior Operator class of operators to the Service Assistant class of operators:

| Capability                           | Senior Operator | Service Assistant |
|--------------------------------------|-----------------|-------------------|
| Use QMS queuing                      | Yes             | No                |
| Call completion for assistance calls | Yes             | No                |
| Serve non-assistant traffic          | Yes             | No                |
| Receive directed calls               | Yes             | Yes               |
| Paging capability                    | No              | Yes               |
| Monitor capability                   | No              | Yes               |

### 3.1 HARDWARE PROVISIONING

#### 3.1.1 HARDWARE USAGE RESTRICTIONS

The standard TOPS MP line-up will be as follows:



Standard TOPS MP Line-up

\* A 30 inch Empty Space between the AAE and PCE Cabinets is required for EMI and Earthquake requirements.

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0 The TOPS Message Switch is required for all applications using  
0 TOPS MPX equipment.

0 TOPS MP - IBM DA requires TOPS MP equipped with the TOPS Mes-  
0 sage Switch (TMS).

0 TOPS MP - IBM DA keyboards are currently available for English  
0 applications only.

0 The maximum allowable number of operators depends on the of-  
0 fice configuration. Refer to the Real Time section of this ECM  
0 for additional information.

0 While the IBM protocol does not provide for monitoring a DA  
0 call, the DMS allows for monitoring an operator. When monitoring  
0 a DA call, the supervisor receives a duplicate display of the  
0 billing screen of the operator position being monitored.

0 The IBM protocol does provide a list status field but it does  
0 not provide the listing detail required by the Extended Bellcore  
0 AMA Format (EBAF). Currently, DA or Intercept calls handled by  
0 the IBM vendor cannot fully populate the Listing Status fields  
0 for EBAF conforming AMA.

0 The ARUs used for TOPS MP - IBM DA are associated with the IBM  
0 DAS. The organization providing the ARUs must be notified of the  
0 number of DA operators to be served at 95% utilization and the  
0 ratio of traffic requiring call completion to traffic not requir-  
0 ing call completion. Call completion requires special ARUs capa-  
0 ble of performing the call completion function.

#### 0 | TOPS QMS

0 | The TOPS QMS software feature (NTXR50AA) that provides for an ex-  
0 | ternal MIS system must have the external MIS equipment provided  
0 | by the Customer.

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0 3.1.2 HARDWARE DEPENDENCIES

0  
0 The three (3) Major Components of the TOPS MP System are:

- 0 1. Position Controller Equipment (PCE) Cabinet
- 0 (Including Associated Equipment)
- 0 2. Auxiliary Access Equipment (AAE) Cabinet
- 0 3. TOPS Multipurpose Position (Modular or Integrated)

## 0 Position Controller Equipment Cabinet (PCE)

0 The PCE Cabinet (NTNX60AA) consists of the following Always Pro-  
0 vided equipment:

- 0 1 SL-100 Cabinet (NTNX25BA)
- 0 1 PCE EMI Bulkhead Assembly (NTNX6022)
- 0 1 Frame Supervisory Panel (FSP) (NTNX26CA)
- 0 4 TOPS Position Controller (TPC) Shelf
- 0 Assemblies (NTNX6101)
- 0 1 Cooling Unit (CU) (NTNX27BA)

0 Associated PCE equipment includes the following:

0 PCE - allows an administrator to print  
0 Printer logs, help screens or program panels  
0 for TPC shelves.

0 TAMI - TPC Administration and Maintenance In-  
0 terface. This interface is a VT100  
0 compatible terminal connected to a TPC (via modems)  
0 which allows an administrator to perform  
0 maintenance or administrative functions  
0 as required. The TAMI (VDU) may be located  
0 remotely or locally (In either case a autoanswer,  
0 autodial modem will be required for the VDU).

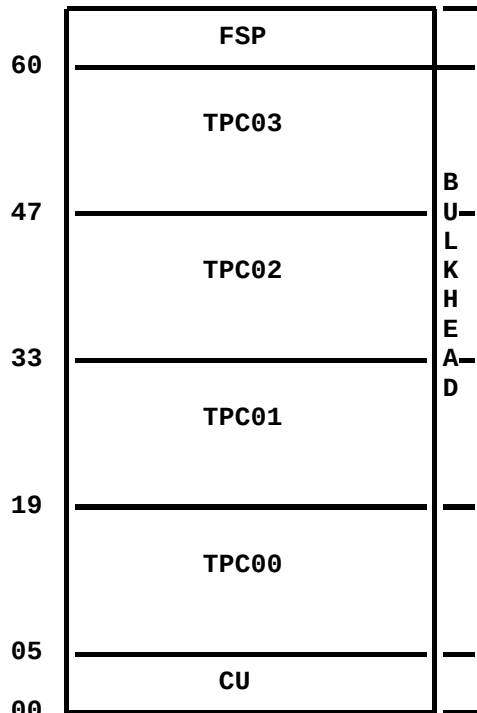
0 Wicat - each CBT unit provides training for up to 16  
0 Computer operator positions and the dimensions for the unit  
0 Based are 44"(H) x 22.1" (W) x 31.8" (D). A Cartridge  
0 Training tape will be used to load the TOPS MP training S/W  
0 (CBT) onto the CBT unit's hard-drive disk. A Wicat VDU  
0 Unit will be used for administration on the CBT units.

0

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**Cabinet**  
**Dimensions - 28x28.5x72**  
**(D)(W) (H)**

**TPC - TOPS Position  
Controller**

**FSP - Frame Supervisory Panel**

**CU - Cooling Unit**

**Bulkhead located on back of Cabinet.**

**The PCE Cabinet can support up to 16 operator positions. Each TPC shelf will support up to 4 operator positions.**

**PCE 00**

### Figure 2 - Position Controller Equipment (PCE) Cabinet

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0 Auxiliary Access Equipment Cabinet (AAE)

0 The NTNX57AA AAE Cabinet has a status of Manufacture Discontin-  
0 ued. The NTNX57AC version of the AAE should be supplied for all  
0 applications.

0 The AAE Cabinet (NTNX57AC) consists of the following Always Pro-  
0 vided equipment:

0 1 SL-100 Cabinet (NTNX25BA)  
0 1 AAE Bulkhead Assy (NTNX5708)  
0 1 End Panel Assy, Right (NTNX2531)  
0 1 End Panel Assy, Left (NTNX2532)  
0 1 Modem Shelf (A0344310)  
0 1 Power Distribution Panel (NTNX24CB)  
0 1 4" Filler Panel (P0688213)  
0 1 Hazard Plate Assy (NTNX5707)

0 Auxiliary Access Equipment:

0 Modem - One (1) Modem Shelf will be Always Provided on the  
0 Shelf AAE Cabinet. Three (3) additional shelves may be  
0 provisioned to mount modems required for database  
0 access for Directory Assistance, Operator Reference  
0 Database (ORDB) or future features. Each modem  
0 shelf is supplied with two power supplies. Up to  
0 16 UDS modem cards may be mounted on a UDS modem  
0 shelf.

0 Power - One (1) Power Distribution Panel (PDP) will be  
0 Distribution Always Provided on the AAE Cabinet. The PDP will  
0 Panel (PDP) power PCEs, the UDS Modem Shelf & the Alarm  
0 Battery Supply (ABS). The PDP can accommodate  
0 up to 15 fuses for the A power feed and up to  
0 15 fuses for the B power feed. The PDP fuse are  
0 physically designated 00-29 with fuse 00 being the  
0 first A power fuse and fuse 15 being the first B  
0 power fuse. The UDS Modem shelf will come prewired  
0 for power. Each will be fused by 2 5A fuses(fuses  
0 are always provided as part of the PDP and are  
0 F11-F13 and F26-F28). The ABS will be supplied  
0 via one (1) 10A fuse on the PDP labeled FABS. (The  
0 10A fuse will be supplied as part of the PDP  
0 stocklist.) The FABS fuse is prewired to the  
0 bulkhead such that only the bulkhead connections  
0 are required from AAE to PCEs.

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|                                      |                                                                    |
|--------------------------------------|--------------------------------------------------------------------|
| Filler P0688213                      |                                                                    |
| TAMI Modem Shelf<br>A0344310 (AP)    | 63<br>—>One 212A modem per equipped<br>TPC shelf                   |
| Filler Panel<br>P0687530 (AP)        | 57                                                                 |
| DSU Modem Shelf 3<br>A0344310 (PROV) | 49<br>—>ORDB Modem shelf: one modem<br>per ORDB-equipped TPC shelf |
| DSU Modem Shelf 2<br>A0344310 (PROV) | 42<br>—>DA Modem shelf: two modems<br>per TPC with DA (PCE 0 & 1)  |
| DSU Modem Shelf 1<br>A0344310 (PROV) | 33<br>—>DA Modem shelf: two modems<br>per TPC with DA (PCE 2 & 3)  |
| Power Distribution<br>Panel (PDP)    | 24                                                                 |
| NTNX24CB<br>(AP)                     |                                                                    |
| Hazard Plate Assy                    | 05 Cabinet<br>Dimensions - 28x28.5x72<br>00 (D)(W) (H)             |

AAE 00

Figure 3 - Auxiliary Access Equipment (AAE) Cabinet

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0 TOPS Multipurpose Position (Modular or Integrated)

0 Since all TOPS Multipurpose Positions (operator or administration  
0 (in- charge, assistance, or force manager)) have the same hard-  
0 ware requirements, all TOPS Multipurpose Positions are available  
0 as a Modular or Integrated Position. The components of each type  
0 of Operator Position are as follows:

0 Modular TOPS MP Operator Position

0 Qty./Position

0 1 TOPS MP Terminal Base Unit (NT0M90SA)  
0 1 Monitor (NT0M92FA)  
0 1 Gnd. Bar (NTNX5305)(1 per 128 positions)

0 EITHER 1 Keyboard (NT0M36AE) - English Universal Keyboard  
0 OR 1 Keyboard (NT0M36AA) - French Universal Keyboard  
0 OR 1 Keyboard (NT0M36AH) - IBM DA English Keyboard  
0 OR 1 Keyboard (NT4X81EA) - TELMEX DA Keyboard  
0 (TELMEX is an international application)

0 \*\*\* Keyboard NT4X81DA is now Manufacture Discontinued. \*\*\*

0 EITHER 2 Modular Headset Jack Assembly - 7.25 feet (NTNX5303)  
0 OR 2 Modular Headset Jack Assembly - 6.5 feet (NTNX5306)  
0 OR 2 Modular Headset Jack Assembly - 10.0 feet (NTNX5308)

0 Integrated TOPS MP Operator Position

0 Qty./Position

0 1 TOPS MP Terminal Base Unit (NT0M90SA)  
0 1 Monitor (NT0M92FA)  
0 1 Gnd. Bar (NTNX5305)(1 per 128 positions)

0 EITHER 1 Keyboard (NT0M36AE) - English Universal Keyboard  
0 OR 1 Keyboard (NT0M36AA) - French Universal Keyboard  
0 OR 1 Keyboard (NT0M36AH) - IBM DA English Keyboard  
0 OR 1 Keyboard (NT4X81EA) - TELMEX DA keyboard  
0 (TELMEX is an international application)

0 \*\*\* Keyboard NT4X81DA is now Manufacture Discontinued. \*\*\*

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0 1 TOPS MP Adjustable Desk  
0 Supplier Part Number = NP154  
0 CPC = A0343403  
0 Eng Code = NPS50684-01L01

0 NOTE : The TOPS MP Adjustable Desk will come equipped with  
0 a headset jack assembly.

0 The CUSTOMER IS RESPONSIBLE for providing PRIVACY PANELS and/or  
0 CHAIRS for TOPS MP Positions. If required to match the TOPS MP  
0 furniture, the customer may order these from Herman Miller.

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0 TOPS MP Position Description

0 Controller (NT0M90SA) -

0 The NT0M90SA Controller includes the digital  
0 telephony circuit board which is compatible  
0 with all previous TOPS MP equipment. This  
0 controller provides improved noise performance  
0 when used with the NTNX62AB HSLI pack. When used  
0 with the NTNX62AA, performance equals that of  
0 previous controllers.

0 Change Kit (NT0M96QE)

0 This change kit upgrades an existing NT0M90NA  
0 controller to NT0M90SA.

0 Monitor (NT0M92FA)

0 The video monitor provides a high resolution  
0 display of eight different shades of grey.  
0 The screen consists of 29 lines of text with  
0 90 characters per line and a 12" diagonal  
0 screen.

0 Ground Bar Assembly (NTNX5305)

0 The Ground Bar Assembly provides a  
0 junction point for furniture grounds and one (1)  
0 system single point ground. Provide one Ground Bar  
0 Assembly for up to 128 positions.

0 Keyboard (NT0M36AE)

0 The keyboard consists of 126 keys which are  
0 configured to provide an efficient operator  
0 interface. The keys are designed using Hall-  
0 effect solid state switches. Keys on the  
0 keyboard are as follows:

0 57 typewriter keys  
0 34 call processing keys  
0 8 softkeys  
0 27 keys available for future applications

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0 (Note: All key caps are provided as part of the  
0 keyboard stocklist as no specially engraved  
0 key caps are possible.)

0 Keyboard (NT0M36AA)

0 French version of the NT0M36AE keyboard described  
0 above.

0 Keyboard (NT0M36AH)

0 IBM DA (English) version of the TOPS MP keyboard.

0 Keyboard (NT4X81DA) is Manufacture Discontinued.

0 Keyboard Change Kit (NT0M36AF)

0 Upgrades NT4X81DA keyboard to NT0M36AE  
0 equivalence for Directory Assistance/ORDB use.  
0 Application of NT0M36AF to an NT4X81DA keyboard  
0 produces an NT4X81DB (B0229511) keyboard, which is  
0 functionally the same as NT0M36AE but uses  
0 different artwork.

0 Keyboard Change Kit (NT0M36AK)

0 Upgrades NT0M36AE Keyboard to NT0M36AH  
0 equivalence for IBM DA use.

0 | Keyboard Change Kit (NT4X81EB)

0 | Upgrades NT0M36AE Keyboard to NT4X81EA for TELMEX  
0 | applications only.  
0 | (TELMEX is an international application)

0 The customer is to provide headsets that meet the generic re-  
0 quirements in the Proposed Generic Requirements for Telephone  
0 Headsets used at Bell Operating Companies (BOC) Operator Con-  
0 soles, Issue 1, August 1986, TA-EOP-000314, published by Bell  
0 Communications Research (Bell Core).

0 A TOPS MP Position will require approximately 25 square feet of  
0 office space (with NTI furniture, without privacy panels).

0 A TOPS MP Position will require approximately 28 square feet of  
0 office space (with NTI furniture and customer provided privacy  
0 panels).

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0 (Attenuation pads are not required for TOPS MP. Also, no op-  
0 tional key caps are orderable with TOPS MP.)

0 A Computer Based Training (CBT) Unit is to be provided per the  
0 customer's request and NTI's Building Studies Engineer shall de-  
0 termine the location of this unit. The CBT Unit must be located  
0 within 100' of all associated PCEs.

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**Figure 4 - Typical Local Configuration for a TOPS MP System**

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When the TOPS MP System is located outside its supporting DMS-200 office, a remote configuration (see Figure 5) is required.

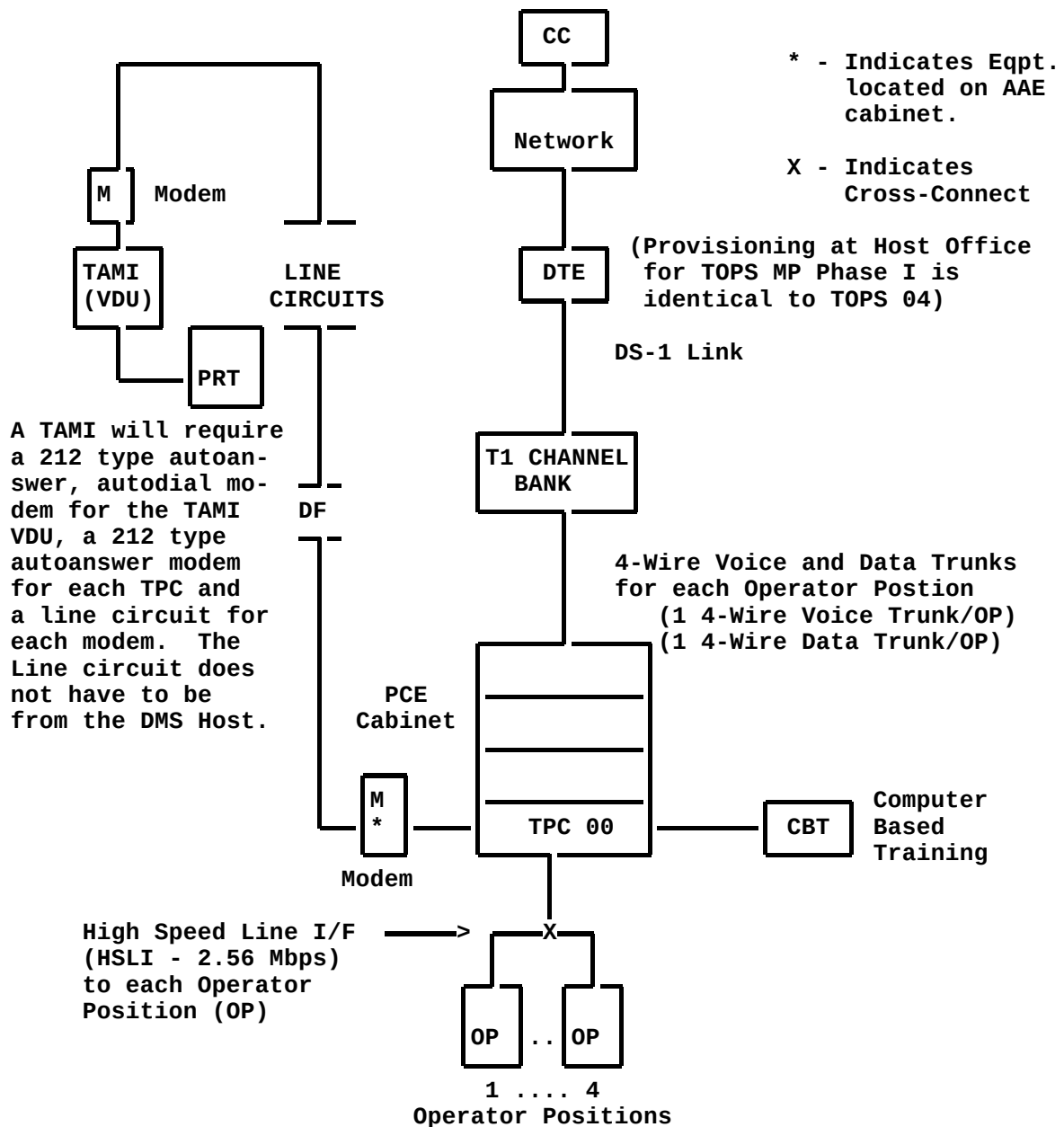
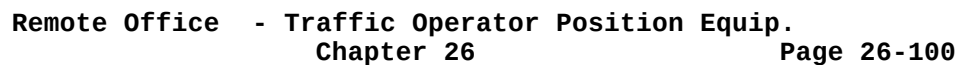


**Figure 5 - Typical Remote Configuration for a TOPS MP System**

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0 Figure 6: TOPS Message Switch (Phase 1)

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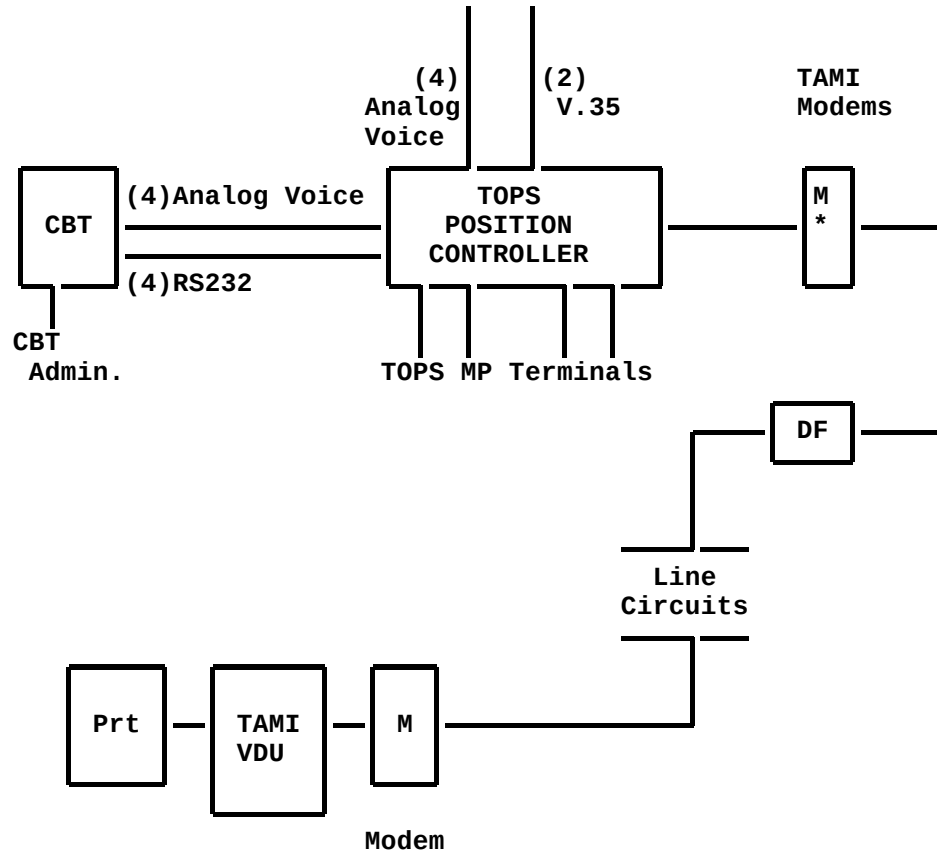
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\* Equipment mounted on AAE cabinet

#### Abbreviations

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|           |                                                 |
|-----------|-------------------------------------------------|
| CB        | : Channel Bank                                  |
| CBT       | : Computer Based Training                       |
| CCI       | : Computer Consoles, Inc.                       |
| CCI ARS   | : Computer Consoles, Inc. Audio Response System |
| CPU       | : Central Processor Unit                        |
| OC Remote | : Operator Centralization Remote                |
| ORDB      | : Operator Reference Database                   |
| TAMI      | : TOPS Administration and Maintenance Interface |

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Figure 6: TOPS Message Switch (Phase 1)

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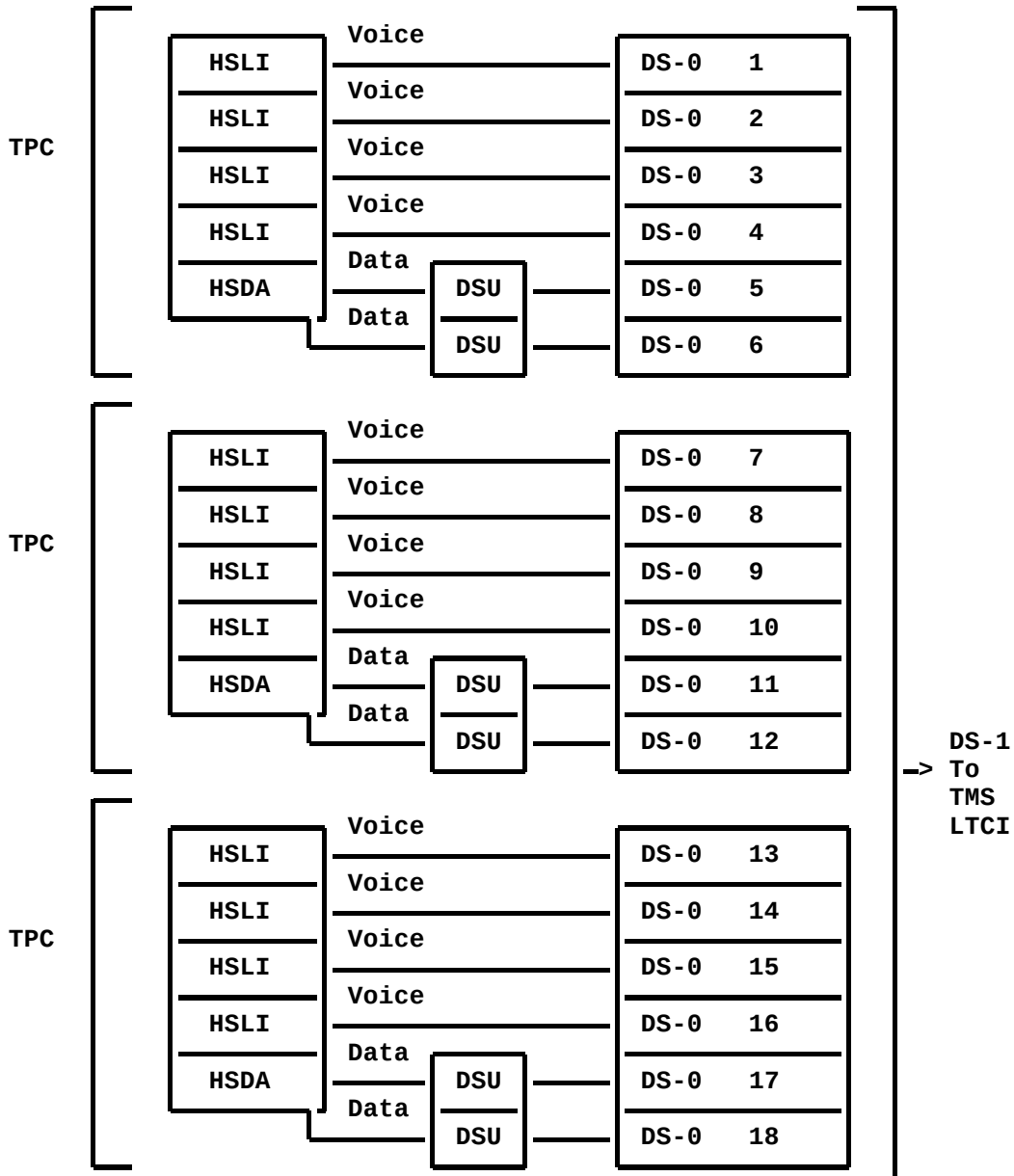
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CHANNEL BANK



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Figure 7: TPC to TMS Multiplexing

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TPC

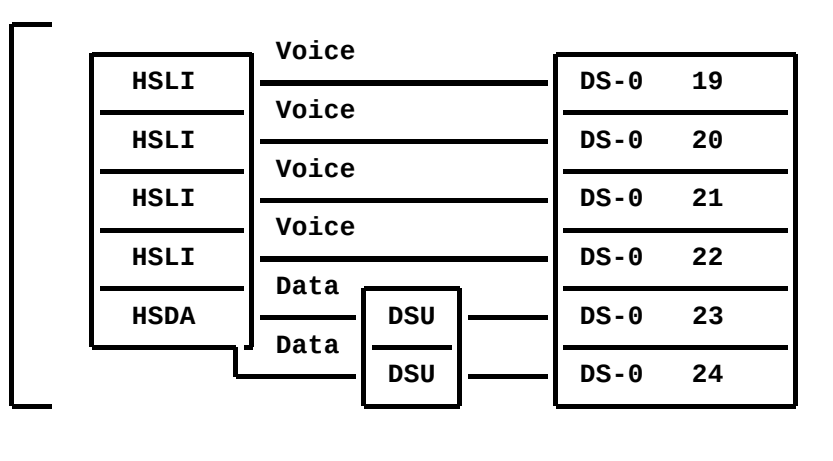


Figure 7: TPC to TMS Multiplexing

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NOTE: The individual position Voice/Data links are multiplexed onto the 24 channels of a DS-1 link by a Channel Bank and sent to the TMS LTCI on a single DS-1.

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0 Hardware Required for Directory Assistance Application

0 The equipment described in this section is required in addition  
0 to the basic office configuration described elsewhere in ECM 345.  
0 The main components of the DA system are the TOPS MP facility, the  
0 DMS-200 host office, the Announcement Recording Unit (ARU) facil-  
0 ity and the Directory Assistance System / Computerized (DAS/C or  
0 Gateway), a vendor-supplied database. These facilities must be  
0 connected by voice or data links to provide DA service. Refer to  
0 Figure 1a or Figure 1b for TOPS MP DA without TMS or Figure 6 for  
0 TOPS MP DA with TMS for the layout of the components of the TOPS  
0 MP DA system.

0 The NTN62AB HSLI CP is required for the Directory Assistance ap-  
0 plication. While the NTN62AB is the standard HSLI and is cur-  
0 rently supplied for all applications, offices previously using  
0 the NTN62AA for Toll and Assistance service must convert to  
0 NTN62AB when adding Directory Assistance service.

0 Hardware Required for Operator Reference Database

0 In addition to the equipment that is required for a basic TOPS MP  
0 Toll and Assist office, database access for ORDB requires a High  
0 Speed Data Access circuit pack and its associated modem. This  
0 NTN66AA HSDA pack mounts in slot 8 of the TPC shelf being con-  
0 figured for ORDB and the UDS D56 modem required for the HSDA pack  
0 mounts on shelf 42 of the AAE cabinet. Refer to the Engineering  
0 Manual section for details of configuring the necessary HSDA and  
0 D56 modem. This HSDA pack and modem provide ORDB access for all  
0 four operator positions supported by the TPC. The HSDA pack pro-  
0 vides two V.35 ports but only one (Port 1) is used for the ORDB  
0 application and therefore only one (1) UDS D56 modem (per HSDA in  
0 slot 8) is required.

0 The NTN62AB HSLI CP is required for the Operator Reference Data-  
0 base application. While the NTN62AB is the standard HSLI and is  
0 currently supplied for all applications, offices previously using  
0 the NTN62AA for Toll and Assistance service must convert to  
0 NTN62AB when adding Operator Reference Database service.

0 Auxiliary Access Equipment Frame

0 The NTN57AC Auxiliary Access Equipment (AAE) frame is supplied  
0 with the modem shelf for TOPS Administration and Maintenance  
0 Interface as Always Provided equipment but the additional modem

0 shelves required for Directory Assistance must be provisioned.  
0 The Data Set Units (DSU) for use on the AAE have a Corporate  
0 Product Code (CPC) of A0344310 and should be provided and config-  
0 ured per the rules in the Engineering Manual section of this ECM.

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0 The individual TOPS MP positions require access to the DAS/C for  
0 Directory information. This access is provided by the NTNX66AA  
0 High Speed Data Access CP which mounts on the TPC shelf in slot  
0 13. This CP supplies the required access for all four positions  
0 on that TPC shelf. The NTNX66AA HSDA CP provides two (2) V.35  
0 ports for database access and each port requires one (1) UDS D56  
0 modem card on a modem shelf in the Auxiliary Access Equipment  
0 frame. Therefore, one (1) NTNX66AA HSDA CP must be provisioned  
0 for every four DA positions and two (2) D56 modems ( A0336873 -  
0 UDS # 64565007) must be provisioned for each HSDA CP.

0 The DA application requires additional memory and this is pro-  
0 vided by an additional NTNX63AA CP mounted on each TPC shelf.  
0 Provide one (1) NTNX63AA for each TPC shelf and mount in slot 5  
0 per the Engineering Manual section.

#### 0 | ARU TRUNK PROVISIONING

0 | The voice announcement of the directory number is actually sup-  
0 | plied by the Announcement Recording Unit (ARU) which must be con-  
0 | nected to the DMS by DS-1 trunks.

#### 0 | Directory Assistance/Intercept/ARU Trunk Provisioning

0 | 1. Calculate the quantity of DA/Intercept trunks required based  
0 | on traffic requirements. Use standard CCS method.

0 |  $BHC \times HT/100 = CCS$  (Refer to the Poisson trunk capacity  
0 | tables in NTP 297-1001-450)

0 | Locate the CCS value in the table under the appropriate GOS  
0 | to determine the number of trunks required.

0 | 2. Calculate the quantity of ARU trunks required based on  
0 | DA/Intercept traffic requirements. Use standard CCS method.

0 |  $BHC \times HT/100 = CCS$  (Refer to the Poisson trunk capacity  
0 | tables in NTP 297-1001-450)

0 | Locate the CCS value in the table under the appropriate GOS  
0 | to determine the number of trunks required.

0 | Average ARU Holding Times are as follows:

0 | - Calls not eligible for auto call completion = 12 sec.

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0 | - Calls eligible for auto call completion,  
0 | call completion declined = 25 sec.

0 | - Calls eligible for auto call completion,  
0 | call completion accepted = 45 sec.

0 | - Intercept calls = 12 sec.

0 | 3. Calculate the number of DA/Intercept DS1s required.

0 | DA/Intercept trunks required (Step 1) / 24 = DS1s required

0 | 4. Calculate the number of ARU DS1s required.

0 | ARU trunks required (Step 2) / 24 = DS1s required

0 | 5. Calculate the number of DTC required based on DTC real  
0 | time capacity

0 | DA/Intercept BHC x 90 ms / 612,000 ms = Number of DTC  
0 | required.

0 | 6. Spread the DA/Intercept DS1s evenly over the number of  
0 | required DTC. Spread the ARU DS1s evenly over the number of  
0 | required DTC. Calculate the the number of attempts per DTC  
0 | using the following formulas:

0 | DA/Intercept trunks:  $28 \text{ CCS} \times 100 / \text{Holding time} = \text{Attempts}$   
0 |  $\text{per trunk} \times 24 \text{ trunks per DS1} \times \text{number}$   
0 |  $\text{of DS1} = \text{attempts per DTC}.$

0 | ARU trunks :  $36 \text{ CCS} \times 100 / \text{Holding time} = \text{Attempts per}$   
0 |  $\text{trunk} \times 24 \text{ trunks per DS1} \times \text{number of DS1} =$   
0 |  $\text{attempts per DTC}.$

0 | (36 CCS is used for the ARU trunks rather than 28 CCS  
0 | because of the extremely low overhead associated with ARU  
0 | connections.)

0 | 7. If any of the DTCs has attempts equal to more than 13,600,  
0 | then add one or more DTC and recalculate attempts per DTC.  
0 | Enough DTC must be provided to achieve attempts less than or  
0 | or equal to 13,600.

0 | Example :

0 | (The numbers used are for this example only)

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0  
0 DA/Intercept BHC = 86,000  
0 DA/Intercept HT = 42 sec  
0 ARU HT = 14 sec

0 1. Total DA/Intercept trunks required = 1290 (Based on 28 CCS  
0 per trunk).

0 2. Total ARU trunks required = 336 (Based on 28 CCS per trunk).

0 3. DA/Intercept DS1s =  $1290/24 = 54$  DS1s

0 4. ARU DS1s =  $336/24 = 14$  DS1s

0 (Note the total DS1s required divided by the DTC physical  
0 capacity of 20 DS1s = 4 DTC are required based on traffic).

0 5.  $86000 \times 90 \text{ ms} / 612000 \text{ ms} = 13$  DTC (Based on real time  
0 capacity).

0 6. DS1s spread evenly over the 13 DTC =

0 DTC 1- 1 ARU DS1  $((36 \times 100 / 14) \times 24) \times 1 = 6172$   
0 11 4 DA/Intc DS1  $((28 \times 100 / 42) \times 24) \times 4 = 6400$   
0 Total attempts 12572

0 DTC 12 1 ARU DS1  $((36 \times 100 / 14) \times 24) \times 1 = 6172$   
0 5 DA/Intc DS1  $((28 \times 100 / 42) \times 24) \times 5 = 8000$   
0 Total attempts 14172

0 DTC 13 2 ARU DS1  $((36 \times 100 / 14) \times 24) \times 2 = 12344$   
0 5 DA/Intc DS1  $((28 \times 100 / 42) \times 24) \times 5 = 8000$   
0 Total attempts 20344

0 DTC 1-11 are well within the 13,600 attempts per DTC limit.  
0 DTC 12 and DTC 13 exceed this limit. A DTC must be added and  
0 the DS1s re-spread over 14 DTC.

0 DTC 1-11 remain the same.

0 DTC 12 is configured the same as DTC 1-11.

0 DTC 13 and 14 are configured with:

0 1 ARU DS1  $((36 \times 100 / 14) \times 24) \times 2 = 6172$   
0 3 DA/Intc DS1  $((28 \times 100 / 42) \times 24) \times 2 = 3200$   
0 Total attempts 9372

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0  
0 \*\*\*\*\*  
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0 \* 14 DTC are required to accomdate the 68 DS1s for the \*  
0 \* DA/Intc/ARU trunks for this example \*  
0 \*  
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## 0 MPC PROVISIONING

0 Each NT1X89AA MPC or NT1X89BA EMPC used for DMS to DAS/C access  
0 will require one (1) 9600 baud modem. Refer to ECM 349 for ap-  
0 propriate modem ordering information (See Case R96).

0 The call control links from the DMS to the DAS are provided via  
0 either NT1X89AA MultiProtocol Converters (MPCs) or NT1X89BA En-  
0 hanced MultiProtocol Converters (EMPCs). The MPCs or EMPCs are  
0 mounted on IOC shelves and are provisioned based on traffic. Each  
0 MPC is capable of handling 9000 Busy Hour Calls and each EMPC can  
0 handle 18000 BHC. A maximum of sixteen MPCs or EMPCs is allowed  
0 per application. The total DA traffic should be divided by 9000  
0 to determine how many MPCs are required, or by 18000 when using  
0 EMPCs. The number of MPCs/EMPCs should be doubled to provide re-  
0 dundancy and spread over as many IOCs as possible to minimize the  
0 impact of an IOC failure. Refer to ECM 482 for additional infor-  
0 mation about EMPC link provisioning and ECM 468 for a diagram  
0 showing system configuration. Refer to availability reports be-  
0 fore ordering EMPCs.

0 The MultiProtocol Converters (MPC/EMPC) used for the datalink  
0 from the DMS to the DA database must be provisioned based on  
0 traffic. Each MPC/EMPC CP will use only one port.

0 LET BHC = total Busy Hour Calls requiring DA access  
0 N = preliminary Number of MPCs/EMPCs required  
0 TC = Total MPC CPs required

0 
$$N = \text{BHC} / 9,000 \quad (\text{Round Up}) \text{ MPC}$$

0 - or -

0 
$$N = \text{BHC} / 18,000 \quad (\text{Round Up}) \text{ EMPC}$$

0 
$$\text{TC} = N * 2$$

0 The preliminary number of MPCs/EMPCs is doubled to provide the  
0 necessary redundancy. In applications requiring more than eight  
0 MPCs/EMPCs for traffic, it is not possible to provide "N \* 2" re-  
0 dundancy, due to the limit of sixteen (maximum) MPCs/EMPCs per  
0 application. In such a configuration sparing should be based on  
0 the concept that no single point failure should degrade capacity.  
0 The MPCs/EMPCs should be spread over as many IOCs as possible and  
0 spares provisioned based on the number of MPCs/EMPCs that would  
0 be lost if the most heavily loaded IOC were to be lost. For exam-  
0 ple, if an office needed twelve MPCs and had four IOCs, three

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0 MPCs/EMPCs per IOC (12 total) would carry the traffic. By provi-  
0 sioning four MPCs/EMPCs per IOC the loss of any individual IOC  
0 would still leave twelve working MPCs/EMPCs. When possible, "N \*  
0 2" sparing is recommended.

0 Operator positions for IBM DA are provisioned the same as for Di-  
0 rectory Assistance via CCI except for the keyboard. Provide the  
0 NT0M36AH (English) keyboard for new IBM DA offices. Existing  
0 NT0M36AE keyboards may be upgraded for IBM DA applications with  
0 the NT0M36AK change kit.

#### 0 | TOPS QMS

0 | The TOPS QMS External MIS feature (NTXR50AA), if provided, re-  
0 | quires one or more MPC or EMPC circuit packs on the IOC shelf.

0 | The TOPS QMS Senior Operator feature (part of NTP41AA or  
0 | NTP42AA) requires a TOPS loop-around trunk for each Senior Oper-  
0 | ator established. This may require additional trunks or T1 con-  
0 | nections in the TOPS office.

#### 0 3.1.3 PROVISIONING CONSIDERATIONS

0  
0 The following equipment is to be configured to meet office re-  
0 quirements. Provisioning Guidelines for determining the number of  
0 TOPS MP positions (Phase I) and supporting DMS-100F equipment is  
0 identical to the TOPS 04 Provisioning Guidelines (with the excep-  
0 tion of power) (Reference NTP 297-2271-450 and Engineering Man-  
0 ual). Hardware required for the TOPS MP System is as follows:

| 0 | <u>PEC</u> | <u>DESCRIPTION/REQUIREMENTS</u> |
|---|------------|---------------------------------|
|---|------------|---------------------------------|

|   |          |                                               |
|---|----------|-----------------------------------------------|
| 0 | NTNX60AA | Position Controller Equipment (PCE) Cabinet - |
| 0 |          | provide per customer requirements. One (1)    |
| 0 |          | fully equipped PCE Cabinet will service 16    |
| 0 |          | operator positions. See attached Engineering  |
| 0 |          | Manual Section (EMA8-TOPSMP-1).               |

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0 NTNX61AF TOPS Position Controller (TPC) Pack Fill -  
0 provide per customer requirements. One (1)  
0 TPC Pack Fill is required for every four (4)  
0 operator positions. See attached preliminary  
0 Engineering Manual Section (EMA-TOPSMP- ).  
0 All new TOPS MP jobs shall be provisioned  
0 with NTNX61AF. Check RTS date. This new pack  
0 fill provides the same functionality as the  
0 NTNX61AE pack fill but has an improved type  
0 interface for storage devices (SCSI).

0 NTNX62AB High Speed Line Interface (HSLI) CP - provide  
0 per customer requirements. One (1) HSLI CP is  
0 required for each operator position. Up to  
0 four (4) HSLI CPs can mount on a TPC shelf,  
0 card slots 9-12. See attached Engineering  
0 Manual Section (EMA8-TOPSMP-2).

0 NT0X50AA Filler Face Plates - mount on an equipped TPC  
0 shelf, in unoccupied card slots 5 and 8-13.

0 NTNX57AC Auxiliary Access Equipment (AAE) Cabinet -  
0 provide one (1) AAE per one (1) to four (4) PCEs.  
0

0 NTNX2531 PCE Row End Panel (Right) - provide one (1)  
0 per PCE line-up.

0 NTNX2532 PCE Row End Panel (Left) - provide one (1)  
0 per PCE line-up

0 NTNX56CA Furniture Floor Attachment Kit (Raised Floor)  
0 provide four (4) per TOPS MP Position.

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0        PEC                    DESCRIPTION/REQUIREMENTS

0        NTNX56BA        Furniture Floor Attachment Kit (Concrete Floor) -  
0                           provide four (4) per TOPS MP Position.  
0        NTNX56AA        PCE Anchor Kit (Raised Floor) - provide four (4)  
0                           per AAE/PCE.  
0        NTNX55AA        PCE/AAE Cable Rack Adapter Kit - provide one (1)  
0                           per AAE/PCE only if customer options not to use  
0                           a simple ladder runway.  
0        NTOX21AV        12mm Anchor Assembly (Concrete, Earthquake  
0                           Zones 1-3) - provide four (4) per AAE/PCE.

0        NTOX21AW        16mm Anchor Assembly (Concrete, Earthquake  
0                           Zones 4-7) - provide four (4) per AAE/PCE.

0        NT0X21AH        Shim Kit (Earthquake) - provide one (1) kit  
0                           per AAE/PCE.

0        NT0X21AU        Anchor Assembly (Nonearthquake) - provide 4  
0                           per AAE/PCE.

0        A0329731        Leveling Feet (Nonearthquake) - provide 4  
0                           per AAE/PCE.

0        P0690625        Cover Plate - when cable troughs are used  
0                           provide two (2) per PCE line-up and 2 per AAE.

0        P0677746        Anchor Plate (Earthquake) - provide four (4)  
0                           per AAE/PCE.

0        P0688332        Isolation Pad - Provide two (2) per AAE/PCE.

0        Provide the following junctor H/W in the 116 Spec:

0                           Qty.  
0        P0127312        1        Provide this hardware for joining PCE  
0        P0401452        1        frames in a line-up. These quantities  
0        P0170265        2        are considered one (1) set. Provide four (4)  
0        P0423638        1        sets for nonearthquake site and six (6) sets  
0                           for earthquake site.

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|   |          |   |                                              |
|---|----------|---|----------------------------------------------|
| 0 | P0677744 | 1 | Provide this EMI contact hardware for each   |
| 0 | P0677745 | 1 | adjacent cabinet internal to the line-up.    |
| 0 | P0205653 | 9 | These quantities are considered one (1) set. |
| 0 | P0483753 | 9 | Provide one (1) set per adjacent cabinet.    |
| 0 | P0627369 | 5 |                                              |

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0 93 12 030 WICAT Computer Based Training System0 Wicat Computer Based Training (CBT) Unit is provided per customer  
0 requirements. The single processor Wicat CBT System will support  
0 up to 16 operator positions. The CBT system may be ordered as a  
0 single system only. Order the following Wicat equipment as re-  
0 quired:0 20000019-01 Wicat CBT System (Includes CBT VDU & one (1) CPU)  
0 (A0361801)0 940-001-001T Wicat Cabinet - order one per Single System  
0 (C2502586) listed above.

0 Recommended Sparring for Non-redundant Wicat CBT Systems:

0 Wicat Part #

0 Description0 810-030-002 ICI Board  
0 (C2502582)0 810-167-001 2MB Memory Board  
0 (C2502580)0 810-220-001 PCM Audio Delivery Board  
0 (C2502581)0 917-022-001 SCSI Host Interface  
0 (C2502587)0 909-005-003 SCSI Hard Disk Drive  
0 (C2502584)0 917-175-001 Monochrome Terminal  
0 (C2502585)0 940-001-001T Model 1260 Cabinet (Brown)  
0 (C2502586)0 919-003-001 SCSI Cartridge Tape Drive  
0 (C2502583)0 917-163-001 12.5MHz CPU Board with 1 MB Memory  
0 (C2502579)

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0 Bix Assembly Bix Assembly - provide one assembly per eight  
0 operator positions. The operator positions must  
0 be within 50 cabling feet of the Bix Box.

0 Bix Assembly

0 Quantity CPC/ENG CODE - Description  
0 (Per 8 operator positions)

0 1 A0355018 - Modular Connector

0 TAMI Provide at least one TPC Administration and Maintenance  
0 Interface (TAMI) (recommend HP 700/22 or DEC VT-320)  
0 per Operating Serving Center (OSC). The TAMI VDU  
0 can access up to four (4) postions at one time (one (1)  
0 TPC shelf). If more than one (1) shelf is required to  
0 be monitored at one (1) time, the quantity of TAMI VDUs  
0 must equal the number of shelves to be monitored. The  
0 TAMI VDU can be located Remotely or Locally. For either  
0 case the TAMI requires a VT100 compatible VDU, a UDS 212  
0 A/D modem for the VDU and a UDS 212 A modem for each  
0 TPC shelf and a line circuit for each of these modems.

0 PCE At this time, an Isolated System Grounding (ISG)  
0 Printer compliant printer is not available. If the printing of  
0 logs, help screens, or program panels is required, a  
0 screen printer from the TAMI VDU is recommended.

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0 The recommended PCE printer is a RS-232 1200 baud  
0 compatible printer.

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0 Modems For TOPS MP, NTI will provide UDS modems for use on  
0 the modem shelves in the AAE frame. Provide per customer  
0 requirements (Reference ECM 313). Provide one (1) UDS 212  
0 A/D standalone type modem for the TAMI VDU and provide one  
0 (1) UDS 212 A card type modem for each equipped TPC shelf.

0 One digital modem circuit (NT3X02/NT3X03 pair provides  
0 four) is required for each TOPS position to make the  
0 necessary D/A or A/D conversion for processing data  
0 signals. The digital modems mount on an MTM shelf.  
0 This is not required when using a TMS configuration.

0 6-Port When a call is routed to an operator position, the voice  
0 Conference channel of that position is connected to a 6-port  
0 Circuits conference circuit. All TOPS applications use 6-port  
0 conference circuits as two 3-port conference circuits.  
0 The 6-port is recommended over the 3-port because of  
0 better noise characteristics. One 6-port conference  
0 circuit is to be provisioned for every two positions  
0 with a spare allotment of 5%.

0 No special maintenance kit exists for TOPS MP.

0 TOPS MP Position Labels

0 Provide two (2) sets of labels for the positions required per  
0 the following information.

0 P0709162 : TOPS Position Label for Positions #0000-0071  
0 P0709163 : TOPS Position Label for Positions #0072-0143  
0 P0709164 : TOPS Position Label for Positions #0144-0215  
0 P0709165 : TOPS Position Label for Positions #0216-0287  
0 P0709166 : TOPS Position Label for Positions #0288-0359  
0 P0709167 : TOPS Position Label for Positions #0360-0431  
0 P0709168 : TOPS Position Label for Positions #0432-0503  
0 P0709169 : TOPS Position Label for Positions #0504-0575  
0 P0709170 : TOPS Position Label for Positions #0576-0647  
0 P0709171 : TOPS Position Label for Positions #0648-0719  
0 P0709172 : TOPS Position Label for Positions #0720-0791  
0 P0709173 : TOPS Position Label for Positions #0792-0863  
0 P0709174 : TOPS Position Label for Positions #0864-0935  
0 P0709175 : TOPS Position Label for Positions #0936-1007  
0 P0709176 : TOPS Position Label for Positions #1008-1023

0 | 65001860 UDS Modem Shelf Spare Power Supply

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0 | Provide one or more UDS Modem Shelf Spare Power Supply  
0 | per Customer request as a spare power supply for the UDS modem  
0 | shelves mounted in the AAE cabinet (NTNX57AC).

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## 0 | TOPS QMS

0 Force management Basic Statistics are provided to devices QTADS,  
0 QFADS and QMFADS. These devices replace the TADS, FADS and MFADS  
0 of the TOPS ACD. The QTADS, QFADS and QMFADS hardware require-  
0 ments are the same the TADS, FADS and MFADS. This hardware in-  
0 cludes a DMODEM circuit (NT3X02AA, NT3X03AA), a BELL108 or  
0 BELL202 compatible modem and a TTY. The QTADS, QFADS and QMFADS  
0 can co-exist in an office during the transition period from TOPS  
0 ACD to TOPS QMS. TOPS QMS queue information can only be reported  
0 to the QTADS, QFADS or QMFADS devices.

0 The FMCRT (Force Manager) provisioning rules remain the same.  
0 The Force Manager position must be a TOPS MP position or a Cus-  
0 tomer provided TOPS 4 position. A TOPS MPX position cannot serve  
0 as a Force Manager position. Only one Force Manager can be provi-  
0 sioned per TOPS office.

0 The new external MIS system can replace the FMCRT, QTADS, QFADS  
0 and QMFADS, can be used in parallel with those devices or not im-  
0 plemented at all. The link for sending the statistics to the ex-  
0 ternal MIS system is an X.25 link. This link is implemented via a  
0 Multi-Protocol Controller circuit pack (MPC) (NT1X89AA) or an En-  
0 hanced Multi-Protocol Controller (EMPC) (NT1X89BA) mounted on an  
0 Input/Output Controller shelf in the TOPS host office. One MPC  
0 port or one EMPC port is required per link. A MPC can provide up  
0 to two 19.2 Kbps ports and an EMPC can provide up to two 56 Kbps  
0 ports. An appropriate modem must be provided per link based on  
0 the speed of the link and the interface requirements of the ex-  
0 ternal MIS system. The limit of one application per MPC or EMPC  
0 applies to these links allowing only one port of any MPC or EMPC  
0 to be used for this feature. The TOPS QMS MIS is limited to 16  
0 links. The external MIS system shall be provided by the customer.

0 The following information provides a calculation for determining  
0 the quantity of MPC or EMPC links required for an external MIS  
0 system.

0 The following calculation determines the average rate at which  
0 message data buffers are transmitted per minute by the toll  
0 switch to the MIS device.

0 Average msg bytes/call \* HDBH call attempts  
0 ----- = Buffers/min.  
0 8192 bytes \* 60

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0 |       Average message bytes/call = average position event msgs/call  
0 |                                   \* 45 bytes + average queue  
0 |                                   event/call \* 26

0 |       As there are typically two queue event messages and three posi-  
0 |       tion event messages per call, assume 187 average msg bytes/call  
0 |       if specific message counts are not available.

0 |       Once HDBH data buffers/minute have been calculated, compare the  
0 |       data rate with the transmission rate of the selected MPC or EMPC  
0 |       port. An MPC card transmitting at 19.2 Kbs can send 18  
0 |       buffers/minute. An EMPC card transmitting at 56 Kbs can send 52.5  
0 |       buffers/minute. A .8 Erlang adjustment for link overhead changes  
0 |       the rated capacity of the MPC card and EMPC card to 14.4 and 42  
0 |       buffers/minute, respectively.

0 |       Percentage of link utilization can be computed using the follow-  
0 |       ing formula:

0 |       Buffers/minute  
0 |       ----- \* 100 = % link utilization on MPC port  
0 |       14.4 minutes

0 |       Buffers/minute  
0 |       ----- \* 100 = % link utilization on EMPC port  
0 |       42 minutes

0 |       If MPC is selected and % utilization is greater than 100% for one  
0 |       link, links shall be added to reduce the link utilization below  
0 |       100% per link. Another option would be to use EMPC.

0 |       If EMPC is selected and % utilization is greater than 100% for  
0 |       one link, links shall be added to reduce the link utilization be-  
0 |       low 100% per link.

0 |       An additional link shall be provisioned to protect against loss  
0 |       of data during a single link failure. All links share the data  
0 |       traffic load under normal operating conditions.

0 |       The above computations do not take into account encoding of Force  
0 |       Management messages and messages generated by non-call events.

0 |       Each Senior Operator established under the TOPS QMS software fea-  
0 |       ture requires a TOPS loop-around trunk.

0 |       Remote Office - Traffic Operator Position Equip.

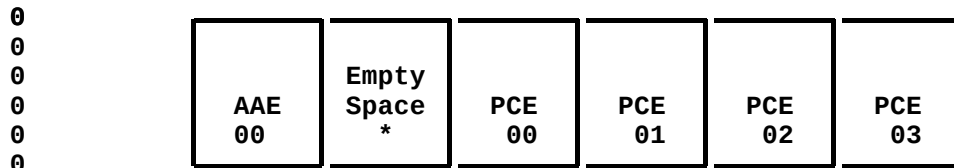
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0 3.1.4 OFFICE LAYOUT INFORMATION

0  
0 The standard TOPS MP line-up will be as follows:



0 Standard TOPS MP Line-up

0 \* A 30 inch Empty Space between the AAE and PCE Cabinets  
0 is required for EMI and Earthquake requirements.

0 3.1.5 TRAFFIC TABLES

0  
0 Complete Half-Hourly Force Capacity Tables are included in NTP  
0 297-2281-750. Information on how to use the tables is included in  
0 Part 6 (page 54) of that NTP and the Tables begin on page 95.  
0 Generally, the number of positions required will be based upon  
0 telco estimates but the Tables are available for reference.

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| ARU Trunk Provisioning Table (Poisson Theory) |      |        |     |        |      |        |      |
|-----------------------------------------------|------|--------|-----|--------|------|--------|------|
| Trunks                                        | CCS  | Trunks | CCS | Trunks | CCS  | Trunks | CCS  |
| 1                                             | .1   | 21     | 346 | 41     | 865  | 61     | 1428 |
| 2                                             | 1.6  | 22     | 370 | 42     | 892  | 62     | 1457 |
| 3                                             | 6.9  | 23     | 395 | 43     | 919  | 63     | 1486 |
| 4                                             | 15.4 | 24     | 419 | 44     | 947  | 64     | 1516 |
| 5                                             | 26.6 | 25     | 444 | 45     | 975  | 65     | 1544 |
| 6                                             | 40.0 | 26     | 469 | 46     | 1003 | 66     | 1574 |
| 7                                             | 54.7 | 27     | 495 | 47     | 1030 | 67     | 1603 |
| 8                                             | 70.9 | 28     | 520 | 48     | 1058 | 68     | 1632 |
| 9                                             | 88.2 | 29     | 545 | 49     | 1086 | 69     | 1661 |
| 10                                            | 107  | 30     | 571 | 50     | 1115 | 70     | 1691 |
| 11                                            | 126  | 31     | 597 | 51     | 1143 | 71     | 1720 |
| 12                                            | 145  | 32     | 624 | 52     | 1171 | 72     | 1750 |
| 13                                            | 166  | 33     | 650 | 53     | 1200 | 73     | 1779 |
| 14                                            | 187  | 34     | 676 | 54     | 1228 | 74     | 1809 |
| 15                                            | 208  | 35     | 703 | 55     | 1256 | 75     | 1838 |
| 16                                            | 231  | 36     | 729 | 56     | 1285 | 76     | 1868 |
| 17                                            | 253  | 37     | 756 | 57     | 1313 | 77     | 1898 |
| 18                                            | 276  | 38     | 783 | 58     | 1342 | 78     | 1927 |
| 19                                            | 299  | 39     | 810 | 59     | 1371 | 79     | 1957 |

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|    |     |    |     |    |      |    |      |
|----|-----|----|-----|----|------|----|------|
| 20 | 323 | 40 | 837 | 60 | 1400 | 80 | 1986 |
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ARU Trunk Provisioning Table (Poisson Theory)

| Trunks | CCS  | Trunks | CCS  | Trunks | CCS  | Trunks | CCS  |
|--------|------|--------|------|--------|------|--------|------|
| 81     | 2016 | 101    | 2620 | 121    | 3234 | 141    | 3857 |
| 82     | 2046 | 102    | 2650 | 122    | 3265 | 142    | 3888 |
| 83     | 2076 | 103    | 2681 | 123    | 3296 | 143    | 3920 |
| 84     | 2106 | 104    | 2711 | 124    | 3327 | 144    | 3951 |
| 85     | 2136 | 105    | 2742 | 125    | 3358 | 145    | 3982 |
| 86     | 2166 | 106    | 2772 | 126    | 3389 | 146    | 4014 |
| 87     | 2196 | 107    | 2803 | 127    | 3420 | 147    | 4045 |
| 88     | 2226 | 108    | 2834 | 128    | 3451 | 148    | 4076 |
| 89     | 2256 | 109    | 2864 | 129    | 3482 | 149    | 4108 |
| 90     | 2286 | 110    | 2895 | 130    | 3513 | 150    | 4139 |
| 91     | 2317 | 111    | 2926 | 131    | 3544 | 151    | 4171 |
| 92     | 2346 | 112    | 2956 | 132    | 3576 | 152    | 4202 |
| 93     | 2377 | 113    | 2987 | 133    | 3607 | 153    | 4234 |
| 94     | 2407 | 114    | 3018 | 134    | 3628 | 154    | 4265 |
| 95     | 2437 | 115    | 3049 | 135    | 3669 | 155    | 4297 |
| 96     | 2468 | 116    | 3080 | 136    | 3700 | 156    | 4328 |
| 97     | 2498 | 117    | 3110 | 137    | 3732 | 157    | 4360 |
| 98     | 2528 | 118    | 3141 | 138    | 3763 | 158    | 4392 |
| 99     | 2559 | 119    | 3172 | 139    | 3794 | 159    | 4423 |
| 100    | 2589 | 120    | 3203 | 140    | 3825 | 160    | 4455 |

| ARU Trunk Provisioning Table (Poisson Theory) |      |        |      |        |     |        |     |
|-----------------------------------------------|------|--------|------|--------|-----|--------|-----|
| Trunks                                        | CCS  | Trunks | CCS  | Trunks | CCS | Trunks | CCS |
| 161                                           | 4486 | 181    | 5121 |        |     |        |     |
| 162                                           | 4518 | 182    | 5153 |        |     |        |     |
| 163                                           | 4550 | 183    | 5185 |        |     |        |     |
| 164                                           | 4581 | 184    | 5217 |        |     |        |     |
| 165                                           | 4613 | 185    | 5249 |        |     |        |     |
| 166                                           | 4645 | 186    | 5281 |        |     |        |     |
| 167                                           | 4676 | 187    | 5313 |        |     |        |     |
| 168                                           | 4708 | 188    | 5345 |        |     |        |     |
| 169                                           | 4740 | 189    | 5377 |        |     |        |     |
| 170                                           | 4771 | 190    | 5409 |        |     |        |     |
| 171                                           | 4803 | 191    | 5441 |        |     |        |     |
| 172                                           | 4835 | 192    | 5473 |        |     |        |     |
| 173                                           | 4867 | 193    | 5505 |        |     |        |     |
| 174                                           | 4898 | 194    | 5537 |        |     |        |     |
| 175                                           | 4930 | 195    | 5569 |        |     |        |     |
| 176                                           | 4962 | 196    | 5601 |        |     |        |     |
| 177                                           | 4994 | 197    | 5633 |        |     |        |     |
| 178                                           | 5026 | 198    | 5665 |        |     |        |     |
| 179                                           | 5058 | 199    | 5697 |        |     |        |     |
| 180                                           | 5089 | 200    | 5729 |        |     |        |     |

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0 3.2 PRODUCT/SYSTEM SPECIFICATION

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0 3.2.1 PHYSICAL CHARACTERISTICS

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|             | Heat Dissipation | Aisle Spacing               | Weight   |
|-------------|------------------|-----------------------------|----------|
| AAE Cabinet | 170 Watts        | 2' Back<br>3' Front         | 1000 lbs |
| PCE Cabinet | 1200 Watts       | 2' Back<br>3' Front         | 1000 lbs |
| CBT Unit    | 250 Watts        | 3' Front & Back<br>4" Sides | 150 lbs  |

0

Table 1 - Building Studies Information

0

## FRAME AND LOGIC GROUNDING

0

0 The Frame Ground is separate from the Logic Ground to conform to  
0 Isolated System Grounding (ISG) principles.

0

## CURRENT DRAIN

0

0 The power requirements of TOPS MP equipment follows:

0

Maximum Current Drain

0

PCE Cabinet (-48V DC)

11 A (A Feed)

0

11 A (B Feed)

0

TOPS Multipurpose Position (115 AC) 0.85 A

0

Computer Based Training Unit (115 AC) 12.0 A

0

Computer Based Training VDU (115 AC) 1.0 A

0

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|   |                                      |              |
|---|--------------------------------------|--------------|
| 0 | Auxiliary Access Equipment Frame     | 3 A (A Feed) |
| 0 |                                      | 3 A (B Feed) |
| 0 | Alarm Battery Supply (ABS) (-48V DC) | 6 A          |

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| 0 |                                                  |             |

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## 0 FUSING REQUIREMENTS

0 The power requirements of TOPS MP equipment follows:

| 0 |                               | <u>Maximum</u> | <u>Current</u> | <u>Drain</u> | <u>Fusing</u> |
|---|-------------------------------|----------------|----------------|--------------|---------------|
| 0 | PCE Cabinet (-48V DC)         | 11 A           | (A Feed)       |              | 20 A          |
| 0 |                               | 11 A           | (B Feed)       |              | 20 A          |
| 0 | TOPS MP Position (115 AC)     | 0.85 A         |                |              |               |
| 0 | CBT Unit (115 AC)             | 12.0 A         |                |              |               |
| 0 | CBT VDU (115 AC)              | 1.0 A          |                |              |               |
| 0 | AAE Frame                     | 3 A            | (A Feed)       |              | 5 A           |
| 0 |                               | 3 A            | (B Feed)       |              | 5 A           |
| 0 | Alarm Battery (ABS) (-48V DC) | 6 A            |                |              | 10 A          |

0 The PCE Cabinet is powered by 2 power feeds (one A & one B), with  
0 each feed fused at 20 A. (Fuses are always provided as part of  
0 the PDP stocklist.) The power source for the PCE Cabinet will be  
0 a Power Distribution Panel (PDP) in the AAE Cabinet. The AAE  
0 cabinet must be provided for both Local and Remote configured  
0 TOPS MP offices. The AAE will also supply ABS to the PCE cabi-  
0 nets.

0 The customer is required to provide the AC power for the TOPS MP  
0 System.

0 NT recommends that a dedicated and protected AC power source be  
0 used for the TOPS Multipurpose Positions, the CBT unit, the  
0 Printer used with the PCE Cabinet or a Local TAMI. The TOPS MP  
0 Monitor will have a twist lock plug which will require a twist  
0 lock power receptacle. Any equipment not powered by the dedi-  
0 cated AC power source must be located at least 7 feet from the  
0 TOPS MP Equipment and if this 7 feet requirement cannot be met,  
0 barriers to separate this equipment from the TOPS MP equipment  
0 must be installed. This is necessary to eliminate the possi-  
0 bility of electrical shock due to grounding potential differ-  
0 ences. Reference the TOPS MP Power and Grounding Requirements  
0 NTP 297-2281-156.

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0 3.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 A 30" empty space between the AAE and PCE frames is required for  
0 EMI and Earthquake requirements.

0 3.2.3 SPARING INFORMATION

0  
0 Recommended sparing guidelines call for one spare for each  
0 provisionable circuit pack.

0 | Provide one or more UDS Modem Shelf Spare Power Supply (65001860)  
0 | per Customer request as a spare power supply for the UDS modem  
0 | shelves mounted in the AAE cabinet (NTNX57AC).

0 3.3 SOFTWARE PROVISIONING

0

0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The following software for TOPS MP applications may be ordered,  
0 based on office configuration requirements.

0 | Packaging information is accurate at time of publication but, due  
0 | to changes often made in packaging, should be checked in the ap-  
0 | propriate software database system.

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0 Includes: NTX000AA Bilge  
0 NTX001AA Common Basic  
0 NTX030CC TOPS Call Processing  
0 NTX134BA Remote OC Data Link Handling  
0 NTX724AA TOPS MP Interface  
0 NTX871AA Remote TOPS MP OC Data Link Handling

0 NTXA60AA - TOPS Closedown

0 NTX873AA - Host TOPS MP OC Data-Link Handling

0 NTX039AA - Host OC Data-Link Handling

0 | Refer to the appropriate software database system for software  
0 package inter-dependencies.

0 For more information on TOPS Closedown packaging, refer to  
0 ECM391.

0 Software Required for Directory Assistance Application

0 The following software is required for TOPS MP Directory Assist-  
0 ance applications:

0 \*\*\* For Directory Assistance \*\*\*

0 Required Master Package:

0 -----

0 NTNX708AA - TOPS MP - Toll and Directory Assistance Operation

0 Includes-

0 NTXA62AA - TOPS MP Audio Response Call Handling  
0 NTXA90AA - TOPS MP - Terminal Handler High Speed  
0 NTXA28AA - TOPS AWT Enhancements  
0 NTX030BA - TOPS ACD Features  
0 NTX030CC - TOPS Call Processing  
0 NTX273AA - MultiProtocol Converter BX.25  
0 NTX645AA - TOPS Service Billing  
0 NTX724AA - TOPS MP Interface

0 |  
0 NTX892AA - MPC Multi-link Handling

0 NTXA63AA - TOPS MP Audio Response Interface  
0 NTXA91AA - Standard Interface for DA/Intercept  
0 Applications

0 |

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0 |

0 \*\*\* NTXA63AA and NTXA91AA were previously required feature  
0 packages. They have been added to NTNX708AA. \*\*\*

0 | Refer to the appropriate software database system for software  
0 | package inter-dependencies.

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0 \*\*\* For Remote OC Applications \*\*\*

0 Required Master Package:

0 -----  
0 NTNX709AA - TOPS MP - Toll and Directory Assist.Operation/Remote

0 Includes-

0 NTXA62AA - TOPS MP Audio Response Call Handling

0 NTX030CC - TOPS Call Processing

0 NTX273AA - MultiProtocol Converter BX.25

0 NTX645AA - TOPS Service Billing

0 NTX724AA - TOPS MP Interface

0 NTX871AA - Remote OC Data Link Handling

0 NTX892AA - MPC Multi-link Handling

0 NTXA63AA - TOPS MP Audio Response Interface

0 \*\*\* NTXA63AA is required for Remote OC DA and has been added  
0 to NTNX709AA.

0 \*\*\* For IBM DA \*\*\*

0 The software for TOPS MP - IBM DA is provided in the following  
0 packages:

0 NTXD39AA : Host OC and SA applications (Master Package)

0 NTXD40AA : Remote OC applications (Master Package)

0 | Refer to the appropriate software database system for software  
0 system inter-dependencies.

0 Software Required for ORDB Application

0 The following software is required for TOPS MP Operator Reference  
0 Database applications:

0 \*\*\* For ORDB \*\*\*

0 Required Feature Packages:

0 -----

0 NTXA20AA - TOPS MP Interface to ORDB

0 NTXA90AA - TOPS MP Terminal Handler High Speed

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0| TOPS QMS FEATURE PACKAGES

0  
0| NTXP41AA TOPS Host Queue Management System

0| NTXP42AA TOPS Remote Queue Management System

0| NTXR48AA QMS: Call And Agent Manager

0| NTXR50AA TOPS QMS External MIS Interface

0| Either of NTXP41AA and NTXR48AA or NTXP42AA and NTXR48AA is re-  
0| quired to implement the TOPS QMS feature in a TOPS office.  
0| NTXR50AA is optional based on the Customer requirement for and  
0| provision of an external MIS.

0| The packages listed above are provisioned in addition to the re-  
0| quired appropriate TOPS master software package.

0| Refer to the SMS database for software package inter-  
0| dependencies.

0 3.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 TPC Software

0 The TPC is a 68000 based system that controls up to four TOPS MP  
0 positions. It handles the distribution of voice and data from  
0 the CC and manages the screen display of each of its positions.

0 A twenty megabyte hard disk and a five and a quarter inch floppy  
0 disk are available on each TPC. The hard disk contains all the  
0 required software and data files to control the operator posi-  
0 tions and the interface to the DMS200 CC. Some floppy disks con-  
0 taining a copy of the load on the hard disk are also shipped with  
0 each TPC. These installation disks can be used to reconfigure

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0 the hard disk in case the TPC fails to start up during installa-  
0 tion.

0 Software upgrades are also shipped on floppy disks. To incorpo-  
0 rate the software upgrades, one must first disable all the MPs on  
0 the TPC from call processing using the BSY command at the MAP and  
0 TAMI. Secondly, one must insert the appropriate floppy disk in  
0 the drive and power on the TPC. The TPC will automatically boot  
0 from the floppy disk and copy the required files on to the hard  
0 disk.

0 It is mandatory to connect the TAMI terminal to the TPC before  
0 TPC installation and TPC software upgrades are begun. The TPC can  
0 then out- put messages on the TAMI indicating progress and re-  
0 quest the user to insert the next floppy disk.

#### 0 Datalinks

0 In the TOPS IV system data communication between the CC and posi-  
0 tions is via asynchronous links. The CC transmits data to the  
0 position at 300 baud and receives data from the position at the  
0 same rate.

0 In the TOPS MP system data communication between the CC and the  
0 TPC is also over asynchronous links, but the CC transmits data to  
0 the TPC at 1200 baud and receives data from TPC at 300 baud.

0 The data channels of the TOPS system are connected through the  
0 switching network to digital modems (NT3X02/NT3X03). These modem  
0 circuits provide the necessary D/A or A/D conversion for process-  
0 ing the data signals. One digital modem circuit is required for  
0 each TOPS operator position unless a TMS configuration is used.  
0 Digital modems are not required with the TMS.

#### 0 Restrictions

- 0 1. a. TOPS offices should have a maximum of four pairs (NT3X02AA,  
0 NT3X03AA) of digital modem cards per MTM, providing a maximum  
0 of 16 modem circuits per MTM.
- 0 b. Combined IBN/TOPS offices should have a maximum of two pairs  
0 (NT3X02AA,NT3X03AA) of digital modem cards per MTM, providing  
0 a maximum of eight circuits per MTM.
- 0 c. In each case it is preferred to spread modem card pairs evenly  
0 across all MTMs to ensure reliability.

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- 0 2. Hosts and remotes with different versions of TOPS software  
0 can be incompatible. The existing procedure for updating  
0 Operator Centralization (OC) software is that the host must  
0 be updated before the remote. This procedure will apply in  
0 TOPS MP as well as TOPS IV. Also, the host cannot have any  
0 inservice TOPS MP positions until the remote is upgraded to  
0 TOPS MP software.
- 0 A TOPS MP remote cannot communicate with a TOPS IV host  
0 because the host is not able to tell the remote what kind  
0 of position it has. The remote will not know whether to send  
0 TOPS IV or TOPS MP commands.
- 0 A TOPS IV remote cannot communicate with a TOPS MP host  
0 because if a TOPS MP position is associated with an OC call,  
0 the remote will not be able to send TOPS MP commands to the  
0 position. If there are no TOPS MP positions on the host this  
0 configuration does work.
- 0 Therefore, the procedure for upgrading OC offices to TOPS MP  
0 is to first update the software in the host without adding any  
0 inservice TOPS MP positions, second, update the software in all  
0 the remotes, and third, put the TOPS MP positions on the host  
0 into service.
- 0 3. TOPS CC software changes that add or change fields on the  
0 TOPS position screen will require parallel changes in the  
0 TPC software.
- 0 4. Operator calls handled at TOPS MP positions can only be  
0 monitored by TOPS MP Assistance positions. Operator calls  
0 handled at TOPS IV positions can only be monitored by  
0 TOPS IV Assistance positions.
- 0 5. To enable an MP for call processing, it must be first  
0 returned to service at the TPC using the TAMI terminal  
0 and then at the CC using the MAP.
- 0 6. All MPs connected to the TPC must be disabled from call  
0 processing before attempting software upgrades. To disable  
0 an MP from call processing, it must be first busied at the  
0 CC using the MAP and then at the TPC using the TAMI terminal.
- 0 7. TAMI baud rate must be reset to 1200 BAUD after a power  
0 hit unless it is already at 1200 baud. The TPC always boots  
0 up in REMOTE mode (1200 BAUD).

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- 0 8. Once the TPC is configured completely with all the required  
0 datafill, accessing TAMI to perform TPC maintenance is  
0 necessary only when there are problems in the TPC. It is  
0 recommended not to access the TAMI while CALL PROCESSING is  
0 enabled, as some performance degradation may result.

0 DRAM Assignment Restriction

0 Mechanized Calling Card Service (MCCS), provided in feature  
0 NTX171CA, requires at least one dedicated DRAM. The same DRAM is  
0 used for the Exchange Alternate Billing Service (EABS) feature  
0 (NTX825AA).

0 This DRAM is designated as MCCS type in Table ANNS and its con-  
0 troller card is dedicated to the CLLI for the MCCS type DRAM in  
0 Table DRAMS. Since the controller is dedicated in software to  
0 MCCS type announcements, the other cards on that DRAM cannot be  
0 used for any other type of announcement.

0 C. Affected Software Tables

0 CC

0 Two new subfields are added to the DEVTYPE field of table TOPSDEV  
0 when DEVTYPE equals FMCRT. One subfield, CNTRLR describes the  
0 type of position controller as either NT4X71, the TOPS IV con-  
0 troller, or the TPC, the TOPS MP controller. The other subfield,  
0 PROTOCOL, describes the communication protocol (with associated  
0 transmission rates) to be used for transmitting and receiving  
0 data to and from the FMCRT position.

0 Two new fields are also added to Table TOPSPOS: CNTRLR defines  
0 the TOPS Controller type and allows software to decide whether to  
0 send TOPS IV or TOPS MP commands to each position, and PROTOCOL  
0 describes the communication protocol (with associated trans-  
0 mission rates) to be used for transmitting and receiving data to  
0 and from the TOPS position.

0 Table OGTKEY is replaced by Tables OGTSPKEY and OGTMPKEY. Table  
0 OGTSPKEY is used for a single purpose (SP - TOPS IV) position and  
0 contains data for the 7 OGT keys on the TOPS SP position. Table  
0 OGTMPKEY allows a DMS-100 TOPS MP operator to transfer a call to  
0 high volume operating company destinations by activating the XFER  
0 key and entering a number from 1 to 7 on the TOPS MP position  
0 keyboard (this capability will be increased to entering a number  
0 from 1 to 99 in TOPS MP Phase II). It is recommended for an of-

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0 fice with both TOPS SP and TOPS MP positions that the first seven  
0 keys be datafilled the same to avoid confusion between operator  
0 teams. Table OGTMPKEY must match the TPC datafilled OUTTRUNKS  
0 SERVICES LIST as described below.

0 TPC

0 Hard keys, Outtrunks, and Position Types can be defined using the  
0 TAMI program.

0 Six customer definable hard keys can be defined as frequently  
0 used functions.

0 Outtrunks numbers allow frequently used numbers to be accessed  
0 quickly by pressing the outtrunks key and a specific digit 1 to  
0 7.

0 Positions can be defined as Toll and Assist, Assistant, In  
0 charge, or Force Management.

0 A mechanism based on floppies is provided to copy the datafill  
0 from one TPC to others.

0 The 7 outgoing trunks defined for the OUTTRUNKS key on the MP  
0 keyboard are datafilled at the TPC in the OUTTRUNKS SERVICES LIST  
0 and must match the datafill in Table OGTMPKEY at the CC.

0 Affected Office Parameters

0 The Office Engineered Parameter DM\_PCM\_ENCODING is required for  
0 switching units with NT3X02CA (not yet available) Digital Modems  
0 (DM) and selects the type of PCM encoding scheme required. For a  
0 switching unit located in Europe and one or more NT3X02CA DMs is  
0 provided, set the value of the parameter to DM\_A\_LAW. If the  
0 switching unit is located in North America, or until the NT3X02CA  
0 becomes available, leave at the default value, DM\_MU\_LAW.

0 The Office Engineered Parameter TOPS\_NUM\_TRANSFER\_TYPES is re-  
0 placed by Parameter TOPS\_TRANSFER\_TYPES which specifies the  
0 transfer types allowed by the transfer keys on each TOPS posi-  
0 tion.

0 Position types Operator, Assistance and In Charge are defined in  
0 Table TOPSPOS. Positions defined as Operator are assigned a Call  
0 Services Set (Toll and Assist and/or Directory Assistance) and a  
0 Transfer Set (General, Transfer 1, Transfer 2 and/or Directory  
0 Assistance Queues) set. For example: To give a TOPS position TA

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0 and DA capabilities, set field SVCSET = ALL in Table TOPSPOS.  
0 Then assign queues in field XFERSET that are translated to handle  
0 both TA and DA traffic.

0 The Office Engineered Parameter TOPS\_TRANSFER\_TYPES specifies the  
0 transfer queues which are accessible to the TOPS operators via  
0 their outgoing trunk keys. The possible values for the parameter  
0 are NONE, XFR1, XFR2, DA, and ALL. A transfer queue must be speci-  
0 fied as a value of TOPS\_TRANSFER\_TYPES to be eligible for assign-  
0 ment in Table OGTSPKEY (TOPS 4) or Table OGTMPKEY (TOPS MP),  
0 where the outgoing trunk keys are assigned to particular transfer  
0 queues.

0 If TOPS\_TRANSFER\_TYPES is set to NONE, all calls go into a gen-  
0 eral queue and TOPS operators cannot transfer calls to other  
0 queues for special handling.

0 Note that DA functionality will not be discussed in this docu-  
0 ment.

### 0 3.3.3 MEMORY PROVISIONING

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0 Refer to the MEMCALC program for TOPS MP memory requirements.  
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0 In offices with BCS27 or higher, an additional NTNX63AA memory  
0 pack is required on each TPC shelf in slot 5. Refer to the Engi-

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0 neering Manual Section for provisioning and configuration de-  
0 tails.

0 Refer to MEMCALC for impact of IBM DA on memory provisioning

0 3.4 REAL TIME IMPACT

0 Phase I of TOPS MP provides no Central Control (CC) Real Time in-  
0 crease over TOPS 04 (Reference SEA 87-03-001).

0 TOPS MP Directory Assistance timings are estimated below. For  
0 customer dialed 0-,411 or 555-1212 from a non-coin station, a TOPS  
0 operator is attached and connection established to an external  
0 ARU. This example includes AMA billing.

| 0 Standalone | Host OC     | Remote OC   |
|--------------|-------------|-------------|
| 0 -----      | 0 -----     | 0 -----     |
| 0 75ms/Call  | 0 50ms/Call | 0 85ms/Call |

0 An additional 15ms/Call is required if either the standalone or  
0 remote office is equipped with an internal ARU.

0 When a customer dials a changed number, the call is routed to an  
0 intercept trunk within the DMS-200 TOPS equipped office and con-  
0 nected to an external ARU.

| 0 Standalone | Host OC    | Remote OC   |
|--------------|------------|-------------|
| 0 -----      | 0 -----    | 0 -----     |
| 0 45ms/Call  | 0 See Note | 0 45ms/Call |

0 Note: Host OC has no timing in this example. A call from the  
0 Remote OC office would route directly to the ARU that  
0 is connected to the Remote OC office. No inter-office  
0 facilities would be utilized between the Host and Remote  
0 offices. (Reference SEA 87-09-004)

0 The maximum number of TOPS Message Switches that can be served by  
0 a DMS 100/200 is physically limited by the number of network  
0 ports available in the DMS. The practical limit however is im-  
0 posed by DMS real time capacity. Refer to TABLE 1 for the maximum  
0 number of operators allowed using various office configurations.

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# Assumptions for TABLE 1:

- Operator utilization 95%
- CC CP Occupancy 70%
- Average Work Time/DA Call 18 sec.
- Average Processing Time/DA Call, NT40:
  - o Stand Alone (SA) system 70 msec.
  - o Host Operator Centralization (HOC) 25 msec.
  - o Remote Operator Centralization (ROC) 75 msec.
- Average Processing Time/DA Call, Supernode(68020 at 20Mhz):
  - o Stand Alone system 35 msec.
  - o Host Operator Centralization 12.5 msec.
  - o Remote Operator Centralization 37.5 msec.
- Average Processing Time/DA Call, Supernode(68030 at 33Mhz):
  - o Stand Alone system 23.3 msec.
  - o Host Operator Centralization 8.3 msec.
  - o Remote Operator Centralization 25 msec.
- Average Work Time 18 sec.
- Operator Call Rate 190 calls/hr.
- 100% Directory Assistance calls

| SYSTEM                  | CONFIG | CC CP OCC<br>(Calls/hr.) | APT<br>(ms) | MAX NO.<br>OPERATORS |
|-------------------------|--------|--------------------------|-------------|----------------------|
| NT40                    | SA     | 36000                    | 70          | 189                  |
|                         | HOC    | 100800                   | 25          | 530                  |
|                         | ROC    | 33600                    | 75          | 117                  |
| SUPERNODE<br>(68020/20) | SA     | 72000                    | 35          | 379                  |
|                         | HOC    | 194180 *                 | 12.5        | 1022 *               |
|                         | ROC    | 67200                    | 37.5        | 354                  |
| SUPERNODE<br>(68030/30) | SA     | 108000                   | 23.3        | 568                  |
|                         | HOC    | 194180 *                 | 8.3         | 1022 *               |
|                         | ROC    | 100800                   | 25          | 531                  |

\* The DMS host handles 1022 calls simultaneously, limited by software design. The maximum number of operators by calculation exceeds this limit and is therefore invalid.

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0 TABLE 1: Operator Maximums

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## 0 4.0 TOPS MPX IWS Applications (OA, OIA, IBM DA OPP)

0 The existing TOPS MPX platform is a single function terminal which  
0 supports Directory Assistance. TOPS MPX IWS supports multiple ser-  
0 vices, and uses industry standard software. The TOPS MPX IWS platform  
0 refers to hardware and software, including the IBM PS/2 with plug-in  
0 cards, industry standard operating system and communications software,  
0 and several application and utility programs developed by BNR. Opera-  
0 tor Assistance (OA), Open Information Access (OIA), and IBM DA OPP are  
0 applications which run on the TOPS MPX IWS platform. TOPS MPX IWS  
0 supports Open Position Protocol (OPP).

0 Prior to the introduction of OA, OIA, and IBM DA OPP, TOPS MPX sup-  
0 ported only the IBM DA AOSS and NT DA AOSS applications. Toll & As-  
0 sist and ORDB were only available on TOPS MP positions. The OIA  
0 application allows MPX positions to access another service (e.g.  
0 ORDB).

0 The body of this ECM does not cover the aspects which are unchanged  
0 from the current TOPS MPX IBM DA AOSS system. The referenced Engi-  
0 neering Manual Sections (EMSs) cover all hardware elements of the TOPS  
0 MPX IWS platform, including those which are unchanged from the current  
0 TOPS MPX IBM DA AOSS system.

0 In order to support the new IWS-based applications (OA, OIA, and IBM  
0 DA OPP), NTN51CB/CC/CD/DB/DC/DD positions require a hardware upgrade.  
0 These positions can be upgraded to the minimum requirements or to the  
0 high performance configuration. The minimum requirements are:

0 386 processor  
0 8 MB RAM  
0 40 MB disk

0 NTN51FB and NTN51GB positions have the high performance configura-  
0 tion. The high performance configuration has the following features:

0 486 processor  
0 8 MB RAM  
0 106 MB disk

0 All new installations will use the high performance configuration. The  
0 high performance configuration may be used for any position, and is  
0 STRONGLY RECOMMENDED for some positions/ applications. Refer to sec-  
0 tion 2.2 to determine when the high performance configuration is re-

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0 commended. Refer to the Engineering Manual Sections for the PECs  
0 required to upgrade existing positions.

0 4.1 HARDWARE PROVISIONING

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0 4.1.1 HARDWARE USAGE RESTRICTIONS

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- 0 - Mixing MPX AOSS and MPX IWS positions on a token ring is  
0 NOT permitted.
- 0 - Mixing MP, MPX AOSS and MPX IWS posit. in an OSC IS permitted.
- 0 - Mixing MP, MPX AOSS and MPX IWS positions on a TMS IS permitted  
0 (including mixing positions on DS-1 and DCH CPs); however,  
0 all posit. supported by a TMS must have the same cluster size.  
0 Since MP and MPX AOSS always have cluster size of four, TMSs  
0 supporting any MP or MPX AOSS posit. can only support cluster  
0 size of four.
- 0 - Mixing cluster sizes on a DMS IS permitted.
- 0 - Mixing NT DA and IBM DA (AOSS or OPP) on a DMS is NOT permitted.
- 0 - Cluster size may be four or sixteen. Cluster size of twenty is  
0 not supported at this time.
- 0 - Redundant datalinks (two DMS gateway positions per cluster)  
0 are STRONGLY RECOMMENDED for reliability.
- 0 - With cluster size of sixteen, the maximum number of positions  
0 on the token ring is sixteen. A cluster can NOT be split over  
0 more than one token ring.
- 0 - If any position in a cluster supports OIA, for optimum performance  
0 it's STRONGLY RECOMMENDED the DMS gateway position(s) in that  
0 cluster have the high performance configuration.
- 0 - For optimum performance with cluster size of sixteen, it is  
0 STRONGLY RECOMMENDED all positions on the token ring have the  
0 high performance configuration.
- 0 - Mixing 386 and 486 positions in a cluster IS permitted.
- 0 - Mixing clust. sizes on a token ring (eg. one cluster of sixteen  
0 positions and a second cluster of four positions) is NOT  
0 permitted.

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0 4.1.2 HARDWARE DEPENDENCIES

0  
0 In order to use cluster size of sixteen, the Increased TOPS Data  
0 Multiplexing software package (NTXR52AA) is required. For cluster  
0 size of sixteen, the high performance configuration is STRONGLY  
0 RECOMMENDED for all positions.

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 Cluster size affects P and C side port requirements on the TMS.  
0 Refer to ECM 468.

## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable.

## 0 CIRCUITS PER CARD

0  
0 Not applicable.

## 0 DISCRIMINATION NUMBERING

0  
0 Numbering: TOPS XXX

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0 4.1.3 PROVISIONING CONSIDERATIONS

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0 The recommended number of positions per token ring is sixteen; up  
0 to twenty positions per token ring are permitted. See section  
0 2.2 "Hardware Usage Restrictions".

0 Exactly two database gateway (formerly called "type 1") positions  
0 are required for EACH TOKEN RING which supports DA. If there is  
0 more than one cluster on the token ring, these database gateway  
0 positions must be in different clusters.

0 For redundant configurations, two DMS gateway (formerly called  
0 "type 2") positions are required PER CLUSTER. (NOTE: a cluster  
0 with a single DMS gateway position is permitted if the DMS gate-  
0 way position is the only position in the cluster.)

0 For non-redundant configurations, one DMS gateway (formerly  
0 called "type 2") position is required PER CLUSTER. Non- redundant  
0 configurations are NOT RECOMMENDED.

0 One operator position on each token ring may be equipped with a  
0 maintenance modem and cable. This position is referred to as an  
0 "operator/maintenance" position, and is used for dial-in mainte-  
0 nance (in addition to normal operator functions). This position  
0 can be in any cluster.

0 Each token ring can have from one to five "clusters" (subject to  
0 the limit of sixteen or twenty positions per token ring). A  
0 "cluster" is a group of positions which share common links to the  
0 DMS. Cluster size can be four or sixteen. A cluster does not  
0 have to be filled. It is recommended that new installations  
0 (with high performance positions) be configured with cluster size  
0 of sixteen.

0 Database gateway positions are only required on token rings which  
0 support Directory Assistance.

0 Performance is influenced by:

0

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- 0 - number and type of applications on the position (OA, DA, OIA).
- 0 - number of logs/swerrs received (operator/maintenance position only).
- 0 - position hardware (e.g. processor type).
- 0 - traffic mix across all positions on the LAN.
- 0 - DMS traffic load.
- 0 - LAN messaging from any additional applications (e.g. a telco-
- 0 developed application via the Application Programmer Interface).
- 0 - cluster size.

#### 0 4.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

#### 0 4.1.5 TRAFFIC TABLES

0  
0 Not applicable.

#### 0 4.2 PRODUCT/SYSTEM SPECIFICATION

##### 0 0 4.2.1 PHYSICAL CHARACTERISTICS

0  
0 Refer to ECM 606 for physical characteristics of the positions.

0

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0 4.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Not applicable.

0 4.2.3 SPARING INFORMATION

0  
0 TOPS MPX positions are normally spared by ordering complete posi-  
0 tions. The quantities are determined by the customer. Refer to  
0 the Engineering Manual Section for part numbers.

0 4.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 Not applicable.

0 4.2.5 CURRENT DRAIN INFORMATION

0  
0 Refer to ECM 606.

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0 4.3 SOFTWARE PROVISIONING

0 The software ordering process is being modified. Position soft-  
0 ware for the V0 should be ordered using BOTH the NTG codes AND  
0 the CPC codes. For the V0, BCS 35 is required.

0 NTG codes are ordered as hardware items on Spec. 6324.

0

0 4.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 DMS 100/200

0  
0 Provide the following master package for each standalone or host  
0 DMS supporting OA and/or OIA (without IBM DA OPP):

0 NTXC14AA TOPS Open Interface Toll (Host)

0 Provide the following master package for each remote DMS  
0 supporting OA and/or OIA (without IBM DA OPP):

0 NTXC15AA TOPS Open Interface Toll (Remote)

0 Provide the following master package for each standalone or  
0 host DMS supporting IBM DA OPP (this package will also support OA  
0 and/or OIA):

0 NTXC18AA TOPS Open Interface Toll/IBM DA (Host)

0 Provide the following master package for each remote DMS supporting  
0 IBM DA OPP (this package will also support OA and/or OIA):

0 NTXC19AA TOPS Open Interface Toll/IBM DA (Remote)

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0 The following pkg. is optional for standalone or host DMSs sup-  
0 porting OIA, and is additional to one of the above master pack-  
0 ages.

0 NTXN84AA Automatic OIA Session Start

0 In addition to the above packages, provision the following pack-  
0 age to support cluster sizes greater than four. If cluster size  
0 of four is the only cluster size to be supported, this package is  
0 not needed:

0 NTXR52AA Increased TOPS Data Multiplexing

0 In addition to the above packages, order the following  
0 packages for HOST DMSs:

0 NTX039AA Host OC Data Link Handling  
0 NTX873AA Host TOPS MP OC Data Link Handling

0 At the time of writing this ECM, the above packages provided the  
0 basic requirements for DMS software with IWS (OPP) applications.  
0 Check SOLID for updates and interdependencies.

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## 0 Position Software

0  
0 Note: OA (NTG362AA) is a prerequisite for DA (NTG364AA) and OIA  
0 (NTG361AA).

## 0 Operator Positions

0 Provide the following packages for EACH operator position:

| 0 | PKG ID   | CPC      | DESCRIPTION                     |
|---|----------|----------|---------------------------------|
| 0 | -----    | -----    | -----                           |
| 0 | NTG384AA | A0601713 | Operating System Module         |
| 0 | NTG383AA | A0385823 | Task Manager Module             |
| 0 | NTG325AA | A0600691 | LAN Manager Module              |
| 0 | NTG385AA | A0407497 | LAN Network Module              |
| 0 | NTG360AA | B0238335 | IWS Base                        |
| 0 | NTG362AA | B0238337 | Operator Assistance Application |

0 Order one or both of the following packages for EACH position ac-  
0 cording to the application(s) supported on the position. Posi-  
0 tions on any given token ring may support different applications.

|   |          |          |                               |
|---|----------|----------|-------------------------------|
| 0 | NTG361AA | B0238336 | OIA Application and Interface |
| 0 | NTG364AA | B0238339 | IBM DA OPP Application        |

0  
0 Combined Operator/Maintenance Positions

0 Provide the following packages for EACH combined operator/ main-  
0 tenance position:

| 0 | PKG ID   | CPC      | DESCRIPTION                     |
|---|----------|----------|---------------------------------|
| 0 | -----    | -----    | -----                           |
| 0 | NTG384AA | A0601713 | Operating System Module         |
| 0 | NTG383AA | A0385823 | Task Manager Module             |
| 0 | NTG325AA | A0600691 | LAN Manager Module              |
| 0 | NTG385AA | A0407497 | LAN Network Module              |
| 0 | NTG360AA | B0238335 | IWS Base                        |
| 0 | NTG328AA | A0600690 | LAN Access Module               |
| 0 | NTG362AA | B0238337 | Operator Assistance Application |



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0 Order one or both of the following packages for EACH position  
0 according to the application(s) supported on the position. Positions  
0 on any given token ring may support different applications.

0 NTG361AA B0238336 OIA Application and Interface  
0 NTG364AA B0238339 IBM DA OPP Application

0 DMS Gateway Positions

0 Provide the following packages for EACH DMS gateway position:

| 0 | PKG ID   | CPC      | DESCRIPTION                     |
|---|----------|----------|---------------------------------|
| 0 | -----    | -----    | -----                           |
| 0 | NTG384AA | A0601713 | Operating System Module         |
| 0 | NTG383AA | A0385823 | Task Manager Module             |
| 0 | NTG325AA | A0600691 | LAN Manager Module              |
| 0 | NTG385AA | A0407497 | LAN Network Module              |
| 0 | NTG360AA | B0238335 | IWS Base                        |
| 0 | NTG327AA | A0600692 | Gateway Communication Module    |
| 0 | NTG362AA | B0238337 | Operator Assistance Application |

0 Order one or both of the following packages for EACH position ac-  
0 cording to the application(s) supported on the position. Posi-  
0 tions on any given token ring may support different applications.

0 NTG361AA B0238336 OIA Application and Interface  
0 NTG364AA B0238339 IBM DA OPP Application

0 Dabatase Gateway Positions (only required for IBM DA OPP)

0 Provide the following packages for EACH database gateway posi-  
0 tion:

| 0 | PKG ID   | CPC      | DESCRIPTION                     |
|---|----------|----------|---------------------------------|
| 0 | -----    | -----    | -----                           |
| 0 | NTG384AA | A0601713 | Operating System Module         |
| 0 | NTG383AA | A0385823 | Task Manager Module             |
| 0 | NTG325AA | A0600691 | LAN Manager Module              |
| 0 | NTG385AA | A0407497 | LAN Network Module              |
| 0 | NTG360AA | B0238335 | IWS Base                        |
| 0 | NTG364AA | B0238339 | IBM DA OPP Application          |
| 0 | NTG362AA | B0238337 | Operator Assistance Application |

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0 Order the following package for EACH position supporting OIA.  
0 Positions on any given token ring may support different applica-  
0 tions.

0 NTG361AA B0238336 OIA Application and Interface

0 4.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 At present, OIA allows interface only to a single database. This  
0 can be ORDB or another database. Refer to section 2.2 for other  
0 restrictions.

0 If the IBM DAS gateway is a Series 1, new DAS software is re-  
0 quired to support TOPS MPX IWS:

- 0 - 5799DLY, version R01 M00, 4/9/93, Call Control Gateway (CCG)
- 0 - PTF28 Activation Patch

0 This software is available from IBM; contact IBM for details and  
0 updates. This does not apply to IBM RS6000 DAS gateways.

0 4.3.3 MEMORY PROVISIONING

0  
0 Refer to MEMCALC.

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0 4.4 REAL TIME IMPACT

0 Refer to System Engineering Alert (SEA) 93-09-002 for CM call  
0 timing.

0 Refer to System Engineering Bulletin (SEB) 93-03-002 for real  
0 time impact on TMS.

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## 0 5.0 TOPS MPX NT DA AOSS

0 With the introduction of NT DA, TOPS MPX positions can access the Net-  
0 work Application Systems (NAS) Directory Assistance (DA) database.  
0 Previously, the NAS DA database was accessible from TOPS MP positions  
0 (and other non-NT positions).

0 The development of NT DA required new software for the MPX positions,  
0 a new keyboard, an upgraded position base, and a modem and modem cable  
0 for dial-in maintenance capability. NT DA uses existing hardware and  
0 software for all other elements of the MPX system (token ring hard-  
0 ware, MIS frame equipment, TMS, CM, and IOE).

0 5.1 HARDWARE PROVISIONING

0

0 5.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 Positions are based on the IBM PS/2. NT DA AOSS requires PS/2  
0 positions with 486 processor, 8 MB RAM, and 106 MB disk.

0 5.1.2 HARDWARE DEPENDENCIES

0  
0 All hardware requirements are given in the Engineering Manual  
0 Sections.

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable.

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable.

## 0 CIRCUITS PER CARD

0  
0 Not applicable.

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable.

0 5.1.3 PROVISIONING CONSIDERATIONS

0  
0 For redundant configurations, each cluster must have two DMS  
0 gateway (formerly called "type 2") positions (a single DMS gate-  
0 way position is permitted if it is the only position in the clus-  
0 ter). For non-redundant configurations, each cluster must have  
0 one DMS gateway position. Non-redundant configurations are NOT  
0 recommended. Cluster size of four is the only cluster size sup-  
0 ported at this time (for NT DA AOSS).

0 The other two or three positions in each cluster (depending on  
0 whether it is a redundant configuration) are operator (formerly  
0 called "type 3") positions. Optionally, one operator position on  
0 each token ring may be equipped with a dial-up modem and addi-  
0 tional software, enabling it to function as a combined  
0 operator/maintenance position.

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0 Database gateway positions, also called "routers", are dedicated  
0 to the task of routing messages between the NAS database and the  
0 other positions on the token ring. These database gateway posi-  
0 tions are NOT part of any cluster. Unlike the "type 1" positions  
0 in IBM DA systems, these positions do not provide operator  
0 functionality. Two database gateway positions are required on  
0 each token ring.

0 Each token ring has a maximum of five clusters of up to four po-  
0 sitions each. (In addition, each token ring has two router (da-  
0 tabase gateway) positions, which are not part of any cluster.)  
0 Unlike TOPS MPX IBM DA AOSS, there is no recommendation to limit  
0 the number of positions on the token ring to something less than  
0 the maximum. (TOPS MPX IBM DA AOSS recommends sixteen positions  
0 per token ring, while the maximum allowed is twenty positions per  
0 token ring.)

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## 0 Position/Cluster/MAU Assignments:

| 0 Cluster          | -1-- | -2-- | -3-- | -4-- | -5-- | n/a |
|--------------------|------|------|------|------|------|-----|
| 0 MAU #            | 0120 | 1201 | 2012 | 0120 | 1201 | 20  |
| 0 MAU Connection # | 1112 | 2233 | 3444 | 5556 | 6677 | 78  |
| 0 Position Type    | GGMO | GG00 | GG00 | GG00 | GG00 | RR  |
| 0 BIX Voice Conn # | 0000 | 0000 | 0111 | 1111 | 1112 | --  |
| 0                  | 1234 | 5678 | 9012 | 3456 | 7890 | --  |
| 0 BIX Data Conn #  | 00   | 00   | 01   | 11   | 11   | 12  |
| 0                  | 12   | 56   | 90   | 34   | 78   | 60  |

0 G = DMS Gateway Position  
0 O = Operator Position  
0 R = Router (Database Gateway)  
0 M = Combined Operator/Maintenance Position

0 A combined operator/maintenance position (optional) can be in  
0 any cluster.

0 5.1.4 OFFICE LAYOUT INFORMATION

0  
0 Modems for the database gateway positions will be connected to  
0 D16 and D20 on the BIX block in the MIS frame. The modem for a  
0 combined operator/maintenance position will not be connected to  
0 the BIX block in the MIS frame; it will be cabled to a customer-  
0 provided telephone outlet.

0 5.1.5 TRAFFIC TABLES

0  
0 Not applicable.

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0 5.2 PRODUCT/SYSTEM SPECIFICATION

0

0 5.2.1 PHYSICAL CHARACTERISTICS

0

0 Refer to ECM 606. NTNX51GB positions have the same physical  
0 characteristics as NTNX51CB/CC/CD/DB/DC/DD positions.

0 5.2.2 EMI/EARTHQUAKE INFORMATION

0

0 Not applicable.

0 5.2.3 SPARING INFORMATION

0

0 TOPS MPX positions are normally spared by ordering complete posi-  
0 tions. The quantities are determined by the customer. Refer to  
0 the Engineering Manual Section for part numbers.

0 5.2.4 POWER FEED AND FUSING REQUIREMENTS

0

0 Not applicable.

0

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0 5.2.5 CURRENT DRAIN INFORMATION

0  
0 Refer to ECM 606.

0 5.3 SOFTWARE PROVISIONING

0 At the time of writing this ECM, the packages listed provide the  
0 basic requirements for DMS and position software. Check SOLID  
0 for updates and interdependencies.

0 5.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

## 0 DMS 100/200

0  
0 NT DA AOSS did not require the development of any DMS software.  
0 However, new master packages were created to provide the set of  
0 features required. For the VO and RAMP, BCS 34 is required.

0 Provide the following package for each standalone DMS supporting  
0 NT DA AOSS:

0 NTXC38AA TOPS MPX STD DA Terminal (Standalone/Host)

0 Provide the following packages for each host DMS supporting  
0 NT DA AOSS:

0 NTXC38AA TOPS MPX STD DA Terminal (Standalone/Host)  
0 NTX039AA Host OC Data Link Handling  
0 NTX873AA Host TOPS MP OC Data Link Handling

0 Provide the following package for each remote DMS supporting  
0 NT DA AOSS:

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0 NORTHERN TELECOM  
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PRACTICE 297-1001-450

0  
0 NTXC39AA TOPS MPX STD DA Terminal (Remote)

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## 0 Operator Positions

0  
0 Provide the following packages for EACH operator position:

| 0 | PKG ID   | CPC      | DESCRIPTION                  |
|---|----------|----------|------------------------------|
| 0 | -----    | -----    | -----                        |
| 0 | NTG384AA | A0601713 | Operating System Module      |
| 0 | NTG383AA | A0385823 | Task Manager Module          |
| 0 | NTG325AA | A0600691 | LAN Manager Module           |
| 0 | NTG329AA | A0600689 | Network Communication Module |
| 0 | NTG326AA | B0238317 | NAS DA Application and Base  |

## 0 Combined Operator/Maintenance Positions

0  
0 Provide the following packages for EACH combined operator/ main-  
0 tenance position:

| 0 | PKG ID   | CPC      | DESCRIPTION                        |
|---|----------|----------|------------------------------------|
| 0 | -----    | -----    | -----                              |
| 0 | NTG384AA | A0601713 | Operating System Module            |
| 0 | NTG383AA | A0385823 | Task Manager Module                |
| 0 | NTG325AA | A0600691 | LAN Manager Module                 |
| 0 | NTG329AA | A0600689 | Network Communication Module       |
| 0 | NTG326AA | B0238317 | NAS DA Application and Base        |
| 0 | NTG328AA | A0600690 | LAN Access Module (maint pos only) |

## 0 Gateway Positions (DMS &amp; Database)

0  
0 Provide the following packages for EACH gateway position:

| 0 | PKG ID   | CPC      | DESCRIPTION             |
|---|----------|----------|-------------------------|
| 0 | -----    | -----    | -----                   |
| 0 | NTG384AA | A0601713 | Operating System Module |
| 0 | NTG383AA | A0385823 | Task Manager Module     |

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0 NTG325AA A0600691 LAN Manager Module  
0 NTG329AA A0600689 Network Communication Module  
0 NTG326AA B0238317 NAS DA Application and Base  
0 NTG327AA A0600692 Gateway Communication Module

0 5.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Mixing NT DA (AOSS) and IBM DA (AOSS or OPP) on a DMS is NOT per-  
0 mitted.

0 5.3.3 MEMORY PROVISIONING

0  
0 NT DA AOSS has the same DMS memory requirements as IBM DA AOSS.  
0 Refer to MEMCALC.

0 5.4 REAL TIME IMPACT

0 DMS real-time requirements are the same for NT DA AOSS as for IBM  
0 DA AOSS. There are new DCH engineering rules in the TMS for NT  
0 DA AOSS. Refer to the Systems Engineering Bulletins.

0

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## 0 6.0 Building Block Engineering

0 6.1 Hardware Provisioning

0

0 6.1.1 Hardware Usage Restrictions

0  
0 For ADAS, the LIS(s) which mount the ADAS VPUs and APUs shall be  
0 used for ADAS exclusively.

0 In BCS 35 the number of NIUs that may be provisioned per switch is  
0 restricted to six (6). This restriction applies to the total of  
0 NIUs for all applications using NIUs.

0 ADAS LISS may share an LPP with the LISSs containing equipment re-  
0 quired for other features with the exception of the LISSs used to  
0 house the equipment required for the Packet Handler feature.

0 6.1.2 Hardware Dependencies

0  
0 The product platform on which ADAS is based uses the LPP (Link  
0 Peripheral Processor) which is provisionable only on DMS  
0 SuperNode switches.

0 Not applicable.

## 0 P and C Side Port Requirements

0

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0 DMS Bus Port Requirements

0

0 Circuits Per Card

0

0 Discrimination Numbering

0

0 6.1.3 Provisioning Considerations

0

0 General

0  
0 :figref refid=config. illustrates typical hardware configura-  
0 tions for ADAS.

0

0

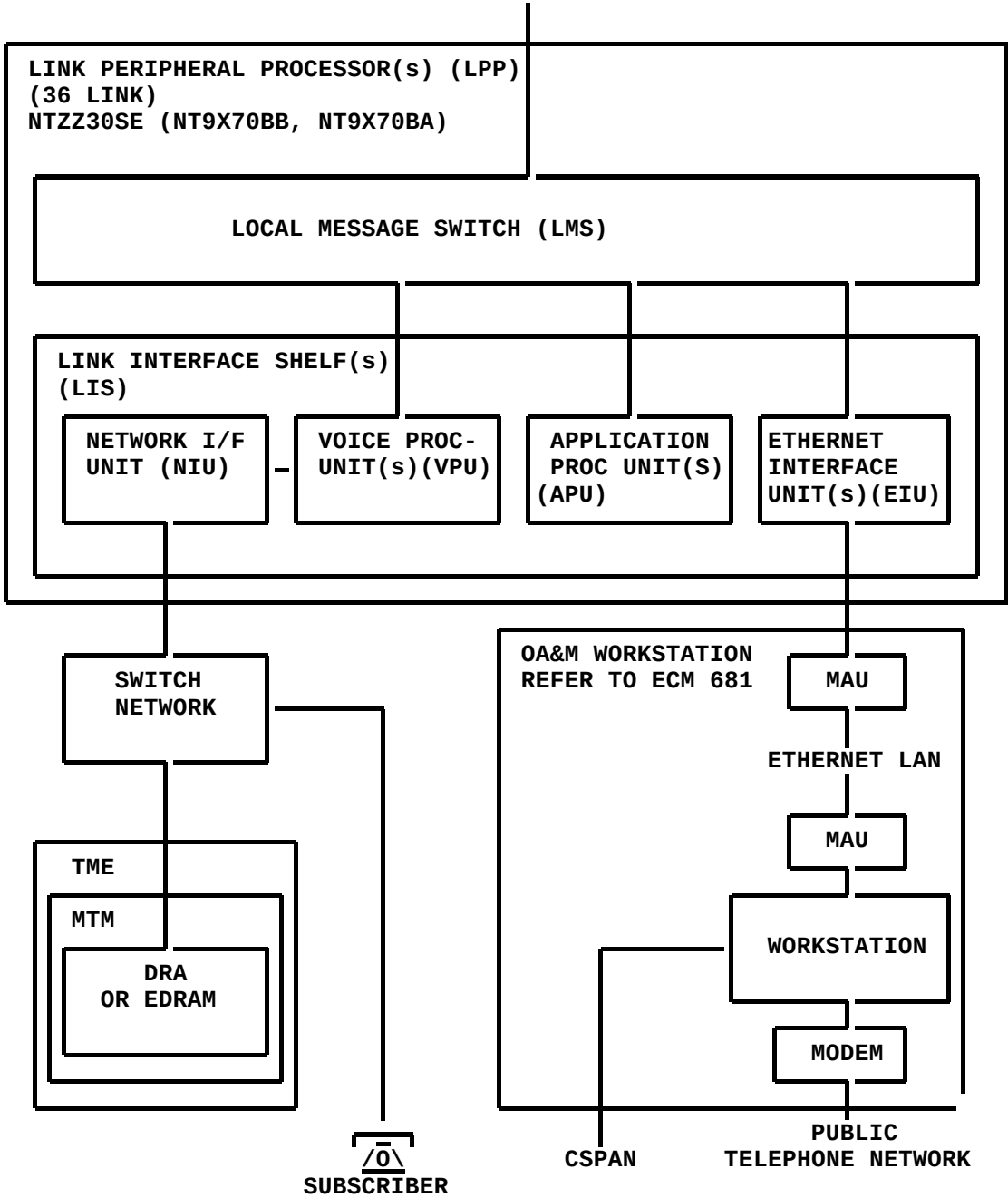
0

0

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:fig id=config place=inline frame=none  
TO MESSAGE SWITCH



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0

0 :figcap ADAS - Hardware Configuration :efig

## 0 Network Considerations

0

0 ADAS may be configured to operate with a DMS 100/200 SuperNode or  
0 DMS 200.SuperNode. With respect to the telephone network, ADAS  
0 may be equipped in switches configured as follows: :ul :li HOC  
0 (Host Operator Center) :li ROC (Remote Operator Center) with ADAS  
0 equipped HOC :li ROC with non-ADAS HOC :eul

0 To operate as an ADAS ROC, the ROC switch must be equipped with  
0 ADAS hardware and software.

## 0 LPP Provisioning-General

0

0 The quantities of equipment required for provisioning ADAS is  
0 based on the number of voice resource servers i.e. Voice Process-  
0 ing Units (VPUs), needed for the expected DA traffic.

0 VPUs are required ADAS. The VPU voice resource servers are each  
0 capable of serving 20 callers simultaneously.

0 The number of LPP's required to house ADAS equipment depends upon  
0 the required capacity of the system.

0 The Voice Processing Platform (VPP) on which the ADAS is based  
0 requires processing resources of two APUs. These units are re-  
0 ferred to as the VPP-APUs. They are needed for the following  
0 functions:

- 0 - Ethernet Interface
- 0 - OA&M management and ADAS APU process management.

0 Single LPP System

0

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0 If the equipment required for an ADAS application can be housed  
0 in a single LPP, accommodation must be made for the VPP-APUs, re-  
0 fer to section 2.4.3 above.

0 The maximum number of ADAS servers that an LPP in a single LPP  
0 system can contain is 320, i.e.  $320/20 = 16$  VPU's.

0 Multi-LPP System (1+N LPPs)

0 The first LPP in a multi-LPP system houses the two (2) base sys-  
0 tem VPP-APUs. The maximum number of ADAS servers that this first  
0 LPP can accommodate is 320, i.e.,  $320/20 = 16$  VPUs.

0 The remaining LPPs can accommodate up to 360 ADAS servers each,  
0 i.e.,  $360/20 = 18$  VPUs each. Two (2) APUs must always be pro-  
0 vided in each of the remaining LPPs. These APUs perform OA&M  
0 management functions for the containing LPP. They are referred  
0 to as LPP-APUs. The LPP-APUs are also capable performing ADAS ap-  
0 plication call processing functions. Each LPP-APU can handle 20  
0 simultaneous calls and should be included in the count of appli-  
0 cation APUs required for the considered ADAS system.

0 LPP Provisioning Limits

0 The maximum number of ADAS LPP's is limited, in BCS 35, by the  
0 maximum number of NIU permitted per DMS switch. The maximum num-  
0 ber of NIUs permitted is six (6). This maximum may increase in  
0 later BCS. The limit of six NIUs means that the maximum number of  
0 LPPs that may be provisioned to contain ADAS is six, i.e. one  
0 ADAS LIS per LPP. The maximum number of ADAS servers that may be  
0 provisioned is therefore 80 (Max servers in first LIS) + 5 x 120  
0 (max servers in 1+N LIS) = 680.

0 LIS Provisioning-General

0  
0 When configured for ADAS operation, the LIS has the following  
0 provisioning limits: :ul :li Minimum Provision = 1 LIS :li  
0 Maximum/LPP = 3 :li Maximum/System = 6 (BCS 35) :eul :tabs

0 Each LIS houses between 20 and 120 ADAS call servers in incre-  
0 ments of 20, i.e. up to 6 VPU's, except for those LIS which are  
0 used to accommodate the VPP-ASUs.

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0 In a single LIS system, the LIS has a maximum capacity of 60 ADAS  
0 servers, i.e., 3 VPUs.

0 The base VPP requires at least one Ethernet Interface Unit (EIU).  
0 This unit is contained in an LIS in the first ADAS LPP.

0 In a system having a single LPP and two (2) LIS, each LIS has a  
0 maximum capacity of 80 ADAS call servers, i.e., 4 VPUs. The sin-  
0 gle LIS also contains the two (2) required VPP APUs and the re-  
0 quired VPP-EIU.

#### 0 VPU Provisioning-General

0  
0 A VPU is capable of handling 20 ADAS calls simultaneously.

0 Application APU's operate in conjunction with VPU's, and APU's  
0 are capable of handling at least 30 ADAS calls simultaneously,  
0 the ratio of Application APU's to VPU's required for a properly  
0 balanced system is 2 Application APU's to 3 VPUs.

0 Voice processing resources of VPU's are allocated to an APU ser-  
0 vice on a per call basis. The coupling between APU and VPU re-  
0 sources is not fixed but is dynamically allocated within the same  
0 LPP.

#### 0 NIU Provisioning-General

0  
0 For ADAS applications each LIS requires a Network Interface Unit  
0 NIU. An NIU is made up of two ASUs which are located in the cen-  
0 ter four front slot positions in the LIS.

0 In BCS 35 the maximum number of NIUs that may be provisioned per  
0 switch is six (6). This restriction is imposed by the integrated  
0 maintenance software.

0

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## 0 | ADAS Initial Greeting

0  
0 The initial greeting a subscriber receives when making a DA call  
0 to a system served by ADAS may be provided either by the ADAS  
0 VPU, which is the general ADAS greeting or by an announcement gen-  
0 erated by the optional DA/Toll Branding feature which is gener-  
0 ally used to identify the DA service provider selected by the  
0 subscriber. The Digitally Recorded Announcement system is used by  
0 the DA/Toll Branding feature to provide the initial announcement  
0 if the DA/Toll Branding feature is used.

0

0

## 0 | DRAM Provisioning - General

0  
0 Digitally Recorded Announcements are required if the optional Di-  
0 rectory Assistance/Toll Branding feature is used. DRAs are pro-  
0 vided either by DRAMs (Digitally Recorded Announcement Modules)  
0 or EDRAMS (Enhanced Digitally Recorded Announcement Modules).  
0 Both DRAM and EDRAMS are mounted in MTM (Maintenance Trunk Mod-  
0 ule) shelves which are contained within Trunk Module Equipment  
0 (TME) frames or cabinets. The number of DRAs required depends  
0 upon the expected ABSBH DA/ADAS call traffic. The MTM and TME may  
0 be shared with compatible CPCs used by other features. Refer to  
0 ECM 611 for DRAM provisioning and to ECM 531 for EDRAM provision-  
0 ing.

0  
0 Announcements used for DA/Toll Branding feature are custom re-  
0 corded. Sufficient DRA memory must be provisioned to accommodate  
0 the announcements required. The DA/Toll announcements may either  
0 be broadcast in the switch network or may be assigned to multiple  
0 trunk circuits to provide the number of announcement 'servers'  
0 required to service the expected call traffic.

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## 0 | OA&M Workstation Provisioning

0  
0 In BCS 35 ADAS supports a single EIU configuration with a single  
0 Simplex OA&M Workstation. The simplex workstation fulfills the  
0 minimum workstation requirements for ADAS. It uses a single Work-  
0 station having a single LAN connection interfacing to the switch  
0 through a single EIU.

0 | Refer to ECM 681 for general OA&M Workstation engineering re-  
0 quirements.

## 0 Power Failure Protection

0  
0 For failure protection purposes, the best compromise arrangement  
0 for limiting the effect of a power supply failure is to intermix  
0 APU's and VPU's within LIS's in the ratio of 2 APU's to 3 VPU's  
0 per LIS. For VPP-APUs failure protection the VPP-APUs should be  
0 configured on opposite LIS half shelves in a single LIS system  
0 and on different LIS shelves in a multi-LIS system.

## 0 Standard CP Configurations

0  
0 The slot configuration of the CPCs within LIS for the ADAS appli-  
0 cation are standardized according to the rules given in the ref-  
0 erenced Engineering Manual Sections covering 36 Link LPPs. In  
0 these rules, the APUs listed have three functional categories:  
0 VPP-APU, LPP-APU and APP-APU.

0 The APP-APU (ADAS Application APU) handles OA&M overheads and at  
0 least 30 ADAS calls simultaneously.

0 The VPP-APU (VPP OA&M APU) Contains the Central Data Collector  
0 for the LPP frame as well as the APU process Management function  
0 for the ADAS system. Each ADAS system requires 2 VPP APUs config-

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0 ured in one of the LPP frames. For convenience, the first frame  
0 containing ADAS application APUs contains the 2 VPP ASUs.

0 The LPP-ASU (LPP OA&M APU) LPP-APU contains the ADAS application  
0 as well as the Central Data Collector for the containing LPP  
0 frame. The LPP-APU is capable of handling 30 ADAS calls simul-  
0 taneously. The LPP OA&M APU is included in the count of ADAS Ap-  
0 plication APUs when determining the number of APUs required using  
0 the APU to VPU ratio of 2:3. Each LPP frame containing APP-APUs  
0 requires 2 LPP-ASUs except for the LPP frame containing the 2  
0 VPP-APUs.

0 The above categorizations are used to indicate the corresponding  
0 APU function. The function is determined by table datafill. The  
0 software load is the same in each type of APU; the required func-  
0 tion is selected by datafill. The slot positions for each type of  
0 APU function are selected for optimum failure protection charac-  
0 teristics of the ADAS as a whole. The APU slot positions are as-  
0 signed according to the standard configuration rules given in the  
0 LPP Engineering Manual Sections referenced in Section 6, to en-  
0 sure optimum failure protection and traffic handling.

#### 0 | ADAS RTS - APU Application Software Loading

0  
0 The application software in the ADAS APU is run under the  
0 SuperNode UNIX (SNIX) operating system. This makes APU software  
0 loading different from other DMS peripherals. ADAS uses a 2 stage  
0 loading process. The first stage loads the base SNIX using PMLOAD  
0 like other peripherals. The operating system software remains  
0 loaded until the APU is powered down or is physically removed. In  
0 the second stage, i.e. the transition from the ISTb state to the  
0 INSV state, the ADAS application is loaded. This loading is per-  
0 formed each time an APU is returned to service from the MAP.

0 In the RTS process, ADAS application software is loaded into the  
0 APUs from the Software Load Module (SLM) or Disk Drive Units  
0 (DDU) via the HSDF file server during the RTS.

0 HSDF file servers are software entities which are defined in ta-  
0 ble SNIXVOLS. The data in SNIXVOLS also defines the Volumes and  
0 Filenames accessible to each HSDF server. Another table,  
0 SNIXAPPL, defines, for each ASU, the HSDF server assigned for ap-

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0 | plication software file downloading . The HSDF server to APU as-  
0 | signment is specified using the identities of the files to be  
0 | downloaded, i.e., the file system names defined in the SNIXVOLS  
0 | table.

0 | On occasions when the multiple APUs need to be loaded, as it is  
0 | in when RTS ALL or a CM Reload restart is performed, the duration  
0 | of the secondary load process may be relatively long. The time  
0 | taken to load the ADAS application depends on the number of APUs  
0 | in the ADAS system, the size of the ADAS/APU application software  
0 | file, the throughput of the loading device or devices, SLM or IOC  
0 | Disk Drives, and other factors external to ADAS, such as  
0 | processor occupancy in the CM.

0 | Using datafill in the SNIXAPPL table configure SLM/IOC Disk Drive  
0 | to load APUs according to the following guidelines:

0 | :ol :li Generally, for systems having 4 (four) or less APUs, load  
0 | the APUs from SLMS only. Allocate APUs evenly across SLMS. :li  
0 | For systems with more than 4 APUs, allocate APUs across all  
0 | available SW loading devices, SLMS and DDUs with loads distrib-  
0 | uted commensurate with loading device throughput capability. :li  
0 | Because the throughput of SLMS is greater than that of DDUs, fa-  
0 | vor the allocation of APUs to SLMS rather than to DDUs. :eol

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0 | Examples:

0 | For operation in the simplex mode, i.e. one HSDF server per SLM or  
0 | DDU.

| 0 | APUs | SLM0 | SLM1 | DDU0 | DDU1 |
|---|------|------|------|------|------|
| 0 | ---- | ---- | ---- | ---- | ---- |
| 0 | 4    | 2    | 2    | 0    | 0    |
| 0 | 5    | 2    | 2    | 1    | 0    |
| 0 | 6    | 2    | 2    | 1    | 1    |
| 0 | 7    | 3    | 2    | 1    | 1    |
| 0 | 8    | 3    | 3    | 1    | 1    |
| 0 | 9    | 3    | 3    | 2    | 1    |
| 0 | 10   | 4    | 3    | 2    | 1    |
| 0 | 11   | 4    | 4    | 2    | 1    |
| 0 | 12   | 4    | 4    | 2    | 2    |
| 0 | 13   | 5    | 4    | 2    | 2    |
| 0 | 14   | 5    | 5    | 2    | 2    |
| 0 | 15   | 5    | 5    | 3    | 2    |
| 0 | 16   | 6    | 5    | 3    | 2    |
| 0 | 17   | 6    | 6    | 3    | 2    |
| 0 | 18   | 6    | 6    | 3    | 3    |
| 0 | 19   | 7    | 6    | 3    | 3    |
| 0 | 20   | 7    | 7    | 3    | 3    |
| 0 | 21   | 7    | 7    | 4    | 3    |
| 0 | 22   | 8    | 7    | 4    | 3    |
| 0 | 23   | 8    | 8    | 4    | 3    |
| 0 | 24   | 8    | 8    | 4    | 4    |

0 | Note: The above configurations are controlled by datafill in the  
0 | SNIXAPPL table. The performance of software loading devices is  
0 | affected by factors external to the ADAS system and may affect  
0 | the optimum configuration for ADAS. The above should be used as a  
0 | guide only.

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0 | For operation in the duplex mode:

| 0 | APUs | SLM0 | SLM1 | DDU0 | DDU1 |
|---|------|------|------|------|------|
| 0 | ---  | ---  | ---  | ---  | ---  |
| 0 | 4    | 3    | 0    | 1    | 0    |
| 0 | 5    | 3    | 0    | 2    | 0    |
| 0 | 6    | 4    | 0    | 2    | 0    |
| 0 | 7    | 5    | 0    | 2    | 0    |
| 0 | 8    | 5    | 0    | 3    | 0    |
| 0 | 9    | 6    | 0    | 3    | 0    |
| 0 | 10   | 6    | 0    | 4    | 0    |
| 0 | 11   | 7    | 0    | 4    | 0    |
| 0 | 12   | 7    | 0    | 5    | 0    |
| 0 | 13   | 8    | 0    | 5    | 0    |
| 0 | 14   | 9    | 0    | 5    | 0    |
| 0 | 15   | 9    | 0    | 6    | 0    |
| 0 | 16   | 10   | 0    | 6    | 0    |
| 0 | 17   | 10   | 0    | 7    | 0    |
| 0 | 18   | 11   | 0    | 7    | 0    |
| 0 | 19   | 12   | 0    | 7    | 0    |
| 0 | 20   | 12   | 0    | 8    | 0    |
| 0 | 21   | 13   | 0    | 8    | 0    |
| 0 | 22   | 14   | 0    | 8    | 0    |
| 0 | 23   | 15   | 0    | 8    | 0    |
| 0 | 24   | 16   | 0    | 8    | 0    |

0 | In the above table, for convenience, SLM1 and DDU1 appear to be  
0 unused. In practice they are used as alternatives to their  
0 mates, SLM0 and DDU0 respectively.

0 6.1.4 Office Layout Information

0

0 6.1.5 Traffic Tables

0

0

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0 Refer to NTP279-1001-450 DMS-100 Family Provisioning for traffic  
0 tables required for calculating the number of voice resource  
0 servers needed for expected DA call traffic.

0 6.1.6 Network Impact

0  
0 When compared with non-ADAS DA call, the use of ADAS increases  
0 subscriber hold time. This causes an increase in traffic over End  
0 Office to ADAS TOPS Office trunks. Refer to the ADAS/DMS 200/TOPS  
0 Office Configurations illustration in :figref refid=ntwk.. Where  
0 ADAS is added to an existing office, End Office to ADAS TOPS Of-  
0 fice trunk provisioning should be reviewed and additional trunks  
0 provisioned to accommodate the expected increase in DA call traf-  
0 fic.

0 The use of ADAS decreases holding time on TOPS Remote Operator  
0 Center (ROC) with ADAS to TOPS Host Operator Centralization (HOC)  
0 trunks, for DA calls, where the HOC Operators handle the ROC DA  
0 calls. In this situation ADAS in the ROC automates the handling  
0 of DA calls thereby reducing the traffic on the ROC to HOC  
0 trunks.

0 The increase in EO to ROC or ADAS/TOPS Stand Alone trunk hold  
0 time for a DA call caused by ADAS is made up as follows: :ul :li  
0 Difference in hold time between existing TOPS/Toll Branding an-  
0 nouncement if any and the optional ADAS associated TOPS/Toll  
0 Branding Announcement, or ADAS greeting announcement, typically 4  
0 sec. per call :li The ADAS 'Hold for operator' announcement, typ-  
0 ically 3 sec per call :li THE ADAS Caller response playback to  
0 operator, typically 3 sec. per call :eul

0 From the above, the increase in hold time owing to ADAS is typi-  
0 cally 10 sec. per call

0 The decrease in ROC to HOC trunk holding time owing to ADAS auto-  
0 mation in the ROC with the operator force in the ROC not  
0 staffed.is made up as follows: :ul :li Operator Work Time (AWT)  
0 reduction owing to ADAS, typically 3 sec. per call. :eul

0 Refer to NTP 297-1001-450 DMS-100 Family Provisioning for trunk  
0 provisioning information.

0| Provisioning Questions

- 0  
0| 1) Is Directory Assistance/Toll Branding option selected?  
0| Yes/No \_\_\_\_\_
- 0| 2) If answer to 1) is 'Yes' then what is required announcement  
0| recording time capacity?  
0| <REQ REC CAPACITY> = \_\_\_\_\_sec
- 0| 3) What percent of DA calls is to be handled by ADAS?  
0| <ADAS%> \_\_\_\_\_%  
0| (default = 100%)
- 0| 4) What is the expected DA Call Traffic (ABSBH)  
0| <DA TRAFFIC> = \_\_\_\_\_Calls/Sec
- 0| 5) What is the expected average operator queue time  
0| <OP QUEUE> = \_\_\_\_\_sec  
0| (default = 5 sec)
- 0| 6) If space in LPP is not used by other features,  
0| how many LIS are empty?  
0| <EMPTY LIS> = \_\_\_\_\_
- 0| 7) Provide LAN IP Addresses for devices to be accessed via the  
0| Ethernet LAN:  
0| APU's \_\_\_\_\_  
0| \_\_\_\_\_  
0| \_\_\_\_\_  
0| \_\_\_\_\_  
0| \_\_\_\_\_
- 0| |

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0 | |  
0 | \_\_\_\_\_  
0 | EIU \_\_\_\_\_  
0 | OA&M Workstation \_\_\_\_\_  
0 | The IP addresses are obtained from the equipment customer,  
0 | assuming that the Ethernet LAN is owned and operated by the  
0 | customer. The LAN IP addresses must be assigned to enable  
0 | communication between devices connected to the LAN.

### 0 | Provisioning Calculations

0  
0 | ADAS Traffic  
0 | <ADAS HOLD TIME> =  
0 | (15 + <OP QUEUE>) = \_\_\_\_\_ sec.  
0 | 1) Calculate ADAS traffic as follows:  
0 | <ADAS TRAFFIC> =  
0 | (<ADAS HOLD TIME> x <DA TRAFFIC> x  
0 | <ADAS%>)/(100 x 100) = \_\_\_\_\_ CCS  
0 | ADAS Servers Required  
0 | 2) <ADAS SERVERS> =  
0 | Lookup Traffic Table (Blocking probability 0.01)  
0 | for <ADAS TRAFFIC> = \_\_\_\_\_ SERVERS  
0 | Refer to NT297-1001-450 for traffic table.  
0 | VPU's Required

0| 3) Calculate the number of VPUs required as follows:

0| <VPUs> = IF<ADAS SERVERS>/20 (rounded up)>24

0| THEN ADAS CAPACITY EXCEEDED

0| ELSE <ADAS SERVERS>/20 (rounded up) = \_\_\_\_\_

0| EIUs Required

0| 4) Provision 1 EIU per ADAS system

0| <EIUs> = 1

0| LISSs Required

0| 5) Calculate the number of LISSs required as follows:

0| <LISSs> = IF<VPUs> <= 4 then 1

0| else ((<VPUs>-4)/6)+1 (rounded up) = \_\_\_\_\_

0| NIUs Required

0| 6) Calculate the number of NIUs required as follows:

0| <NIUs> = <LISSs> = \_\_\_\_\_

0| LPPs Required

0| 7) Calculate number of LPPs as follows:

0| <LPPs> = IF (<LISSs> - <EMPTY LIS>) >= 1

0| THEN (<LISSs> - (<LISSs> - <EMPTY LIS>))/3 Rounded up

0| ELSE 0 = \_\_\_\_\_

0| APUs Required

0| 8) Calculate the number of APUs required as follows:

0| <APUs> = IF(<VPUs> <= 4)

0| THEN <APUs> = 2 + <VPUs>/3 (rounded up)

0| ELSE IF (<VPUs> <= 22 AND (<LISSs> - <EMPTY LIS>) = 1)

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0  
0 THEN  $\langle \text{APUs} \rangle = 2 + (2 + \langle \text{VPUs} \rangle) / 3$  (rounded up)  
0  
0 ELSE IF ( $\langle \text{VPUs} \rangle > 4$  AND  $\leq 28$   
0 AND ( $\langle \text{LISSs} \rangle - \langle \text{EMPTY LIS} \rangle = 2$ )  
0 THEN  $\langle \text{APUs} \rangle = 2 + (2 + \langle \text{VPUs} \rangle) / 3$  (rounded up)  
0  
0 ELSE IF ( $\langle \text{VPUs} \rangle > 4$  AND  $\leq 16$ )  
0 THEN  $\langle \text{APUs} \rangle = (2 + \langle \text{VPUs} \rangle) / 3$  (rounded up)  
0  
0 ELSE IF ( $\langle \text{VPUs} \rangle > 16$ )  
0 THEN  $\langle \text{APUs} \rangle = 2 + (2 + \langle \text{VPUs} \rangle) / 3$  (rounded up) = \_\_\_\_

0 Filler Face Plates Required

0 8) Calculate the number of Filler Faceplates as Follows:  
0  $\langle \text{FILLER PLATES} \rangle = \langle \text{LISSs} \rangle \times 10 - (\langle \text{APUs} \rangle + \langle \text{VPUs} \rangle) = \underline{\hspace{2cm}}$

0 OA&M Workstations Required

0 9) Provide one Simplex OA&M Workstation per ADAS system. Refer  
0 to ECM 681 for OA&M Workstation engineering requirements.

0 6.2 Product/System Specification

0  
0 6.2.1 Physical Characteristics

0  
0 6.2.2 EMI/Earthquake Information

0  
0 Not applicable.

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### 0| 6.2.3 Sparing Information

0  
0| Standard sparing algorithms are used.

### 0| 6.2.4 Power Feed and Fusing Requirements

0

### 0| 6.2.5 Current Drain Information

## 0 0| 6.3 Software Provisioning

0

### 0| 6.3.1 Required Software Packages and Interdependencies

0 :ul :li NTG320AA - ADAS APU which has the following prerequisite  
0 packages: :ul :li NTXQ23AA - TOPS ADAS :ul :li NTXA62AA - TOPS  
0 DA AUDIO RESPONSE CALL HANDLING :li NTXH77AA - CHANNELLIZED AC-  
0 CESS ON LPP/LIS :li NTG310AA - EIU PERIPHERAL LOAD FOR SUPERNODE  
0 OPC :li NTXF20AA - LMS ON LPP :eul :li NTXS31AA - ENHANCED SER-  
0 VICE RESOURCE MANAGEMENT :ul :li NTXS11AA - FILE TRANSFER PROTO-  
0 COL (DARPA) :eul :li NTXS30AA - UAE/UNIX :li NTXS29AA - APU  
0 MAINTENANCE :ul :li NTXF19AA - TCP/IP PROTOCOLS :li NTXF05AA -  
0 EIU :li NTXN18AA - LIU Base :eul :li NTXS32AA - APU SOS UNIX BASE  
0 :li NTG322AA - VPU :li NTG321AA - OA&M POSITION :li NTXE71AA -  
0 TOPS DIRECTORY ASSISTANCE/TOLL BRANDING (OPTIONAL) :eul

0 The mapping of ADAS package identities to software feature activ-  
0 ity numbers is as follows: :ul :li NTXQ23AA - TOPS ADAS :ul :li  
0 AF3011 - - AABS VSN XP RESTRUCTURE :li AF3204 - - ADAS MTS Mes-  
0 sage Composer/Interpreter :li AF3205 - - ADAS VSN XP :li AF3206 -  
0 - ADAS TOPS XP :li AF3012 - - ADAS VSN SIMULATOR :li AN0327 - -

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0 ADAS APU S/W Installation :eul :li NTXS29AA - APU MAINTENANCE :ul  
0 :li AF2689 - - Maintenance for SNode :li AL2010 - - APU Maintenance :eul :li NTXS30AA - UAE,UNIX CONVERSANT S/W :ul :li AF3379  
0 - - SNode/UNIX File System Access to IOC Disk :li AF2980 - - OM  
0 Transmission :li AN0069 - - S/W Installation for UNIX Components  
0 :li AF3391 - - Log Transfer - UNIX-SOS :eul :li NTXS31AA - ENHANCED SERVICE RESOURCE MANAGEMENT :ul :li AF3049 - - APU Resource Management :li AN0047 - - Enhanced Services Resource Management :li AF3006 - - VPU Service Circuit Resource Management :li AF3532 - - VPU MAP and Table Control :li AN0178 - - ADAS MMI Data Transfer :eul :li NTXS32AA - APU SOS UNIX BASE :ul :li AF2684 - - UNIX Kernal Change for SNIX :li AL1579 - - UNIX Kernal Initialization :li AF3290 - - Logs & Alarms Transfer :li AL1982 - - Messaging Access for UNIX :li AL2016 - - Enhanced VM Scheduler :li AL2479 - - FPX VM Modifications :li AL1047 - - LA Support for non-SOS operating systems in SuperNode :li AL1580 - - Support for Non-SOS Systems in SuperNode - Phase 2 :li AL1581 - - UNIX Kernel Changes for Small Machine Environment :eul :li NTG320AA - ADAS APPLICATION PROCESSING UNIT (APU) S/W :ul :li AF3048 - - ADAS Communication Interface :li AF3050 - - ADAS CPE Internals :li AF3291 - - APU Process Management :li AF3381 - - ADAS APU Call processing Application :li AF3382 - - ADAS Data Manager :li AF3384 - - ADAS Voice/CM Libraries :eul :li NTG321AA - OA&M POSITION :ul :li AN0056 - - ADAS Service Data MMI :li AN0182 - - VDS to VREC Conversion Tool :eul :li NTXG322AA - VOICE PROCESSING UNIT (VPU) S/W :ul :li AF3005 - - VPU Local Maintenance :li AF3007 - - VPU Service Circuit Processing :li AF3031 - - VPU RAP and CBI Low Level I/O :li AF3033 - - VPU RAP and CBI Diagnostic Support :li AF3035 - - VPU Local Resource Management :li AF3394 - - RAP DTMF :li AN0016 - - RAP Play and Record Processing :li AN0046 - - RAP Application and Diagnostics :eul

### 0 6.3.2 Software Usage Restrictions

0

### 0 6.3.3 Memory Provisioning

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0 6.4 Real Time Impact

0 | The ADAS feature has a relatively high real time impact. Refer  
0 | to System Engineering Alert SEA 93-08-001.

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0 CHAPTER 27

0 DMS300 GATEWAY

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0 1.0 DMS-300 Gateway

0 1.1 Introduction

0 The DMS-300 Gateway Switch functions as an international exchange  
0 for calls between different world zones and for domestic overseas  
0 traffic originating or terminating within a world zone (as exists  
0 between North America and some Caribbean countries).

0 Under the switching plan for distance dialing overseas each ex-  
0 change involved in the completion of long distance calls is clas-  
0 sified and designated according to the highest rank switching  
0 function performed, its interrelationship with other switching  
0 centers and its transmission requirements. The hierarchial rank-  
0 ing (and an associated office class) given to each switching cen-  
0 ter in the network determines the routing pattern.

0 With respect to the DMS-300 (GATEWAY) switching center, this of-  
0 fice class is of the form "CTX", where X is equal to 1, 2 or 3  
0 etc.

0 The CCITT R1, R2 and No. 5 trunk circuits are provisioned in the  
0 normal way as for other trunk types. Both types of trunk cards  
0 mount only on a TM8 module or on a T8A module (which is a TM8  
0 module equipped for Test Access).

0 In DMS-300 the signalling circuits for CCITT No. 6 signalling are  
0 provisioned. A No. 6 "Signalling Circuit" is comprised of a No.  
0 6 Signalling Terminal (ST) (consisting of a signalling terminal,  
0 a modem and a dedicated No. 6 voice circuit) in conjunction with  
0 a No. 6 Link Circuit (LINK). Each "ST-LINK" set up is capable of  
0 processing the signalling information required to complete 2048  
0 simultaneous calls.

0 The types of No. 6 link reserve arrangements currently supported  
0 by the DMS-300 are Synchronous Reserve, Non-Synchronous Reserve,  
0 Load-Sharing and Nominated Speech.

0 Synchronous Reserve

0 With this mode, two signalling circuits are used. One is la-  
0 belled as the "Primary" circuit and carries all of the signalling  
0 information. The second circuit is labelled as the "Synchronous  
0 Reserve" and carries no signalling information but is synchro-  
0 nized with the Primary circuit, as a back-up, in case of a car-  
0 rier failure.

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0 Non-Synchronous Reserve

0 With this mode, a "Primary" signalling circuit carries all of the  
0 signalling information, which the back-up consists of a No. 6  
0 link circuit without Signalling Terminal. When this link is re-  
0 quired for signalling it must be first switched to a free ST from  
0 a "pool" of STs and then synchronized.

0 Load Sharing

0 With this mode, there are two signalling circuits which are used  
0 on the basis of duplicate working with load sharing. Each circuit  
0 is then the back-up for the signalling load on the other circuit.

0 Nominated Speech

0 With this mode, a "Primary" signalling circuit carries all of the  
0 signalling information. The back up is a No. 6 voice circuit  
0 which when required for signalling must first be seized, switched  
0 to a free ST out of a pool of STs and then synchronized.

0 Within the DMS-300 the facility exists to relate one particular  
0 Signalling Circuit to another for the purposes of tandeming sig-  
0 nalling information. A gateway office with the ability is re-  
0 ferred to as a Signal Transfer Point (STP) for CCITT No. 6  
0 Signalling.

0 "Private Lines", in the DMS-300 are trunk circuits that are capa-  
0 ble of connecting to a subscriber set, receiving digitone signal-  
0 ling and giving the subscriber access to the international  
0 network.

0 The service circuit cards are equipped on a Maintenance Trunk  
0 Module (MTM). Provision service circuit cards as required.

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0 1.2 Features

0 1.2.1 The DMS-300 is capable of interfacing with the Dynamic Load  
0 Control Unit of a subtending office that uses a "Time Assign-  
0 ment Speech Interpolation (TASI-B)" type of facility to multi-  
0 plex voice and signalling traffic from a number of incoming  
0 circuit on to a reduced number of outgoing circuits.

0 The DMS-300 is not capable of performing the function of TASI-B  
0 multiplexing itself.

0 1.2.2 The "Call Detail Recording" feature within the DMS-300 allows  
0 the recording of originating and terminating information on a  
0 "per call" basis for every maintenance and customer originated  
0 call passing through the DMS-300. Although normally used for  
0 billing purposes by the Telco, this feature is optional and  
0 will only be provided if requested.

0 1.2.3 "Echo Suppressor Control" is a function of the DMS-300 software  
0 and is capable of enabling and/or disabling both the DMS ver-  
0 sion "Digital Echo Suppressor (DES)" and select types of analog  
0 Echo Suppressors currently on the market.

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0 1.3 Equipment Provisioning

0 1.3.1 Common Channel Signalling

0 (a) General Description

0 CCITT No. 6 Signalling is required for DMS-300. For more infor-  
0 mation on the CCITT No. 6, refer to Section 3.15.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host  
0 Chapter 3, Section 3.15 Common Channel Signalling Systems

0 (c) Provisioning Considerations

0 ( i) By first selecting a foreign administration that will be  
0 connected to the DMS-300 via CCITT No. 6 Signalling, fill  
0 in the pertinent information, i.e., the connecting office  
0 name, the quantity of voice circuits required, the types  
0 of No. 6 link reserve arrangements required and the quan-  
0 tities of signalling terminals and link circuits needed  
0 to implement this arrangement.

0 The total number of entries is referred to as the number  
0 of routes for which No. 6 Signalling is required.

0 ( ii) The No. 6 Signaling Equipment (N6E) frame is capable of  
0 mounting sixteen signalling terminals and sixteen modems.  
0 Two of each come equipped when the frame is ordered, thus  
0 leaving fourteen provisional signalling terminals/modems.

0 ( iii) The total number of T8A mountable No. 6 trunk circuits  
0 can be found by totalling the number of voice circuits  
0 required, the number of signalling links required and the  
0 number of STs required.

0 ( iv) The CCITT definition of "Automatic Transmission Measuring  
0 and Signalling Testing Equipment (ATME-No. 2)" requires  
0 the presence of a "director" and a type (a), (b) and (c)  
0 "responder". In DMS-300 the "director" and a type (a)  
0 "responder" consist of a paired set of circuit packs  
0 (NT2X47AB/NT2X56AA), while the type (b) and (c) responder



are provided for in the software. The card pair can be used as either "director" or "responder" but not at the same time. Therefore, the Telco should specify the number of cards required depending on its maintenance requirements.

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0 1.3.2 Test Access Network (TAN)

0 (a) General Description

0 The Test Access Network (TAN) provides a four wire metallic access from a jack on each Trunk Test Position (TTP) to all R1, R2 and No. 5 and No. 6 trunk circuits in the office.

0 (b) References

0 None

0 (c) Provisioning Considerations

0 ( i) Provide one (1) NT5X00AB TAN module for every 32 TME frames requiring access.

0 ( ii) The NT5X00AB TAN module also provides test access from three test trunks (NT5X04AA) in conjunction with three test positions. For each additional three test positions requiring Test Access, provide one (1) NT5X00AA TAN module for every NT5X00AB being provided.

0 ( iii) When the TAN module is cabled directly to the test positions, provide one NT5X02AA Test Position Controller Card.

0 ( iv) Provide one test trunk (NT5X04AB, mounted on a T8A or IT8A module) per test position, from which test access will be required.

0 The NT5X04AB CCITT#5 Trunk Circuit Pack provides compatibility with the operation of V.22 type modems. The V.22 type modem is used extensively with personal computers to send voice band data. The Hayes modem is a V.22 device.

0 The V.22 modems generate 2400 Hz and 2600 Hz frequencies which are also employed as CCITT#5 line signals. This results in a conflict whenever a call employing the modem is routed over a CCITT#5 circuit. The NT5X04AB will include a guard tone capability which prevents interpretation of the 2400 Hz and 2600 Hz frequencies as line signals while a signal power in the voice frequency band exceeds a threshold.

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0 ( v) Within each TAN module (NT5X00AB and NT5X00AA) utilize  
0 one group of three relay card slots per eight MTE frames  
0 requiring test access.

0 Within each relay group provide one Relay Card (NT5X01AA)  
0 per test position from which access is required (maximum  
0 3 per relay group).

0 | ( vi) Both types of TAN modules mount on the Test Access Equip-  
0 ment frame (TAE, NT5X12AA or NT5X12AB) with the following  
0 restrictions:

0 1) The NT5X00AB will mount only in positions  
0 65 and 51 on the TAE frame.

0 2) The NT5X00AA will mount in any position on  
0 the TAE frame (65, 51, 32, 18, 04) but  
0 yields positional preference to the  
0 NT5X00AB.

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0 1.3.3 Echo Suppressor Control

0 (a) General Description

0 In the DMS-300, Digital Echo Suppressors are provisioned on a  
0 "pooled service circuit" basis (i.e. non-dedicated). This enables  
0 the Telco to provision the quantity of DESs based on traffic con-  
0 ditions and exceptional levels of blocking rather than strictly  
0 on a per circuit basis.

0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host

0 (c) Provisioning Considerations

0 ( i) Of the six provisionable DES cards per DES module the  
0 first, third and fifth card provide eight circuits each  
0 while the second, fourth and sixth card provide seven  
0 circuit each for a total of 45 DES circuits per module.

0 ( ii) The DES module mounts on a DCE frame in positions 65, 51,  
0 32 and 18 only.

0 ( iii) If existing echo suppressors are to be re-used for  
0 DMS-300 applications, please contact the NTL Customer En-  
0 gineer to determine whether or not an interface study is  
0 required.

0 ( iv) For more information on the Digital Echo Suppressors re-  
0 fer to Section 3.5.

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#### 0 1.3.4 Universal Tone Receiver

##### 0 (a) General Description

0 The Universal Tone Receiver (UTR) circuit pack is provisioned for  
0 R2 call setup. Each UTR pair has thirty circuits. For more in-  
0 formation on the UTR, refer to Section 3.5.

##### 0 (b) References

0 Chapter 3, Section 3.5 Peripheral Modules - Host

##### 0 (c) Provisioning Considerations

0 ( i) The number of UTR circuits is obtained by calculating the  
0 UTR holding time and multiplying by the average number of  
0 calls per hour. In general it is always safe to provide  
0 two (2) pairs of UTR cards if unsure of the traffic de-  
0 mands.

0 For incoming R2 calls the UTR holding time is as follows:

- 0 1. From seizure to final digit collection  
0 plus
- 0 2. From final digit collection to - trunk  
0 selection if R1 or N5 outgoing, - seize  
0 acknowledgement if R2 outgoing.

0 For outgoing R2 calls the UTR holding time is as follows:

- 0 1. The UTR is held until told to release by  
0 the far office or timeout if we are the  
0 controlling signal office (i.e. R1 to R2  
0 calls).

0 The number of UTRs used on average is given by the fol-  
0 lowing formula:

$$\begin{array}{lcl}
 \text{\# of UTR} & & \text{SI} \qquad \qquad \text{S0} \\
 \text{Circuits} = \text{NI} \times \text{-----} \times \text{EI} + \text{NO} \times \text{-----} \times \text{EO} \\
 \text{required} & & \text{HI+SI} \qquad \qquad \text{HO+S0}
 \end{array}$$

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0 where,

0 NI = Number of incoming R2 trunks (or 2-way  
0 used as incoming)

0 SI = Signalling time in seconds of incoming  
0 trunks

0 HI = Holding time (talking) of incoming trunks  
0 in seconds

0 EI = Erlang occupancy figure of incoming  
0 trunks

0 NO = Number of outgoing R2 trunks (or 2-way  
0 used as outgoing)

0 SO = Signalling time in seconds of outgoing  
0 trunks

0 HO = Holding time (talking) of outgoing trunks  
0 in seconds

0 EO = Erlang occupancy figure of outgoing trunks

0 ( ii) This circuit pack is only required for CCITT No. 6 Sig-  
0 nalling.

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# DMS300 Gateway

## Chapter 27

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0 CHAPTER 28

0 DMS100 MAIL - SERVICE PERIPHERAL MODULE

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DMS100 Mail - Service Peripheral Module  
Chapter 28



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0 DMS100 MAIL - SERVICE PERIPHERAL MODULE  
0 Section Contents

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0 1.0 DMS-100 Mail - Service Peripheral Module

0 The Service Peripheral Module is a voice processing server developed  
0 for the DMS-100 central office environment. It will be used standalone  
0 initially and later in conjunction with an Intelligent Services Node  
0 (ISN) to provide (a) large capacity platform (1920 ports) with inte-  
0 grated OA&M capabilities, and (b) enhanced services to residential and  
0 centrex subscribers using display-based sets.

0 The Service Peripheral Module provides up to 192 ports in central of-  
0 fice packaging with redundancy and reliability features. It evolved  
0 from the Meridian Mail which originated as SL-1 peripheral equipment  
0 providing business-oriented voice messaging and voice response ser-  
0 vices to PBX customers.

0 The Service Peripheral Module provides the following services:

- 0 \* Voice Messaging
- 0 \* Call Answering
- 0 \* Auto-attendant
- 0 \* Voice Menus
- 0 \* Interactive Voice Response (Customs applications developed in  
0 an external UNIX environment)
- 0 \* Multi-Customer
- 0 \* Multiple Administration Position
- 0 \* Residential Call Answering with Dial Pulse Set Support

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0 1.1 HARDWARE PROVISIONING

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0 1.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 1.1.2 HARDWARE DEPENDENCIES

0  
0 The Service Peripheral Module uses the S/DMS Cost Reduced Super-  
0 node frame. Success of SPM relies on the outcome of the S/DMS  
0 program.

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0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable.

0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable.

0 CIRCUITS PER CARD

0  
0 Not applicable

0 DISCRIMINATION NUMBERING

0  
0 Not applicable

0 1.1.3 PROVISIONING CONSIDERATIONS

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## 0 SERVICE MIX

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0 Provisioning will depend on the relative proportions of the fol-  
0 lowing service mix:

- 0 \* Centrex Voice Messaging/Voice Services
- 0 \* Small Business Call Answering
- 0 \* Residential Call Answering
- 0 \* Residential Networking

0 Business oriented services have a peak busy hour of mid-morning  
0 and mid-afternoon, while residential use peaks in late afternoon  
0 and early evening. Since the busy hours do not clash, they can  
0 share some of the same system resources with the exception of  
0 disk space.

0 Systems are engineered based on Call Answering and Message Re-  
0 trieval activities since these account for the majority of user  
0 activities:

- 0 \* The total number of ports required is determined by the com-  
0 bined busy hour load.
- 0 \* Disk space requirements are additive and not shared. Disk  
0 space must be the sum of disk space required for each appli-  
0 cation.
- 0 \* Number of ports required for networking is approximately 6%  
0 of the number of ports required in general for Centrex ap-  
0 plications only.

0 1.1.4 OFFICE LAYOUT INFORMATION

0  
0 Not applicable.

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0 1.1.5 TRAFFIC TABLES

0  
0 The table shown indicates the heaviest traffic (in CCS) for which  
0 the system should be engineered. For a better grade of service  
0 additional channels should be allocated. With UCD (Uniform Call  
0 Distribution) queue used, the system does not block but rather  
0 delays caller in queue, listening to ringback, until a channel is  
0 available. The recommended grade of service is 'P.05' - 5% proba-  
0 bility of delay in queue exceeding 6 seconds, i.e. one ring cy-  
0 cle. When no UCD is deployed and MLHG (Multi Line Hunt Group) is  
0 used instead, the system will block when all channels are busy,  
0 and must be engineered to a lower throughput; P.02 is recom-  
0 mended. The traffic tables for various blocking and non-blocking  
0 grades of service indicates:

- 0 \* the traffic that can be handled by a given number of nodes  
0 (CCS, and calls per hour assuming 0.4CCS per call)
- 0 \* the number of users this represents (heavy use: 0.7 busy-  
0 hour CCS/user and light use: 0.2/0.3 busy-hour CCS/user)
- 0 \* an estimate of the number of ports required for networking  
0 based on typical centrex use.

0 Note that the use of broadcast messages or large distribution  
0 lists can result in a surge of login traffic. Sending a broadcast  
0 message results in all message waiting lights coming on in a  
0 short period of time. Users will notice the visual MWI and many  
0 will attempt to log in to retrieve the message immediately. All  
0 ports may become busy, and callers will be blocked (no UCD) or  
0 delayed (UCD) while waiting for a free port. Note that external  
0 callers may be affected as well, since Call Answering competes  
0 with Login for voice ports. It is advisable that broadcast mes-  
0 sages not be sent at peak hours.

0 Networking traffic is generated by AMIS Open Networking, which  
0 supports ad-hoc messaging to an open user community, and Private  
0 Networking, which supports messaging among a closed user commu-  
0 nity distributed over a closed set of sites (Centrex or PBX  
0 based). In both applications, all message transport is performed  
0 via voice call, with control information signalled via DTMF and  
0 message transfer via analog play/record on any voice channel.  
0 Networking traffic from AMIS message transfers resulting from com-



0 pose operations can be expected to increase traffic by about 6%  
0 under typical use.

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| Voice Ports | Busy hr traffic (CCS) | Calls/ Hour (30 sec) | Number of Users (.2ccs/user) | Number of Users (.7ccs/user) | Networking Ports |
|-------------|-----------------------|----------------------|------------------------------|------------------------------|------------------|
| 24          | 557.1                 | 1857                 | 2785                         | 795                          | 2                |
| 48          | 1258.1                | 4194                 | 6290                         | 1797                         | 2                |
| 72          | 1982.7                | 6609                 | 9913                         | 2832                         | 2                |
| 96          | 2718.6                | 9062                 | 13593                        | 3884                         | 3                |
| 120         | 3460.9                | 11536                | 17304                        | 4944                         | 4                |
| 144         | 4207.8                | 14026                | 21039                        | 6011                         | 4                |
| 168         | 4957.9                | 16526                | 24789                        | 7083                         | 5                |
| 192         | 5710.5                | 19035                | 28552                        | 8158                         | 6                |

0 UCD: Non-blocking P.05 Delay > 1/6 Hold Time (One Ring Cycle)

| Voice Ports | Busy hr traffic (CCS) | Calls/ Hour (30 sec) | Number of Users (.2ccs/user) | Number of Users (.7ccs/user) | Networking Ports |
|-------------|-----------------------|----------------------|------------------------------|------------------------------|------------------|
| 24          | 485.7                 | 1619                 | 2428                         | 694                          | 2                |
| 48          | 1149.8                | 3833                 | 5749                         | 1642                         | 2                |
| 72          | 1847.2                | 6157                 | 9236                         | 2639                         | 2                |
| 96          | 2560.7                | 8536                 | 12803                        | 3658                         | 3                |
| 120         | 3284.1                | 10947                | 16420                        | 4692                         | 4                |
| 144         | 4014.4                | 13381                | 20072                        | 5735                         | 4                |
| 168         | 4749.9                | 15833                | 23749                        | 6786                         | 5                |
| 192         | 5489.5                | 18298                | 27447                        | 7842                         | 6                |

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| Voice Ports | Busy hr traffic (CCS) | Calls/ Hour (40 sec) | Number of Users (.3ccs/user) | Number of Users (.7ccs/user) | Networking Ports |
|-------------|-----------------------|----------------------|------------------------------|------------------------------|------------------|
| 24          | 598.7                 | 1498                 | 1996                         | 855                          | 2                |
| 48          | 1382.1                | 3455                 | 4607                         | 1974                         | 3                |
| 72          | 2197.3                | 5418                 | 7342                         | 3139                         | 5                |
| 96          | 3027.6                | 7569                 | 10092                        | 4325                         | 6                |
| 120         | 3867.1                | 9668                 | 12890                        | 5524                         | 8                |
| 144         | 4712.7                | 11782                | 15709                        | 6732                         | 9                |
| 168         | 5562.9                | 13907                | 18543                        | 7947                         | 10               |
| 192         | 6416.5                | 16041                | 21388                        | 9166                         | 12               |

MLHG: P.02 Blocking

| Voice Ports | Busy hr traffic (CCS) | Calls/ Hour (40 sec) | Number of Users (.3ccs/user) | Number of Users (.7ccs/user) | Networking Ports |
|-------------|-----------------------|----------------------|------------------------------|------------------------------|------------------|
| 24          | 550.6                 | 1377                 | 1835                         | 787                          | 2                |
| 48          | 1299.9                | 3259                 | 4333                         | 1857                         | 3                |
| 72          | 2086.4                | 5216                 | 6955                         | 2951                         | 5                |
| 96          | 2891.0                | 7228                 | 9637                         | 4130                         | 6                |
| 120         | 3706.7                | 9267                 | 12356                        | 5295                         | 8                |
| 144         | 4530.0                | 11325                | 15100                        | 6471                         | 9                |
| 168         | 5562.9                | 13397                | 17863                        | 7655                         | 10               |
| 192         | 6192.0                | 15480                | 20640                        | 8846                         | 12               |

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## 0 1.1.6 CUSTOMER QUESTIONS

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| Questions                                               | Variable | Typical Value |
|---------------------------------------------------------|----------|---------------|
| Current Quantity of Business Lines                      | BL       |               |
| Current Quantity of Residential Lines                   | RL       |               |
| Business Voice Mail penetration                         | PBL %    |               |
| Residential Voice Mail penetration                      | RBL %    |               |
| Voice Mail average BH CCS per Bus user                  | BBH      | .45 ccs/user  |
| Voice Mail average BH CCS per Res user                  | RBH      | .25 ccs/user  |
| Average storage usage per Bus user                      | BS       | 1.5 min/user  |
| Average storage usage per Res user                      | RS       | 1.5 min/user  |
| % of voice mail traffic from<br>Bus users during Bus BH | PBBH     | 75 %          |
| % of voice mail traffic from<br>Res users during Res BH | PRBH     | 75 %          |
| % of Storage Occupancy Engineered to                    | PSO      | 75 %          |

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0 1.1.7 VOICE PORT and STORAGE CALCULATIONS

0  
0 Voice Port Calculations

0 Business Mailboxes (BM) =  $BL \times PBL$

0 Residential Mailboxes (RM) =  $RL \times PRL$

0 Total Business BH ccs (TBBH) =  $(BM \times BBH) / PBBH$

0 Total Residential BH ccs (TRBH) =  $(RM \times RBH) / PRBH$

0 Select the larger of TBBH or TRBH and use the appropriate traffic  
0 table shown in Section 2.7 Traffic Tables to determine the port  
0 size required for the system. In the Central Office environment,  
0 the minimum port size is 48 ports.

0 Storage Calculations

0 Total Disk Storage =  $((BM \times BS) + (RM \times RS)) / PSO$

0 In the Central Office Environment only the shadowed disk storage  
0 options are available.

0 1.1.8 Port Connectivtiy

0  
0 Ports on the transition modules of the SPM allow connections of  
0 the following to be made:

0 1. NTGX07AA Modem Transition Module

0 \* 4 duplex SMDI links

0 2. NTGX09AA T1 Transition Module

0 \* 4 T1 spans

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## 0 3. NTGX06AA 68K Transition Module

0 \* 3 currents loops for terminals and printers

0 \* 1 V22 bis modem port with internal modem for simplex SMDI,  
0 networking modem or remote maintenance access.

0 1.1.9 Recommended Terminals

0 The following list shows the recommended terminals, printers and  
0 modems to be used with SPM. It also shows the current loop  
0 adapter, if required, and the current loop cable connecting the  
0 equipment.

| <u>Terminal</u>      | <u>CPC</u> | <u>Adapter</u> | <u>CPC</u> | <u>Cable</u> |
|----------------------|------------|----------------|------------|--------------|
| DEC VT420-AA (white) | A0383146   | H8673-AA       | A0384282   | NT0X96FR     |
| DEC VT420-BA (green) | A0383147   | H8673-AA       | A0384282   | NT0X96FR     |
| DEC VT420-CA (amber) | A0383150   | H8673-AA       | A0384282   | NT0X96FR     |
| HP 700/44            | A0378381   | not needed     |            | NT0X96FR     |

| <u>Printer</u>       | <u>CPC</u> | <u>Adapter</u> | <u>CPC</u> | <u>Cable</u> |
|----------------------|------------|----------------|------------|--------------|
| DEC LA75 kit         | A0383528   | H8673-AA       | A0384282   | NT0X96FR     |
| DEC LA424 (NTZZ14EC) | B0236797   | H8673-AA       | A0384282   | NT0X96FR     |

| <u>Modem</u>          | <u>CPC</u>             | <u>Cable</u>      |
|-----------------------|------------------------|-------------------|
| Ventel 2400 Plus 2    | A0384913               | NT0X96EH/NTNX36QA |
| GDC Datacom 224C      | A0605611               | NT0X96EH/NTNX36QA |
| Case Datatel DCM42220 | A0351638               | NT0X96EH/NTNX36QA |
| UDS 52245226          | A0385557 (rack-mount)  | NT0X96EH/NTNX36QA |
| UDS 62245079          | A0360824 (stand-alone) | NT0X96EH/NTNX36QA |

0 The NT0X96FR/NTNX36QA cable connects the current loop  
0 terminal/printer to the DF (Distribution Frame). The NT0X96EH  
0 connects the modem to the NT1X89AA/BA, the NTNX36QA connects the  
0 modem to the NT1X67FA, in the IOC of the DMS for the SMDI Link.

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0 See CA0X15 items 4AF, 5AD and 5AX for the NT0X96FR, NT0X96EH and  
0 NTNX36QA cables.

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0 1.1.10 Dataport Assignments

0  
0 Terminals, printers and modems are connected to the ports on the  
0 transition modules of the SPM Nodes (MSP, SPN, TIFN). The table  
0 below shows the suggested connections for the various SPN fea-  
0 tures:

| Node  | Port1           | Port2         | Port3           | Port4        |
|-------|-----------------|---------------|-----------------|--------------|
| MSP1  | Console(Note 1) | Modem(Note 2) | Printer(Note 3) | UAT (Note 4) |
| MSP2  | Console(Note 1) | Modem(Note 2) | Console         | UAT (Note 4) |
| SPN1  | Console         | SMDI(4,8,10)  | Console         | UAT (4,6)    |
| SPN2  | Console         | SMDI4,6,8,10) | Console         | ACCESS (5,6) |
| SPN3  | Console         | SMDI(4,8,10)  | Console         | Console      |
| SPN4  | Console         | SMDI(8,10)    | Console         | ACCESS (5,6) |
| SPN5  | Console         | SMDI(8,10)    | Console         | Console      |
| SPN6  | Console         | SMDI(8,10)    | Console         | ACCESS (5,6) |
| SPN7  | Console         | SMDI(8,10)    | Console         | Console      |
| SPN8  | Console         | SMDI(8,10)    | Console         | ACCESS (5,6) |
| TIFN1 | SMDI (Note 7,8) | SMDI(Note 8)  | SMDI (Note 8)   | SMDI(Note 8) |
| TIFN2 | SMDI (Note 7,9) | SMDI(Note 9)  | SMDI (Note 9)   | SMDI(Note 9) |
| TIFN3 | SMDI (Note 8)   | SMDI(Note 8)  | SMDI (Note 8)   | SMDI(Note 8) |
| TIFN4 | SMDI (Note 9)   | SMDI(Note 9)  | SMDI (Note 9)   | SMDI(Note 9) |

## 0 Note:

- 0 1. MSPs port 1 are reserved for either the Console or AdminPlus  
0 (if enabled) and cannot be reassigned. Consoles or terminals

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0 are required for system and user administration. See Section  
0 2.11 for recommended terminals.

0 2. MSPs port 2 should be reserved for remote diagnostics use.

0 3. MSP1 port 3 should be assigned to the printer.

0 4. If the Multi-Admin feature is enable, up to 3 UAT (User Admin  
0 Terminal) may be assigned. For local terminals, MSP1 and MSP2  
0 port 4 should be assigned the 1st and 2nd UAT, SPN1 port 4  
0 should be assigned the 3rd UAT. For remote access, UATs may  
0 be assigned on a modem port on an SPN node.

0 5. If the ACCESS feature is enabled, an ACCESS port must be as-  
0 signed for every 48 ports that the SPM has been provisioned  
0 with. An ACCESS may only be assigned to an SPN node.

0 6. A UAT and ACCESS port must not be assigned to the same SPN  
0 node.

0 7. TIFN1 port 1 is assigned the 1st SMDI link and should not be  
0 reassigned. It may have an associated standby redundant link  
0 (even if the Multi-SMDI feature is not enabled) that will be  
0 assigned to TIFN2 port 1.

0 8. If the Multi-SMDI feature is enabled, additional SMDI ports  
0 may be assigned. The maximum of SMDI links supported will be  
0 determined by the number of SPM ports provisioned and the  
0 number of SPN modem ports not being used by other features. A  
0 48 port SPM with 2 SPNs could support 6 non-redundant SMDI  
0 links (4 links from TIFN1 and 2 links from SPN1 and SPN2) if  
0 no other feature uses the SPN modem port. SPM with 168-192  
0 ports will support 16 non-redundant SMDI links.

0 9. If Multi-SMDI feature is enabled, redundant SMDI links may be  
0 assigned. SPM with 48-96 ports will support up to 4 redundant  
0 SMDI Links. The primary (master) links should be assigned  
0 sequentially from TIFN1 port 1-4, and the associated standby  
0 (slave) links assigned from TIFN2 port 1-4. SPM with 120-192  
0 ports will support up to 8 redundant SMDI links. The primary  
0 links are assigned to TIFN1 port 1-4 and TIFN3 port 1-4. The  
0 associated standby links are assigned to the matching TIFN  
0 nodes.

0 10. If the Proprietary Networking feature is enabled, any SPN  
0 modem port may be used for networking. The maximum number of  
0 network connections that may be supported will be determined

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0 by the number of SPN modem ports not being used for other  
0 features.

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0 1.2 PRODUCT/SYSTEM SPECIFICATION

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0 1.2.1 PHYSICAL CHARACTERISTICS

0

0 The Service Peripheral Module has the following mechanical dimen-  
0 sions:

0 \* Height 72in.

0 \* Width 42in.

0 \* Depth 28in.

0 The Service Peripheral Module has the following power/thermal  
0 characteristics:

0 \* Current drain 50 amps

0 \* Power consumption 1200 watts for 96-port system

0 2400 watts for 192-port system

0 \* Thermal profile not more than 20°C above ambient

0 1.2.2 EMI/EARTHQUAKE INFORMATION

0

0 The SPM uses the S/DMS Cost Reduced Supernode frame. The EMI and  
0 Earthquake compliancy will depend on the outcome of the S/DMS  
0 program which is not available at this moment in time.

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0 1.2.3 SPARING INFORMATION

0  
0 MTBF (Mean Time Between Failure) for the Service Peripheral Mod-  
0 ule:

0 MSP 4.4 years  
0 SPN 3.5 years  
0 TIFN 4.4 years  
0 Entire system 42.7 years

0 Spares for SPM in C0 environment

| PEC      | Description                 | Spares |
|----------|-----------------------------|--------|
| NTGX04AA | MMAIL BUS TERM TRAN MOD PB  | 1      |
| NTGX04BA | MMAIL BUS EXT TRANS MOD PB  | 1      |
| NTGX05AA | 68K MAIN CIRCUIT PACK       | 1 or 2 |
| NTGX06AA | 68K TRANSITION MODULE PB    | 1 or 2 |
| NTGX07AA | MODEM TRANSITION MODULE PB  | 1      |
| NTGX08AA | T1 MAIN CIRCUIT PACK        | 1      |
| NTGX09AA | T1 TRANSITION MODULE PB     | 1      |
| NTGX10AA | BUS CONTROLLER MAIN CP      | 1      |
| NTGX11AA | BUS CTLR TRANSITION MOD PB  | 1      |
| NTGX12AA | VP12 CIRCUIT PACK           | 1 or 2 |
| NTGX14AA | 1200MB DISK MODULE ASSY     | 1 or 2 |
| NTGX14BA | DUAL 1200MB DISK MOD ASSY   | 1 or 2 |
| NTGX15AA | DISK TAPE MODULE ASSEMBLY   | 1      |
| NT9X91AB | +5V/+12V Power Converter CP | 2      |
| NT0X96EH | SMDI Link cable             | 1      |

0 Note: Spares for the above Circuit Packs should be one (1) or two  
0 (2) for the common packs at the customer's discretion espe-  
0 cially in market-places that have the 48-hour replacement  
0 service.

0

0 Spares for SPM in non-traditional CO environment

0 The following shows the critical minimal sparing list for SPM  
0 used in a non-traditional CO environment like PCS (Personal Com-  
0 puter Systems) to provide cost competitiveness. This list takes  
0 advantage of spares pooling and shows 3 (three) levels of sparing  
0 for systems with 1, 2 and 3 to 10 SPMs.

| PEC      | Description                | Spares for<br>no. of SPMs |   |           |
|----------|----------------------------|---------------------------|---|-----------|
|          |                            | 1                         | 2 | 3 or more |
| NTGX05AA | 68K MAIN CIRCUIT PACK      | 1                         | 2 | 3         |
| NTGX06AA | 68K TRANSITION MODULE PB   | 1                         | 1 | 1         |
| NTGX08AA | T1 MAIN CIRCUIT PACK       | 1                         | 1 | 1         |
| NTGX10AA | BUS CONTROLLER MAIN CP     | 1                         | 2 | 2         |
| NTGX11AA | BUS CTLR TRANSITION MOD PB | 1                         | 1 | 1         |
| NTGX14AA | 1200MB DISK MODULE ASSY    | 1                         | 2 | 2         |
| NTGX14BA | DUAL 1200MB DISK MOD ASSY  | 1                         | 2 | 2         |

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0 1.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 SPM has the following fusing requirements for both A and B feeds:

| <u>Shelf</u>     | <u>Fuse (amp)</u> |
|------------------|-------------------|
| Shelf Pos 00 - A | 20                |
| Shelf Pos 00 - B | 20                |
| Shelf Pos 13 - A | 20                |
| Shelf Pos 13 - B | 20                |
| Shelf Pos 26 - A | 30                |
| Shelf Pos 26 - B | 30                |
| Shelf Pos 39 - A | 30                |
| Shelf Pos 39 - B | 30                |
| Blower - A       | 10                |
| Blower - B       | 10                |

0 1.2.5 CURRENT DRAIN INFORMATION

0

0 1.2.6 SYSTEM CAPACITIES

| <u>Item</u>                       | <u>Limit/Capacity</u> |          |
|-----------------------------------|-----------------------|----------|
| Voice Messaging Channels          | 192                   | (Note 1) |
| Voice Message Storage (hours)     | 1200                  | (Note 2) |
| Number of Languages on the System | 4                     | (Note 3) |

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|   |                                      |           |          |
|---|--------------------------------------|-----------|----------|
| 0 | Voice Menus                          | 4000      |          |
| 0 | Levels per Voice Menu                | 20        | (Note 3) |
| 0 | Voice Service DNS                    | 4000      |          |
| 0 | Messages per mailbox                 | 999       | (Note 4) |
| 0 | Org Directory entries/system         | 50000     |          |
| 0 | Registered mailboxes/system          | 42328     |          |
| 0 | Personal Verifications               | 100 hours | (Note 5) |
| 0 | Voice Menu or Forms definition       | 100 hours | (Note 5) |
| 0 | Entries per org. distribution list   | 120       | (Note 6) |
| 0 | Personal Distribution Lists/user     | 9         | (Note 3) |
| 0 | Entries per personal dist. list      | 99        | (Note 3) |
| 0 | Max minutes/mailbox (MMI limitation) | 360       |          |
| 0 | Customer Groups                      | 2000      | (Note 7) |
| 0 | Networking Nodes/system              | 50        |          |
| 0 | Remote maintenance ports             | 2         |          |
| 0 | Admin. pos. including Maint. Console | 4         |          |
| 0 | Maintenance printers                 | 2         | (Note 8) |
| 0 | SMDI Links with Multi-SMDI feature   | 16        |          |
| 0 | Maintenance Console                  | 1         |          |
| 0 | Proprietary Networking ports         | 22        | (Note 9) |

|   |              |            |              |              |              |            |                  |
|---|--------------|------------|--------------|--------------|--------------|------------|------------------|
| 0 | <u>Nodes</u> | <u>Max</u> | <u>Voice</u> | <u>Ports</u> | <u>Hours</u> | <u>Max</u> | <u>Mailboxes</u> |
| 0 | 6            |            | 48           |              | 150          |            | 5291             |
| 0 | 6            |            | 48           |              | 300          |            | 10582            |
| 0 | 8            |            | 96           |              | 300          |            | 10582            |
| 0 | 8            |            | 96           |              | 600          |            | 21164            |
| 0 | 12           |            | 144          |              | 450          |            | 15873            |
| 0 | 12           |            | 144          |              | 900          |            | 31746            |
| 0 | 14           |            | 192          |              | 600          |            | 21164            |
| 0 | 14           |            | 192          |              | 1200         |            | 42328            |

0 Note:

- 0 1. This limit corresponds to 8 SPN 24-channel nodes. These sys-
- 0 tems are configurable in increments of 24 channels.
- 0 2. This limit corresponds to a maximum 8 1400MB SPN disks, (suf-
- 0 ficient for 150 hours/disk). It includes voice messages and
- 0 personal greetings but not personal verifications, system
- 0 greetings, voice service definitions (unless on VS203, see
- 0 note 5 below) or prompts.
- 0 3. This is a feature implementation limit.
- 0 4. This limit is a user interface implementation.



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- 0 5. Voice menus and other voice service definitions (announcements, voice form definitions) are stored on the System Volume (VS1) where they share space with personal verifications and network queues. If VS203 is defined as the voice service volume, there may be upto 150 hours of voice menus and other voice service definitions in addition to 100 hours of personal verifications.
- 0 6. This is an MMI feature limitation.
- 0 7. This is an implementation limitation based on maximum DMS-100 customers.
- 0 8. Only one maintenance printer is active at a time. The recommended configuration is to connect one printer to port 3 on MSP 1 and to connect the other printer to the printer port on the system console. The second printer is used when MSP 1 fails.
- 0 9. The proprietary network transport protocol is not supported on the SPM (CO market), nor is it supported at Gate 3 on the MSM (CPE market). Support for the proprietary network transport protocol on the MSM may be provided in a MM8 up-issue, together with new hardware to increase the number of RS-232 ports available for networking. A software change is needed in the Operating System to correctly control the DTR lines on ports connected to on-board modems to be used for networking. Furthermore, special cabling is needed to allow the modem ports on a TIFN node pair to be used independently (non-redundantly). This limit corresponds to 1 modem port per SPN (upto 8 SPN) plus 4 modem ports per TIFN, less 2 ports for a single redundant SMDI connection.

0 1.3 SOFTWARE PROVISIONING

0

0 1.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The Service Peripheral Module requires non-BCS software release  
0 MM8 or higher.

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0 The following codes are used in Phase 1 for the SPM software:

| 0 | <u>Package Title</u>    | <u>Code</u> |
|---|-------------------------|-------------|
| 0 | SPM Base Software       | SPM000AA    |
| 0 | SMDI Interface Software | SPM010AA    |
| 0 | AMIS Analog Networking  | SPM011AA    |
| 0 | Voice Forms             | SPM020AA    |
| 0 | Voice Menus             | SPM021AA    |
| 0 | VMUIF Call Answering    | SPM100AA    |
| 0 | MM Voice Messaging      | SPM120AA    |

0 The Service Peripheral Module SPM 02 Software Packaging is as  
0 follows :

| 0 | <u>Package Title</u>   | <u>Code</u> |
|---|------------------------|-------------|
| 0 | SPM Base Software      | SPM000AA    |
| 0 | Multi-SMDI             | SPM010AA    |
| 0 | AMIS Analog Networking | SPM011AA    |
| 0 | Voice Forms            | SPM020AA    |
| 0 | Voice Menus            | SPM021AA    |
| 0 | Family Mailboxes       | SPM030AA    |
| 0 | Call Answering         | SPM100AA    |
| 0 | Voice Messaging        | SPM110AA    |
| 0 | Full Voice Messaging   | SPM120AA    |
| 0 | DMS-Mail Mailboxes     | SPM130AA    |

0 Note: The DMS-Mail Mailboxes Master Package include SPM100,  
0 SPM110, SPM120 and SPM030AA with no mailbox limits, priced by  
0 ports.

### 0 1.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

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PRACTICE 297-1001-450

0 1.3.3 MEMORY PROVISIONING

0  
0 Not applicable.

0 1.4 REAL TIME IMPACT

0 Not applicable.

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0 NORTHERN TELECOM

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PRACTICE 297-1001-450

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0 CHAPTER 29

0 MERIDIAN EQUIPMENT

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Meridian Equipment  
Chapter 29

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## 0 1.0 SNSE Integration for Meridian Cabinets

0 The integration of the SuperNode SE (SNSE) will provide the Meridian  
0 Cabinet System product line the ability to evolve from NT40 to a  
0 SuperNode based Core without having to expand to a full capacity  
0 SuperNode. The SNSE will also provide, within a single bay an alterna-  
0 tive packaging solution to the traditional Enhanced network (ENET)  
0 bays and the Link Peripheral Processor bay for the small to medium  
0 sized offices.

0 The SNSE platform contains in a single bay CM/SLM, DMS-BUS, LIS and  
0 Network functionalities. It's growth capacity, depending on engineered  
0 traffic and amount of features, is supported on the Meridian Cabinets  
0 up to 12,000 ports. If the potential for further growth is evident,  
0 beyond 14k- 16k range, then OPTION 211 (full SuperNode) should be se-  
0 riously considered.

0 This ECM will concentrate on the interface to the Meridian Cabinets  
0 that require cabling to either the MS, ENI, or LIS portions of the  
0 SNSE. The affected MCS equipment is the MCTMI, MCSM, MCEX (IOC), and  
0 the MCGM(IOC, STM).

0 For more in-depth provisioning rules of the SNSE itself, see ECM632.

### 0 1.1 HARDWARE PROVISIONING

0

#### 0 1.1.1 HARDWARE USAGE RESTRICTIONS

0

0 There are several restrictions concerning Meridian cabinets from  
0 network port usage to types of bulkheads and circuit packs. Spe-  
0 cial cabling schemes have been designed for DS30A and/or fiber  
0 options for peripheral ports on MCTMI, MCSM, or MCGM.

0 When provisioning an ENI shelf the following restrictions apply:

0 The Meridian bulkhead NT9X0813 must be provisioned one per plane.  
0 also provision internal DS30A cables NT9X0815 (ONE PER NT9X41)  
0 and NT9X0817 (ONE PER NT9X45). Due to bulkhead connector limita-  
0 tions a maximum of four (4) NT9X41 or NT9X45 PB's and cross point

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0 cards (NT9X35) per plane can be provisioned for any DS30 copper  
0 connections.

0 When provisioning NT9X41's or NT9X45's provision in the following  
0 order and slots:(Provision in pairs)

| slots (SHF13) |      | NT9X0813 BULKHEAD CONNS. |                | CABLE PEC         |
|---------------|------|--------------------------|----------------|-------------------|
| PL0           | PL1  | CONN. NUMBERS            | CABLE TYPE     |                   |
| 13            | & 23 | C000,C001,C002,C003      | COPPER / FIBER | NTNX36AQ(COPPER)* |
| 14            | & 24 | C004,C005,C006,C007      | COPPER / FIBER |                   |
| 15            | & 25 | C008,C009,C010,C011      | COPPER / FIBER |                   |
| 16            | & 26 | C012,C013,C014,C015      | COPPER / FIBER |                   |
| 17            | & 27 | FIBER PORTS HOLES        | - FIBER        | NT0X97AK(FIBER)*  |
| 18            | & 28 | FIBER PORTS HOLES        | - FIBER        |                   |
| 19            | & 29 | FIBER PORTS HOLES        | - FIBER        |                   |

- 0 NOTE: 1) \* SEE CAZX15AA FOR SNSE CONNECTIVITY
- 0 2) SLOTS 13-16 PL0 AND 23-26 PL1 ARE THE DESIGNATED  
0 COPPER POSITIIONS BUT DEPENDING ON THE OFFICE  
0 REQUIREMENTS CAN BE USED AS FIBER (NT9X40) OR COPPER  
0 FIBER MIX (NT9X45).
- 0 3) IN PROVISIONING FOR FIBER(DS512) OR COPPER(DS30) PROVISION  
0 DS30 LINKS USING NT9X45'S FIRST BECAUSE OF BULKHEAD  
0 RESTRICTIONS. THEN UTILIZE THE FIBER PORTS ON THE 9X45'S  
0 (TOTAL 3) AND THEN MOVE TO NT9X40'S IF REQUIRED FOR MORE  
0 DS512 FIBER.

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## 0 HARDWARE USAGE RESTRICTIONS FOT COMMERCIAL AND FEDERAL MARKETS

0  
0 The restriction for the Commercial MSL100 market are that:

- 0 1)All SNSE's will be supported on initial  
0 offices only. No extensions.  
0 2)JNET will NOT be supported. If SNSE is  
0 provisioned, it must start initially with  
0 ENET or ENI shelf in SNSE.

0 The restriction for the Federal MSL100 market are that:

- 0 1)SNSE's can be added as upgrades to existing  
0 offices. Extensions are supported.  
0 2)JNET will NOT be supported. If SNSE is  
0 provisioned, it must start initially with  
0 ENET or ENI shelf in SNSE.

0

0 1.1.2 HARDWARE DEPENDENCIES

0  
0 In provisioning for MSL cabinet interface to the SNSE/ENI, a  
0 Meridian bulkhead must be provisioned on each plane of the ENI  
0 shelf. The PEC Code for th e two bulkheads is NT9X0813. Provide  
0 two (2) per ENI shelf.

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 See section 2.2

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## 0 DMS BUS PORT REQUIREMENTS

0  
0 See section 2.3.3 and ECM632 for SNSE provisioning.

## 0 CIRCUITS PER CARD

0  
0 See ECM632 for SNSE provisioning.

## 0 DISCRIMINATION NUMBERING

0  
0 N/A

## 0 MESSAGE SWITCH PROVISIONING AND IOC INTERFACE

0  
0 The MS shelf on the SNSE does not have a special bulkhead but  
0 uses the standard NT9X6550 and NT9X6551. SPECIAL NOTE: Earlier  
0 documentation did call out Meridian bulkhead to be provisioned:  
0 NT9X6560 & 61 these have been cancelled do not order them. Uti-  
0 lizing the "standard" bulkheads (nt9x6550 & 51) will allow the en-  
0 gineer to provision the 32 port MS I/F CP NT9X17BB and the 16  
0 link DS30 Paddle Board NT9X69BA in slots 10 and 11. This informa-  
0 tion is new and will be reflected in the next release of ECM632.

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0 1.1.3 PROVISIONING CONSIDERATIONS

0  
0 The introduction of the SNSE to the MSL line-up requires a num-  
0 ber of changes to the existing equipment:

- 0 1) MCTMI TO BE FIBERIZED TO INTERFACE ENI  
0 A. DS30 OPTION CABLE KITS  
0 B. DS-512 OPTION CABLE KITS  
0 C. DS1 OPTION CABLE KITS  
0 2) MCSM DS30 CABLE BULKHEAD KIT FOR ENI

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## 0 PROVISIONING OF LOCAL CABLE KITS FOR MCSM, MCTMI

0  
0 Due to the SNSE integration the "always provided" DS30 cables  
0 internal to the MCTMI cabinet are now provisionable through cabl-  
0 ing kits. The provisioning options for the kits will be DS30,  
0 DS30A, DS-512, and DS1.

0 The kit for the DS-512 interface, NTNX33SD provides no cabling,  
0 but provides the NT6X02BU Fiber Conversion Kit and 2 P0738373  
0 cover plates which provide coax port holes through the bulkhead.  
0 For a complete list of the cables provided in each of the kits  
0 look at the stocklists for the Pec Codes.

0 In provisioning an MCSM DS30 copper interface to SNSE ENI shelf  
0 the MCSM local cabling must be converted to external interface  
0 through the bulkhead. Apply the NTNX29BB Hardware Kit to provide  
0 connectivity for external DS30 ports. Provide one (1) NTNX29BB  
0 per MCSM Cabinet.

0 The NTNX29BB includes a bulkhead (P0686033) and two cables  
0 (NTNX2905 and NTNX2906. Two internal cables will need to be re-  
0 moved, they are (NTNX2903 and NTNX2904).

0 The cabling kits that have been created are designed to provision  
0 a complete cabinet, i.e. both modules, or four shelves. These  
0 kits provide internal cables only- from backplane to bulkhead.  
0 External cables also need to be job engineered.

## 0 1. NTNX33SD DS-512 FIBER INTERFACE KIT(MCTMI)

0 RULE: Provision one (1) NTNX33SD per MCTMI for DS-512  
0 interface to ENI/SNSE .

## 0 1 KIT PROVIDES:

0 (2) P0738373 COVER PLATE (has fiber port holes)

0 (2) NT6X02BU FIBER HARDWARE

## 0 2. NTNX33DS DS-30(XPM) PORT CABLES HARDWARE KIT (MCTMI)

0  
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0  
0 RULE: Provision one (1) NTNX33DS per MCTMI for DS30 (XPM)  
0 interface to ENI/SNSE .

0 1 KIT PROVIDES:

- 0 (1) NTMX3310 FOR SHELF 05  
0 (1) NTMX3312 FOR SHELF 19  
0 (1) NTMX3311 FOR SHELF 33  
0 (1) NTMX3313 FOR SHELF 47  
0 (4) P0638261 CONNECTOR KEY BRACKET

0 3. NTNX33DT DS-30A PORT CABLES HARDWARE KIT (MCTMI)

0 RULE: Provision one (1) NTNX33DT per MCTMI when  
0 providing NT6X48AA DS30A cards.

- 0 (1) NTNX3305 FOR SHELF 05  
0 (1) NTNX3306 FOR SHELF 05  
0 (1) NTNX3313 FOR SHELF 05  
0 (1) NTNX3314 FOR SHELF 05  
0 (1) NTNX3315 FOR SHELF 05  
0 (1) NTNX3316 FOR SHELF 05  
0 (1) NTNX3307 FOR SHELF 33  
0 (1) NTNX3308 FOR SHELF 33  
0 (1) NTNX3319 FOR SHELF 33  
0 (1) NTNX3320 FOR SHELF 33  
0 (1) NTNX3321 FOR SHELF 33

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0 (1) NTNX3322 FOR SHELF 33

0 4. NTNX33DU DS-30A PORT CABLE HARDWARE KIT (MCTMI)

0 RULE: Provision one NTNX33DU per MCTMI when FIBER  
0 interface is NOT required.

0 (1) NTNX3317 FOR SHELF 05

0 (1) NTNX3318 FOR SHELF 05

0 (1) NTNX3323 FOR SHELF 33

0 (1) NTNX3324 FOR SHELF 33

0 5. NTNX33DV DS-1 LINK CABLE HARDWARE KIT (MCTMI)

0 RULE: Provision when NT6X50's or NTB01's are required for  
0 DS-1 or D-Channel interface is required.

0 (1) NTNX3309 FOR SHELF 05

0 (1) NTNX3310 FOR SHELF 05

0 (1) NTNX3311 FOR SHELF 33

0 (1) NTNX3312 FOR SHELF 33

0

0 PROVISIONING INFORMATION ENDGUARDS AND DOORS FOR SNSE

0  
0 when configuring an SNSE use the following PEC Codes and rules  
0 for ordering doors and endguards:

0 Door Assembly-Brown NTZZ30KA RUL1

0 Door Assembly-Grey NTZZ30JA RUL1

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0 SNSE End Guard NON EMI-Grey NTRX73AL RUL2

0 SNSE End Guard NON EMI-Grey NTRX73AM RUL3

0 SNSE End Guard NON EMI-Brown NTRX73AN RUL4

0 SNSE End Guard NON EMI-Brown NTRX73AP RUL5

0 Leveling Feet SNSE NTRX2523 RUL6

0 RUL1 1)Provide NTZZ30KA for BROWN doors for SNSE.  
0 2)Provide NTZZ30JA for GREY doors for SNSE

0 RUL2 Provide one (1) NTRX73AL for GREY EMI endguards  
0 for the left end of line-up.

0 RUL3 Provide one (1) NTRX73AM for GREY EMI endguards  
0 for the right end of line-up.

0 RUL4 Provide one (1) NTRX73AN for BROWN EMI endguards  
0 for the left end of line-up.

0 RUL5 Provide one (1) NTRX73AP for BROWN EMI endguards  
0 for the right end of line-up.

0 RUL6 Provide one (1) NTRX2523 per SNSE.

0 For further information see EMA15-05-001 NTRX73 CABINETIZED DMS  
0 COSMETIC ENDGUARDS AND EMI SIDE PANELS

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0 1.1.4 OFFICE LAYOUT INFORMATION

0  
0 The SNSE integration program for Meridian Cabinet Systems will  
0 support two configurations. One configuration will be a separate  
0 C42 line-up powered by an MPDC and the other configuration will  
0 be a fully integrated SNSE into the MCS lineup and powered from  
0 the MCAM. The position of the SNSE in the line-up will be on the  
0 end of the line-up next to the MCAM for extensions, and the sec-  
0 ond bay in the first line-up (next to the MCAM) for initial of-  
0 fices.

0 1.1.5 TRAFFIC TABLES

0  
0 For detailed ASU capacity provisioning, refer to: SEB 92-02-001  
0 LPP

0 1.2 PRODUCT/SYSTEM SPECIFICATION

0

0 1.2.1 PHYSICAL CHARACTERISTICS

0  
0 The SNSE is packaged in a C42 (Streamline) cabinet.

0 1.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 The SNSE C42 cabinet is EMI compliant.

0



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## 0 POWER CONSIDERATIONS FOR SNSE POWERED FROM AN MPDC

0  
0 When integrating the SNSE with the MSL lineup power cables must  
0 be job engineered. The fuse assignments are to be job engineered  
0 and are not preassigned as with the PDP in the MCAM.

|                           | MPDC FUSE<br>POSITION | FUSE<br>SIZE | DESCRIPTION  |
|---------------------------|-----------------------|--------------|--------------|
| A<br><br>F<br>E<br>E<br>D | FXX                   | 20A          | -48V(1)SH 00 |
|                           | FXX                   | 20A          | -48V(2)SH 13 |
|                           | FXX                   | 20A          | -48V(3)SH 26 |
|                           | FXX                   | 20A          | -48V(4)SH 39 |
|                           | FXX                   | 5A           | -48V(F) CU   |
| B<br><br>F<br>E<br>E<br>D | FXX                   | A            | -48V(1)SH 00 |
|                           | FXX                   | 20A          | -48V(2)SH 13 |
|                           | FXX                   | 20A          | -48V(3)SH 26 |
|                           | FXX                   | 20A          | -48V(4)SH 39 |
|                           | FXX                   | 5A           | -48V(F) CU   |

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0 1.2.5 CURRENT DRAIN INFORMATION

0  
0 See ECM632

0

0



0 1.3 SOFTWARE PROVISIONING

0

0 1.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0

0 the software packages required for SNSE integration are:

0 NTXD88AA SuperNode SE base(Series 20)  
0 NTXC21AA Enhanced Network 16K  
0 NTXQ53AA LIS Controller

0

0 1.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 Not applicable.

0 1.3.3 MEMORY PROVISIONING

0

0 See ECM632 SNSE

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0 1.4 REAL TIME IMPACT

0 See ECM632 SNSE

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## 0 2.0 Meridian Cabinet Remote Module-SONET (MCRMS)

0 The MCRMS is the Meridian Cabinet version of the Remote SONET switch (CRSC). Although the MCRMS uses the common existing CRSC and SL-100 hardware the MCRMS represents a different packaging solution. Whereas the CRSC utilizes a second cabinet for the D-Channel Handler extension shelf, the MCRMS has been designed to carry the extension shelf, eliminating the LCME shelf and adding a Power Distribution (PDP) shelf.

0 The functions within the MCRMS are:

0 The RMM at position 49 is a standard remote Maintenance module, based on the central-office DMS-100 family Maintenance Trunk module, that performs line testing, diagnostics, and alarm monitoring at the remote site.

0 The RCC2 shelf contains central control functions. the single shelf, 68020-based module will support an option for direct SONET interface, and significantly increases capacity. The central features of the RCC2 are:

0 54 P-side ports, an increase of 34 from the RCC. The 54 P-side ports can be a mix of DS1, DS30A, and DCH (D-Channel handlers. A maximum of 46 DS1's, 30 DS30A's, and 10 DCH's can be provisioned in various combinations. See Provisioning Considerations section 2.4 for port spread information and table.

0 The EXT shelf works in conjunction with the RCC2 to support 24 additional DS1 links or 10 D-Channel Handlers to accommodate ISDN line requirements.

0 The Cooling Unit(CU) is the fan unit providing air flow from the bottom of the cabinet to the top.

0 The Power Distribution Panel (PDP) provides power to the MCRMS and other cabinets in the lineup, plus up to 3 IPEC columns externally through bulkhead power filters. Special cable harnesses are provisionable for powering IPEC's from the PDP.

0 The MCRMS will introduce SONET interface in later BCS releases. The SONET interface will increase the network reliability, reduce hardware, Operation Administration, and Maintenance(OA&M), and provisioning costs. It will also expand the bandwidth to allow for future advanced services.

0 The MCRMS is based on the new Remote Cluster Controller 2 or RCC2. The RCC2 is a BCS34 introduction and will replace the RCC and RCCI. The

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0 RCC2 expands the P-side ports from 20 (RCC) to 54 which can be a mix  
0 of DS1, DS30A and DCH port interfaces. The RCC2 in combination with  
0 EXT (Extension) shelf make up the Common Peripheral Module or CPM. The  
0 CPM is a family of peripheral modules used in the DMS-100 family and  
0 uniquely combined in the MCRMS.

0 The RCC2 shelf houses five (5) Quad frame Carrier circuit packs  
0 (NTMX87). Four DS1 packlets can mount on the Quad frame Carrier CP.  
0 For further expansion the extension shelf can house up to three more  
0 Quad Frame carrier circuit packs. The RCC2 can also house three (3)  
0 NTB02AA D Channel handlers for a total of approximately 324 ports.  
0 The D-Channel handler card receives data from ISDN terminals and  
0 routes the data to either the ISDN signaling pre-processor (ISP) card  
0 or the packet handler.

0 The PDP equipped in the bottom of the MCRMS will provide power to other  
0 cabinets in the line-up and also powers the IPE columns via EMI  
0 bulkhead filters. This eliminates the need for a separate power cabi-  
0 net at the remote sites.

## 0 2.1 HARDWARE PROVISIONING

0

### 0 2.1.1 HARDWARE USAGE RESTRICTIONS

0  
0 The maximum distance from the host to the farthest remote off the  
0 RCC2 and 150 miles for Private Line Applications.

0 The MCRMS is linked to the host by either DS1 or Fiber-Optic  
0 interface. Direct Fiber Interface (DFI) and PCM30 interface are  
0 not yet available (BCS37).

## 0 D-CHANNEL RESTRICTIONS

0  
0 The theoretical maximum of D-channels on a DCH circuit pack  
0 (NTB02) is 124. Due to restrictions the total amount of D-

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0 channels on the RCC2 ,utilizing all three DCH slot positions,  
0 will net approximately 324 total channels, or 108 per card. The  
0 total slots (ports) available for DCH with the RCC2 AND EXT shelf  
0 combined is 10.

0 2.1.2 HARDWARE DEPENDENCIES

0  
0 The MCRMS is developed from the existing RSCS platform, reconfig-  
0 ured and packaged in a Meridian Cabinet.

0 P AND C SIDE PORT REQUIREMENTS

0  
0 See provisioning information below

0 DMS BUS PORT REQUIREMENTS

0  
0 N/A

0 CIRCUITS PER CARD

0  
0 See provisioning information

0

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0 DISCRIMINATION NUMBERING

0  
0 Use standard CADES "set" command for assigning numbering to RMM  
0 shelf.

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0 2.1.3 PROVISIONING CONSIDERATIONS

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## 0 PROVISIONING OF P-SIDE PORTS

0  
0 The RCC2 in the MCRMS provides a maximum of 54 Peripheral Side  
0 (P-Side) ports of which can be engineered a combination of DS-1,  
0 DCH (D-Channel handler), and DS30A links. The hardware require-  
0 ment to support the 54 ports is greater than the physical capac-  
0 ity of the RCC2 (22 ports). When provisioning beyond 22 ports the  
0 EXT shelf is required to allow port expansion upwards to the max-  
0 imum of 54 ports.

0 The 54 ports are shared ports by the different types of links re-  
0 quired by the customer. When mixing links on the ports care must  
0 be taken not to overlap available ports. DS-1 links may be as-  
0 signed from ports 0-47 (excluding 22, 23) and DS30A links may be  
0 assigned from 53-24. DCH links may assigned at locations through-  
0 out the 54 ports taking away from possible DS-1 links.

0 The 54 shared ports should be assigned in the following sequence:

|   |                   |                                          |
|---|-------------------|------------------------------------------|
| 0 | -----             |                                          |
| 0 | 1) RMM LINK       | PORT 22(23 NOT USED)                     |
| 0 | -----             |                                          |
| 0 | 2) DS-1 INTERLINK | PORTS 0,8                                |
| 0 |                   |                                          |
| 0 | RULE:             | The first two interlinks in a dual       |
| 0 |                   | configuration must be port 0 (slot 12:0) |
| 0 |                   | and port 8 (slot 16:0). subsequent       |
| 0 |                   | interlinks may use any DS-1 ports.       |
| 0 | -----             |                                          |

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**NOTE:** The order of the circuit pack assignment should be RCC2 slot 14,16,12





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## P-SIDE DS-1 PORTS

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NTMX87AA DS1 QUAD FRAME CARRIER  
4 NTMX81AA PACKLETS PER NTMX87AA  
2 DS-1 PORTS PER PACKLET

0

RCC2 SHELF 35 SLOTS 12,16,14

0

## SLOT 12 PORTS

## SLOT 16 PORTS

## SLOT 14 PORTS

0

-----

-----

-----

0

12:0 0-1

16:0 8-9

14:0 16-17

0

12:1 2-3

16:1 10-11

14:1 18-19

0

12:2 4-5

16:2 12-13

14:2 20-21

0

12:3 6-7

16:3 14-15

14:3 (RESERVED)\*

0

\* PORT 22 ON PACKLET 3 ARE RESERVED FOR RMM LINKS

0

PORT 23 IS NOT USED FOR MCRMS

0

## P-SIDE DS-1 PORTS

0

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0

NTMX87AA DS1 QUAD FRAME CARRIER

0

4 NTMX81AA PACKLETS PER NTMX87AA

0

2 DS-1 PORTS PER PACKLET

0

0

EXT SHELF 21 (RCC2 EXTENSION) SLOTS 4,6,8

0

## SLOT 04 PORTS

## SLOT 06 PORTS

## SLOT 08 PORTS

0

-----

-----

-----

0

04:0 24-25

06:0 32-33

08:0 40-41

0

04:1 26-27

06:1 34-35

08:1 42-43

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0 04:2 28-29 06:2 36-37 08:2 44-45  
0 04:3 30-31 06:3 38-39 08:3 46-47

0 P-SIDE DCH PORTS (RCC2)  
0 -----  
0 NTBX02AA D-CHANNEL HANDLER  
0  
0 RCC2 SHELF 35 SLOTS 12,16

0 SLOT 12 PORTS SLOT 16 PORTS  
0 -----  
0 port 1 port 9  
0  
0 (0,2-8 NOT USED)

0  
0 P-SIDE DCH PORTS (EXT)  
0 -----  
0 NTBX02AA D-CHANNEL HANDLER  
0  
0 EXT SHELF 21 SLOTS 3,5,7,8,4,6

0 SLOT PORT  
0 -----  
0 3 10  
0 5 11  
0 7 12  
0 8 13  
0 4 14  
0 6 15

0  
0 The number of DS30A links from the RCC2 to the peripheral is de-  
0 termined and dependent on the engineered CCS per line required to  
0 support the customers traffic requirements.

0

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0 Each external cable (NTNX36AS) handles a maximum of 6 DS30A  
0 ports. The external cable interfaces into the MCRMS bulkhead and  
0 interfaces a level 5 connector on the internal cable that breaks  
0 out to 6 8 pin connectors at the backplane. Each 8 pin connector  
0 is one DS30A port, giving maximum flexibility of DS30A port us-  
0 age.

0 DS30A links are provisioned off the NTMX74AA DS30A Interface  
0 card. There are a total of 54 P-side ports (0-53). 32 ports are  
0 available for DS30A interface. The ports available are assigned  
0 in decsending order from 53 through 24.

0 The physical port 0 of the DS-30A I/F board(NTMX74AA) in slot 15  
0 is used for the internal communication between RCC2 and the RMM  
0 shelf. This port is represented as port 22 in the P-side  
0 (DCH,DS-1, and DS-30A) port mapping. Port 1 is also reserved for  
0 for a DS30A link, but will not be used in the MCRMS design. The  
0 RCC2 shelf provides 32 redundant ports on the NTMX74 circuit  
0 packs. The two packs in slots 13,15 are wired in parallel on the  
0 backplane. Due to connector restrictions the 32 ports are divided  
0 between the two cards. If one card fails the other will take over  
0 all 32 ports.(see table below)

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## 0 P-SIDE D30A PORTS

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0 NTMX74AA DS30A INTERFACE

0

RCC2 SHELF 35 SLOTS 13,15(REDUNDANT)

0

SLOT 13&amp;15 PORTS

RCC2/EXT

0

0

physical ports  
on NTMX74

logical ports (software)

0

## SLOT

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|    |                      |                        |
|----|----------------------|------------------------|
| 15 | 0---DEDICATED-----22 | DEDICATED RMM LINK     |
| 15 | 1---CAN'T USE-----23 | NOT AVAILABLE ON MCRMS |
| 13 | 2                    | 24                     |
| 13 | 3                    | 25                     |
| 15 | 4                    | 26                     |
| 15 | 5                    | 27                     |
| 13 | 6                    | 28                     |
| 13 | 7                    | 29                     |
| 15 | 8                    | 30                     |
| 15 | 9                    | 31                     |
| 13 | 10                   | 32                     |
| 13 | 11                   | 33                     |
| 15 | 12                   | 34                     |
| 15 | 13                   | 35                     |
| 13 | 14                   | 36                     |
| 13 | 15                   | 37                     |
| 15 | 16                   | 38                     |
| 15 | 17                   | 39                     |
| 13 | 18                   | 40                     |
| 13 | 19                   | 41                     |
| 15 | 20                   | 42                     |
| 15 | 21                   | 43                     |
| 13 | 22                   | 44                     |
| 13 | 23                   | 45                     |
| 15 | 24                   | 46                     |
| 15 | 25                   | 47                     |
| 13 | 26                   | 48                     |
| 13 | 27                   | 49                     |
| 15 | 28                   | 50                     |

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|   |    |    |    |
|---|----|----|----|
| 0 | 15 | 29 | 51 |
| 0 | 13 | 30 | 52 |
| 0 | 13 | 31 | 53 |

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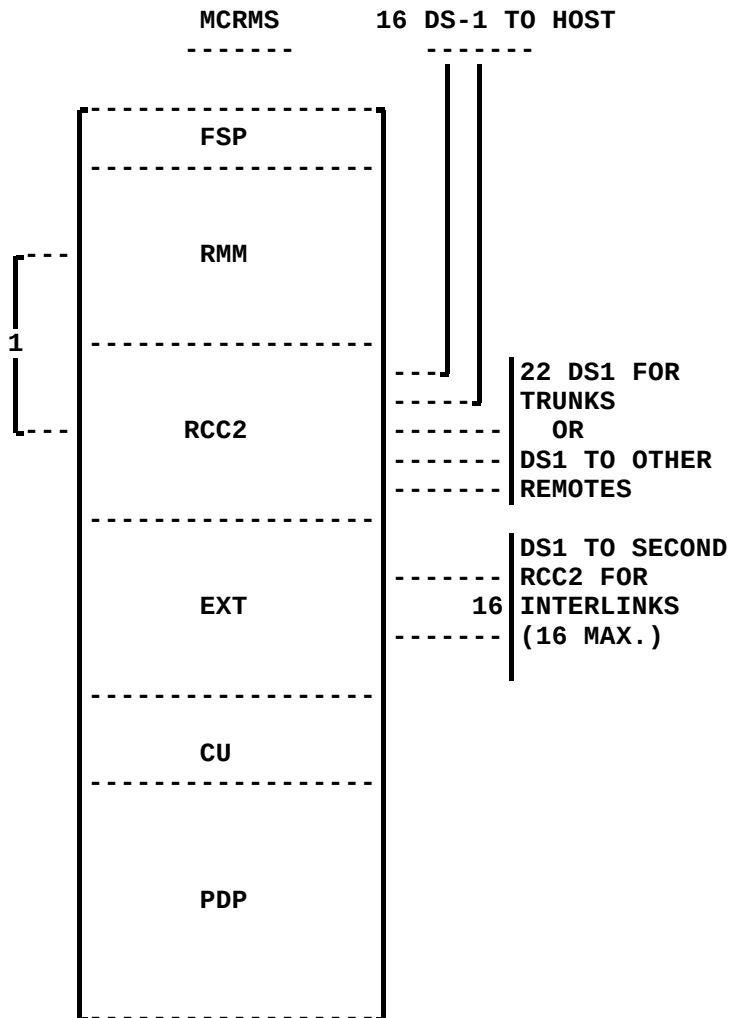
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## 0 C-SIDE LINK PROVISIONING

0  
0 The C-Side by the packlets in slots 9 and 19 of the RCC2 shelf.  
0 The port assignments are as follows:

| slot | packlet | ports | slot | packlet | ports |
|------|---------|-------|------|---------|-------|
| 9    | :       | 0     | 19   | :       | 0     |
| 9    | :       | 1     | 19   | :       | 1     |
| 9    | :       | 2     | 19   | :       | 2     |
| 9    | :       | 3     | 19   | :       | 3     |

0 NOTE: Port 0 and port 2 are message ports and are always required.

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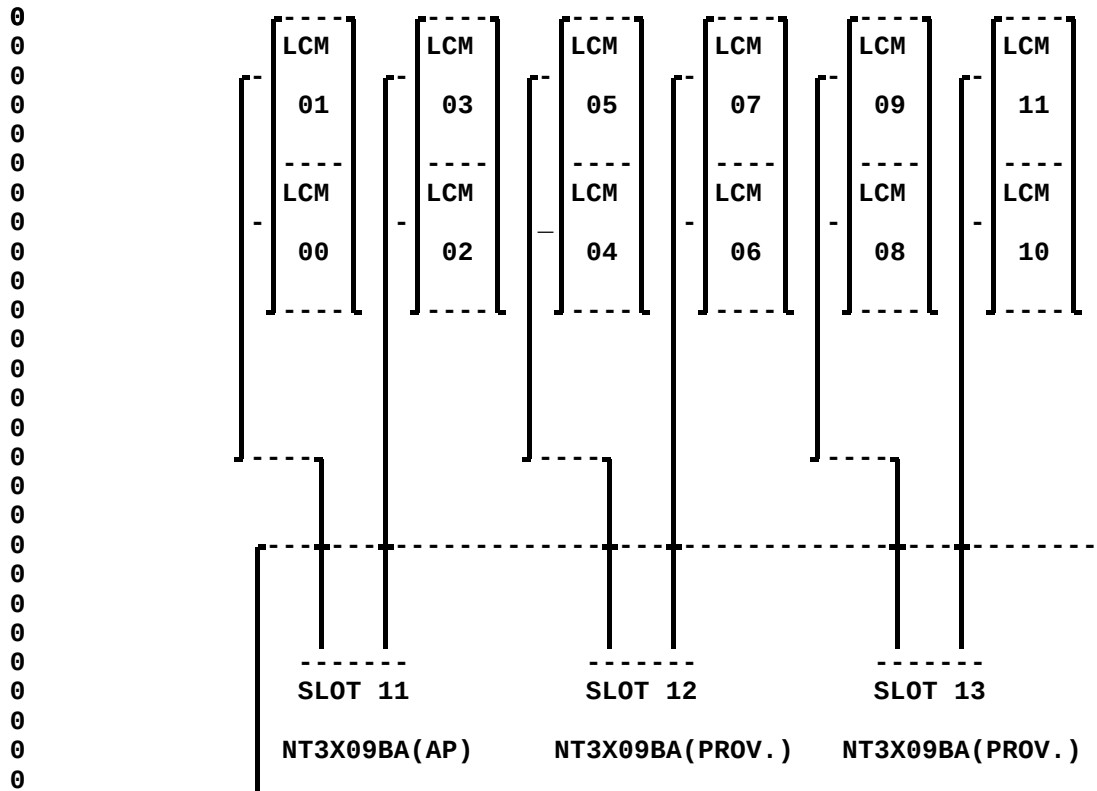
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## 0 MCLM/MCLME



0 MCRM-S RMM SHELF 49  
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0 2.1.4 OFFICE LAYOUT INFORMATION

0  
0 The physical lay-out of the MCRMS is comprised of a Remote  
0 Maintenance Module (RMM), the Remote Cluster Controller 2 with  
0 SONET interface capabilities an Extension shelf to handle addi-  
0 tional Quad Frame Carrier packets and D-Channel handlers, and a  
0 Power Distribution Panel, PDP.

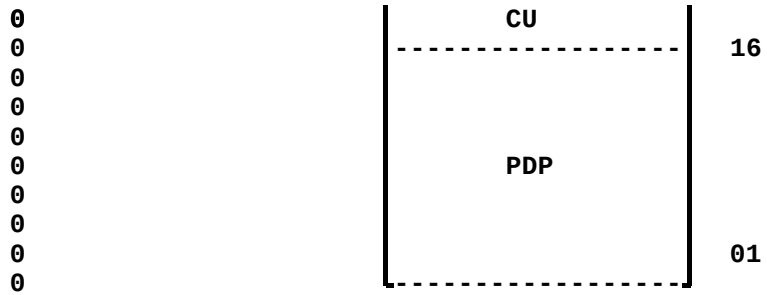
0 MCRMS  
0 -----

|      | SHELF POS. |
|------|------------|
| FSP  | 62         |
| RMM  |            |
|      | 49         |
| RCC2 |            |
|      | 35         |
| EXT  |            |
|      | 21         |

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0 2.1.5 TRAFFIC TABLES

0  
0 The traffic capacity for the MCRMS can be as follows:

- 0 \* All ISDN lines : 2400 at 11.4 CCS
- 0 \* All MCLME POTS : 3360 at 7.9 CCS + 421 at 6.0 CCS
- 0 \* All MCLM Lines : 3585 at 7.4 CCS + 421 at 6.0 CCS
- 0 \* All IPE Lines : 1792 at 9.8 CCS + 1280 at 6.2 CCS
- 0 \* All MCDM Lines : 1120 at 15.8 CCS + 800 at 10.0 CCS

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0 2.2 PRODUCT/SYSTEM SPECIFICATION

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0 2.2.1 PHYSICAL CHARACTERISTICS

0

0 The MCRMS is packaged in a Meridian Cabinet and is fully inte-  
0 grated into a Meridian Cabinet Remote switch lineup. The MCRMS  
0 can be ordered in either grey or brown.

0

0 2.2.2 EMI/EARTHQUAKE INFORMATION

0

0 The MCRMS complies with FCC EMI regulations: Part 15, Class A,  
0 and Part 68.

0

0 The MCRMS, being packaged in a Meridian Cabinet uses the same  
0 earthquake anchoring procedures and hardware as the Meridian  
0 Cabinet product line.

0 2.2.3 SPARING INFORMATION

0

0 The standard algorithm applies when provisioning spares.

0 2.2.4 POWER FEED AND FUSING REQUIREMENTS

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0 The MCRMS receives sendary power from the Power Distribution  
0 Panel in the bottom of the Cabinet. The Cabinet requires -48VDC  
0 main feeds.

#### 0 2.2.5 CURRENT DRAIN INFORMATION

0  
0 The shelves within the MCRMS have the following power require-  
0 ments:

| 0 | SHELF | POWER REQUIREMENTS       |
|---|-------|--------------------------|
| 0 | RMM   | 5A @ -48V : 240W TOTAL   |
| 0 | RCC2  | 8.1A @ -42V : 340W TOTAL |
| 0 | EXT   | 7.3A @ -42V : 307W TOTAL |

#### 0 2.3 SOFTWARE PROVISIONING

0

##### 0 2.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 Existing RSCS software will be used. Minor changes to diagnostics  
0 for shelf position datafills will be required.

0 The MCRMS software will consist of Central Control and Peripheral  
0 Module Features packages.

0 The base MCRMS base software packages are:

|   |            |                                             |
|---|------------|---------------------------------------------|
| 0 | * NTX145AA | SOFTWARE SWITHING FEATURE                   |
| 0 | * NTX150AA | RSC-INTRA RSC CALLING                       |
| 0 | * NTP92AA  | REMOTE SWITCHING CENTER SONET BASIC         |
| 0 | * NTP92AB  | REMOTE SWITCHING CENTER SONET BASIC (BCS35) |

0 The follow is the list of optional software packages available to  
0 support additional capabilities for the MCRMS.

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0  
0 \* NTX142AA DS-1 64 Kbps CLEAR  
0 \* NTX143AA DS-1 ESF  
0 \* NTX149AA RSC ESA-LINES  
0 \* NTX149AB RSC ESA-LINES AND TRUNKS  
0 \* NTX152AB RSC TRUNKING  
0 \* NTX380AA DUAL REMOTE CLUSTER CONTROLLER 2  
0 \* NTX381AA RSC REMOTE-OFF-REMOTE  
0 \* NTX750AB ISDN BASIC PACKAGE  
0 \* NTXJ00AA ISDN ON RSC  
0 \* NTXN82AB RSC ENHANCED ESA (LINES AND TRUNKS)  
0 \* NTXQ12AA RSC ENHANCED ESA(LINES  
0 \* NTXR34AA XPM BASIC  
0 \* NTXR42AA FIRMWARE DOWNLOADING

0

0 2.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 This information is unavailable at this time.

0 2.3.3 MEMORY PROVISIONING

0  
0 The Processor card in the RCC2 shelf has an initial 8M of memory  
0 and can be expanded to 16MW.

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0 2.4 REAL TIME IMPACT

0 The Real Time capacity of the MCRMS will be similar to the capac-  
0 ity as specified for the RSCS. Real Time capacity will not be  
0 specified until further testing is complete.

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0 3.0 Meridian Cabinet Remote Switching Center

0 The cabinetized MSL100 RSC-C utilizes the DMS-100 as the basis for  
0 system and module design. The design is such that the existing and  
0 future DMS-100 RSC software is used without modification.

0 An RSC-C can support MCRU terminated on it. The MCRU is the Meridian  
0 Cabinet Remote Unit which is the cabinetized version of the RLCM (Re-  
0 mote Line Concentrating Module).

0 All standard features are available including Intra Switching and ESA.

0 3.1 HARDWARE PROVISIONING

0

0 3.1.1 HARDWARE USAGE RESTRICTIONS

0

0 The RSC-C will support any combination of analog and digital ter-  
0 minals up the real time capacity and/or traffic limit of the RCC.  
0 This is typically around 3,000 lines.

0 Direct trunking to the local public telephone network can be pro-  
0 vided on a limited basis. Digital trunks can be provisioned at  
0 the expense of line peripheral ports.

0 If additional Universal Tone Receiver Packs (NT6X92BB) are re-  
0 quired for traffic considerations above the two (2) provided with  
0 the NTNX17BA Common Packfill, RCC is restricted to to a maximum  
0 of 10 NT6X50 total circuit packs. This will allow sufficient cur-  
0 rent for the operation of the second UTR pair.

0 Note that End Panels must be associated with the first MCRM (of a  
0 lineup) in the Configuration Section of the specification. It  
0 must not appear in the "Loose Items" section of the specification  
0 and must never "ship Loose".

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0 3.1.2 HARDWARE DEPENDENCIES

0  
0 When provisioning NT6X50AB DS-1 Interface cards the host control-  
0 ler must also be equipped with the NT6X50AB CP. Also if a module  
0 is being upgraded to NT6X50AB the switch must be at least at  
0 BCS31 and an NT6x45BA or higher must be in place. For new offices  
0 use an NT6X45BD signal processor for NON XPM+ functionality.

## 0 P AND C SIDE PORT REQUIREMENTS

0  
0 Not applicable

## 0 DMS BUS PORT REQUIREMENTS

0  
0 Not applicable

## 0 CIRCUITS PER CARD

0  
0 Not applicable

## 0 DISCRIMINATION NUMBERING

0  
0 Not applicable

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0 3.1.3 PROVISIONING CONSIDERATIONS

0  
0 The NT6X12ZF product change kit is ordered to provide the Uni-  
0 versal Processor, the buss terminator and backplane wiring. Use  
0 the NT6X12ZF change kit as a guide for provisioning and assigning  
0 the circuitpacks and wire and for removing circuit packs no  
0 longer for XPM+ upgrades.

0 MCRM CABINET

0  
0 The MCRM provides power to the first lineup of the RSC-C. The  
0 system alarm, service and diagnostic circuits are located in the  
0 RMM (Remote Maintenance Module) shelf. External connectors from  
0 these circuits to the MDF are provided via filtered connectors in  
0 the rear bulkhead.

0 The Power Distribution Panel (PDP) is located in the bottom shelf  
0 position of the MCRM cabinet.

0 Immediately above the PDP is the Cooling Unit. This cabinet is  
0 forced air cooled with a dual speed fan unit.

0 Above the cooling unit is the Remote Cluster Control (RCC) module  
0 which provides interface to the Host via DS1 Ports/T1 spans. The  
0 RCC can support MCRU and digital trunks as well as its local ELMS  
0 and DLMS.

0 All twenty P-side ports for the RCC are always fully wired to  
0 filtered connectors in the rear bulkhead for use as digital  
0 trunks and/or to interface other remote line equipment.

0 The Remote Maintenance Module (RMM) is located above the RCC.

0 Located in the top of the MCRM is the frame supervisory panel  
0 (FSP) which distributes and controls power and alarms for the  
0 cabinet.

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## 0 MCLM Cabinet

0  
0 The MCLM contains up to two (2) fully duplicated Enhanced Line  
0 Modules (ELM). Each ELM has eight (8) Line Drawers providing a  
0 512 card slot capacity. A MCLM has the capacity of 1024 single,  
0 physical line card slots.

0 An ELM is a repackaged standard DMS LCM. All four Line Drawers  
0 on each shelf are located on the left, leaving the control equip-  
0 ment on the right. Each ELM module contains a Ringing Generator  
0 on the lower array shelf and a fuse panel on the upper array  
0 shelf.

0 All six DS30A links for each ELM are hardwired to a single con-  
0 nector on the rear bulkhead. The MTA cable is also hardwired to  
0 the backpanel and has sufficient length to connect to the MCRM  
0 cabinet. Each ELM can have 2, 3, 4, 5 or 6 DS30A speech links to  
0 the RCC.

0 All Tip/Ring cables from the Line Drawers are hardwired to EMI-  
0 filtered, fifty-pin telephony connectors on the rear bulkhead.

0 An FSP is located in the top of the cabinet to distribute power  
0 control and alarms in the cabinet.

0 This cabinet is forced air cooled with dual speed fan units inte-  
0 grated in both the top and the bottom of the cabinet.

## 0 MCDM Cabinet (Ref: ECM 283)

0  
0 This cabinet contains a maximum of four (4) Digital Line Modules  
0 (DLM), providing service for up to 640 Meridian digital sets. In  
0 the MSL100, the MCDM will support all the feature sets and data  
0 terminals, in contrast to the MCLM which are intended to support  
0 analog sets only.

0 Each of the four DLMS is a single shelf, stand-alone unit provid-  
0 ing 160 digital ports. Each port will support a single digital  
0 set and can also support a data option. The MCDM can therefore

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0 support 640 feature sets, plus 640 data terminals for a total of  
0 1280 terminals per cabinet. These are maximum numbers. The ac-  
0 tual number of sets and terminals supported will vary depending  
0 on other factors such as traffic considerations and messaging.

0 The DS30A links for each DLM are hardwired to a single connector  
0 per DLM on the rear bulkhead. All 640 ports are also hardwired  
0 to EMI-filtered, 50-pin connectors on the rear bulkhead for sim-  
0 plified connection to the MDF. All test access circuits (includ-  
0 ing "LTU" function) are built into each DLM itself, so that no  
0 external connectors are required for service circuits.

0 Each DLM on the MCDM cabinet (four DLM/cabinet max) can have 2, 4  
0 or 6 speech links to the RCC.

0 An FSP is located in the top of the cabinet to distribute power  
0 control and alarms to the cabinet.

0 This cabinet is forced air cooled with a dual speed fan unit in-  
0 tegrated into the base of the cabinet.

#### 0 Miscellaneous

0  
0 Always Required: (see Engineering Manual Insert for MCRM)

0 Provide a remote equipment label package (NTNX1102).

0 Provide two sets of doors and labels per cabinet  
0 (one set for front and one for rear).  
0 Provide a set of cabinet type labels.  
0 Provide a set of end panels per lineup.

0 Optional:

0 Provide one Patlon antistatic mat per RCC.  
0 Provide a remote equipment tool set (NT0X58AD) per site.

0

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0 3.1.4 OFFICE LAYOUT INFORMATION

0  
0 The PDP is located in the bottom shelf of the MCRM. It can supply up to eight (8) additional cabinets in a lineup. An equipment lineup may consist of more than one MCRM. Maximum number of cabinets in a lineup would then be limited also by the room size, traffic considerations (ie; #ELMs/DLMs served by the RCC), etc.

0 One set of End Panels must be provided per lineup and associated (in the configuration section of the specification) with the first MCRM in a lineup. They must be installed in the factory (never shipped loose).

0 3.1.5 TRAFFIC TABLES

0  
0 Refer to NTP 297-1001-450 DMS100 Family Provisioning, Section 2, Traffic Criteria and Capacities and/or ECM 350, DMS100 Traffic Provisioning "The Credit System".

0 3.2 PRODUCT/SYSTEM SPECIFICATION

0

0 3.2.1 PHYSICAL CHARACTERISTICS

0  
0 Not applicable.

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0 3.2.2 EMI/EARTHQUAKE INFORMATION

0  
0 Refer to NTP 555-4001-103 Meridian SL100 Cabinetized Section 2-1  
0 Earthquake Resistance

0 3.2.3 SPARING INFORMATION

0  
0 As a rule of thumb, provision as spare, a minimum of one of each  
0 circuit pack up to a maximum of 10% of the total count of that  
0 item.

0 3.2.4 POWER FEED AND FUSING REQUIREMENTS

0  
0 The following fuses and feeds are required: All cabinets within  
0 a RSC-C lineup are powered from the PDP on on the MCRM. The PDP  
0 is always provided with the following:

0 Qty 42 20.0A Fuses

0 Qty 1 10.0A Fuse

0 RSC-C is DC powered.

0 Cabinets in a lineup are powered from the Power Distribution  
0 Panel (PDP) located in the MCRM cabinet.

0 All power cables to the PDP from the cabinets in the lineup are  
0 factory equipped and shipped with the cabinets.

0 The MCRM will operate over the range of -44V to -56V.

0

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0 3.2.5 CURRENT DRAIN INFORMATION

0  
0 The current drain per MCRM NTNX17AA cabinet is 14.0 AMPS.  
0 The current drain per MCLM NTNX38\_\_ cabinet is 20.0 AMPS.  
0 The current drain per MCDM NTNX50AA cabinet is 18.0 AMPS.

0 3.3 SOFTWARE PROVISIONING

0

0 3.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

0  
0 The MCRM is designed such that the existing and future DMS-100  
0 RSC software is used without modification.  
0 All standard features are available. Refer to NTP-1001-450 Sec-  
0 tion 32; Software Features, at the appropriate BCS level.

0 3.3.2 SOFTWARE USAGE RESTRICTIONS

0  
0 Not applicable.

0 3.3.3 MEMORY PROVISIONING

0  
0 CPU memory requirements are calculated with the host. Totals cal-  
0 culated include all remote lines and equipment.



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0 3.4 REAL TIME IMPACT

0 CPU realtime impact is calculated with the host. Totals calcu-  
0 lated include all remote equipment.

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0 APPENDIX A

0 BCS GATING REQUIREMENTS

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BCS Gating Requirements  
Appendix A

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0 BCS GATING REQUIREMENTS  
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0 1.0 BCS Insertion Gating Hardware

0 This NTP identifies the hardware modification needed to load BCS soft-  
0 ware into the DMS-100. The hardware modifications identified are cate-  
0 gorized as 'insertion gating', i.e. they are essential for the  
0 achievement of successful BCS software insertion into DMS 100 target  
0 configurations.

0 Two types of gating hardware are covered in this NTP:

0 \* BCS Gating Hardware

0 \* Feature Insertion Gating Hardware

0 Definitions of these and associated terms are given in the sec-  
0 tion headed "Definition of Terms".

0 BCS Gating Hardware and Feature Insertion Gating hardware are  
0 identified because they require to be shipped and installed be-  
0 fore loading of BCS software is attempted in the target DMS. If  
0 loading of BCS software is attempted before the BCS Software or  
0 Feature Insertion Hardware has been installed, a load abort will  
0 occur.

0 For commercial reasons, BCS Gating Hardware is differentiated  
0 from Feature Insertion Gating Hardware. Note that BCS gating  
0 hardware is required in all systems receiving the corresponding  
0 BCS software. Feature Insertion Gating Hardware, on the other  
0 hand, is required in addition to the BCS Gating Hardware for the  
0 following:

0 \* Systems in which the corresponding feature is required and  
0 the corresponding feature software is contained in the BCS  
0 load.

0 \* Systems receiving USL (Universal Software Load)

0 \* Systems receiving BCS Software obtained through a buy-out.

0 BCS Gating Hardware and Feature Insertion Gating Hardware are  
0 identified in tables covering BCS-26 through BCS-35.

0 ANY OFFICE THAT IS UPGRADING A BCS MUST MEET THE MINIMUM HARDWARE  
0 REQUIREMENTS FOR THAT OFFICE. HARDWARE MINIMUMS ARE BASED ON AD-  
0 DITIONS TO THE PREVIOUS BCS HARDWARE REQUIREMENTS.

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0 All other upgrade hardware is feature hardware. The feature re-  
0 lated hardware information and details on BCS Feature Gating  
0 Hardware should be obtained from Advanced Provisioning Informa-  
0 tion (API) or Engineering Change Memorandum (ECM) documents pro-  
0 viding provisioning information on the feature. This feature  
0 related hardware should be ordered in the appropriate specs.

0 Specific software packages in the BCS or USL software load are  
0 dependent on having specific insertion gating hardware for suc-  
0 cessful loading. This dependant software and corresponding hard-  
0 ware is identified in this NTP.

#### 0 1.1 Hardware Provisioning

0

##### 0 1.1.1 Hardware Usage Restrictions

0  
0 Not applicable.

##### 0 1.1.2 Hardware Dependencies

0  
0 Not applicable.

#### 0 P and C Side Port Requirements

0

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## 0 DMS Bus Port Requirements

0

## 0 Circuits Per Card

0

## 0 Discrimination Numbering

0

0 1.1.3 Provisioning Considerations

0

0 BCS Gating and Feature Insertion Gating Procedures

0 - BCS Gating and Feature Insertion Gating Hardware is proc-  
0 essed by BCS scheduling.

0 \* Manufacturing ships the BCS Gating and Feature Insertion  
0 Gating material separately to site.

0 \* Hardware is installed prior to corresponding load applica-  
0 tion in the comprising hardware unit, e.g. CC (Central  
0 Control), XPM (Peripheral Module), MS (Message Switch).

0 General - USL Gating Hardware

0 USLs have a comprehensive feature content. A USL may contain fea-  
0 tures which are redundant for some target offices. The feature  
0 software is redundant in these cases if the target office does  
0 not operate the considered feature and, therefore, if there are  
0 special hardware requirements for the feature, the feature hard-  
0 ware will not be present. For some features the special hardware  
0 required is Feature Insertion Gating Hardware, e.g. additional



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0 memory. If an attempt is made to load a USL in a target office  
0 not equipped with this Feature Insertion Gating Hardware, a load  
0 abort will occur. To avoid this, Feature Insertion Gating Hard-  
0 ware must be installed in offices receiving USL. Feature In-  
0 sertion Gating Hardware must be installed prior to USL  
0 insertion.

0 To facilitate the determination of whether or not an office has  
0 all of the hardware necessary for USL insertion, the features re-  
0 quiring Feature Insertion Gating Hardware are identified by soft-  
0 ware package identity codes in the tables presented later in this  
0 NTP.

0 General - SLM II

0 SLM II hardware is categorized as Feature Insertion Gating. Refer  
0 to the Definition of Terms section. Because it is Feature In-  
0 sertion Gating, BCS Gating material, shipping and installation  
0 procedures must be followed.

0 SLM II may be required for the following reasons:

- 0 1. For USL (Universal Software Load) applications. Refer to 'BCS  
0 33 Gating Hardware.'
- 0 2. Size of office image is greater than the capacity of SLM I.  
0 i.e., 62Mb. (calculated by MEMCALC) (Feature Insertion Gat-  
0 ing, refer to the Definitions of Terms).
- 0 3. Customer orders SLM II for other reasons, e.g. BRISC hardware  
0 requirement, planned capacity upgrade, etc. (Feature In-  
0 sertion Gating).

0 For SLM II installation details refer to Installation Manual IM  
0 925.

0 General - BRISC

0 BRISC hardware (NT9X10AA and NT9X26DA) is categorized as Feature  
0 Insertion Gating and, regardless of BCS level, must be installed  
0 prior to CC load application, according to the procedures de-  
0 scribed for BCS Gating and Feature Insertion Gating Hardware,  
0 above.

0 For BRISC installation details refer to Installation Manual IM  
0 925.

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0 BCS26 & 27 Gating Hardware

0 Only Feature Insertion Gating Hardware is identified for BCS 26  
0 and 27.

0 In the table, terms used are defined as:

| 0 Terms in Table | Associated PEC                    |
|------------------|-----------------------------------|
| 0 Ext. SP Mem    | NT6X46AC or NT6X46BB - SEE NOTE   |
| 0 Ext. MP Mem    | 2nd NT6X47AB per shelf - SEE NOTE |

0 NOTE: The NT6X46AC circuit pack (cp) will be used to update ex-  
0 isting modules. This cp (NT6X46AC) will be ordered via a Product  
0 Change (PC) kit. The PC kit will change the PEC of the base mod-  
0 ules and make several other circuit pack slots provisionable.  
0 (The slots are being made provisionable to eliminate the need for  
0 additional PC kits and base module PECs when the circuit packs  
0 change PECs due to upcoming features.) The NT6X46BB will be used  
0 on new modules. These new modules will contain provisionable  
0 slots for changing cp's.

0 For U.S. applications only, the second NT6X47AB (MP Memory CP)  
0 pair can be provisioned on updated modules. The second NT6X47AB  
0 CP pair will be ordered as a line item on modules where the ex-  
0 isting module already contained one (1) NT6X47AB CP pair. The one  
0 (1) NT6X47AC is provisionable on new modules and has the memory  
0 capacity equivalent of two (2) NT6X47AB. Existing modules should  
0 be updated via a change kit which replaces the NT6X47ABs with the  
0 NT6X47ACs.

0 BCS28 & 29 Gating Hardware

0 Only Feature Insertion Gating Hardware is identified for BCS 28  
0 and 29.

0 In the table, terms used are defined as:

| 0 Terms in Table | Associated PEC                         |
|------------------|----------------------------------------|
| 0 Ext. SP Mem    | NT6X46AC or NT6X46BB - SEE NOTE        |
| 0 Ext. MP Mem    | 2nd NT6X47AB per shelf or - SEE NOTE   |
| 0                | NT6X47AC                               |
| 0 New Msg        | NT6X69AA & 79AA or NT6X69AB - SEE NOTE |
| 0                | or NT6X69AC                            |

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0 XPM Processor CP NT6X45BA - SEE NOTE  
0 Ext. LCM Processor CP NT6X51AB - SEE NOTE

0 NOTE: The NT6X46AC circuit pack (cp) will be used to update ex-  
0 isting modules. This cp (NT6X46AC) will be ordered via a Product  
0 Change (PC) kit. The PC kit will change the PEC of the base mod-  
0 ules and make several other circuit pack slots provisionable.  
0 (The slots are being made provisionable to eliminate the need for  
0 additional PC kits and base module PECs when the circuit packs  
0 change PECs due to upcoming features.) The NT6X46BB will be used  
0 on new modules. These new modules will contain provisionable  
0 slots for changing cp's.

0 For U.S. applications only, the second NT6X47AB (MP Memory CP)  
0 pair can be provisioned on updated modules. The second NT6X47AB  
0 CP pair will be ordered as a line item on modules where the ex-  
0 isting module already contained one (1) NT6X47AB CP pair. The one  
0 (1) NT6X47AC is provisionable on new modules and has the memory  
0 capacity equivalent of two (2) NT6X47AB. Existing modules should  
0 be updated via a change kit which replaces the NT6X47ABs with the  
0 NT6X47ACs.

0 The NT6X69AA and NT6X79AA or NT6X69AB cp can be used to update  
0 existing modules. These cp will be ordered via PC Kit. The PC  
0 kit will change the PEC of the base modules and make the card  
0 slots provisionable. The NT6X69AC is to be used for all New Mes-  
0 saging updates and replaces all the previous New Msg circuit  
0 packs.

0 For Canadian applications, the provisionable NT6X45BA circuit  
0 pack will be required for BCS-28 for XPM Super Charging.

0 For Canadian applications, the NT6X51AB circuit pack will be re-  
0 quired for BCS-28 for XPM Super Charging. NT6X51AB is an "Always  
0 Provided" circuit pack on the LCM Common CP fill. It is part of  
0 NT6X04AB LCM Common CP (i.e. pertaining to LCM, RSC, RLCM) and  
0 NT8X04AB LCM Common CP (i.e. pertaining to OPM). In Canada,  
0 Change Application Dept. 1955 BRW will field upgrade existing LCM  
0 modules as required (i.e. Systems Application Engineering will  
0 NOT retrofit NT6X51AA to NT6X51AB via product change kit). How-  
0 ever, after Change Application field upgrades an office, System  
0 Application Engineering will update the office records accord-  
0 ingly.

0 BCS30 & 31 Gating Hardware

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0 Only Feature Insertion Gating Hardware is identified for BCS 30  
0 and 31.

0 In the BCS 30 - 31 table, terms used are defined as:

| 0 Terms in Table | Associated PEC          |            |
|------------------|-------------------------|------------|
| 0 Ext. SP Mem    | NT6X46AC or NT6X46BB    | - SEE NOTE |
| 0 Ext. MP Mem    | 2nd NT6X47AB or one (1) | - SEE NOTE |
| 0                | NT6X47AC per shelf      |            |
| 0 4M MS Proc     | NT9X13DC                |            |
| 0 6M Memory      | NT9X14BB                |            |

0 NOTE: The NT6X46AC circuit pack (cp) will be used to update ex-  
0 isting modules. This cp (NT6X46AC) will be ordered via a Product  
0 Change (PC) kit. The PC kit will change the PEC of the base mod-  
0 ules and make several other circuit pack slots provisionable.  
0 (The slots are being made provisionable to eliminate the need for  
0 additional PC kits and base module PECs when the circuit packs  
0 change PECs due to upcoming features.) The NT6X46BA will be used  
0 on new modules. These new modules will contain provisionable  
0 slots for changing cp's.

0 For U.S. applications only, the second NT6X47AB (MP Memory CP)  
0 pair can be provisioned on updated modules. The second NT6X47AB  
0 CP pair will be ordered as a line item on modules where the ex-  
0 isting module already contained one (1) NT6X47AB CP pair. The one  
0 (1) NT6X47AC is provisionable on new modules and has the memory  
0 capacity equivalent of two (2) NT6X47AB. Existing modules should  
0 be updated via a change kit which replaces the NT6X47ABs with the  
0 NT6X47ACs.

0 For Canadian applications only, one (1) NT6X47AC pair will be  
0 provisioned on new modules and will replace NT6X47AB on existing  
0 modules. The second NT6X47AB is not to be provisioned for  
0 Canadian jobs. NT9X13DC, MS CPU Processor CP (4Meg), and  
0 NT9X14BB, 6MB Memory, must be provisioned on the Message Switch  
0 (MS) when ENET hardware and/or software (NTXE01AA) is ordered.  
0 Refer to ECM493 and ECM626.

#### 0 BCS32 Gating Hardware

0 Only Feature Insertion Gating Hardware is identified for BCS 32.

0 Effective BCS-32, all IACs in an office must be replaced with  
0 LGCI/LTCI or LGC/LTC modules with ISDN capabilities prior to ac-  
0 cepting a BCS-32 or above load.

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0 BCS33 Gating Hardware

0 Only Feature Insertion Gating Hardware is identified for BCS 33.

0 Effective with BCS33, the old messaging/small memory configura-  
0 tion will no longer be supported on new BCS loads for any XPM ex-  
0 cept DTC6, MSB6, and MSB7.

0 Switches using Universal Software Load require SLM II hardware,  
0 i.e. NT9X44AB. Refer to ECM 626, DMS Core, for provisionng de-  
0 tails.

0 The following terms used in the table below are defined as fol-  
0 lows:

| 0 Terms in Table | Associated PEC                                                     |
|------------------|--------------------------------------------------------------------|
| 0 -----          | 0 -----                                                            |
| 0 Ext. MP Mem    | 2nd NT6X47AB or one<br>0 NT6X47AC per shelf                        |
| 0 New Msg        | NT6X69AB, NT6X69AC, or<br>0 NT6X69AA & NT6X79AA & minimum NT6X45AC |
| 0 Ext. SP Mem    | NT6X46AC, NT6X46BA, or NT6X46BB                                    |
| 0 4M MS Proc     | NT9X13DC                                                           |
| 0 6M Memory      | NT9X14BB                                                           |
| 0 SLM II         | NT9X44AB                                                           |

0 The second NT6X47AB (MP Memory CP) can be provided when upgrading  
0 existing DTC modules. A NT6X02EQ change kit will be used on ex-  
0 isting DTCs to replace the NT6X47AB CPs with NT6X47AC CPs.

0 The NT6X47AC CP will be provisioned on new DTC modules and  
0 RLCM/OPM modules with ESA.

0 The NT6X69AC (Msg Protocol & Tone CP) will be provisioned on new  
0 DTC and SMR modules. DTC and SMR modules with old messaging,  
0 NT6X43AA, will be upgraded with the NT6X69AC, via a Product  
0 Change (PC) Kit, to meet new messaging requirements. DTC modules  
0 being upgraded to new messaging must upgrade the Signal Processor  
0 Memory CP with the NT6X46AC or NT6X46BB via PC Kits. New modules  
0 will be provisioned with the NT6X46BB CP. Existing DTC modules  
0 may have been provisioned with the NT6X46BA.

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0 NT6X69AA & NT6X79AA or NT6X69AB, Msg Protocol & Tone CP, and  
0 NT6X45AC Processor CP satisfies the new messaging requirement on  
0 existing DTC modules.

0 NT9X13DC, MS CPU Processor CP (4Meg), and NT9X14BB, 6MB Memory,  
0 must be provisioned on the Message Switch (MS) when ENET hardware  
0 and/or software (NTXE01AA) is being ordered. Refer to ECM493 and  
0 ECM626. The NT9X13DC and NT9X14BB must also be provisioned when  
0 FLIS hardware and/or software (NTXQ51AA) is ordered in BCS33 and  
0 beyond. Refer to ECM612.

0 Refer to the appropriate API/ECM document for further provision-  
0 ing rules.

0 Refer to ECM441, XPM Power Provisioning, to ensure that the cor-  
0 rect NT2X70, Power Converter CP, is provisioned in upgraded XPMs.

0 BCS34 Gating Hardware

0 Only Feature Insertion Gating Hardware is identified for BCS 34.

0 The following terms used in the table below are defined as fol-  
0 lows:

| 0 Terms in Table | 0 Associated PEC |
|------------------|------------------|
| 0 -----          | 0 -----          |
| 0 Unified Proc   | 0 NTMX77AA       |
| 0 XPM+ Term PB   | 0 NTMX71AA       |
| 0 EISP           | 0 NTBX01AB       |
| 0 4M MS Proc     | 0 NT9X13DC       |
| 0 6M Memory      | 0 NT9X14BB       |

0 The NTMX77AA (Unified Processor), NTMX71AA (XPM Plus Terminator  
0 Paddleboard), and NTBX01AB (Enhanced ISP) must be provisioned on  
0 all RCCI modules going to BCS34.

0 NT9X13DC, MS CPU Processor CP (4Meg), and NT9X14BB, 6MB Memory,  
0 must be provisioned on the Message Switch (MS) for applications  
0 using the NIU hardware and or software (NTXP47AA) in BCS34, i.e.  
0 the Packet Handler.

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0 93 12 030 BCS35 Gating Hardware0 The following BCS Insertion Gating Hardware is identified for BCS  
0 35:

- 0 \* Minimum 16M memory is required in the Message Switch prior to  
0 BCS 35 load insertion if USL load MIC is used and/or if SCP  
0 II and Billing Server is being added.
- 0 \* In STP switches Combined Clock CPs, NT9X53AC, and External  
0 Clock I/F CPs, NT9X54AC, are required in in the MS of STP  
0 switches prior to BCS SW load insertion.
- 0 \* When using "Universal" loads (USL) on the SuperNode SE, the  
0 Compute Module must be provisioned with NT9X14EA 96MByte mem-  
0 ory cards prior to USL insertion. The NT9X14EA is in these  
0 instances regarded as BCS Insertion Gating. Provisioning of  
0 the NT9X14EA is conditional on having NT9X13MB processors in  
0 the SNSE Compute Module. Refer to ECM 623 for SNSE provision-  
0 ing rules.

0 The following table provides a summary of MS USL loads, their  
0 size and their contents.

| MS LOAD | MEMORY | PRODUCT  | PACKAGE   |
|---------|--------|----------|-----------|
| -----   | -----  | -----    | -----     |
| MSC35   | 7M     | J-NET    | NTXP10    |
| MEC35   | 10M    | E-NET    | NTXE01 or |
|         |        | DMS-PH * | NTXP47 or |
|         |        | FLIS     | NTXQ51 or |
|         |        | ASN VM   | NTXR87 or |
|         |        | ADAS     | NTXQ23    |
| MIC35   | 16M    | DMS-SCP  | NTXN21    |
| MNC35   | 16M    | SNSE     | NTXP44    |

0 \* Requires minimum 7M in Canada

0 The following MS memory sizes may be configured. MS memory sizes  
0 are referenced as requirements in the tables which follow.

| 0 | TOTAL MEMORY | PROCESSOR        | MEMORY          |
|---|--------------|------------------|-----------------|
| 0 | -----        | -----            | -----           |
| 0 | 7 Meg        | 9X13DA (1 meg) + | 9X14BB (6 meg)  |
| 0 | 7 Meg        | 9X13DB (1 meg) + | 9X14BB (6 meg)  |
| 0 | 10 Meg       | 9X13DC (4 meg) + | 9X14BB (6 meg)  |
| 0 | 25 Meg *     | 9X13DB (1 meg) + | 9X14DB (24 meg) |
| 0 | 28 Meg       | 9X13DC (4 meg) + | 9X14DB (24 meg) |
| 0 | 16 Meg **    | 9X13DD (16 meg)  |                 |

0 \* (only used in DMS 250)  
0 \*\* VO in BCS 35)

0| BCS35 Gating Hardware

0| No change from BCS35

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The following tables list the hardware gating and MINIMUM packfill level required for BCS 32-35 on a per module basis:

| MODULE<br>BCS             | LGC                                                                                     | LTC                                                                                          | DTC                                                                                                                          |
|---------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 26<br>-----<br>MIN PACKFL | NO CHANGE<br>-----<br>NT6X02AH                                                          | NO CHANGE<br>-----<br>NT6X02AG                                                               | NO CHANGE<br>-----<br>NT6X02AA                                                                                               |
| 27<br>-----<br>MIN PACKFL | Ext. SP Mem.<br>-----<br>NT6X02LA<br>NT6X02AT(upg)                                      | Ext. SP Mem.<br>-----<br>NT6X02MA<br>NT6X02AU(upg)                                           | Ext. SP Mem.<br>(if New Msg)<br>&<br>Ext. MP Mem.<br>(Canadian Only)<br>-----<br>NT6X02AA<br>NT6X02AS (if<br>New Msg exists) |
| 28<br>-----<br>MIN PACKFL | Canada:<br>NT6X45BA<br>US:<br>NO CHANGE<br>from BCS 27<br>-----<br>NT6X02LA<br>NT6X02AT | Canada:<br>NT6X45BA<br>US:<br>NO CHANGE<br>from BCS 27<br>-----<br>NT6X02MA(new)<br>NT6X02AU | Canada:<br>NT6X45BA<br>US:<br>NO CHANGE<br>from BCS 27<br>-----<br>NT6X02AA<br>NT6X02AS (if<br>New Msg<br>exists)            |
| 29<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 28<br>-----<br>NT6X02LA<br>NT6X02AT                               | NO CHANGE<br>from BCS 28<br>-----<br>NT6X02MA(new)<br>NT6X02AU                               | NO CHANGE<br>from BCS 28<br>-----<br>NT6X02AA<br>NT6X02AS (if                                                                |

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|---|--|--|--|--------------------|
| 0 |  |  |  | New Msg<br>exists) |
| 0 |  |  |  |                    |
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|---------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 30<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 29<br>-----<br>NT6X02LA<br>NT6X02AT                  | Ext. MP Mem.<br>-----<br>NT6X02MC(new)<br>NT6X02MA<br>NT6X02AU             | NO CHANGE<br>from BCS 29<br>-----<br>NT6X02AA<br>NT6X02AS (if<br>New Msg<br>exists)     |
| 31<br>-----<br>MIN PACKFL | Ext. MP Mem.<br>-----<br>NT6X02LC(new)<br>NT6X02LA<br>NT6X02AT             | NO CHANGE<br>from BCS 30<br>-----<br>NT6X02MC(new)<br>NT6X02MA<br>NT6X02AU | NO CHANGE<br>from BCS 30<br>-----<br>NT6X02AA<br>NT6X02AS (if<br>New Msg<br>exists)     |
| 32<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 31<br>-----<br>NT6X02LC(new)<br>NT6X02LA<br>NT6X02AT | NO CHANGE<br>from BCS 31<br>-----<br>NT6X02MC(new)<br>NT6X02MA<br>NT6X02AU | NO CHANGE<br>from BCS 31<br>-----<br>NT6X02AA<br>NT6X02AS (if<br>New Msg<br>exists)     |
| 33<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 32<br>-----<br>NT6X02LC(new)<br>NT6X02LA<br>NT6X02AT | NO CHANGE<br>from BCS 32<br>-----<br>NT6X02MC(new)<br>NT6X02MA<br>NT6X02AU | Ext. MP Mem<br>New Msg<br>Ext. SP Mem<br>-----<br>NT6X02IC(new)<br>NT6X02IA<br>NT6X02AS |
| 34<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 33<br>-----<br>NT6X02LC(new)<br>NT6X02LA<br>NT6X02AT | NO CHANGE<br>from BCS 33<br>-----<br>NT6X02MC(new)<br>NT6X02MA<br>NT6X02AU | NO CHANGE<br>from BCS 33<br>-----<br>NT6X02IC(new)<br>NT6X02IA<br>NT6X02AS              |

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|---------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------|
| 30<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 29<br>-----<br>NT6X02IA<br>NT6X02AS                  | NO CHANGE<br>from BCS 29<br>-----<br>NT6X02IA<br>NT6X02AS                  | NO CHANGE<br>from BCS 29<br>-----<br>NT6X07AC |
| 31<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 30<br>-----<br>NT6X02IA<br>NT6X02AS                  | NO CHANGE<br>from BCS 30<br>-----<br>NT6X02IA<br>NT6X02AS                  | NO CHANGE<br>from BCS 30<br>-----<br>NT6X07AC |
| 32<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 31<br>-----<br>NT6X02IA<br>NT6X02AS                  | NO CHANGE<br>from BCS 31<br>-----<br>NT6X02IA<br>NT6X02AS                  | NO CHANGE<br>from BCS 31<br>-----<br>NT6X07AC |
| 33<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 32<br>-----<br>NT6X02IC(new)<br>NT6X02IA<br>NT6X02AS | NO CHANGE<br>from BCS 32<br>-----<br>NT6X02IC(new)<br>NT6X02IA<br>NT6X02AS | NO CHANGE<br>from BCS 32<br>-----<br>NT6X07AC |
| 34<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 33<br>-----<br>NT6X02IC(new)<br>NT6X02IA<br>NT6X02AS | NO CHANGE<br>from BCS 33<br>-----<br>NT6X02IC(new)<br>NT6X02IA<br>NT6X02AS | NO CHANGE<br>from BCS 33<br>-----<br>NT6X07AC |

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| <div> <div>MODULE</div> <div>BCS</div> </div>        | SMR                                                                       | SMS                                                                                         | SMU                                                                                                                          |
|------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <div>26</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE</div> <div>-----</div> <div>NT6X02CA</div>                 | <div>NO CHANGE</div> <div>-----</div> <div>NT6X02DA</div>                                   | <div>NO CHANGE</div> <div>-----</div> <div>NT6X02EA</div>                                                                    |
| <div>27</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE<br/>from BCS 26</div> <div>-----</div> <div>NT6X02CA</div> | <div>NO CHANGE<br/>from BCS 26</div> <div>-----</div> <div>NT6X02DA</div>                   | <div>Ext. SP Mem.</div> <div>-----</div> <div>NT6X02EB<br/>NT6X02AW(upg)</div>                                               |
| <div>28</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE<br/>from BCS 27</div> <div>-----</div> <div>NT6X02CA</div> | <div>Ext. SP Mem.<br/>New Msg</div> <div>-----</div> <div>NT6X02DD<br/>NT6X02DC(upg)</div>  | <div>Canada:<br/>NT6X45BA<br/>US:<br/>NO CHANGE<br/>from BCS 27</div> <div>-----</div> <div>NT6X02EB<br/>NT6X02AW(upg)</div> |
| <div>29</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE<br/>from BCS 28</div> <div>-----</div> <div>NT6X02CA</div> | <div>NO CHANGE<br/>from BCS 28</div> <div>-----</div> <div>NT6X02DD<br/>NT6X02DC(upg)</div> | <div>NO CHANGE<br/>from BCS 28</div> <div>-----</div> <div>NT6X02EB<br/>NT6X02AW(upg)</div>                                  |
| <div>30</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE<br/>from BCS 29</div> <div>-----</div> <div>NT6X02CA</div> | <div>NO CHANGE<br/>from BCS 29</div> <div>-----</div> <div>NT6X02DD<br/>NT6X02DC(upg)</div> | <div>NO CHANGE<br/>from BCS 29</div> <div>-----</div> <div>NT6X02EB<br/>NT6X02AW(upg)</div>                                  |



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|---------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 31<br>-----<br>MIN PACKFL | Ext. SP Mem.<br>Ext. MP Mem.<br>-----<br>NT6X02CC<br>NT6X02CQ(upg)              | Ext. MP Mem.<br>-----<br>NT6X02DD<br>NT6X02DC(upg)                              | Ext. MP Mem.<br>-----<br>NT6X02EB<br>NT6X02AW(upg)<br>NT6X02EG(new)        |
| 32<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 31<br>-----<br>NT6X02CP(new)<br>NT6X02CC<br>NT6X02CQ(upg) | NO CHANGE<br>from BCS 31<br>-----<br>NT6X02DH(new)<br>NT6X02DD<br>NT6X02DC(upg) | NO CHANGE<br>from BCS 31<br>-----<br>NT6X02EG(new)<br>NT6X02EB<br>NT6X02AW |
| 33<br>-----<br>MIN PACKFL | New Msg<br>-----<br>NT6X02CT(upg)                                               | NO CHANGE<br>from BCS 32<br>-----<br>NT6X02DH(new)<br>NT6X02DD<br>NT6X02DC      | NO CHANGE<br>from BCS 32<br>-----<br>NT6X02EG(new)<br>NT6X02EB<br>NT6X02AW |
| 34<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 33<br>-----<br>NT6X02CT(upg)                              | NO CHANGE<br>from BCS 33<br>-----<br>NT6X02DH(new)<br>NT6X02DD<br>NT6X02DC      | NO CHANGE<br>from BCS 33<br>-----<br>NT6X02EG(new)<br>NT6X02EB<br>NT6X02AW |
| 35<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 34<br>-----<br>NT6X02CT(upg)                              | NO CHANGE<br>from BCS 34<br>-----<br>NT6X02DH(new)<br>NT6X02DD<br>NT6X02DC      | NO CHANGE<br>from BCS 34<br>-----<br>NT6X02EG(new)<br>NT6X02EB<br>NT6X02AW |

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| <div> <div>MODULE</div> <div>BCS</div> </div>        | RSC                                                                                                                          | Dual<br>RSC                                                                                                                  | MSB7                                                                                                                 |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <div>26</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE</div> <div>-----</div> <div>NT6X12AB</div>                                                                    | <div>Ext. SP Mem.<br/>Ext. MP Mem.</div> <div>-----</div> <div>NT6X12CA<br/>NT6X12AD(upg)</div>                              | <div>NO CHANGE</div> <div>-----</div> <div>NT6X32AA</div>                                                            |
| <div>27</div> <div>-----</div> <div>MIN PACKFL</div> | <div>Ext. SP Mem.<br/>Ext. MP Mem.</div> <div>-----</div> <div>NT6X12CA<br/>NT6X12AD(upg)</div>                              | <div>NO CHANGE<br/>from BCS 26</div> <div>-----</div> <div>NT6X12CA<br/>NT6X12AD(upg)</div>                                  | <div>Ext. SP Mem.</div> <div>-----</div> <div>NT6X32CA<br/>NT6X32AB(upg)</div>                                       |
| <div>28</div> <div>-----</div> <div>MIN PACKFL</div> | <div>Canada:<br/>NT6X45BA<br/>US:<br/>NO CHANGE<br/>from BCS 27</div> <div>-----</div> <div>NT6X12CA<br/>NT6X12AD(upg)</div> | <div>Canada:<br/>NT6X45BA<br/>US:<br/>NO CHANGE<br/>from BCS 27</div> <div>-----</div> <div>NT6X12CA<br/>NT6X12AD(upg)</div> | <div>Canada:<br/>NT6X45BA<br/>NO CHANGE<br/>from BCS 27</div> <div>-----</div> <div>NT6X32CA<br/>NT6X32AB(upg)</div> |
| <div>29</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE<br/>from BCS 28</div> <div>-----</div> <div>NT6X12CA<br/>NT6X12AD(upg)</div>                                  | <div>NO CHANGE<br/>from BCS 28</div> <div>-----</div> <div>NT6X12CA<br/>NT6X12AD(upg)</div>                                  | <div>NO CHANGE<br/>from BCS 28</div> <div>-----</div> <div>NT6X32CA<br/>NT6X32AB(upg)</div>                          |
| <div>30</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE<br/>from BCS 29</div> <div>-----</div> <div>NT6X12CA</div>                                                    | <div>NO CHANGE<br/>from BCS 29</div> <div>-----</div> <div>NT6X12CA</div>                                                    | <div>NO CHANGE<br/>from BCS 29</div> <div>-----</div> <div>NT6X32CA</div>                                            |

|   |  |               |               |               |
|---|--|---------------|---------------|---------------|
| 0 |  | NT6X12AD(upg) | NT6X12AD(upg) | NT6X32AB(upg) |
| 0 |  |               |               |               |
| 0 |  |               |               |               |

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|---------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------|
| 31<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 30<br>-----<br>NT6X12CA<br>NT6X12AD(upg)             | NO CHANGE<br>from BCS 30<br>-----<br>NT6X12CA<br>NT6X12AD(upg)             | NO CHANGE<br>from BCS 30<br>-----<br>NT6X32CA<br>NT6X32AB(upg) |
| 32<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 31<br>-----<br>NT6X12AG(new)<br>NT6X12CA<br>NT6X12AD | NO CHANGE<br>from BCS 31<br>-----<br>NT6X12AG(new)<br>NT6X12CA<br>NT6X12AD | NO CHANGE<br>from BCS 31<br>-----<br>NT6X32CA<br>NT6X32AB      |
| 33<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 32<br>-----<br>NT6X12AG(new)<br>NT6X12CA<br>NT6X12AD | NO CHANGE<br>from BCS 32<br>-----<br>NT6X12AG(new)<br>NT6X12CA<br>NT6X12AD | NO CHANGE<br>from BCS 32<br>-----<br>NT6X32CA<br>NT6X32AB      |
| 34<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 33<br>-----<br>NT6X12AG(new)<br>NT6X12CA<br>NT6X12AD | NO CHANGE<br>from BCS 33<br>-----<br>NT6X12AG(new)<br>NT6X12CA<br>NT6X12AD | NO CHANGE<br>from BCS 33<br>-----<br>NT6X32CA<br>NT6X32AB      |
| 35<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 34<br>-----<br>NT6X12AG(new)<br>NT6X12CA<br>NT6X12AD | NO CHANGE<br>from BCS 34<br>-----<br>NT6X12AG(new)<br>NT6X12CA<br>NT6X12AD | NO CHANGE<br>from BCS 34<br>-----<br>NT6X32CA<br>NT6X32AB      |

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| <div> <div>MODULE</div> <div>BCS</div> </div>        | LCM                                                                                                                                       | RLCM<br>(w/ESA)                                                                                            | OPM<br>(w/ESA)                                                                                             |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| <div>26</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE</div> <div>-----</div> <div>NT6X03RA<br/>NT6X03RB<br/>NT6X04AA(LCM)</div>                                                  | <div>NO CHANGE</div> <div>-----</div> <div>NT6X11AA</div>                                                  | <div>NO CHANGE</div> <div>-----</div> <div>NT6X11AA</div>                                                  |
| <div>27</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE<br/>from BCS 26</div> <div>-----</div> <div>NT6X03RA<br/>NT6X03RB<br/>NT6X04AA(LCM)</div>                                  | <div>NO CHANGE<br/>from BCS 26</div> <div>-----</div> <div>NT6X11AA</div>                                  | <div>NO CHANGE<br/>from BCS 26</div> <div>-----</div> <div>NT6X11AA</div>                                  |
| <div>28</div> <div>-----</div> <div>MIN PACKFL</div> | <div>Canada:<br/>NT6X51AB<br/>US:<br/>NO CHANGE<br/>from BCS 27</div> <div>-----</div> <div>NT6X03RA<br/>NT6X03RB<br/>NT6X04AA(LCM)</div> | <div>Canada:<br/>NT6X51AB<br/>US:<br/>NO CHANGE<br/>from BCS 27</div> <div>-----</div> <div>NT6X11AA</div> | <div>Canada:<br/>NT6X51AB<br/>US:<br/>NO CHANGE<br/>from BCS 27</div> <div>-----</div> <div>NT6X11AA</div> |
| <div>29</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE<br/>from BCS 28</div> <div>-----</div> <div>NT6X03RA<br/>NT6X03RB<br/>NT6X04AA(LCM)</div>                                  | <div>NO CHANGE<br/>from BCS 28</div> <div>-----</div> <div>NT6X11AA</div>                                  | <div>NO CHANGE<br/>from BCS 28</div> <div>-----</div> <div>NT6X11AA</div>                                  |



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|---------------------------|----------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------|
| 30<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 29<br>-----<br>NT6X03RA<br>NT6X03RB<br>NT6X04AA(LCM) | NO CHANGE<br>from BCS 29<br>-----<br>NT6X11AA  | NO CHANGE<br>from BCS 29<br>-----<br>NT6X11AA  |
| 31<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 30<br>-----<br>NT6X03RA<br>NT6X03RB<br>NT6X04AA(LCM) | NO CHANGE<br>from BCS 30<br>-----<br>NT6X11AA  | NO CHANGE<br>from BCS 30<br>-----<br>NT6X11AA  |
| 32<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 31<br>-----<br>NT6X03RA<br>NT6X03RB<br>NT6X04AA(LCM) | NO CHANGE<br>from BCS 31<br>-----<br>NT6X11AA  | NO CHANGE<br>from BCS 31<br>-----<br>NT6X11AA  |
| 33<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 32<br>-----<br>NT6X03RA<br>NT6X03RB<br>NT6X04AA(LCM) | Ext. MP Mem<br>(NT6X47AC)<br>-----<br>NT6X11AA | Ext. MP Mem<br>(NT6X47AC)<br>-----<br>NT6X11AA |
| 34<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 33<br>-----<br>NT6X03RA<br>NT6X03RB<br>NT6X04AA(LCM) | NO CHANGE<br>from BCS 33<br>-----<br>NT6X11AA  | NO CHANGE<br>from BCS 33<br>-----<br>NT6X11AA  |

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|                                          |                                                                                              |                                                               |                                                               |
|------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| <p>35</p> <p>-----</p> <p>MIN PACKFL</p> | <p>NO CHANGE<br/>from BCS 34</p> <p>-----</p> <p>NT6X03RA<br/>NT6X03RB<br/>NT6X04AA(LCM)</p> | <p>NO CHANGE<br/>from BCS 34</p> <p>-----</p> <p>NT6X11AA</p> | <p>NO CHANGE<br/>from BCS 34</p> <p>-----</p> <p>NT6X11AA</p> |
| <p>36</p> <p>-----</p> <p>MIN PACKFL</p> | <p>NO CHANGE<br/>from BCS 35</p> <p>-----</p> <p>NT6X03RA<br/>NT6X03RB<br/>NT6X04AA(LCM)</p> | <p>NO CHANGE<br/>from BCS 35</p> <p>-----</p> <p>NT6X11AA</p> | <p>NO CHANGE<br/>from BCS 35</p> <p>-----</p> <p>NT6X11AA</p> |

TABLE 4: BCS Requirements for LCM/RLCM/OPM

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| <div> <div>MODULE</div> <div>BCS</div> </div>        | COMPUTING<br>MODULE                                                                                    | MESSAGE<br>SWITCH                                                                | SYSTEM LOAD<br>MODULE                                                            |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <div>26</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NT9X13BC</div> <div>NT9X14DB **</div> <div>NT9X12AB/AC</div> <div>-----</div> <div>NT9X06AC</div> | <div>NT9X13DB</div> <div>NT9X14BB</div> <div>-----</div> <div>NT9X04AE</div>     | <div>NT9X12AB/AC</div> <div>-----</div> <div>NT9X07AB</div>                      |
| <div>27</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE</div> <div>from BCS 26</div> <div>-----</div> <div>NT9X06AC</div>                       | <div>NO CHANGE</div> <div>from BCS 26</div> <div>-----</div> <div>NT9X04AE</div> | <div>NO CHANGE</div> <div>from BCS 26</div> <div>-----</div> <div>NT9X07AB</div> |
| <div>28</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE</div> <div>from BCS 27</div> <div>-----</div> <div>NT9X06AC</div>                       | <div>NO CHANGE</div> <div>from BCS 27</div> <div>-----</div> <div>NT9X04AE</div> | <div>NO CHANGE</div> <div>from BCS 27</div> <div>-----</div> <div>NT9X07AB</div> |
| <div>29</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE</div> <div>from BCS 28</div> <div>-----</div> <div>NT9X06AC</div>                       | <div>NO CHANGE</div> <div>from BCS 28</div> <div>-----</div> <div>NT9X04AE</div> | <div>NO CHANGE</div> <div>from BCS 28</div> <div>-----</div> <div>NT9X07AB</div> |
| <div>30</div> <div>-----</div> <div>MIN PACKFL</div> | <div>NO CHANGE</div> <div>from BCS 29</div> <div>-----</div> <div>NT9X06AC</div>                       | <div>NO CHANGE</div> <div>from BCS 29</div> <div>-----</div> <div>NT9X04AE</div> | <div>NO CHANGE</div> <div>from BCS 29</div> <div>-----</div> <div>NT9X07AB</div> |
| <div>31</div> <div>-----</div>                       | <div>NO CHANGE</div> <div>from BCS 30</div> <div>-----</div>                                           | <div>4M MS Proc</div> <div>6M Memory &amp;&amp;</div> <div>-----</div>           | <div>NO CHANGE</div> <div>from BCS 30</div> <div>-----</div>                     |

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|   |            |          |          |          |
|---|------------|----------|----------|----------|
| 0 | MIN PACKFL | NT9X06AC | NT9X04AE | NT9X07AB |
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|---------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 32<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 31<br>-----<br>NT9X06AC | NO CHANGE<br>from BCS 31<br>-----<br>NT9X04AE                                                  | NO CHANGE<br>from BCS 31<br>-----<br>NT9X07AB                                                                                           |
| 33<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 32<br>-----<br>NT9X06AC | 4M MS Proc<br>6M Memory \$\$<br>-----<br>NT9X04AE                                              | For regular<br>SW loads,<br>NO CHANGE<br>from BCS 32.<br>For Universal<br>SW Loads,<br>SLM II MUST<br>BE PROVIDED.<br>-----<br>NT9X07AB |
| 34<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 33<br>-----<br>NT9X06AC | 4M MS Proc<br>6M Memory ##<br>-----<br>NT9X04AE                                                | NO CHANGE<br>from BCS 33<br>-----<br>NT9X07AB                                                                                           |
| 35<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 34<br>-----<br>NT9X06AC | 4M MS Proc<br>6M Memory ++<br>NT9X53AC %%<br>16M Memory @@<br>-----<br>NT9X04AE<br>NT9X04AG %% | NO CHANGE<br>from BCS 34<br>-----<br>NT9X07AB                                                                                           |
| 36<br>-----<br>MIN PACKFL | NO CHANGE<br>FROM BCS 35<br>-----<br>NT9X06AC | NO CHANGE<br>FROM BCS 35<br>-----<br>NT9X04AE<br>NT9X04AG %%                                   | NO CHANGE<br>FROM BCS 35<br>-----<br>NT9X07AB                                                                                           |

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## 0 TABLE 5: BCS Requirements for SuperNode

0 \*\* Existing NT9X14BB 6 MByte CPs do not have to be retrofit  
0 to NT9X14DB 24 Mbyte. Requirements for the NT9X14DB CP  
0 for BCS26 & 27 refers to new installations and replacements  
0 of existing NT9X14DA. Memory growth is provisioned in  
0 increments of 24 MBytes (i.e. NT9X14DB). The NT9X12AC replaces  
0 the NT9X12AB.

0 && Required when adding ENET H/W and/or S/W.(Package NTXE01AA  
0 in MS load MEC)

0 \$\$ Required when adding FLIS H/W and/or S/W (Package NTXQ51AA  
0 in MS load MEC)

0 ## Required when adding the NIU H/W and/or S/W,(Package NTPX47AA  
0 in MS load MEC), for the Packet Handler.

0 For the Canadian Market, the requirement for a  
0 minimum of 10M Byte of MS for Packet Handler in BCS 34 is  
0 reduced to a minimum of 7M Byte in BCS 35. The S/W package  
0 NTPX47AA is contained in the MS load MEC.

0 For the US Market the requirement for a minimum of 10M Byte of  
0 MS memory is also required in BCS 35.

0 @@ A minimum of 16M of MS memory is required when adding SCP II  
0 and Billing Server and/or S/W (Package NTXF06AA in MS load MIC),

0 %% Combined Clock CPs, NT9X53AC, and External Clock I/F CPs,  
0 NT9X54AC, are required in in the SuperNode MS  
0 of STP switches prior to BCS SW load insertion. The minimum MS  
0 packfill required to support NT9X53AC and NT9X54AC is NT9X04AG.

0 ++ A minimum of 10 Mbyte of MS memory is required when adding  
0 NIU HW and/or S/W (Package NTXQ23AA in MS load MEC) for ADAS.

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| MODULE<br>-----<br>BCS        | CM                                                        | MS                                                        | SLM                                                       |
|-------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| 35<br><br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 34<br>(96M Memory)**<br>-----<br>NA | NO CHANGE<br>from BCS 34<br>(16M Memory)@@<br>-----<br>NA | NO CHANGE<br>from BCS 34<br><br>-----<br>NA<br>NT9X44AC## |
| 36<br><br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 35<br>(96M Memory)**<br>-----<br>NA | NO CHANGE<br>from BCS 35<br>(16M Memory)@@<br>-----<br>NA | NO CHANGE<br>from BCS 35<br><br>-----<br>NA<br>NT9X44AC## |

TABLE 6: BCS Requirements for SuperNode SE

\*\* When using "Universal" loads (USL) on the SuperNode SE, the Compute Module must be provisioned with NT9X14EA 96MByte memory cards prior to USL insertion. The NT9X14EA is in these instances regarded as BCS Insertion Gating. Provisioning of the NT9X14EA is conditional on having NT9X13MB processors in the SNSE Compute Module. Refer to ECM 632 for SNSE provisioning rules.

The above requirements apply for the following SNSE USLs:

For the U.S., either of:

NTXC57AA DMS100 BCS35 S/W LOAD FOR SNSE ENET SERIES 20  
NTXC58AA DMS100/200 BCS35 S/W LOAD FOR SNSE SERIES 20  
NTXC59AA DMS200 BCS35 S/W LOAD FOR SNSE SERIES 20

For Canada, either of:

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0 NTXC63AA SMART MANAGEMENT SNSE SERIES 20  
0 NTXC64AA UNIVERSAL S/W SNSE SERIES 20 FOR TOLL

0 @@ A minimum of 16M of MS memory is required when adding SCP II  
0 and Billing Server and/or S/W (Package NTXF06AA in MS load MIC),  
0 Also when adding SNSE S/W (Package NTP44AA  
0 in MS load MNC)

0 ## The PEC NT9X44AC represents Software Load Module SLM1A which is  
0 used with SNSE.

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|   |            |          |  |
|---|------------|----------|--|
| 0 | MIN PACKFL | NTNX61AC |  |
| 0 |            |          |  |
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| <div> <div>MODULE</div> <div>BCS</div> </div> | ISDN<br>IAC/LGCI/<br>DTCI/LTCI                                 | ISDN<br>LCMI                                  | ISDN<br>RCCI                                      |
|-----------------------------------------------|----------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------|
| 26<br>-----<br>MIN PACKFL                     | NO CHANGE<br>-----<br>NT6X02NA<br>NTBX40BC(IAC)                | NO CHANGE<br>-----<br>NTBX31AA                | N/A<br>-----                                      |
| 27<br>-----<br>MIN PACKFL                     | Ext. SP Mem.<br>-----<br>NT6X02NA<br>NTBX40BC(IAC)             | NO CHANGE<br>from BCS 26<br>-----<br>NTBX31AA | N/A<br>-----                                      |
| 28<br>-----<br>MIN PACKFL                     | NO CHANGE<br>from BCS 27<br>-----<br>NT6X02NA<br>NTBX40BC(IAC) | NTBX34AB<br>-----<br>NTBX31AC                 | N/A<br>-----                                      |
| 29<br>-----<br>MIN PACKFL                     | NO CHANGE<br>from BCS 28<br>-----<br>NT6X02NA<br>NTBX40BC(IAC) | NO CHANGE<br>from BCS 28<br>-----<br>NTBX31AC | N/A<br>-----                                      |
| 30<br>-----<br>MIN PACKFL                     | NO CHANGE<br>from BCS 29<br>-----<br>NT6X02NA<br>NTBX40BC(IAC) | NO CHANGE<br>from BCS 29<br>-----<br>NTBX31AC | Ext. MP Mem*<br>Ext. SP Mem*<br>-----<br>NT6X12DA |
| 31<br>-----                                   | NO CHANGE<br>from BCS 30<br>-----                              | NO CHANGE<br>from BCS 30<br>-----             | NO CHANGE<br>from BCS 30<br>-----                 |

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|   |            |               |          |          |
|---|------------|---------------|----------|----------|
| 0 | MIN PACKFL | NT6X02NA      | NTBX31AC | NT6X12DA |
| 0 |            | NTBX40BC(IAC) |          |          |
| 0 |            |               |          |          |

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|---------------------------|----------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------|
| 32<br>-----<br>MIN PACKFL | IAC must be<br>replaced with<br>LGCI/LTCI<br>-----<br>NT6X02NA | NO CHANGE<br>from BCS 31<br>-----<br>NTBX31AC | NO CHANGE<br>from BCS 31<br>-----<br>NT6X12DC(new)<br>NT6X12DA |
| 33<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 32<br>-----<br>NT6X02NA                  | NO CHANGE<br>from BCS 32<br>-----<br>NTBX31AC | NO CHANGE<br>from BCS 32<br>-----<br>NT6X12DC(new)<br>NT6X12DA |
| 34<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 33<br>-----<br>NT6X02NA                  | NO CHANGE<br>from BCS 33<br>-----<br>NTBX31AC | Unified Proc<br>XPM+ Term PB<br>EISP<br>-----<br>NT6X12DE      |
| 35<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 34<br>-----<br>NT6X02NA                  | NO CHANGE<br>from BCS 34<br>-----<br>NTBX31AC | NO CHANGE<br>from BCS 34<br>-----<br>NT6X12DE                  |
| 36<br>-----<br>MIN PACKFL | NO CHANGE<br>from BCS 35<br>-----<br>NT6X02NA                  | NO CHANGE<br>from BCS 35<br>-----<br>NTBX31AC | NO CHANGE<br>from BCS 35<br>-----<br>NT6X12DE                  |

TABLE 8 : BCS Requirements for ISDN

\* The RCCI is always provided with Ext. MP and SP Memory CPs  
and is shown here for information only.

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| \ MODULE<br>-----<br>BCS REQUIRED \ |  | BASE LPP<br>(INCLUDES<br>LMS AND<br>LIS) | STP                            | SSP/SEP                        | EIU                            |
|-------------------------------------|--|------------------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 35                                  |  | NO<br>CHANGE<br>FROM<br>BCS 34           | NO<br>CHANGE<br>FROM<br>BCS 34 | NO<br>CHANGE<br>FROM<br>BCS 34 | NO<br>CHANGE<br>FROM<br>BCS 34 |
| 36                                  |  | NO<br>CHANGE<br>FROM<br>BCS 35           | NO<br>CHANGE<br>FROM<br>BCS 35 | NO<br>CHANGE<br>FROM<br>BCS 35 | NO<br>CHANGE<br>FROM<br>BCS 35 |

TABLE 9: BCS-35 Requirements for LPPs (CHART 1 OF 3)

| \ MODULE<br>-----<br>BCS REQUIRED \ |  | MDR7                           | FRIU                           | DMS-PH                         | NIU                            |
|-------------------------------------|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 35                                  |  | NO<br>CHANGE<br>FROM<br>BCS 34 | NO<br>CHANGE<br>FROM<br>BCS 34 | NO<br>CHANGE<br>FROM<br>BCS 34 | NO<br>CHANGE<br>FROM<br>BCS 34 |
| 36                                  |  | NO<br>CHANGE<br>FROM<br>BCS 35 | NO<br>CHANGE<br>FROM<br>BCS 35 | NO<br>CHANGE<br>FROM<br>BCS 35 | NO<br>CHANGE<br>FROM<br>BCS 35 |

TABLE 9: BCS-35 Requirements for LPPs (CHART 2 OF 3)

| \ MODULE<br>-----<br>BCS REQUIRED \ |  | SEP | APU | VPU |  |
|-------------------------------------|--|-----|-----|-----|--|
|                                     |  | NO  |     |     |  |

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|   |    |                                |                                |                               |  |
|---|----|--------------------------------|--------------------------------|-------------------------------|--|
| 0 | 35 | CHANGE<br>FROM<br>BCS 34       | APU<br>INTRODUCED              | VPU<br>INTRODUCED             |  |
| 0 |    |                                |                                |                               |  |
| 0 | 36 | NO<br>CHANGE<br>FROM<br>BCS 35 | NO<br>CHANGE<br>FROM<br>BCS 35 | NO<br>CHAGE<br>FROM<br>BCS 35 |  |
| 0 |    |                                |                                |                               |  |

0 TABLE 9: BCS-35 Requirements for LPPs (CHART 3 OF 3)

0 Note - new = Product Engineering Codes (PEC) for an initial  
0 office receiving a BCS load  
0 upg = PEC for an existing office which is upgrading a  
0 BCS load  
0 Refer to ECM 620 for minimum hardware required for  
0 LPP applications in BCS 34.

0 CAUTION Before attempting BCS loading of STP LPPs in which the LIUs  
0 use NTEX22AA (4M) processors, ensure that DATAFILL memory  
0 requirements do not cause memory capacity to be exceeded.  
0 LIU memory requirement calculations are detailed in  
0 SEB 92-01-001. Refer to ECM 620 for LIU provisioning rules.

0 Where LIU memory requirements exceed 4M, replace NTEX22AAs  
0 with NTEX22BBs. In these instances, the NTEX22BBs should be  
0 treated as Feature Insertion Gating material. Refer to the  
0 Section "Feature Insertion Gating Hardware."

0 All other hardware is feature hardware. The BCS feature related  
0 hardware information and details on the BCS Gating hardware  
0 should be obtained from Advanced Provisioning Information (API)  
0 documents or Engineering Change Memorandums (ECM) on the feature.  
0 This feature related hardware should be ordered in the appropriate  
0 specs.

#### 0 1.1.4 Office Layout Information

0  
0 Not applicable.



0 1.1.5 Traffic Tables

0  
0 Not applicable.

0 1.2 Product/System Specification

0

0 1.2.1 Physical Characteristics

0  
0 Not applicable.

0 1.2.2 Emi/Earthquake Information

0  
0 Not applicable.

0 1.2.3 Sparing Information

0  
0 Not applicable.

0 1.2.4 Power Feed and Fusing Requirements

0

0

0 1.2.5 Current Drain Information0  
0 1.3 Software Provisioning

0

0 1.3.1 Required Software Packages And Interdependencies

0  
0 Some hardware may require additional software packages to func-  
0 tion. Refer to SMS and/or SOLID software databases.

0 1.3.2 Software Usage Restrictions

0  
0 Not applicable.

0 1.3.3 Memory Provisioning

0  
0 Not applicable.

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0 1.4 Real Time Impact

0 Not applicable.

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0 APPENDIX B

0 TRAFFIC CRITERIA AND CAPACITIES

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Traffic Criteria and Capacities  
Appendix B

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0 TRAFFIC CRITERIA AND CAPACITIES  
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0 1.0 Service Standards

0 1.1 Introduction

0 The Service Standard Specifies the Delay and Matching Loss Crite-  
0 ria Service Objectives for Local (Class 5) and Toll switching  
0 systems recommended by Northern Telecom. Explicit objectives are  
0 given for the Average Busy Season Busy Hour (ABSBH), and High Day  
0 Busy Hour (HDBH)

0 The standard has been developed taking into account both the per-  
0 formance aspects of switching systems and the service expecta-  
0 tions of customers. The following three areas of traffic  
0 engineering related activities are impacted by design standards:

0 \* Switch Administration Switch administration will ensure that  
0 service provided meets these traffic  
0 standards using servicing techniques.

0 \* Switch Provisioning Initial switch implementation as well  
0 as switch extensions are engineered to  
0 meet given traffic service objectives.  
0 These service standards performance  
0 levels will be used in determination of  
0 switch capacities.

0 \* Switch Performance The Delay and Matching Loss design  
0 standard performance levels will be  
0 used as a point of reference in the de-  
0 velopment of performance requirement  
0 standards which specifies Northern  
0 Telecom's performance requirements re-  
0 commendations for the design and devel-  
0 opment of new switching systems.

0 1.2 Busy Hour Criteria

0 Provisioning of traffic sensitive components is based on service  
0 criteria and traffic intensity (Load) or on call attempts as a  
0 function of service relations. In engineering the facilities,  
0 the derived load versus service restrictions should be as accu-



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0 rate as possible. These functions should be verified by simu-  
0 lation and appropriate measurements on systems in service.

0 The traffic capacity tables that form the basis for equipment  
0 provisioning give the load or call volumes that can be handled by  
0 different equipment quantities, while attaining a fixed service  
0 criterion during an indicated period of time (Busy Hour). Se-  
0 lection of the Busy Hour is critical, because this is the period  
0 during a year for which the traffic load or call attempts should  
0 be forecast. In some cases, provisioning is based on the most  
0 limiting of two or three expected loads in different periods of  
0 time (i.e. ABSBH 10HDBH and HDBH) with a different service crite-  
0 rion. The purpose of this is to ensure adequate performance un-  
0 der both normal and peak load conditions.

### 0 1.3 Types of Service Criteria

#### 0 Blocking Loss (Matching Loss Criteria)

0 Blocking Loss occurs when a call arrives for service and all  
0 servers (service circuits, network paths, etc.) are busy. Block-  
0 ing is measured as the fraction of all calls attempted that are  
0 lost.

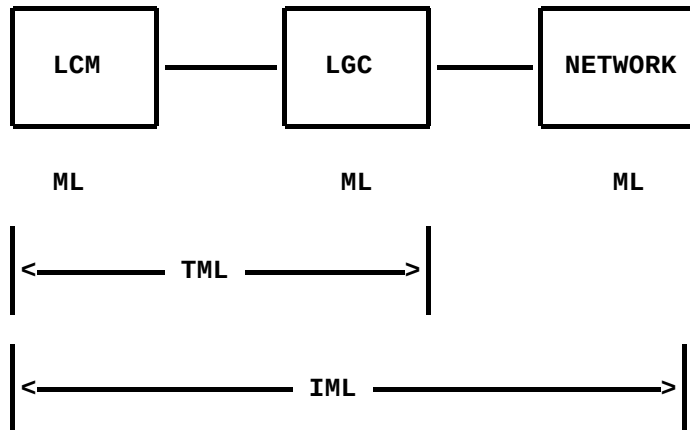
#### 0 Delay Criteria

0 Delay occurs when a call finds all servers (service circuits,  
0 software resources, etc.) busy and the call is queued until it  
0 defects or a server becomes idle. Delay is usually measured as  
0 the fraction of call attempts that are delayed greater than a  
0 specified criteria (i.e. Delay > 3 seconds or Delay > 1 Holding  
0 Time).

#### 0 Terminating Matching Loss (TML)

0 The DMS-100F is provisioned in modular sections, with each module  
0 having its own component of Matching Loss. Incoming Matching  
0 Loss (IML) is the linear addition of the Matching Loss allotted  
0 to component parts. Terminating Matching Loss (TML) is the IML  
0 portion allocated to Peripheral Modules (PM) (i.e. LCM/LGC,  
0 RLCM/LGC, OPM/LGC, LCM/RCC etc.) (see figure below).

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0 1.4 Definitions

0 Busy Hour (BH)

0 In a business day, the peak 60 minute period (not necessarily a  
0 clock hour) when the largest volume of traffic is handled.

0 Time Consistent Busy Hour (TCBH)

0 The busy hour may vary from one day to another. In order to en-  
0 gineer the switching equipment, the hour of day which consist-  
0 ently has the highest average load over the study period is  
0 determined. This hour is called the Time Consistent Busy Hour.

0 Busy Season (BS)

0 Three selected months (not necessarily consecutive) each contain-  
0 ing 20 consecutive business days that have the highest average  
0 business day traffic in the TCBH is termed the Busy Season. It  
0 should be noted that the same hour is used for each month.

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0 Average Busy Season Busy Hour (ABSBH)

0 The measured busy hour traffic, averaged across the business days  
0 of the busy season is termed the Average Busy Season Busy Hour  
0 (ABSBH) load.

0 Ten High Day Busy Hour (10HDBH)

0 Traffic Data are processed all year. From this data the average  
0 of the ten highest days busy hour load (excluding holiday traffic  
0 e.g. Mother's Day and abnormal traffic e.g. Snow Storms) is cal-  
0 culated. This is termed the Ten High Day Busy Hour Load. The  
0 10HDBH may not be the same busy hour as that calculated for the  
0 ABSBH.

0 Note that a 10HDBH performance standard is not based directly on  
0 the 10HDBH load. Such a standard is the (unweighted) average  
0 service expected for the relevant 10 busy hours. Since virtually  
0 all load/service relations are convex functions, this means that  
0 traffic engineering for the 10HDBH must include a "day-to-day  
0 variation" allowance, (i.e. a reduction in the capacity that  
0 would be cited to meet a single-hour service objective. This same  
0 remark applies to ABSBH service standard and capacities.

0 High Day Busy Hour (HDBH)

0 The one day among the 10HDBH Loads that has the highest traffic  
0 during the busy hour is designated the High Day Busy Hour.

0 Call Types

0 Calls processed by Local (Class 5) and Toll switching systems  
0 other than test calls are categorized as follows:

0 \* Originating Terminating These are calls which originate from  
0 and are terminated to customer lines  
0 within the same switch. These are also  
0 called intra-office calls.

0 \* Originating Outgoing These are calls which originate from  
0 the customer lines served by the switch  
0 but have a terminating destination ex-

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0 ternal to that switch. These are also  
0 called interoffice calls.

0 \* Incoming Terminating These calls originate from sources ex-  
0 ternal to the switch and are destined  
0 for termination on customer lines  
0 within this switch

0 \* Incoming Outgoing These calls have originating sources  
0 and terminating destinations which are  
0 external to the switch. These con-  
0 nections are also called tandem calls  
0 and involve a minimum of three switch-  
0 ing systems.

### 0 1.5 Criteria at Normal Operating Conditions

0 Service standards specified in Chapter 2 will apply when there  
0 are no overload controls in effect and all load-related equipment  
0 is in service. Traffic engineering information will be provided  
0 to permit telcos to order DMS-100 systems that will handle  
0 smaller traffic loads while meeting service standard objectives.

### 0 1.6 Criteria Under Overload Conditions

0 Overload is defined as a condition in which the DMS-100 family of  
0 switching systems exceeds High Day Busy Hour performance require-  
0 ments because its call processing resources are exhausted. This  
0 condition can be caused by the exhaust of:

- 0 \* Real Time of the Processor
- 0 \* Switching Network Overloads
- 0 \* Peripheral Units Overload
- 0 \* Inadequate Provision of Service Circuits

0 A DMS-100 Family office is designed and configured to handle a  
0 defined amount of traffic with defined characteristics. If the  
0 designed load is exceeded, some of the traffic must be delayed or  
0 blocked. The exact effect depends on the nature of the overload.  
0 The design intent is that any part of the equipment that is of-



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## 0 2.0 Grade of Service Specifications

0 The Office Grade of Service is defined as being a component of  
0 the office service quality, qualifying the normal office reaction  
0 to traffic variations in the ideal situation in which the Office  
0 is completely fault and trouble free. Therefore, to establish a  
0 standard basis of equipment provisioning, it is necessary to de-  
0 vise a measure of service to quantify the inconvenience suffered  
0 by the subscribers as a result of blocking. The definition of  
0 inconvenience depends on how the system deals with calls which  
0 encounter blocking. In a loss system, busy tone is immediately  
0 returned to the calling subscriber who must replace his receiver  
0 before trying again, whereas in a delay system, the calling sub-  
0 scriber can wait, possibly for a limited time, during which, he  
0 is immediately connected when the facility (i.e. service cir-  
0 cuits) becomes available. The subscriber is only considered to be  
0 inconvenienced if the delay exceeds some maximum tolerable value.  
0 DMS-100 family design apply a mixture of loss (matching loss) and  
0 delay criteria.

0 Standard grades of service have usually been arrived at on the  
0 basis of judgement and experience, the idea being to achieve the  
0 best service obtainable with the technology available at reason-  
0 able cost. These standards should not be too inflexible, and may  
0 need to be reviewed from time to time in light of technical de-  
0 velopments.

0 2.1 Dial Tone Delay (DTD) GOS Objectives

| DMS-100 Local |       |       |  |
|---------------|-------|-------|--|
| Criteria      | ABSBH | HDBH  |  |
| -----         | ----- | ----- |  |
| DTD > 3 sec   | 1.5%  | 20%   |  |

0 Note: \* Switches are to be provisioned to the more  
0 constraining of either ABSBH or HDBH load  
0 levels.

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0 DTD is a measure of the time it takes a switch to return dial  
0 tone to an originating subscriber after the subscriber goes off-  
0 hook. The receipt of dial tone indicates the system is ready to  
0 receive the subscribers keyed digits.

0 In DMS-100 Local the following times are major contributions to  
0 Dial Tone Delays:

0 \* Peripheral module response time to subscriber off-hook.

0 \* Time to process the request for service by the periph-  
0 eral processor.

0 \* Time required to connect the receiver and tone source

0 These times are cumulative and the system design provides for a  
0 total dial tone connect time that is within the dial tone delay  
0 standards as specified above.

0 Note that blocked dial tone occurs when the customer line circuit  
0 cannot access any digit receiver because of network congestion,  
0 particularly in the peripheral module front end concentrator.

## 0 2.2 Incoming Start to Dial Delay (ISDD) GOS Specification

| 0 | 0            | DMS-100 Local |      | DSM-200 Toll |      |
|---|--------------|---------------|------|--------------|------|
|   |              | -----         |      | -----        |      |
| 0 | Criteria     | ABSBH         | HDBH | 10HDBH       | HDBH |
| 0 | ISDD > 3 sec | 1.5%          | 20%  | 8%           | 20%  |

0 Note: \* Switches are to be provisioned to the more  
0 constraining of either ABSBH or HDBH for Local  
0 and 10HDBH or HDBH for Toll load levels.

0 When attempts are allowed to queue, interoffice receivers (MF)  
0 are subject to interoffice receiver (IR) delay criterion, ex-  
0 pressed as the probability that all MF receivers are busy when a

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0 call arrives. Generally, the dial tone delay standards apply to  
0 incoming start to dial delay as well.

0 Receiver circuit provisioning is given in item 2.5. These are  
0 engineered so that Call Processing Delay constitutes the major  
0 component of DTD and ISDD in a central control (Realtime) limited  
0 system.

0 2.3 Matching Loss G.O.S.

| DMS-100 LOCAL<br>-----               |                |               |             |  |
|--------------------------------------|----------------|---------------|-------------|--|
| Criteria<br>-----                    | ABSBH<br>----- | HDBH<br>----- |             |  |
|                                      |                | Current       | Recommended |  |
| Incoming Matching Loss (IML)         | 2%             | 20%           | 5%          |  |
| Outgoing Matching Loss (OML)         | 1%             | 20%           | 5%          |  |
| Intra Office Matching (IAML)<br>Loss | 2%             | 20%           | 5%          |  |

| DMS-200 Toll/Tandem<br>----- |        |      |  |
|------------------------------|--------|------|--|
| Criteria                     | 10HDBH | HDBH |  |
| Tandem Matching Loss (TAML)  | 0.5%   | 2%   |  |

0 Note: \* For Local applications the IML is the limiting  
0 factor

0 \* For Toll applications the TAML is the limiting  
0 factor

0 \* For Local/Toll applications the more stringent  
0 of the IML and/or TML is the limiting factor.



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0 \* The TELCO may wish to specify different GOS for  
0 their unique operating environment.

0 Matching loss is defined as the situation where no network path  
0 exists between an incoming or originating call and a free cus-  
0 tomer line or suitable outgoing trunk. Matching loss can be  
0 classified by the type of call being processed by the switching  
0 technology employed. In general it is classified as follows:

0 \* INCOMING MATCHING LOSS (IML) This term is used in con-  
0 junction with incoming ter-  
0 minating calls only.

0 \* OUTGOING MATCHING LOSS (OML) This term is used in con-  
0 junction with originating-  
0 outgoing calls only.

0 \* INTRA OFFICE MATCHING LOSS (IAML) This term is used in con-  
0 junction with originating-  
0 terminating calls only.

0 \* TANDEM MATCHING LOSS (TAML) This term is used in con-  
0 junction with incoming-  
0 outgoing calls only.

0 In general, all matching loss calls take up to two trials to find  
0 a suitable path through the network, i.e., All paths are in ef-  
0 fect "point to group" between the originating channel and the  
0 terminating channel.

#### 0 2.4 Service Circuits GOS Objectives

0 With the exception of receivers (i.e. Digitone, MF and UTR), oc-  
0 cupancy on individual groups of service circuits (i.e. tone cir-  
0 cuits, conference circuits, announcement circuits, etc) is  
0 limited to 80 percent on an ABSBH load level basis, and 90 per-  
0 cent on a HDBH load level basis. For large groups of service  
0 circuits, the occupancy limit is expected to be the limiting fac-  
0 tor. For smaller groups of service circuits, the criteria listed  
0 below provide the basis for service circuit delay and blocking

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0 requirements. In general, the quantities of these system compo-  
0 nents are engineered to cause minimal blocking. This helps to  
0 ensure that processing requirements per call do not increase sig-  
0 nificantly under peak load conditions.

0 The service circuits GOS based on blocking criteria are as fol-  
0 lows:

| 0 | Service Circuit       | Criteria | ABSBH | HDBH  |
|---|-----------------------|----------|-------|-------|
| 0 | -----                 | -----    | ----- | ----- |
| 0 | Announcement Circuits | BLOCKING | 1%    | 5%    |
| 0 | Tone Circuits         | BLOCKING | 1%    | 5%    |
| 0 | Conference Circuits   | BLOCKING | 0.1%  | 5%    |

## 0 2.5 Receiver GOS Objectives

0 In all cases, occupancy on individual groups of receiver circuits  
0 (i.e. digitone, MF, and UTR) is limited to 75 percent on a HDBH  
0 load level basis. The requirements are expected to be control-  
0 ling requirements for groups of receiver circuits over approxi-  
0 mately 35 receivers (i.e. pool of digitone and/or MF). For groups  
0 of receiver circuits smaller than 35 receivers the following cri-  
0 teria provide the basis for receiver circuit delay and blocking  
0 requirements.

0 The receiver circuits GOS based on blocking and delay criteria  
0 are as follows:

| 0 | Service Circuit | Criteria    | ABSBH | HDBH  |
|---|-----------------|-------------|-------|-------|
| 0 | -----           | -----       | ----- | ----- |
| 0 | DTMF Receiver   | DTD > 0 sec | 1%    | 5%    |
| 0 |                 | DTD > 3 sec | 0.1%  | 1.0%  |
| 0 | MF Receiver     | DTD > 0 sec | 1%    | 5%    |
| 0 |                 | DTD > 3 sec | 0.1%  | 1.0%  |

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|   |              |             |      |      |
|---|--------------|-------------|------|------|
| 0 |              |             |      |      |
| 0 | UTR Receiver | DTD > 0 sec | 1%   | 5%   |
| 0 |              | DTD > 3 sec | 0.1% | 1.0% |

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### 0| 3.0 Traffic Provisioning Considerations

0 The methodology is based on achieving the required Grade of Service Blocking criteria as allocated between the individual components of the DMS-100 System. Where the Grade of Service Blocking is unspecified or is not the most constraining provisioning criteria, NT recommends component blocking standards commensurate with optimal utilisation of the DMS-100 System.

0 For a given Office, NT recommends that engineering the provisioning requirements for series II Peripherals (i.e. LCM, RLCM, OPM, RCC, DTC, LGC, and LTC) be met at the projected High Day Busy Hour (HDBH) Office Load. Verify realtime Capacity, as detailed in appropriate NT Documentation, for both Peripheral and Central Control Complex to ensure satisfactory operation at the specified load.

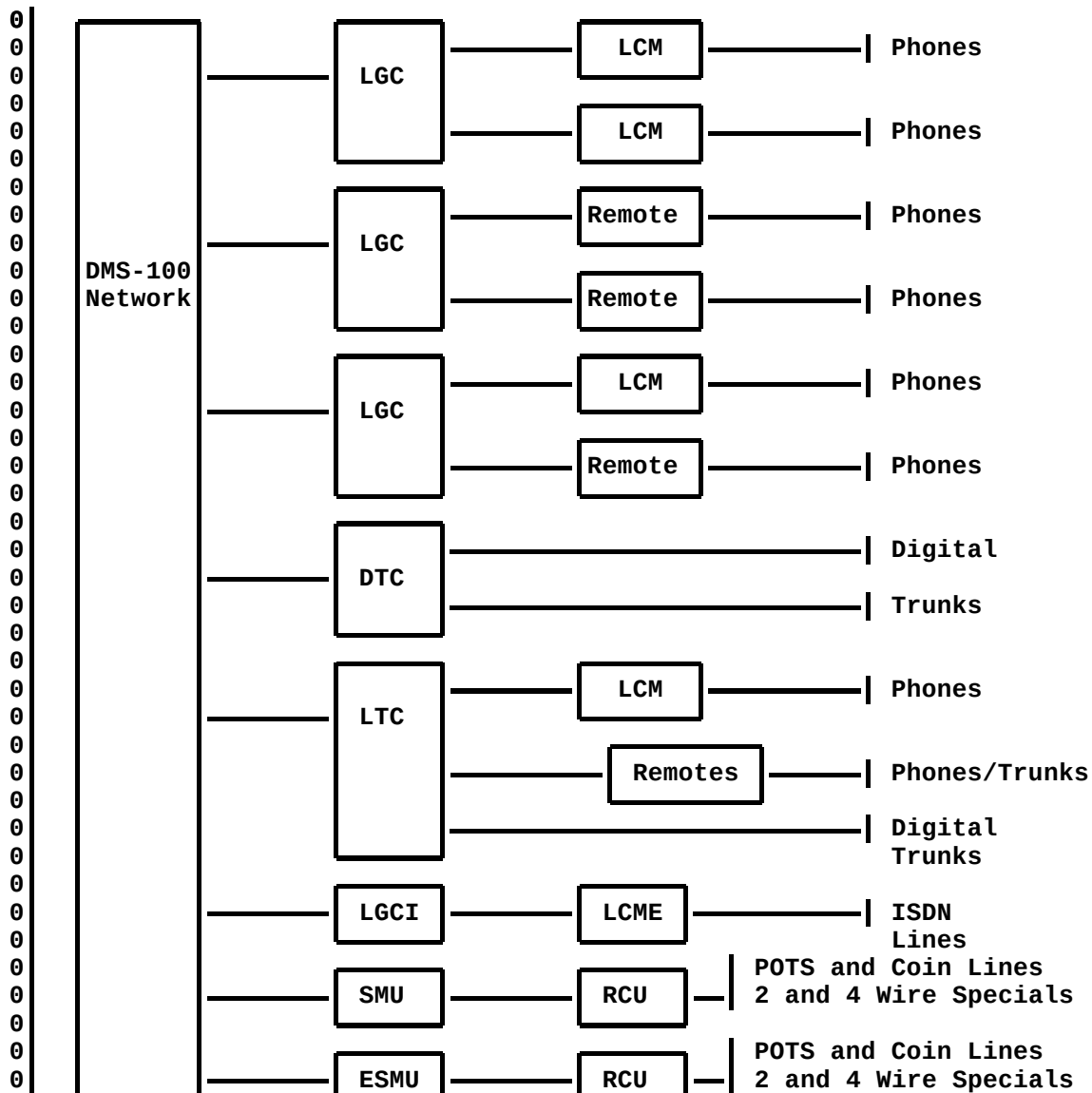
0 Check the capacities of the link configurations selected to meet the HDBH Load against the relevant non-HDBH criteria, e.g., the projected Average Busy Season Busy Hour (ABSBH) Load. If ABSBH criteria are dominant, increase link quantities or de-load components where these are already at maximum. Re-size the Office physical equipment configurations. It should be noted that DMS-100 designs must satisfy essentially five precepts: Physical requirements, Teletraffic Capacity and Grade of Service criteria, Processor Realtime limits, Software Resources capacity, including total memory requirements, and relevant Administrative criteria (e.g., peripheral image loading).

0| The steps to simplified provisioning are as follows:

- 0 1) Define an overall Initial Matching Loss (IML) for an Office Define blocking by selecting the following:  
0 ABSBH: 0.003, 0.005, 0.007, 0.10 or 0.20  
0 HDBH : 0.03, 0.005, 0.07, 0.1, or 0.2
- 0 2) Use the value of the Initial Matching Loss to provision peripherals by referring to the appropriate traffic table.

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0 | 4.0 Peripheral Nodal Requirements



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**Figure 1: DMS SYSTEM ARCHITECTURE**

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0 | 4.1 ISDN Terminology

0 | D - 16Kbps channel. Supports up to 8 terminals.

0 | Dd - 4:1 multiplexed channel (64Kbps)

0 | Bb - High speed packet data (nailed up connection)

0 | Bd - Statistically multiplexed D channel packet data

0 | U-type - Long line (one slot line card)

0 | S/T type - Short Line (two slot line card)

0 | 2B+D - Two 64Kbps B channels and one 16Kbps D channel. The  
0 | B channels can be either PCM voice, switched data or  
0 | packet data. The D channel must be packet data.

0 | 1B+D - One 64Kbps B channel and one 16Kbps D channel. This  
0 | configuration is not currently supported in this  
0 | document, except for RCU applications.

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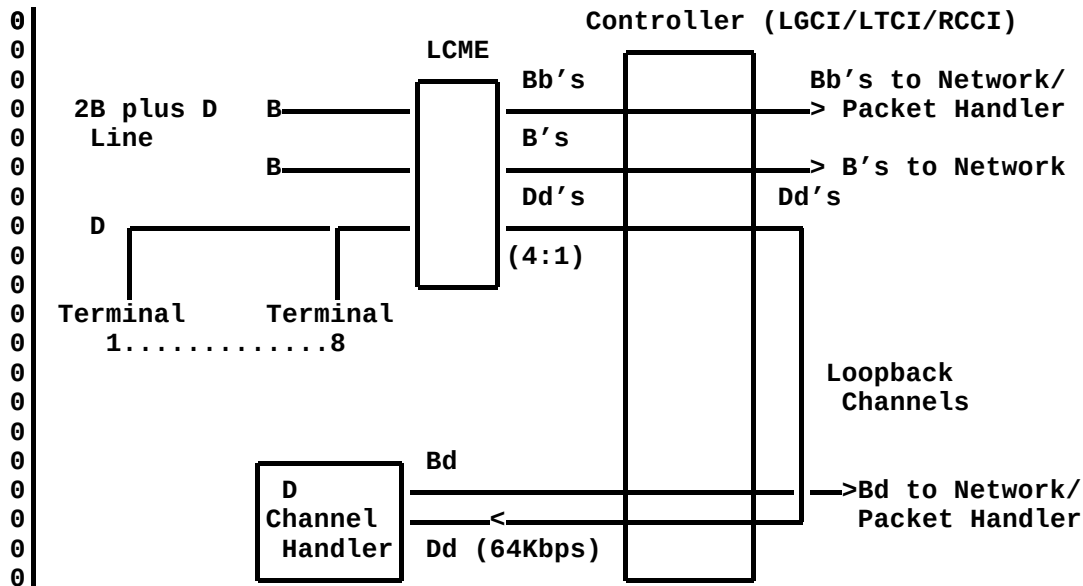
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0 | 4.2 ISDN Channel Routing



0 | Figure 2 : ISDN CHANNEL ROUTING  
0 | (C-Side Packet Configuration)

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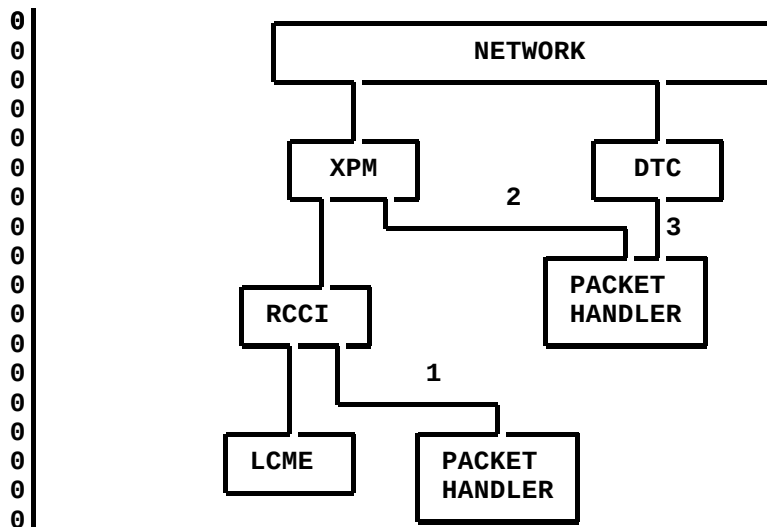
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0 | Figure 3 : RCCI PACKET HANDLER ACCESS OPTIONS

- 0 | 1. Packet Handler access from RCCI P-side. Required  
0 | for Packet Handler access during ESA. See ECM-504.
- 0 | 2. Packet Handler access from RCCI host XPM (P-side)  
0 | This configuration is not used due to the loss of  
0 | capacity inherent in C-side loopbacks.
- 0 | 3. Packet Handler access from another XPM in the C0  
0 | with P-side DS-1s. This configuration is supported  
0 | by the rules in this ECM.

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0 | 4.3 Definition of a Node

0 | A node is defined as follows:

0 | Host LCMS, remote LCMS, RMMs, RCC, RLCM, OPM,  
0 | ESA processor (for the RLCM or OPM) and dummy  
0 | software nodes.

0 | Following is an example of how to count nodes:

0 | A host LGC configured with two (2) host LCMS, one (1) RLCM, one  
0 | (1) OPM and one (1) RSC (remotes configured below) would constitute  
0 | a total of 15 software nodes.

0 | o The host LCMS would constitute two (2) software nodes.

0 | o A RLCM configured with one (1) RMM and ESA processor would  
0 | constitute three (3) software nodes.

0 | o An OPM configured with one (1) RMM would constitute two (2)  
0 | software nodes.

0 | o An RSC configured with one (1) RCC, two (2) RMMs and five (5)  
0 | LCMS would constitute eight (8) software nodes.

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## 0 5.0 Simplified Provisioning (Non-ISDN)

0 The following section provides simplified Teletraffic Engineering  
0 rules for provisioning Series 2 non-ISDN peripheral module equipment.  
0 It includes information about the assumptions that have been used and  
0 the restrictions which apply to this process. (Simplified provisioning  
0 rules for ISDN are discussed in a separate section, later in this doc-  
0 ument.)

0 The simplified traffic engineering methodology uses both High Day Busy  
0 Hour (HDBH) and Average Busy Season Busy Hour (ABSBH) engineering in  
0 calculations for the peripherals, and determines which of these crite-  
0 ria will provide the most stringent requirement. Traffic tables are  
0 provided to support these calculations.

### 0 5.1 LGC/LTC P-Side Configuration

0 The peripheral side (p-side) ports of an LGC/LTC can be configured for  
0 a maximum of two (2) RSCs if the following conditions are met:

- 0 1) 2 RSCs from a single configuration
- 0 2) 1 RSC from a dual configuration and 1 RSC from a single  
0 configuration.
- 0 3) Traffic, Real Time and software Nodal requirements do not  
0 exceed the recommended engineering limits.

0 In addition, the remaining p-side ports can be configured for RLCMs,  
0 OPMs and/or LCMs if the Traffic, Real Time and software Nodal require-  
0 ments do not exceed the recommended engineering limits.

0 An LGC/LTC can support a maximum of two RSC-SONET controllers, pro-  
0 vided RealTime and nodal limits are not exceeded. The LGC/LTC has 43  
0 messaging channels available for subtending processors (LCMs, ESA,  
0 RMM, etc), which limits modules off the RCC2. See the following sec-  
0 tion for more information regarding counting nodes.

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0 5.2 RSC P-Side Configuration

0 The peripheral (p-side) ports of an RSC can be configured for the fol-  
0 lowing maximums if the Traffic, Real Time and software Nodal require-  
0 ments do not exceed the recommended engineering limits:

- 0 1) Maximum of 9 LCMs (using 2 links per LCM)
- 0 2) Maximum of 4 DS1s for PBX Trunking and/or 4 DS1s for CDO  
0 Trunking.
- 0 3) Maximum of 9 non-ESA RLCM/OPMs using two links per module.
- 0 4) Any combination of the above not to exceed the stated  
0 individual maximums

0 A host LGC/LTC can support a maximum software datafilling of 18 Pe-  
0 ripheral side (P-side) software nodes. (Pre BCS23)

0 A host LGC/LTC can support a maximum software datafilling of 62  
0 software nodes. (BCS23 and onwards)

0 ( i) Traffic from Community Dial Office (CDO) trunks (Dy-  
0 namic Trunks) is assumed to stay at the remote site and  
0 does not utilize host links. The CCS value used for all  
0 lines that terminate on the same controller as the CDO  
0 trunks must include both host to line and CDO to line  
0 traffic.

0 CDO Dynamic trunks off a RSC - A maximum of four (4)  
0 DS-1 CDO Dynamic trunks will be supported.

0 ( ii) Traffic from Private Branch Exchange (PBX) trunks (Dy-  
0 namic trunks) is divided between the host and remote  
0 based on customer input.

0 PBX Dynamic trunks off a RSC - A maximum of four (4)  
0 DS-1 PBX Dynamic trunks will be supported.

0 (iii) The total number of P-side RCC ports to support  
0 RLCM/OPM lines and CDO,PBX Dynamic trunks in any combi-

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0 nation, while maintaining individual maximums, must not  
0 exceed eighteen (18) ports.

0 ( iv) Dual RCC configurations must have traffic balanced as  
0 evenly as possible across both RCC's. Dual RCC's  
0 interfacing an odd number of LCM's must have a balanced  
0 traffic capacity across both RCC's by either adding a  
0 LCM to share traffic loads or distributing the Line  
0 Cards evenly to promote a balanced traffic capacity.  
0 This includes any RLCM/OPM that is "remoted" or CDO/PBX  
0 Digital Dynamic Trunks off the RCC's.

0 ( v) Minimum traffic on Host links is the total traffic  
0 less the intra traffic derated by a factor of 0.96.  
0 All call types (whether intra or non-intra) will  
0 require call set up using the Host links.

0 ( vi) All "INPUT" information must be provided on a per site  
0 basis for each type configuration. All "INPUT" informa-  
0 tion must be Telco specified.

0 ( vii) All line card types are spread evenly across all  
0 equipped line drawers as possible. This will avoid  
0 any "lumping" of a particular line card type in any  
0 one line drawer or LCM.

0 (viii) POTS wired lines are defined as line cards used for  
0 the following functions:

|   |              |   |          |                     |
|---|--------------|---|----------|---------------------|
| 0 | Single Party | - | NT6X17-- | (A type Line Cards) |
| 0 | Two Party    | - | NT6X18-- | (B type Line Cards) |
| 0 | Four Party   | " | "        | "                   |
| 0 | Eight Party  | " | "        | "                   |
| 0 | Coin Lines   | " | "        | "                   |
| 0 | PBX Lines    | " | "        | "                   |

0 ( ix) Meridian Digital Centrex (MDC) wired lines are defined  
0 as line cards used for the following functions;

|   |                    |   |          |                     |
|---|--------------------|---|----------|---------------------|
| 0 | MDC Business Lines | - | NT6X17-- | (A type Line Cards) |
| 0 | MDC Business Lines |   | NT6X18-- | (B type Line Cards) |

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0 Business Sets - NT6X21-- (C type Line Cards)  
0 Message Waiting - NT6X19-- (E type Line Cards)

0 ( x) DATAPATH wired lines are defined as line card used  
0 for the following function;

0 Data Unit - NT6X71-- (D type Line Cards)

0 ( xi) IBERT wired lines are defined as line card used for the  
0 following function;

0 IBERT - NT6X99-- (INTEGRATED BIT ERROR RATE TEST CARD)

0 (xii) DIALAN lines are defined as line cards used for the  
0 following function;

0 DIALAN - NT6X76-- (L TYPE LINE CARD) FOR DATA PORTION  
0 - NT6X17-- (A TYPE LINE CARD) FOR VOICE PORTION

0 Voice portion of full DIALAN service is included in the  
0 MDC category since DIALAN service can be provided with  
0 or without the voice/MDC portion.

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0 5.3 LCM Physical Configuration Calculation:

0 POTS + MDC + DATAPATH + IBERT + DIALAN + 48V PwrCnvt +  
0 MessWait + AttCon = T

0 # LCM = T/Number of slots to be used per LCM

0 Where:

0 POTS = (qty of A + B type Line cards) defined for POTS use

0 MDC = (qty of A + B + C + E Line Cards) defined for MDC use  
0 (includes voice portion of DIALAN)

0 DATAPATH = 2\*(qty of D type Line Cards) defined for DATAPATH use

0 IBERT = 2\*(qty of Ibert Line Cards)

0 DIALAN = Z\*(qty of L type Line Cards) defined for DIALAN use

0 Where: Z=2 if using NT6X76AC or data is = or < 10% of lines  
0 Z=3 if using NT6X76AA and data penetration is > 10%.

0 +48V Pwr Cnvt = 2\*(qty of NT6X23AA (+48V Power Converters))

0 Mess Wait = 2\*(qty of NT6X20AA (Message Waiting Converters))

0 Att Con = 3\*(quantity of Attendant Consoles)

0 ( i) This document addresses the traffic component of provi-  
0 sioning and assumes hardware will be provisioned based  
0 on the applicable Engineering Manual section.

0 ( ii) The Simplified Traffic method supports 2% ABSBH and and  
0 5% HDBH overall office Matching Loss only. For appli-  
0 cations where the overall office Matching Loss is other  
0 than 2% ABSBH and 5% HDBH contact System Engineering.

0 (iii) When completing the calculations, results may be ob-  
0 tained that exceed the allowable limits for the module  
0 being considered. This will be noted by an appropriate

0 comment (for example, "if > x, Dual RSC is required" or  
0 "if > y, reconfigure"). The engineer must reallocate  
0 lines or peripherals to provide a less-demanding load  
0 on the controller and recalculate until a configuration  
0 which falls within the limits is found.

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0 | 5.4 RSC-SONET P-Side Configuration

0 | The RSC-SONET has up to 46 DS-1 ports available on its P-side, but a  
0 | maximum of eight (8) of these may be used for CDO+PBX trunking. Four  
0 | (4) DS1s may be CDO and four (4) DS1s may be PBX. The remaining DS1s  
0 | may home RLCM or OPM remotes.

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0 5.5 Application of Tables used in Simplified Provisioning (Non-ISDN)

0 |

0 | Table D: LCM HDBH Carried Traffic Capacity (CCS)

0 The number of LCM required to support the specified number of  
0 line cards with their associated physical requirements and line  
0 card spreading rules, fill factors etc is determined. A distrib-  
0 ution of the total number of lines across the required number of  
0 LCMs is made. The LCM traffic load is calculated comprising the  
0 sum of the product of the number of lines times the mean traffic  
0 per line for each class of service. Per line traffic is normally  
0 quoted as ABSBH. This should be adjusted to HDBH by the applica-  
0 tion of a factor supplied by the Telco (HDBH/ABSBH ratio). The  
0 result is the LCM HDBH Traffic load requirement.

0 | The Telco also supplies an overall HDBH Blocking requirement for  
0 the Office. This is usually the Incoming Matching Loss (IML).

0 | 1. Select the preferred value (Concentrating vs Non-  
0 Concentrating).

0 | 2. Start with Table D-a (for concentrating LGC/LTCs) if you  
0 have chosen the concentrating option.

0 | 3. Given the IML Blocking, HDBH/ABSBH Ratio, and CCS per LC  
0 (ABSBH), read the number of links per LCM. See sample val-  
0 ues below:

0 | SAMPLE VALUES

0 | Use these sample values to walk through the example below:

0 | IML = .006  
0 | HDBH/ABSBH Ratio = 1.1  
0 | CCS/LCM = 3000

0 | a) For IML = .006, pick the next LOWEST range of values  
0 (representing a higher grade of service). These are ar-

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0 | rayed in blocks of five rows, representing the number  
0 | of links (2-6) per LCM.

0 | b) Choose the appropriate column of values based on the  
0 | HDBH/ABSBH Ratio, e.g., one of 1.1, 1.15, 1.2, 1.3. (In  
0 | the sample values above, the ratio used is 1.1).

0 | c) Select the number of links per LCM by choosing the ap-  
0 | propriate row in the block that is GREATER THAN OR  
0 | EQUAL TO the value of CCS per LCM. Based on the sample  
0 | values above, Links per LCM in this example would be 5.  
0 | (Find block where IML = .005, as next higher grade of  
0 | service. Pick column for ratio = 1.1, then find row  
0 | showing CCS/LCM value of 3545 which is next highest  
0 | value to 3000.)

0 | 4. Use the same steps using Table D-b, for non-concentrating  
0 | LGC/LTCs, to produce a second value for Links per LCM.

0 | Table E: RLCM/OPM HDBD Carried Traffic Capacity (CCS)

0 | 1. In Table E1, locate the required HDBH/ABSBH ratio in the  
0 | ABSBH version of the table.

0 | 2. Locate the sub-table of Table E1 containing the HDBH/ABSB  
0 | ratio you require:

0 | E1-a = HDBH/ABSBH Ratio 1.1  
0 | E1-b = HDBH/ABSBH Ratio 1.15  
0 | E1-c = HDBH/ABSBH Ratio 1.2  
0 | E1-d = HDBH/ABSBH Ratio 1.3

0 | 3. Find the IML block which is lesser than or equal to the IML  
0 | value you calculated.

0 | 4. Select the appropriate column for the expected percentage  
0 | (%) Intra Office Traffic, e.g, 60%. If the expected per-  
0 | centage (%) is not in the table, use the column for the next  
0 | lowest percentage.

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0 5. Select the number of links per LCM by choosing the appropri-  
0 ate row in the block that is greater than or equal to the  
0 value of CCS per LCM.

0 6. Read the number of links per LCM from the left side of the  
0 table.

0 7. The above method applies to both RLCM and OPM peripherals.

0 Use the sample values below to follow the example:

0 SAMPLE VALUES

0 Use these sample values to walk through the example below:

0 IML = .006  
0 HDBH/ABSBH Ratio = 1.1  
0 CCS/LCM = 3000

0 8. If the CCS/LCM exceeds the values in the table block, i.e.,  
0 if number of links is greater than 6, change your configura-  
0 tion to reduce the the CCS/LCM (deload), and then recalcu-  
0 late based on the revised configuration.

0 9. Repeat this process using HDBH Data in Table E2, and select  
0 the higher of the two values (representing maximum links).

0 Table F (Mono RSC Host Link HDBH CCS)

0 1. Use Table F-a: RCC Traffic Capacity (CCS) Supporting Lines  
0 Only, if the the RCC has no trunk connections.

0 (a) Starting with the Host CCS, read down the columns for  
0 Host CCS until you reach the CCS number which is  
0 greater than or equal to the CCS figure you started  
0 with. Look left to identify the host links required.

0 For Example:

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0 For Host CCS = 10006, scan down the column until you reach  
0 the next highest figure (10838). Looking left to the host links  
0 column, host links required would be 14.

0 (b) Repeat this process for Total CCS. Identify the host  
0 links required.

0 (c) If the number of host links required is greater than 16  
0 (max) for EITHER the Host CCS or Total CCS columns, a  
0 Dual RCC is required.

0 2. Use Table F-b: RCC Traffic Capacity (CCS) - Supporting Lines  
0 and Trunks, if there are CDO or PBX DS-1s attached to the  
0 RCC.

0 (a) Identify the number of supporting lines and trunks at-  
0 tached to the RCC (ranges from 1-8), and choose the  
0 column for Intra CCS corresponding to that number of  
0 lines/trunks.

0 (b) Read down the column for Intra CCS, to the CCS figure  
0 representing the amount of Intra CCS you calculated  
0 earlier.

0 (c) Read down the column to the next highest CCS figure,  
0 and read across to the amount of Host CCS available af-  
0 ter the Intra CCS has been accounted for. If there is  
0 enough Host CCS available, read across to the number of  
0 host links required. If there is NOT enough Host CCS  
0 left after the intra CCS, you must de-load and recalcu-  
0 late before going on to identify the host links re-  
0 quired for the new configuration.

0 Note: The number of possible host links decreases as  
0 the number of supporting lines and trunks increases.  
0 The maximum number of host links is 8 when supporting  
0 lines/trunks equals 8 (max).

0 (d) If the number of host links required exceeds the maxi-  
0 mum available, a Dual RCC is required.

- 0 | (e) Select the highest number of links required to satisfy  
0 | both Host and Intra CCS requirements.

0 | Table G: RSC-S Traffic Capacity

- 0 | 1. Given the figure for Switched CCS, read down the table to  
0 | find the next highest level, then read across to identify  
0 | channels required.

- 0 | 2. If CCS figures exceed the maximum, a dual RSC-S is required.

0 | Table H: Interlink Provisioning (Dual RSC)

- 0 | 1. Choose the highest CCS figure for RCC 1 or RCC 2, and use  
0 | this CCS figure for both RCCs.

- 0 | 2. Read down the CCS column to the next highest figure, the  
0 | read across to number of links (interlinks) required. The  
0 | minimum is two, and the maximum is 14.

- 0 | 3. If CCS figures exceed the maximum, a co-located RSC is re-  
0 | quired.

0 | Table K: DMS-100 Local Network Capacities

- 0 | 1. Given a figure for Total Two-way CCS per Network Module,  
0 | start with column for ABSBH blocking factor (IML) of .001.

- 0 | 2. Read down this column to find the total two-way CCS figure  
0 | which is greater than or equal to the required value.

- 0 | 3. Read left to find the number of network modules required

- 0 | 4. Repeat this process using the column for HDBH, IML = .01

- 0 | 5. The number of network modules required will be the higher of  
0 | these two figures, or the maximum number of modules accord-  
0 | ing to physical network requirements.

0 | Table L: DMS-200 Offices and DMS-100/200 Toll Offices

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- 0 | 1. Use this table in the same way as Table K, for DMS-200 of-  
0 | fices and for DMS-100/200 Toll offices or offices combining  
0 | local/toll networks.

0 | Table X: IRLCM Capacity (CCS)

0 Table X is used in a similar manner to Table E, where the Remote  
0 site is served by IRLCM utilising PCM-30 digital spans.

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0 | 6.0 Simplified Provisioning (ISDN)

0 | The provisioning of DMS-100 peripherals and DPN packet handler  
0 | equipment for the Integrated Services Digital Network (ISDN) of-  
0 | fice is based on meeting required traffic levels and Grade of  
0 | Service (GOS) requirements. The desired Incoming Matching Loss  
0 | and traffic load together determine the required quantity of:

- 0 |       - LCMI modules  
0 |       - ISDN Peripheral Controller (CPCI) modules  
0 |       - Links from LCMI to CPCI  
0 |       - Links from CPCI to Network  
0 |       - D-Channel Handler circuit packs on CPCI  
0 |       - Digital Interworking Unit T1 and Serial Interface Modules  
0 |       - Access Module LAPB and LAPD Processing Elements

0 | DMS-100 components, including ISDN peripherals, are engineered to  
0 | meet the projected High Day Busy Hour (HDBH) Load at the speci-  
0 | fied Grade Of Service parameters. Link configurations, traffic  
0 | loading of individual elements, and equipment quantities are then  
0 | adjusted if other criteria, (e.g., Real Time or capacity) are  
0 | dominant.

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0 | NOTE: The overall Peripheral GOS (IML) for the non-ISDN peripher-  
0 | als must be the same as that used for the ISDN peripherals.

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0 | 6.1 Simplified ISDN Traffic Provisioning Method

0 | 1. The ISDN Peripheral engineering methodology results in the  
0 | provisioning of "n" CPCI modules across which the traffic  
0 | load is spread as evenly as possible. The first "n-1" mod-  
0 | ules are identical, and will be configured to contain the  
0 | near-optimum number of links, DCH circuit packs and LCMIs  
0 | appropriate to the quantity of loops with the desired char-  
0 | acteristics which can be supported. The "nth" or "Residual"  
0 | CPCI module is provisioned to accommodate the remaining pe-  
0 | ripherals.

0 | 2. If non-ISDN lines are included as part of the ISDN Order,  
0 | appropriate steps should be taken to provision the necessary  
0 | components to support that part of the order, following the  
0 | simplified method of engineering. Note that the overall Pe-  
0 | ripheral Grade of Service (IML) for the non-ISDN peripherals  
0 | must be the same as that used for the ISDN peripherals.

0 | Resulting from the engineering of the non-ISDN portion of  
0 | the Order will normally be several LGC modules. Select ONE  
0 | of the group of LGC(s) which supports the fewest LCMs; the  
0 | selected LGC must support LCMs ONLY (no RSC, trunks, etc).  
0 | Calculate the traffic carried by all the LCMs interfacing to  
0 | this LGC. If the sum is less than 6000 CCS, these LCMs will  
0 | be termed "Residual LCMs" and the "n"th LGCI should be  
0 | tested to check if it can support the Residual LCMs. If this  
0 | is feasible, the Residual LCMs should be re-assigned to the  
0 | LGCI and the LGC requirement correspondingly reduced.

0 | 3. Check whether the lines on the residual LCMs can be accommo-  
0 | dated on the LCMI. If this is feasible, the non-ISDN lines  
0 | from the Residual LCMs will be mixed with ISDN loops by as-  
0 | signing them to the LCMIs that interface to the residual  
0 | CPCI.

0 | If these checkpoints fail, the non-ISDN and ISDN services  
0 | will remain segregated on non-ISDN and ISDN peripherals as  
0 | per the original engineering.

0 | After the DMS-100 ISDN Peripheral equipment design is com-  
0 | plete, perform the Packet Handler traffic engineering; pro-

0 | vision the packet handler to meet the configurations  
0 | dictated by the CPCI engineering.

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0 | 6.2 ISDN 2B1Q Simplified (Traffic) Engineering Rules

0 | ISDN 2B1Q Simplified engineering rules are used only for the pro-  
0 | visioning and engineering of host (LCGI/LTCI) or remote (RSCI)  
0 | peripherals which subtend the 2B1Q Enhanced Line Concentrating  
0 | Module (LCME). The 2B1Q Simplified method takes into account  
0 | current Telco projections for ISDN loop requirements and uses a  
0 | set of rules that meets the desired Grade of Service, capacity,  
0 | and high speed packet requirements. The 2B1Q Simplified rules  
0 | have been optimized to provide one (1) LCME per LCGI/LTCI/RSCI.

0 | 1. If non-ISDN lines are included as part of the ISDN order,  
0 | appropriate steps should be taken to provision that part of  
0 | the order using the simplified method for non-ISDN provi-  
0 | sioning. Note that the overall peripheral Grade of Service  
0 | (IML) for non-ISDN peripherals must be the same as the de-  
0 | fault parameters used within the 2B1Q Simplified rules.

0 | 2. Any resulting residual non-ISDN lines may be accommodated by  
0 | mixing of non-ISDN services with ISDN services on an LCME.  
0 | However, the LCME is not intended solely as a non-ISDN vehi-  
0 | cle. Thus a large residual non-ISDN requirement which can  
0 | not be engineered appropriately over the 2B1Q equipment com-  
0 | plement should be either re-engineered via step 1. above or  
0 | re-negotiated with the Telco.

0 | 3. The 2B1Q Simplified engineering method makes a number of as-  
0 | sumptions to simplify both the calculations and the number  
0 | of tables required based on current Telco ISDN loop require-  
0 | ments.

0 | The Grade of Service assumptions are as follows:

|                                     |         |              |
|-------------------------------------|---------|--------------|
| 0   DTD > 3 sec.                    | (ABSBH) | 0.015        |
| 0   DTD > 3 sec.                    | (HDBH)  | 0.2          |
| 0   ISDD > 3 sec.                   | (ABSBH) | 0.015        |
| 0   ISDD > 3 sec.                   | (HDBH)  | 0.2          |
| 0   HDBH/ABSBH ratio (lines/trunks) |         | 1.1/1.15/1.2 |

0 | The number of high speed packet data (Bb) is limited to 10%  
0 | of the total BRA (2B+D) lines to prevent excessive capacity  
0 | restrictions.

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- 0 | 4. Once the general inputs section has been captured from the  
0 | Telco, calculations proceed as follows:
- 0 | - General calculations are performed to determine the  
0 | number of lines, slots, trunks, and the weighted CCS  
0 | per line.
  - 0 | - LCME calculations are performed to determine the  
0 | provisionable number of lines, Bd and Dd channels,  
0 | total CCS, and the number of host links on a per LCME  
0 | basis.
  - 0 | - DCH/Packet Handler calculations determine the number of  
0 | lines, Bb and Dd links per DCH, as well as the number  
0 | of packet handler (PH) links on a per LCME basis.
  - 0 | - For remote applications, Mono RSCI calculations deter-  
0 | mine the number of LCME ports, DCHs, C-side links to  
0 | the host and packet handler.
  - 0 | - If necessary, Dual RSCI calculations determine the num-  
0 | ber of LCME ports, DCHs, C-side links to the host and  
0 | packet handler, total CCS, as well as RSCI interlinks.
  - 0 | - LGCI/LTCI calculations determine the number of P-side  
0 | links, DCHs, host facilities, and number of C-side  
0 | loopback ports on a per LGCI/LTCI basis, as well as the  
0 | total number of LGCIs.
- 0 | 5. After the DMS-100 ISDN 2B1Q engineering has been  
0 | completed, do the packet handler (PH) engineering. Provision  
0 | the packet handler (PH) to meet the configurations dictated  
0 | by the DMS-100 ISDN engineering.

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0 | 6.3 ISDN Configuration Restrictions

0 | The Packet Handler may be at a centralized location or at the  
0 | RCCI location.

0 | In host applications, the Packet Handler equipment may reside at  
0 | the LGCI/LTCI location or at a centralized location. The Packet  
0 | Handler may be accessed via the P-Side or the C-Side of the  
0 | LGCI/LTCI but, due to the capacity loss inherent in C-side  
0 | loopbacks, P-side access is not used. Rules for C-side config-  
0 | urations are included herein.)

0 | P-side access to the Packet Handler should only be used when the  
0 | Packet Handler is to be located with the RCCI to provide packet  
0 | data capability during Emergency Stand Alone (ESA) conditions.

0 | Since coin lines cannot mount in an LCME, an LCM dedicated to  
0 | coin lines will be provided when this capability is required. If  
0 | a dual RCCI configuration is required, one LCM for coin lines  
0 | will be provided on each RCCI (if coin capability is required).  
0 | This dedicated LCM will have no other line types equipped except  
0 | coin lines and the associated power converters.

0 | It is assumed that RLCM/OPMs will not home to LGCI/RCCI. These  
0 | additions will be added at a later date.

0 | It is assumed all host trunks will terminate to a DTC. Thus LTCs  
0 | will be used only to interface RCCI/RSCs with the trunking fea-  
0 | ture.

0 | It is assumed that the RCCI will home to an LGC or LTC, rather  
0 | than an LGCI/LTCI due to the increased capacity available to the  
0 | LGC/LTC.

0 | The LGC/LTC which is acting as host to an RCCI must have 64KB  
0 | clear channel capability. Likewise, any DTC that provides links  
0 | to the Packet Handler must be equipped for 64KB clear channel ca-  
0 | pability. This is accomplished by equipping NT6X50AB DS-1 circuit  
0 | packs.

0 | The maximum number of LTID per DCH circuit pack is restricted to  
0 | 511.

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0 The average DPPS/D terminal is restricted to a maximum of 0.4  
0 packets for each single loop (maximum of 8 terminals per loop).  
0 Increasing the number of packets above 0.4 DPPS/D terminal will  
0 require additional D Channel Handlers (due to the current limit  
0 of 50 DPPS per DCH).

0 The Stat Mux ratio is assumed to be fixed at 64:1.

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0 6.4 Application of Tables Used In ISDN Peripheral Engineering

0 Table D: LCM HDBH Carried Traffic Capacity (CCS)

0 The number of LCM required to support the specified number of  
0 line cards with their associated physical requirements and line  
0 card spreading rules, fill factors etc is determined. A distrib-  
0 ution of the total number of lines across the required number of  
0 LCMs is made. The LCM traffic load is calculated comprising the  
0 sum of the product of the number of lines times the mean traffic  
0 per line for each class of service. Per line traffic is normally  
0 quoted as ABSBH. This should be adjusted to HDBH by the applica-  
0 tion of a factor supplied by the Telco (HDBH/ABSBH ratio). The  
0 result is the LCM HDBH Traffic load requirement.

0 The Telco also supplies an overall HDBH Blocking requirement for  
0 the Office. This is usually the Incoming Matching Loss (IML).

0 1. Start with Table D-a (for concentrating LGC/LTCs) if you  
0 have chosen the concentrating option, or choose Table D-b if  
0 you have selecting the non-concentrating option.

0 2. Given the IML Blocking, HDBH/ABSBH Ratio, and CCS per LC  
0 (ABSBH), read the number of links per LCM. See sample val-  
0 ues below:

0 SAMPLE VALUES

0 Use these sample values to walk through the example below:

0 IML = .006  
0 HDBH/ABSBH Ratio = 1.1  
0 CCS/LCM = 3000

0 a) For IML = .006, pick the next LOWEST range of values  
0 (representing a higher grade of service). These are ar-  
0 rayed in blocks of five rows, representing the number  
0 of links (2-6) per LCM.

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0 | b) Choose the appropriate column of values based on the  
0 | HDBH/ABSBH Ratio, e.g., one of 1.1, 1.15, 1.2, 1.3. (In  
0 | the sample values above, the ratio used is 1.1).

0 | c) Select the number of links per LCM by choosing the ap-  
0 | propriate row in the block that is GREATER THAN OR  
0 | EQUAL TO the value of CCS per LCM. Based on the sample  
0 | values above, Links per LCM in this example would be 5.  
0 | (Find block where IML = .007, as next highest. Pick  
0 | column for ratio = 1.1, then find row showing CCS/LCM  
0 | value of 3545 which is next highest value to 3000.)

0 | 3. Use the same steps for Table D-b ( non-concentrating  
0 | LGC/LTCs) to produce the required value for Links per LCM.

0 | Table E: RLCM/OPM HDBD Carried Traffic Capacity (CCS)

0 | 1. In Table E1, locate the required HDBH/ABSBH ratio in the  
0 | ABSBH version of the table.

0 | 2. Locate the sub-table of Table E1 containing the HDBH/ABSB  
0 | ratio you require:

0 | E1-a = HDBH/ABSBH Ratio 1.1  
0 | E1-b = HDBH/ABSBH Ratio 1.15  
0 | E1-c = HDBH/ABSBH Ratio 1.2  
0 | E1-d = HDBH/ABSBH Ratio 1.3

0 | 3. Find the IML block which is lesser than or equal to the IML  
0 | value you calculated.

0 | 4. Select the appropriate column for the expected percentage  
0 | (%) Intra Office Traffic, .e.g, 60%. If the expected per-  
0 | centage (%) is not in the table, use the column for the next  
0 | lowest percentage.

0 | 5. Select the number of links per LCM by choosing the appropri-  
0 | ate row in the block that is greater than or equal to the  
0 | value of CCS per LCM.



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0 | 6. Read the number of links per LCM from the left side of the  
0 | table.

0 | 7. The above method applies to both RLCM and OPM peripherals.

0 | Use the sample values below to follow the example:

0 | SAMPLE VALUES

0 | Use these sample values to walk through the example below:

0 | IML = .006  
0 | HDBH/ABSBH Ratio = 1.1  
0 | CCS/LCM = 3000

0 | 8. If the CCS/LCM exceeds the values in the table block, i.e.,  
0 | if number of links is greater than 6, change your configura-  
0 | tion to reduce the the CCS/LCM (deload), and then recalcu-  
0 | late based on the revised configuration.

0 | 9. Repeat this process using HDBH Data in Table E2, and select  
0 | the higher of the two values (representing maximum links).

0 | Table F (Mono RSC Host Link HDBH CCS)

0 | 1. Use Table F-a: RCC Traffic Capacity (CCS) Supporting Lines  
0 | Only, if the the RCC has no trunk connections.

0 | (a) Starting with the Host CCS, read down the columns for  
0 | Host CCS until you reach the CCS number which is  
0 | greater than or equal to the CCS figure you started  
0 | with. Look left to identify the host links required.

0 | For Example:

0 | For Host CCS = 10006, scan down the column until you reach  
0 | the next highest figure (10838). Looking left to the host links  
0 | column, host links required would be 14.

0 | (b) Repeat this process for Total CCS. Identify the host  
0 | links required.

0 (c) If the number of host links required is greater than 16  
0 (max) for EITHER the Host CCS or Total CCS columns, a  
0 Dual RCC is required.

0 2. Use Table F-b: RCC Traffic Capacity (CCS) - Supporting Lines  
0 and Trunks, if there are CDO or PBX DS-1s attached to the  
0 RCC.

0 (a) Identify the number of supporting lines and trunks at-  
0 tached to the RCC (ranges from 1-8), and choose the  
0 column for Intra CCS corresponding to that number of  
0 lines/trunks.

0 (b) Start with the Host CCS and read down to the number of  
0 host links required.

0 (c) Read down the column to the next highest CCS figure,  
0 and read across to the number of host links required.

0 Note: The number of possible host links decreases as  
0 the number of supporting lines and trunks increases.  
0 The maximum number of host links is 8 when supporting  
0 lines/trunks equals 8 (max).

0 (d) If the number of host links required exceeds the maxi-  
0 mum available, a Dual RCC is required.

0 (e) Select the highest number of links required by either  
0 of Host or Intra CCS.

0 Table G: RSC-S Traffic Capacity

0 1. Given the figure for Switched CCS, read down the table to  
0 find the next highest level, then read across to identify  
0 channels required.

0 2. If CCS figures exceed the maximum, a dual RSC-S is required.

0 Table H: Interlink Provisioning (Dual RSC)

0 1. Choose the highest CCS figure for RCC 1 or RCC 2, and use  
0 this CCS figure for both RCCs.

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0 | 2. Read down the CCS column to the next highest figure, then  
0 | read across to number of links (interlinks) required. The  
0 | minimum is two, and the maximum is 14.

0 | 3. If CCS figures exceed the maximum, a co-located RSC is re-  
0 | quired.

0 | Table K: DMS-100 Local Network Capacities

0 | 1. Given a figure for Total Two-way CCS per Network Module,  
0 | start with column for ABSBH blocking factor (IML) of .001.

0 | 2. Read down this column to find the total two-way CCS figure  
0 | which is greater than or equal to the required value.

0 | 3. Read left to find the number of network modules required

0 | 4. Repeat this process using the column for HDBH, IML = .01

0 | 5. The number of network modules required will be the highest  
0 | of these two figures, or the maximum number of modules ac-  
0 | cording to physical network requirements.

0 | Table L: DMS-200 Offices and DMS-100/200 Toll Offices

0 | 1. Use this table in the same way as Table K, for DMS-200 of-  
0 | fices and for DMS-100/200 Toll offices or offices combining  
0 | local/toll networks.

0 | TABLE 8 - LCME Capacity (CCS per Channel)

0 | Use Table 8 to determine the number of switched channels per LCME  
0 | based on the total CCS requirements of the LCME. This is in turn  
0 | used to determine the number of links to the LGCI/LTCI/RSCI per  
0 | LCME. Select the desired HDBH/ABSBH ratio as per the Telco input  
0 | and the required IML, and match the column with the total calcu-  
0 | lated CCS for BOTH the ABSBH and HDBH default inputs. Select the  
0 | maximum value of these two readings as the basis for calculating  
0 | the number of links per LCME.

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0 6.5 Application Of Tables Used In ISDN 2B1Q Simplified Engineering

0 | TABLE 8 - LCME Capacity (CCS per Channel)

0 | Use Table 8 to determine the number of switched channels per LCME  
0 | based on the total CCS requirements of the LCME. This is in turn  
0 | used to determine the number of links to the LGCI/LTCI/RSCI per  
0 | LCME. Select the desired HDBH/ABSBH ratio as per the Telco input  
0 | and match the column with the total calculated CCS for BOTH the  
0 | ABSBH and HDBH default inputs. Select the maximum value of these  
0 | two readings as the basis for calculating the number of links per  
0 | LCME.

0 | TABLE 9- RCCI Capacity (CCS) Carried Load

0 | Use Table 9 for both mono and dual RCCI configurations. Calculate  
0 | the required number of host links by reading across the table  
0 | based on the HDBH total CCS requirement. Also, determine the  
0 | RCCI intra-channel occupancy by reading across the table based on  
0 | the calculated intra-switch link requirement. Both calculations  
0 | are used in mono and dual RCCI computations to determine the re-  
0 | quirement for either dual or dual co-located RCCI configurations.

0 | TABLE 10 - LGCI Capacity (CCS) Carried Load

0 | Use Table 10 to determine the number of C-side LGCI/LTCI links to  
0 | the network based on the total HDBH CCS per LCME. Read across  
0 | the table to find the calculated HDBH CCS for the LGCI/LTCI and  
0 | then read off the corresponding number of C-side links required.

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## 0 7.0 Traffic Tables

## 0 TABLE D: LCM HDBH Carried Traffic Capacity (CCS)

0 TABLE D-a: LCM Traffic Capacity (CCS): 20 P-Side Ports LGC/LTC  
0 (CARRIED LOAD)

| 0 | LCM   | HD/ABS Ratio |      |      |      |            |
|---|-------|--------------|------|------|------|------------|
| 0 | LINKS | 1.1          | 1.15 | 1.2  | 1.3  | HDBH       |
| 0 |       | IML = 0.003  |      |      |      | IML = 0.03 |
| 0 | 2     | 1393         | 1357 | 1316 | 1230 | 1607       |
| 0 | 3     | 2322         | 2263 | 2194 | 2050 | 2651       |
| 0 | 4     | 2786         | 2715 | 2633 | 2460 | 3249       |
| 0 | 5     | 3483         | 3394 | 3291 | 3075 | 4066       |
| 0 | 6     | 4644         | 4526 | 4389 | 4101 | 5422       |

| 0 |   | IML = 0.005 |      |      |      | IML = 0.05 |
|---|---|-------------|------|------|------|------------|
| 0 | 2 | 1418        | 1383 | 1343 | 1260 | 1637       |
| 0 | 3 | 2363        | 2305 | 2238 | 2101 | 2708       |
| 0 | 4 | 2836        | 2766 | 2686 | 2521 | 3297       |
| 0 | 5 | 3545        | 3458 | 3358 | 3152 | 4125       |
| 0 | 6 | 4727        | 4610 | 4477 | 4203 | 5499       |

| 0 |   | IML = 0.007 |      |      |      | IML = 0.07 |
|---|---|-------------|------|------|------|------------|
| 0 | 2 | 1429        | 1397 | 1360 | 1281 | 1654       |
| 0 | 3 | 2382        | 2329 | 2267 | 2135 | 2740       |
| 0 | 4 | 2859        | 2795 | 2721 | 2562 | 3326       |
| 0 | 5 | 3574        | 3494 | 3401 | 3203 | 4160       |
| 0 | 6 | 4765        | 4659 | 4535 | 4271 | 5545       |

| 0 |   | IML = 0.01 |      |      |      | IML = 0.1 |
|---|---|------------|------|------|------|-----------|
| 0 | 2 | 1446       | 1415 | 1380 | 1304 | 1671      |
| 0 | 3 | 2411       | 2359 | 2300 | 2174 | 2772      |
| 0 | 4 | 2893       | 2831 | 2760 | 2609 | 3354      |
| 0 | 5 | 3616       | 3538 | 3450 | 3262 | 4194      |
| 0 | 6 | 4822       | 4718 | 4600 | 4349 | 5590      |

| 0 |   | IML = 0.02 |      |      |      | IML = 0.2 |
|---|---|------------|------|------|------|-----------|
| 0 | 2 | 1477       | 1449 | 1417 | 1348 | 1697      |
| 0 | 3 | 2462       | 2416 | 2362 | 2247 | 2823      |

|   |   |      |      |      |      |      |
|---|---|------|------|------|------|------|
| 0 | 4 | 2954 | 2899 | 2834 | 2697 | 3400 |
| 0 | 5 | 3693 | 3624 | 3543 | 3371 | 4251 |
| 0 | 6 | 4924 | 4832 | 4724 | 4495 | 5666 |

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0 TABLE D-b: LCM Traffic Capacity (CCS): 16 P-Side Ports LGC/LTC  
0 (CARRIED LOAD)

| 0 | Links | ABSBH       |       |      |      | HDBH       |
|---|-------|-------------|-------|------|------|------------|
| 0 | LCM   | HD/ABS      | Ratio |      |      |            |
| 0 |       | 1.1         | 1.15  | 1.2  | 1.3  | HDBH       |
| 0 |       | IML = 0.003 |       |      |      | IML = 0.03 |
| 0 | 2     | 1445        | 1427  | 1404 | 1346 | 1708       |
| 0 | 3     | 2329        | 2293  | 2247 | 2136 | 2709       |
| 0 | 4     | 3230        | 3172  | 3098 | 2927 | 3732       |
| 0 | 5     | 4137        | 4053  | 3950 | 3717 | 4769       |
| 0 | 6     | 5045        | 4935  | 4800 | 4506 | 5815       |
| 0 |       | IML = 0.005 |       |      |      | IML = 0.05 |
| 0 | 2     | 1500        | 1483  | 1459 | 1402 | 1784       |
| 0 | 3     | 2402        | 2366  | 2320 | 2209 | 2804       |
| 0 | 4     | 3316        | 3257  | 3185 | 3016 | 3842       |
| 0 | 5     | 4234        | 4152  | 4049 | 3823 | 4890       |
| 0 | 6     | 5153        | 5041  | 4914 | 4630 | 5946       |
| 0 |       | IML = 0.007 |       |      |      | IML = 0.07 |
| 0 | 2     | 1535        | 1517  | 1494 | 1436 | 1832       |
| 0 | 3     | 2447        | 2411  | 2365 | 2255 | 2864       |
| 0 | 4     | 3369        | 3311  | 3228 | 3073 | 3910       |
| 0 | 5     | 4294        | 4210  | 4112 | 3892 | 4965       |
| 0 | 6     | 5218        | 5112  | 4985 | 4709 | 6027       |
| 0 |       | IML = 0.01  |       |      |      | IML = 0.1  |
| 0 | 2     | 1572        | 1554  | 1531 | 1473 | 1882       |
| 0 | 3     | 2494        | 2458  | 2412 | 2303 | 2925       |
| 0 | 4     | 3424        | 3365  | 3295 | 3133 | 3980       |
| 0 | 5     | 4355        | 4274  | 4177 | 3953 | 5042       |
| 0 | 6     | 5287        | 5182  | 5051 | 4790 | 6108       |
| 0 |       | IML = 0.02  |       |      |      | IML = 0.2  |
| 0 | 2     | 1645        | 1627  | 1603 | 1545 | 1978       |
| 0 | 3     | 2585        | 2549  | 2503 | 2398 | 3040       |
| 0 | 4     | 3530        | 3471  | 3405 | 3253 | 4108       |

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|   |   |      |      |      |      |      |
|---|---|------|------|------|------|------|
| 0 | 5 | 4474 | 4398 | 4307 | 4107 | 5180 |
| 0 | 6 | 5420 | 5324 | 5209 | 4954 | 6255 |

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0 TABLE E: RLCM/OPM HDBH Carried Traffic Capacity (CCS)

0 TABLE E1-a: RLCM/OPM HDBH Carried Traffic Capacity (CCS)

0 RLCM/OPM TRAFFIC CAPACITY (CCS)  
0 ABSBH (CARRIED LOAD)

0 HDBH/ABSBH Ratio = 1.1

| Host Links | "0%" | 20% | 30% | Percent Intra Traffic |     |     |     |  |
|------------|------|-----|-----|-----------------------|-----|-----|-----|--|
|            |      |     |     | 40%                   | 50% | 60% | 80% |  |

0 IML = 0.003

|   |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|
| 2 | 988  | 1187 | 1321 | 1488 | 1703 | 1992 | 2983 |
| 3 | 1678 | 2017 | 2243 | 2516 | 2809 | 3080 | 3567 |
| 4 | 2388 | 2871 | 3186 | 3518 | 3819 | 4086 | 4488 |
| 5 | 3109 | 3394 | 3555 | 3724 | 3888 | 4040 | 4313 |
| 6 | 3834 | 4185 | 4374 | 4537 | 4654 | 4731 | 4814 |

0 IML = 0.005

|   |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|
| 2 | 1032 | 1241 | 1380 | 1555 | 1780 | 2081 | 3106 |
| 3 | 1738 | 2089 | 2324 | 2604 | 2900 | 3173 | 3663 |
| 4 | 2462 | 2959 | 3282 | 3620 | 3921 | 4190 | 4587 |
| 5 | 3193 | 3486 | 3652 | 3824 | 3990 | 4143 | 4420 |
| 6 | 3928 | 4287 | 4479 | 4644 | 4759 | 4834 | 4916 |

0 IML = 0.007

|   |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|
| 2 | 1060 | 1274 | 1418 | 1597 | 1828 | 2138 | 3183 |
| 3 | 1776 | 2135 | 2374 | 2660 | 2957 | 3231 | 3722 |
| 4 | 2508 | 3014 | 3342 | 3682 | 3985 | 4253 | 4648 |
| 5 | 3245 | 3543 | 3711 | 3885 | 4052 | 4207 | 4485 |
| 6 | 3985 | 4350 | 4544 | 4709 | 4823 | 4896 | 4978 |

0 IML = 0.01

|   |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|
| 2 | 1090 | 1310 | 1458 | 1642 | 1880 | 2198 | 3262 |
| 3 | 1816 | 2183 | 2427 | 2718 | 3017 | 3291 | 3784 |
| 4 | 2555 | 3071 | 3405 | 3746 | 4050 | 4319 | 4711 |
| 5 | 3299 | 3602 | 3773 | 3949 | 4117 | 4273 | 4551 |
| 6 | 4044 | 4414 | 4610 | 4776 | 4890 | 4963 | 5044 |

0 IML = 0.02

|   |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|
| 2 | 1150 | 1383 | 1538 | 1733 | 1984 | 2320 | 3417 |
|---|------|------|------|------|------|------|------|

|   |   |      |      |      |      |      |      |      |
|---|---|------|------|------|------|------|------|------|
| 0 | 3 | 1895 | 2277 | 2532 | 2831 | 3133 | 3408 | 3904 |
| 0 | 4 | 2648 | 3182 | 3526 | 3872 | 4177 | 4447 | 4835 |
| 0 | 5 | 3404 | 3716 | 3891 | 4072 | 4243 | 4400 | 4681 |
| 0 | 6 | 4158 | 4538 | 4738 | 4905 | 5019 | 5092 | 5171 |

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0 | TABLE E1-b: RLCM/OPM HDBH Carried Traffic Capacity (CCS)

0 | RLCM/OPM TRAFFIC CAPACITY (CCS)  
0 | ABSBH (CARRIED LOAD)

0 | HDBH/ABSBH Ratio = 1.15

| 0   Host        | Links | "0%" | 20%  | 30%  | 40%  | 50%  | 60%  | 80% |
|-----------------|-------|------|------|------|------|------|------|-----|
| 0   IML = 0.003 |       |      |      |      |      |      |      |     |
| 0   2           | 977   | 1174 | 1306 | 1472 | 1685 | 1970 | 2947 |     |
| 0   3           | 1656  | 1990 | 2213 | 2481 | 2767 | 3031 | 3504 |     |
| 0   4           | 2351  | 2826 | 3135 | 3459 | 3750 | 4009 | 4391 |     |
| 0   5           | 3054  | 3334 | 3492 | 3657 | 3816 | 3964 | 4230 |     |
| 0   6           | 3759  | 4103 | 4287 | 4445 | 4555 | 4628 | 4708 |     |

|                 |      |      |      |      |      |      |      |  |
|-----------------|------|------|------|------|------|------|------|--|
| 0   IML = 0.005 |      |      |      |      |      |      |      |  |
| 0   2           | 1022 | 1228 | 1366 | 1539 | 1762 | 2060 | 3070 |  |
| 0   3           | 1716 | 2063 | 2294 | 2570 | 2859 | 3124 | 3600 |  |
| 0   4           | 2425 | 2914 | 3232 | 3561 | 3853 | 4113 | 4494 |  |
| 0   5           | 3138 | 3426 | 3589 | 3757 | 3918 | 4068 | 4337 |  |
| 0   6           | 3853 | 4206 | 4393 | 4552 | 4663 | 4733 | 4810 |  |

|                 |      |      |      |      |      |      |      |  |
|-----------------|------|------|------|------|------|------|------|--|
| 0   IML = 0.007 |      |      |      |      |      |      |      |  |
| 0   2           | 1050 | 1262 | 1404 | 1581 | 1810 | 2117 | 3146 |  |
| 0   3           | 1754 | 2108 | 2345 | 2625 | 2916 | 3182 | 3660 |  |
| 0   4           | 2471 | 2969 | 3292 | 3623 | 3917 | 4177 | 4556 |  |
| 0   5           | 3191 | 3483 | 3648 | 3818 | 3982 | 4132 | 4402 |  |
| 0   6           | 3911 | 4268 | 4457 | 4617 | 4728 | 4799 | 4877 |  |

|                |      |      |      |      |      |      |      |  |
|----------------|------|------|------|------|------|------|------|--|
| 0   IML = 0.01 |      |      |      |      |      |      |      |  |
| 0   2          | 1080 | 1298 | 1444 | 1626 | 1862 | 2178 | 3225 |  |
| 0   3          | 1794 | 2156 | 2397 | 2683 | 2975 | 3242 | 3722 |  |
| 0   4          | 2518 | 3026 | 3354 | 3687 | 3982 | 4243 | 4621 |  |
| 0   5          | 3244 | 3541 | 3709 | 3881 | 4046 | 4198 | 4471 |  |
| 0   6          | 3972 | 4335 | 4527 | 4686 | 4797 | 4868 | 4944 |  |

|                |      |      |      |      |      |      |      |  |
|----------------|------|------|------|------|------|------|------|--|
| 0   IML = 0.02 |      |      |      |      |      |      |      |  |
| 0   2          | 1140 | 1370 | 1524 | 1717 | 1966 | 2299 | 3378 |  |
| 0   3          | 1872 | 2250 | 2502 | 2796 | 3091 | 3359 | 3843 |  |
| 0   4          | 2610 | 3137 | 3475 | 3813 | 4110 | 4372 | 4749 |  |

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|   |   |      |      |      |      |      |      |      |
|---|---|------|------|------|------|------|------|------|
| 0 | 5 | 3349 | 3656 | 3828 | 4004 | 4172 | 4327 | 4604 |
| 0 | 6 | 4090 | 4464 | 4660 | 4821 | 4930 | 5001 | 5079 |

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0 | TABLE E1-c: RLCM/OPM HDBH Carried Traffic Capacity (CCS)

0 | RLCM/OPM TRAFFIC CAPACITY (CCS)  
0 | ABSBH (CARRIED LOAD)

0 | HDBH/ABSBH Ratio = 1.2

| 0   Host | Links | "0%" | 20%  | 30%  | 40%  | 50%  | 60%  | 80%  |
|----------|-------|------|------|------|------|------|------|------|
| 0        | 2     | 963  | 1158 | 1288 | 1451 | 1661 | 1943 | 2901 |
| 0        | 3     | 1627 | 1955 | 2174 | 2437 | 2714 | 2968 | 3424 |
| 0        | 4     | 2303 | 2769 | 3071 | 3384 | 3664 | 3912 | 4276 |
| 0        | 5     | 2984 | 3258 | 3413 | 3573 | 3727 | 3869 | 4124 |
| 0        | 6     | 3664 | 4000 | 4179 | 4331 | 4437 | 4505 | 4579 |

|   |             |      |      |      |      |      |      |      |
|---|-------------|------|------|------|------|------|------|------|
| 0 | IML = 0.003 |      |      |      |      |      |      |      |
| 0 | 2           | 1008 | 1212 | 1348 | 1519 | 1738 | 2033 | 3023 |
| 0 | 3           | 1688 | 2028 | 2255 | 2526 | 2806 | 3062 | 3521 |
| 0 | 4           | 2377 | 2857 | 3168 | 3485 | 3768 | 4018 | 4377 |
| 0 | 5           | 3070 | 3351 | 3510 | 3673 | 3830 | 3975 | 4234 |
| 0 | 6           | 3762 | 4106 | 4288 | 4439 | 4541 | 4611 | 4687 |

|   |             |      |      |      |      |      |      |      |
|---|-------------|------|------|------|------|------|------|------|
| 0 | IML = 0.007 |      |      |      |      |      |      |      |
| 0 | 2           | 1036 | 1246 | 1386 | 1561 | 1787 | 2090 | 3098 |
| 0 | 3           | 1726 | 2074 | 2306 | 2581 | 2863 | 3120 | 3582 |
| 0 | 4           | 2423 | 2912 | 3228 | 3548 | 3832 | 4081 | 4445 |
| 0 | 5           | 3122 | 3408 | 3569 | 3735 | 3892 | 4037 | 4300 |
| 0 | 6           | 3821 | 4170 | 4355 | 4509 | 4613 | 4680 | 4756 |

|   |            |      |      |      |      |      |      |      |
|---|------------|------|------|------|------|------|------|------|
| 0 | IML = 0.01 |      |      |      |      |      |      |      |
| 0 | 2          | 1066 | 1282 | 1426 | 1606 | 1839 | 2150 | 3177 |
| 0 | 3          | 1765 | 2122 | 2359 | 2638 | 2922 | 3180 | 3644 |
| 0 | 4          | 2470 | 2969 | 3289 | 3612 | 3899 | 4150 | 4513 |
| 0 | 5          | 3177 | 3468 | 3632 | 3800 | 3960 | 4106 | 4371 |
| 0 | 6          | 3883 | 4238 | 4425 | 4579 | 4684 | 4750 | 4821 |

|   |            |      |      |      |      |      |      |      |
|---|------------|------|------|------|------|------|------|------|
| 0 | IML = 0.02 |      |      |      |      |      |      |      |
| 0 | 2          | 1126 | 1354 | 1506 | 1696 | 1942 | 2271 | 3327 |
| 0 | 3          | 1842 | 2215 | 2462 | 2750 | 3037 | 3298 | 3767 |
| 0 | 4          | 2563 | 3080 | 3411 | 3738 | 4030 | 4286 | 4650 |

|   |   |      |      |      |      |      |      |      |
|---|---|------|------|------|------|------|------|------|
| 0 | 5 | 3284 | 3585 | 3755 | 3928 | 4091 | 4241 | 4510 |
| 0 | 6 | 4004 | 4370 | 4563 | 4721 | 4828 | 4896 | 4970 |

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0 | TABLE E1-d: RLCM/OPM HDBH Carried Traffic Capacity (CCS)

0 | RLCM/OPM TRAFFIC CAPACITY (CCS)  
0 | ABSBH (CARRIED LOAD)

0 | HDBH/ABSBH Ratio = 1.3

| 0   Host | Links | "0%" | 20%  | 30%  | 40%  | 50%  | 60%  | 80%  |
|----------|-------|------|------|------|------|------|------|------|
| 0        | 2     | 929  | 1117 | 1242 | 1400 | 1602 | 1874 | 2785 |
| 0        | 3     | 1556 | 1870 | 2079 | 2328 | 2584 | 2818 | 3235 |
| 0        | 4     | 2189 | 2630 | 2915 | 3205 | 3462 | 3690 | 4018 |
| 0        | 5     | 2820 | 3079 | 3225 | 3375 | 3518 | 3651 | 3887 |
| 0        | 6     | 3453 | 3768 | 3935 | 4074 | 4171 | 4232 | 4299 |

|   |   |      |      |      |      |      |      |      |
|---|---|------|------|------|------|------|------|------|
| 0 | 2 | 974  | 1171 | 1302 | 1467 | 1679 | 1964 | 2904 |
| 0 | 3 | 1616 | 1943 | 2160 | 2416 | 2676 | 2913 | 3338 |
| 0 | 4 | 2263 | 2720 | 3013 | 3309 | 3570 | 3797 | 4131 |
| 0 | 5 | 2909 | 3175 | 3325 | 3478 | 3623 | 3756 | 3998 |
| 0 | 6 | 3552 | 3877 | 4049 | 4191 | 4288 | 4350 | 4417 |

|   |   |      |      |      |      |      |      |      |
|---|---|------|------|------|------|------|------|------|
| 0 | 2 | 1002 | 1204 | 1340 | 1509 | 1728 | 2021 | 2978 |
| 0 | 3 | 1654 | 1988 | 2210 | 2471 | 2733 | 2971 | 3400 |
| 0 | 4 | 2309 | 2775 | 3072 | 3372 | 3638 | 3870 | 4204 |
| 0 | 5 | 2964 | 3236 | 3389 | 3545 | 3693 | 3829 | 4072 |
| 0 | 6 | 3617 | 3948 | 4123 | 4266 | 4364 | 4426 | 4493 |

|   |   |      |      |      |      |      |      |      |
|---|---|------|------|------|------|------|------|------|
| 0 | 2 | 1032 | 1240 | 1380 | 1554 | 1779 | 2081 | 3054 |
| 0 | 3 | 1694 | 2036 | 2263 | 2528 | 2793 | 3034 | 3468 |
| 0 | 4 | 2358 | 2834 | 3138 | 3441 | 3709 | 3943 | 4269 |
| 0 | 5 | 3022 | 3299 | 3455 | 3614 | 3764 | 3901 | 4147 |
| 0 | 6 | 3681 | 4018 | 4192 | 4333 | 4433 | 4498 | 4569 |

|   |   |      |      |      |      |      |      |      |
|---|---|------|------|------|------|------|------|------|
| 0 | 2 | 1091 | 1311 | 1459 | 1643 | 1881 | 2200 | 3203 |
| 0 | 3 | 1772 | 2130 | 2367 | 2641 | 2911 | 3158 | 3602 |
| 0 | 4 | 2455 | 2951 | 3266 | 3577 | 3850 | 4093 | 4431 |

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|   |   |      |      |      |      |      |      |      |
|---|---|------|------|------|------|------|------|------|
| 0 | 5 | 3138 | 3426 | 3587 | 3752 | 3908 | 4050 | 4306 |
| 0 | 6 | 3823 | 4172 | 4355 | 4502 | 4600 | 4661 | 4728 |

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0 | TABLE E2: RLCM/OPM HDBH Carried Traffic Capacity (CCS)

| 0 | Host       |      |      | Percent Intra Traffic |      |      |      |      |  |
|---|------------|------|------|-----------------------|------|------|------|------|--|
| 0 | Links      | "0%" | 20%  | 30%                   | 40%  | 50%  | 60%  | 80%  |  |
| 0 | IML = 0.03 |      |      |                       |      |      |      |      |  |
| 0 | 2          | 1131 | 1360 | 1512                  | 1704 | 1951 | 2281 | 3401 |  |
| 0 | 3          | 1898 | 2281 | 2537                  | 2844 | 3167 | 3467 | 4010 |  |
| 0 | 4          | 2689 | 3232 | 3586                  | 3958 | 4293 | 4594 | 5058 |  |
| 0 | 5          | 3496 | 3816 | 3998                  | 4187 | 4371 | 4594 | 5058 |  |
| 0 | 6          | 4312 | 4707 | 4920                  | 5107 | 5243 | 5332 | 5432 |  |
| 0 | IML = 0.05 |      |      |                       |      |      |      |      |  |
| 0 | 2          | 1224 | 1471 | 1636                  | 1843 | 2110 | 2467 | 3643 |  |
| 0 | 3          | 2018 | 2426 | 2697                  | 3018 | 3346 | 3645 | 4190 |  |
| 0 | 4          | 2832 | 3404 | 3774                  | 4152 | 4488 | 4789 | 5239 |  |
| 0 | 5          | 3656 | 3992 | 4181                  | 4377 | 4565 | 4789 | 5239 |  |
| 0 | 6          | 4490 | 4901 | 5120                  | 5307 | 5438 | 5524 | 5618 |  |
| 0 | IML = 0.07 |      |      |                       |      |      |      |      |  |
| 0 | 2          | 1273 | 1530 | 1702                  | 1917 | 2195 | 2566 | 3765 |  |
| 0 | 3          | 2081 | 2501 | 2781                  | 3108 | 3437 | 3737 | 4283 |  |
| 0 | 4          | 2905 | 3492 | 3869                  | 4250 | 4587 | 4888 | 5330 |  |
| 0 | 5          | 3740 | 4082 | 4276                  | 4475 | 4664 | 4888 | 5330 |  |
| 0 | 6          | 4579 | 4998 | 5221                  | 5407 | 5536 | 5620 | 5712 |  |
| 0 | IML = 0.1  |      |      |                       |      |      |      |      |  |
| 0 | 2          | 1321 | 1588 | 1766                  | 1990 | 2278 | 2663 | 3881 |  |
| 0 | 3          | 2142 | 2575 | 2862                  | 3196 | 3526 | 3826 | 4374 |  |
| 0 | 4          | 2977 | 3578 | 3963                  | 4346 | 4684 | 4984 | 5419 |  |
| 0 | 5          | 3818 | 4168 | 4365                  | 4567 | 4758 | 4984 | 5419 |  |
| 0 | 6          | 4665 | 5091 | 5316                  | 5502 | 5630 | 5711 | 5801 |  |
| 0 | IML = 0.2  |      |      |                       |      |      |      |      |  |
| 0 | 2          | 1411 | 1696 | 1886                  | 2125 | 2433 | 2845 | 4088 |  |
| 0 | 3          | 2254 | 2709 | 3011                  | 3355 | 3687 | 3988 | 4537 |  |
| 0 | 4          | 3102 | 3728 | 4126                  | 4512 | 4851 | 5150 | 5571 |  |
| 0 | 5          | 3957 | 4320 | 4523                  | 4730 | 4923 | 5150 | 5571 |  |
| 0 | 6          | 4813 | 5253 | 5482                  | 5667 | 5791 | 5870 | 5955 |  |

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0 | TABLE F: RCC Traffic Capacity (CCS)

0 | TABLE F-a: RCC Traffic Capacity (CCS) Supporting Lines Only

0 | HDBH (CARRIED LOAD)

| 0 | HOST  | HOST  | TOTAL |
|---|-------|-------|-------|
| 0 | LINKS | CCS   | CCS   |
| 0 | ----- | ----- | ----- |
| 0 | 2     | 1122  | 15625 |
| 0 | 3     | 1879  | 15550 |
| 0 | 4     | 2659  | 15499 |
| 0 | 5     | 3452  | 15463 |
| 0 | 6     | 4254  | 15437 |
| 0 | 7     | 5063  | 15421 |
| 0 | 8     | 5878  | 15413 |
| 0 | 9     | 6697  | 15411 |
| 0 | 10    | 7520  | 15416 |
| 0 | 11    | 8346  | 15428 |
| 0 | 12    | 9174  | 15446 |
| 0 | 13    | 10005 | 15471 |
| 0 | 14    | 10838 | 15505 |
| 0 | 15    | 11672 | 15546 |
| 0 | 16    | 12508 | 15600 |

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| $\theta$ | HDBH (CARRIED LOAD) |
|----------|---------------------|
| 0        | 100                 |
| 10       | 100                 |
| 20       | 100                 |
| 30       | 100                 |
| 40       | 100                 |
| 50       | 100                 |
| 60       | 100                 |
| 70       | 100                 |
| 80       | 100                 |
| 90       | 100                 |
| 100      | 100                 |

|            |          | # CDO AND PBX DS-1s OFF RCC |           |           |           |
|------------|----------|-----------------------------|-----------|-----------|-----------|
|            |          | 1                           | 2         | 3         | 4         |
| HOST LINKS | HOST CCS | INTRA CCS                   | INTRA CCS | INTRA CCS | INTRA CCS |
| 2          | 1122     | 13671                       | 12840     | 12011     | 11183     |
| 3          | 1879     | 12840                       | 12011     | 11183     | 10358     |
| 4          | 2659     | 12011                       | 11183     | 10358     | 9535      |
| 5          | 3452     | 11183                       | 10358     | 9535      | 8714      |
| 6          | 4254     | 10358                       | 9535      | 8714      | 7896      |
| 7          | 5063     | 9535                        | 8714      | 7896      | 7082      |
| 8          | 5878     | 8714                        | 7896      | 7082      | 6272      |
| 9          | 6697     | 7896                        | 7082      | 6272      | 5466      |
| 10         | 7520     | 7082                        | 6272      | 5466      | 4667      |
| 11         | 8346     | 6272                        | 5466      | 4667      | 3874      |
| 12         | 9174     | 5466                        | 4667      | 3874      | 3092      |
| 13         | 10005    | 4667                        | 3874      | 3092      |           |
| 14         | 10838    | 3874                        | 3092      |           |           |
| 15         | 11672    | 3092                        |           |           |           |
| 16         | 12508    |                             |           |           |           |

|       |      |  | # CDO AND PBX DS-1s OFF RCC |       |       |       |
|-------|------|--|-----------------------------|-------|-------|-------|
|       |      |  | 5                           | 6     | 7     | 8     |
| HOST  | HOST |  | -----                       |       |       |       |
| LINKS | CCS  |  | INTRA                       | INTRA | INTRA | INTRA |
|       |      |  | CCS                         | CCS   | CCS   | CCS   |
| ----- |      |  |                             |       |       |       |
| 2     | 1122 |  | 10358                       | 9535  | 8714  | 7896  |
| 3     | 1879 |  | 9535                        | 8714  | 7896  | 7082  |
| 4     | 2659 |  | 8714                        | 7896  | 7082  | 6272  |
| 5     | 3452 |  | 7896                        | 7082  | 6272  | 5466  |
| 6     | 4254 |  | 7082                        | 6272  | 5466  | 4667  |
| 7     | 5063 |  | 6272                        | 5466  | 4667  | 3874  |
| 8     | 5878 |  | 5466                        | 4667  | 3874  | 3092  |
| 9     | 6697 |  | 4667                        | 3874  | 3092  |       |
| 10    | 7520 |  | 3874                        | 3092  |       |       |
| 11    | 8346 |  | 3092                        |       |       |       |

0 | TABLE G: RSC-S Traffic Capacity (CCS) - HDBH (Carried Load)

| 0 | SWITCHED | CHANNELS | SWITCHED | CHANNELS |
|---|----------|----------|----------|----------|
| 0 | CCS      | REQUIRED | CCS      | REQUIRED |
| 0 | -----    | -----    | -----    | -----    |
| 0 | 42       | 8        | 4990     | 160      |
| 0 | 132      | 12       | 5127     | 164      |
| 0 | 237      | 16       | 5265     | 168      |
| 0 | 349      | 20       | 5403     | 172      |
| 0 | 466      | 24       | 5542     | 176      |
| 0 | 586      | 28       | 5680     | 180      |
| 0 | 708      | 32       | 5818     | 184      |
| 0 | 833      | 36       | 5957     | 188      |
| 0 | 959      | 40       | 6095     | 192      |
| 0 | 1087     | 44       | 6234     | 196      |
| 0 | 1215     | 48       | 6373     | 200      |
| 0 | 1344     | 52       | 6511     | 204      |
| 0 | 1474     | 56       | 6650     | 208      |
| 0 | 1605     | 60       | 6789     | 212      |
| 0 | 1737     | 64       | 6928     | 216      |
| 0 | 1869     | 68       | 7067     | 220      |
| 0 | 2001     | 72       | 7207     | 224      |
| 0 | 2134     | 76       | 7346     | 228      |
| 0 | 2268     | 80       | 7485     | 232      |
| 0 | 2401     | 84       | 7625     | 236      |
| 0 | 2535     | 88       | 7764     | 240      |
| 0 | 2670     | 92       | 7903     | 244      |
| 0 | 2805     | 96       | 8043     | 248      |
| 0 | 2940     | 100      | 8183     | 252      |
| 0 | 3075     | 104      | 8322     | 256      |
| 0 | 3211     | 108      | 8462     | 260      |
| 0 | 3346     | 112      | 8602     | 264      |
| 0 | 3482     | 116      | 8741     | 268      |
| 0 | 3619     | 120      | 8881     | 272      |
| 0 | 3755     | 124      | 9021     | 276      |
| 0 | 3891     | 128      | 9261     | 280      |
| 0 | 4028     | 132      | 9301     | 284      |
| 0 | 4165     | 136      | 9441     | 288      |
| 0 | 4302     | 140      | 9581     | 292      |
| 0 | 4439     | 144      | 9721     | 296      |
| 0 | 4577     | 148      | 9862     | 300      |

**PRACTICE 297-1001-450**

0 | TABLE G: RSC-S Traffic Capacity (CCS) - HDBH (Carried Load)

| 0 | SWITCHED | CHANNELS |
|---|----------|----------|
| 0 | CCS      | REQUIRED |
| 0 | -----    | -----    |
| 0 | 10282    | 312      |
| 0 | 10423    | 316      |
| 0 | 10563    | 320      |
| 0 | 10703    | 324      |
| 0 | 10844    | 328      |
| 0 | 10984    | 332      |
| 0 | 11125    | 336      |
| 0 | 11265    | 340      |
| 0 | 11406    | 344      |
| 0 | 11546    | 348      |
| 0 | 11687    | 352      |
| 0 | 11828    | 356      |
| 0 | 11968    | 360      |
| 0 | 12109    | 364      |
| 0 | 12250    | 368      |
| 0 | 12390    | 372      |
| 0 | 12531    | 376      |
| 0 | 12672    | 380      |

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0 | TABLE H: Interlink Provisioning

| 0 | CCS   | LINKS |
|---|-------|-------|
| 0 | ----- | ----- |
| 0 | 994   | 2     |
| 0 | 1709  | 3     |
| 0 | 2453  | 4     |
| 0 | 3215  | 5     |
| 0 | 3988  | 6     |
| 0 | 4770  | 7     |
| 0 | 5559  | 8     |
| 0 | 6354  | 9     |
| 0 | 7153  | 10    |
| 0 | 7956  | 11    |
| 0 | 8763  | 12    |
| 0 | 9572  | 13    |
| 0 | 10384 | 14    |

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**0 | NETWORK MODULE (NT5X13\_\_,NT8X10\_\_)**

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**0 | NETWORK MODULE (NT5X13\_\_,NT8X10\_\_)**

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0 | TABLE M: MF Receiver Holding Time

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| CALLS                       | 4 Digit | Additional Digit |
|-----------------------------|---------|------------------|
| Incoming MF Call (All Types | 1.9 Sec | 0.14 Second      |
| Key Pulsing Switchboard     | 5.7 Sec | 0.60 Second      |

0 |0 | Note: Add 0.9 seconds for MF incoming calls and 2.32 seconds  
0 | for Dialpulse incoming calls outputting ANI information.

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0 TABLE 0: DIGITONE Receiver Holding Time  
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| Calls                | Holding Time       |
|----------------------|--------------------|
| 0 Operator           | 2.3 Sec. (Note 1)  |
| 3-Digit Service Code | 3.1 Sec.           |
| 7-Digit Number       | 7.9 Sec. (Note 2)  |
| 10-Digit Number      | 11.3 Sec. (Note 2) |
| False Attempt        | 3.0 Sec.           |

0 Note 1: When special toll call (0+) service is provided,  
0 add 4 second holding time to operator calls for  
0 the time-out feature used to discriminate  
0 between (0+) and (0-) calls.

0 Note 2: Add 0.8 seconds for each digit dialled for toll  
0 call prefixes.

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0 TABLE S: ATTENDANT CONSOLE - TRAFFIC CAPACITY TABLES

0 SPEED OF ANSWER = 4 SECONDS

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| 0 | ATTENDANT | ATTENDANT WORK TIMES (AWT) IN SECONDS |      |      |      |      |      |
|---|-----------|---------------------------------------|------|------|------|------|------|
| 0 | CONSOLE   |                                       |      |      |      |      |      |
| 0 | ACTIVATED |                                       |      |      |      |      |      |
| 0 | CCS/36    | 16                                    | 20   | 30   | 40   | 60   | 80   |
| 0 | 31        | 2.36                                  | 2.69 | 3.63 | 3.89 | 4.69 | 5.31 |
| 0 | 32        | 2.38                                  | 2.70 | 3.66 | 3.92 | 4.72 | 5.35 |
| 0 | 33        | 2.39                                  | 2.72 | 3.68 | 3.96 | 4.77 | 5.40 |
| 0 | 34        |                                       |      |      |      |      |      |
| 0 | 2.40      | 2.74                                  |      |      |      |      |      |
| 0 | 3.71      | 3.99                                  | 4.81 | 5.45 |      |      |      |
| 0 | 35        | 2.41                                  | 2.76 | 3.73 | 4.03 | 4.86 | 5.50 |
| 0 |           |                                       |      |      |      |      |      |
| 0 | 36        | 2.42                                  | 2.78 | 3.76 | 4.06 | 4.90 | 5.55 |
| 0 | 37        | 2.43                                  | 2.79 | 3.78 | 4.09 | 4.93 | 5.59 |
| 0 | 38        | 2.44                                  | 2.80 | 3.81 | 4.12 | 4.96 | 5.62 |
| 0 | 39        | 2.45                                  | 2.81 | 3.83 | 4.15 | 4.99 | 5.66 |
| 0 | 40        | 2.46                                  | 2.82 | 3.85 | 4.18 | 5.02 | 5.70 |
| 0 |           |                                       |      |      |      |      |      |
| 0 | 41        | 2.47                                  | 2.83 | 3.86 | 4.19 | 5.06 | 5.74 |
| 0 | 42        | 2.48                                  | 2.84 | 3.87 | 4.21 | 5.09 | 5.78 |
| 0 | 43        | 2.49                                  | 2.85 | 3.88 | 4.22 | 5.13 | 5.82 |
| 0 | 44        | 2.50                                  | 2.86 | 3.89 | 4.24 | 5.17 | 5.86 |
| 0 | 45        | 2.51                                  | 2.87 | 3.90 | 4.25 | 5.20 | 5.90 |
| 0 |           |                                       |      |      |      |      |      |
| 0 | 46        | 2.52                                  | 2.89 |      |      |      |      |
| 0 | 3.93      |                                       |      |      |      |      |      |
| 0 | 4.28      | 5.23                                  | 5.94 |      |      |      |      |
| 0 | 47        | 2.53                                  | 2.90 | 3.95 | 4.31 | 5.25 | 5.98 |
| 0 | 48        | 2.54                                  | 2.91 | 3.98 | 4.34 | 5.28 | 6.02 |
| 0 | 49        | 2.55                                  | 2.92 | 4.00 | 4.37 | 5.31 | 6.06 |
| 0 | 50        | 2.56                                  | 2.93 | 4.03 | 4.40 | 5.34 | 6.10 |
| 0 |           |                                       |      |      |      |      |      |
| 0 | 51        | 2.56                                  | 2.94 | 4.04 | 4.41 | 5.36 | 6.12 |
| 0 | 52        | 2.57                                  | 2.95 | 4.06 | 4.42 | 5.38 | 6.15 |
| 0 | 53        | 2.58                                  | 2.96 | 4.07 | 4.43 | 5.41 | 6.17 |
| 0 | 54        | 2.58                                  | 2.97 | 4.09 | 4.44 | 5.43 | 6.20 |
| 0 | 55        | 2.59                                  | 2.98 | 4.10 | 4.45 | 5.45 | 6.22 |
| 0 |           |                                       |      |      |      |      |      |
| 0 | 56        | 2.60                                  | 2.99 | 4.12 | 4.47 | 5.48 | 6.26 |

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|   |             |      |      |      |      |      |      |
|---|-------------|------|------|------|------|------|------|
| 0 | 57          | 2.60 | 3.00 | 4.14 |      |      |      |
| 0 | <u>4.49</u> |      |      |      |      |      |      |
| 0 | 5.51        | 6.29 |      |      |      |      |      |
| 0 | 58          | 2.61 | 3.01 | 4.16 | 4.51 | 5.54 | 6.33 |
| 0 | 59          | 2.62 | 3.02 | 4.18 | 4.53 | 5.57 | 6.37 |
| 0 | 60          | 2.62 | 3.03 | 4.20 | 4.55 | 5.60 | 6.40 |

0 TABLE S (CONT'D): ATTENDANT CONSOLE - TRAFFIC CAPACITY TABLES  
0 SPEED OF ANSWER = 4 SECONDS

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0 ATTENDANT  
0 CONSOLE  
0 ACTIVATED  
0 CCS/36

ATTENDANT WORK TIMES (AWT) IN SECONDS

|          | 16   | 20   | 30   | 40   | 60   | 80   |
|----------|------|------|------|------|------|------|
| 0 61     | 2.63 | 3.03 | 4.21 | 4.57 | 5.62 | 6.42 |
| 0 62     | 2.63 | 3.04 | 4.22 | 4.59 | 5.64 | 6.44 |
| 0 63     | 2.64 | 3.04 | 4.24 | 4.61 | 5.66 | 6.46 |
| 0 64     | 2.64 | 3.05 | 4.26 | 4.63 | 5.68 | 6.48 |
| 0 65     | 2.65 | 3.05 | 4.28 | 4.66 | 5.70 | 6.50 |
| 0        |      |      |      |      |      |      |
| 0 66     | 2.65 | 3.06 | 4.28 | 4.66 | 5.72 | 6.52 |
| 0 67     | 2.66 | 3.07 | 4.29 | 4.67 | 5.74 | 6.54 |
| 0 68     | 2.67 | 3.08 | 4.30 | 4.68 | 5.76 | 6.56 |
| 0 69     | 2.67 | 3.09 | 4.31 | 4.69 |      |      |
| 0   5.78 |      |      |      |      |      |      |
| 0 6.58   |      |      |      |      |      |      |
| 0        |      |      |      |      |      |      |
| 0 70     | 2.68 | 3.10 | 4.32 | 4.70 | 5.80 | 6.70 |
| 0 71     | 2.68 | 3.11 | 4.33 | 4.72 | 5.82 | 6.72 |
| 0 72     | 2.69 | 3.12 | 4.34 | 4.74 | 5.84 | 6.73 |
| 0 73     | 2.69 | 3.13 | 4.36 | 4.76 | 5.86 | 6.74 |
| 0 74     | 2.70 | 3.14 | 4.38 | 4.78 | 5.88 | 6.75 |
| 0 75     | 2.70 | 3.15 | 4.40 | 4.80 | 5.90 | 6.76 |
| 0        |      |      |      |      |      |      |
| 0 76     | 2.71 | 3.16 | 4.41 | 4.82 | 5.92 | 6.77 |
| 0 77     | 2.71 | 3.17 | 4.42 | 4.84 | 5.94 | 6.77 |
| 0 78     | 2.72 | 3.18 | 4.43 | 4.86 | 5.96 | 6.78 |
| 0 79     | 2.72 | 3.19 | 4.45 | 4.88 | 5.98 | 6.79 |
| 0 80     | 2.73 | 3.20 | 4.46 | 4.90 | 6.00 |      |
| 0   6.90 |      |      |      |      |      |      |

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0 TABLE S (CONT'D): ATTENDANT CONSOLE - TRAFFIC CAPACITY TABLES  
0  
0 SPEED OF ANSWER = 4 SECONDS

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## 0 NOTES:

- 0 1. Number of consoles = (Traffic offered in CCS/36)  
0  $\div$  (Value for AWT)
- 0 2. Figures to the left of this line represent occupancies  
0 greater than 92J.
- 0 3. With an upper limit for attendant occupancies of no  
0 greater than 92J (or 33.12 CCS/Attendant), the number of attendant  
0 consoles required (for values of attendant console activated CCS/36  
0 to the left of this line) is determined by the following formula:

0 No. Attendant Consoles =  
0 Traffic offered in CCS  
0 33.12

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| NUMBER OF<br>PORTS<br>DELOADED PER<br>NSG | NUMBER OF DIGITAL BROADCAST ANNOUNCEMENT<br>CHANNELS (CIRCUITS) |      |      |      |
|-------------------------------------------|-----------------------------------------------------------------|------|------|------|
|                                           | 8                                                               | 16   | 24   | 30   |
| 0                                         | 480                                                             | 590  | 680  | 740  |
| 1                                         | 1180                                                            | 1290 | 1380 | 1440 |
| 2                                         | 1880                                                            | 1990 | 2080 | 2140 |
| 3                                         | 2580                                                            | 2690 | 2780 | 2840 |
| 4                                         | 3280                                                            | 3390 | 3480 | 3540 |
| 5                                         | 3980                                                            | 4090 | 4180 | 4240 |
| 6                                         | 4680                                                            | 4790 | 4880 | 4940 |
| 7                                         | 5380                                                            | 5490 | 5580 | 5640 |

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TABLE T: TOTAL DRA TRAFFIC (CCS) FOR NT0X48 NETWORK

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RELEASE 28.01  
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| NUMBER OF<br>PORTS<br>DELOADED PER<br>NSG | NUMBER OF DIGITAL BROADCAST ANNOUNCEMENT<br>CHANNELS (CIRCUITS) |       |       |       |
|-------------------------------------------|-----------------------------------------------------------------|-------|-------|-------|
|                                           | 8                                                               | 16    | 24    | 30    |
| 0                                         | 950                                                             | 1110  | 1240  | 1330  |
| 1                                         | 1650                                                            | 1810  | 1940  | 2030  |
| 2                                         | 2350                                                            | 2510  | 2640  | 2730  |
| 3                                         | 3050                                                            | 3210  | 3340  | 3430  |
| 4                                         | 3750                                                            | 3910  | 4040  | 4130  |
| 5                                         | 4450                                                            | 4610  | 4740  | 4830  |
| 6                                         | 5150                                                            | 5310  | 5440  | 5530  |
| 7                                         | 5850                                                            | 6010  | 6140  | 6230  |
| 8                                         | 6550                                                            | 6710  | 6840  | 6930  |
| 9                                         | 7250                                                            | 7410  | 7540  | 7630  |
| 10                                        | 7950                                                            | 8110  | 8240  | 8330  |
| 11                                        | 8650                                                            | 8810  | 8940  | 9030  |
| 12                                        | 9350                                                            | 9510  | 9640  | 9730  |
| 13                                        | 10050                                                           | 10210 | 10340 | 10430 |
| 14                                        | 10750                                                           | 10910 | 11040 | 11130 |
| 15                                        | 11450                                                           | 11610 | 11740 | 11830 |

TABLE U: TOTAL DRA TRAFFIC (CCS) FOR NT5X13 NETWORK

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| TRUNKS | BLOCKING PROBABILITY |       |       |       |
|--------|----------------------|-------|-------|-------|
|        | 0.001                | 0.005 | 0.010 | 0.050 |

|   |    |      |      |      |      |
|---|----|------|------|------|------|
| 0 | 1  | .1   | .2   | .4   | 1.9  |
| 0 | 2  | 1.6  | 3.7  | 5.4  | 12.9 |
| 0 | 3  | 6.9  | 12.2 | 15.7 | 29.4 |
| 0 | 4  | 15.4 | 24.2 | 29.6 | 49.1 |
| 0 | 5  | 26.6 | 38.9 | 46.1 | 70.9 |
| 0 | 6  | 40.0 | 55.4 | 64.4 | 94.1 |
| 0 | 7  | 54.7 | 73.4 | 83.9 | 118  |
| 0 | 8  | 70.9 | 92.5 | 105. | 143  |
| 0 | 9  | 88.2 | 113  | 126  | 169  |
| 0 | 10 | 107  | 134  | 149  | 195  |
| 0 | 11 | 126  | 156  | 172  | 222  |
| 0 | 12 | 145  | 178  | 195  | 249  |
| 0 | 13 | 166  | 201  | 220  | 277  |
| 0 | 14 | 187  | 224  | 244  | 305  |
| 0 | 15 | 208  | 248  | 269  | 333  |
| 0 | 16 | 231  | 273  | 294  | 362  |
| 0 | 17 | 253  | 297  | 320  | 390  |
| 0 | 18 | 276  | 322  | 346  | 419  |
| 0 | 19 | 299  | 347  | 373  | 448  |
| 0 | 20 | 323  | 373  | 399  | 477  |
| 0 | 21 | 346  | 399  | 426  | 507  |
| 0 | 22 | 370  | 424  | 453  | 536  |
| 0 | 23 | 395  | 451  | 480  | 566  |
| 0 | 24 | 419  | 477  | 507  | 596  |
| 0 | 25 | 444  | 504  | 535  | 626  |
| 0 | 26 | 469  | 531  | 562  | 656  |
| 0 | 27 | 495  | 558  | 590  | 686  |
| 0 | 28 | 520  | 585  | 618  | 717  |
| 0 | 29 | 545  | 612  | 647  | 747  |
| 0 | 30 | 571  | 640  | 675  | 778  |

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0 RELEASE 28.01  
0 93 12 030 TABLE V: POISSON Capacity Tables  
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| 0<br>0<br>0<br>0<br>0<br>0<br>0 | CIRCUITS | BLOCKING PROBABILITY |       |       |       |
|---------------------------------|----------|----------------------|-------|-------|-------|
|                                 |          | 0.001                | 0.005 | 0.010 | 0.050 |
| 0                               | 31       | 597                  | 667   | 703   | 809   |
| 0                               | 32       | 624                  | 695   | 732   | 840   |
| 0                               | 33       | 650                  | 723   | 760   | 871   |
| 0                               | 34       | 676                  | 751   | 789   | 902   |
| 0                               | 35       | 703                  | 779   | 818   | 933   |
| 0                               | 36       | 729                  | 807   | 847   | 964   |
| 0                               | 37       | 756                  | 836   | 878   | 995   |
| 0                               | 38       | 783                  | 864   | 905   | 1026  |
| 0                               | 39       | 810                  | 892   | 935   | 1057  |
| 0                               | 40       | 837                  | 921   | 964   | 1088  |
| 0                               | 41       | 865                  | 950   | 993   | 1120  |
| 0                               | 42       | 892                  | 979   | 1023  | 1151  |
| 0                               | 43       | 919                  | 1000  | 1052  | 1183  |
| 0                               | 44       | 947                  | 1036  | 1082  | 1214  |
| 0                               | 45       | 975                  | 1066  | 1112  | 1246  |
| 0                               | 46       | 1003                 | 1095  | 1142  | 1277  |
| 0                               | 47       | 1030                 | 1124  | 1171  | 1309  |
| 0                               | 48       | 1058                 | 1153  | 1201  | 1340  |
| 0                               | 49       | 1086                 | 1183  | 1231  | 1372  |
| 0                               | 50       | 1115                 | 1212  | 1261  | 1403  |

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0 TABLE V: POISSON Capacity Tables

| 0<br>0<br>0<br>0<br>0 | CIRCUITS | BLOCKING PROBABILITY |       |       |       |
|-----------------------|----------|----------------------|-------|-------|-------|
|                       |          | 0.001                | 0.005 | 0.010 | 0.050 |
| 0                     | 81       | 2016                 | 2149  | 2215  | 2405  |
| 0                     | 82       | 2046                 | 2180  | 2247  | 2437  |
| 0                     | 83       | 2076                 | 2211  | 2278  | 2470  |
| 0                     | 84       | 2106                 | 2242  | 2310  | 2503  |
| 0                     | 85       | 2136                 | 2273  | 2341  | 2536  |
| 0                     | 86       | 2166                 | 2304  | 2373  | 2569  |
| 0                     | 87       | 2196                 | 2335  | 2404  | 2601  |
| 0                     | 88       | 2226                 | 2366  | 2436  | 2634  |
| 0                     | 89       | 2256                 | 2397  | 2467  | 2667  |
| 0                     | 90       | 2286                 | 2428  | 2499  | 2700  |
| 0                     | 91       | 2317                 | 2459  | 2530  | 2733  |
| 0                     | 92       | 2346                 | 2490  | 2562  | 2766  |
| 0                     | 93       | 2377                 | 2521  | 2594  | 2798  |
| 0                     | 94       | 2407                 | 2553  | 2625  | 2831  |
| 0                     | 95       | 2437                 | 2584  | 2657  | 2864  |
| 0                     | 96       | 2468                 | 2615  | 2689  | 2897  |
| 0                     | 97       | 2498                 | 2646  | 2721  | 2930  |
| 0                     | 98       | 2528                 | 2678  | 2752  | 2963  |
| 0                     | 99       | 2559                 | 2709  | 2784  | 2996  |
| 0                     | 100      | 2589                 | 2740  | 2816  | 3029  |

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0 TABLE V: POISSON Capacity Tables

| 0<br>0<br>0<br>0<br>0 | CIRCUITS | BLOCKING PROBABILITY |       |       |       |
|-----------------------|----------|----------------------|-------|-------|-------|
|                       |          | 0.001                | 0.005 | 0.010 | 0.050 |
| 0                     | 101      | 2620                 | 2772  | 2847  | 3062  |
| 0                     | 102      | 2650                 | 2803  | 2879  | 3095  |
| 0                     | 103      | 2681                 | 2834  | 2910  | 3128  |
| 0                     | 104      | 2711                 | 2866  | 2942  | 3161  |
| 0                     | 105      | 2742                 | 2897  | 2974  | 3194  |
| 0                     | 106      | 2772                 | 2929  | 3006  | 3227  |
| 0                     | 107      | 2803                 | 2960  | 3038  | 3260  |
| 0                     | 108      | 2834                 | 2991  | 3070  | 3293  |
| 0                     | 109      | 2864                 | 3023  | 3102  | 3326  |
| 0                     | 110      | 2895                 | 3054  | 3135  | 3359  |
| 0                     | 111      | 2926                 | 3086  | 3166  | 3393  |
| 0                     | 112      | 2956                 | 3118  | 3198  | 3426  |
| 0                     | 113      | 2987                 | 3149  | 3230  | 3459  |
| 0                     | 114      | 3018                 | 3181  | 3262  | 3493  |
| 0                     | 115      | 3049                 | 3212  | 3294  | 3526  |
| 0                     | 116      | 3080                 | 3244  | 3326  | 3559  |
| 0                     | 117      | 3110                 | 3276  | 3359  | 3592  |
| 0                     | 118      | 3141                 | 3307  | 3391  | 3625  |
| 0                     | 119      | 3172                 | 3339  | 3423  | 3659  |
| 0                     | 120      | 3203                 | 3371  | 3456  | 3692  |
| 0                     | 121      | 3234                 | 3402  | 3488  | 3725  |
| 0                     | 122      | 3265                 | 3434  | 3520  | 3758  |
| 0                     | 123      | 3296                 | 3466  | 3552  | 3792  |
| 0                     | 124      | 3327                 | 3498  | 3584  | 3825  |
| 0                     | 125      | 3358                 | 3530  | 3616  | 3859  |
| 0                     | 126      | 3389                 | 3562  | 3648  | 3892  |
| 0                     | 127      | 3420                 | 3594  | 3681  | 3925  |
| 0                     | 128      | 3451                 | 3626  | 3713  | 3959  |
| 0                     | 129      | 3482                 | 3657  | 3746  | 3992  |
| 0                     | 130      | 3513                 | 3689  | 3778  | 4026  |

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0 TABLE V: POISSON Capacity Tables

| 0<br>0<br>0<br>0<br>0 | CIRCUITS | BLOCKING PROBABILITY |       |       |       |
|-----------------------|----------|----------------------|-------|-------|-------|
|                       |          | 0.001                | 0.005 | 0.010 | 0.050 |
| 0                     | 151      | 4171                 | 4363  | 4460  | 4729  |
| 0                     | 152      | 4202                 | 4396  | 4492  | 4762  |
| 0                     | 153      | 4234                 | 4428  | 4525  | 4796  |
| 0                     | 154      | 4265                 | 4460  | 4557  | 4830  |
| 0                     | 155      | 4297                 | 4492  | 4590  | 4864  |
| 0                     | 156      | 4328                 | 4525  | 4622  | 4897  |
| 0                     | 157      | 4360                 | 4557  | 4655  | 4931  |
| 0                     | 158      | 4392                 | 4589  | 4688  | 4964  |
| 0                     | 159      | 4423                 | 4621  | 4721  | 4998  |
| 0                     | 160      | 4455                 | 4654  | 4754  | 5032  |
| 0                     | 161      | 4486                 | 4686  | 4786  | 5065  |
| 0                     | 162      | 4518                 | 4718  | 4819  | 5099  |
| 0                     | 163      | 4550                 | 4751  | 4851  | 5132  |
| 0                     | 164      | 4581                 | 4783  | 4884  | 5166  |
| 0                     | 165      | 4613                 | 4816  | 4917  | 5200  |
| 0                     | 166      | 4645                 | 4848  | 4949  | 5234  |
| 0                     | 167      | 4676                 | 4880  | 4982  | 5267  |
| 0                     | 168      | 4708                 | 4913  | 5015  | 5301  |
| 0                     | 169      | 4740                 | 4945  | 5048  | 5335  |
| 0                     | 170      | 4771                 | 4978  | 5081  | 5369  |
| 0                     | 171      | 4803                 | 5010  | 5114  | 5402  |
| 0                     | 172      | 4835                 | 5043  | 5146  | 5436  |
| 0                     | 173      | 4867                 | 5075  | 5179  | 5470  |
| 0                     | 174      | 4898                 | 5108  | 5212  | 5504  |
| 0                     | 175      | 4930                 | 5140  | 5245  | 5537  |
| 0                     | 176      | 4962                 | 5173  | 5277  | 5571  |
| 0                     | 177      | 4994                 | 5205  | 5310  | 5605  |
| 0                     | 178      | 5026                 | 5238  | 5343  | 5638  |

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0 TABLE V: POISSON Capacity Tables

| 0<br>0<br>0<br>0<br>0 | CIRCUITS | BLOCKING PROBABILITY |       |       |       |
|-----------------------|----------|----------------------|-------|-------|-------|
|                       |          | 0.001                | 0.005 | 0.010 | 0.050 |
| 0                     | 181      | 5121                 | 5335  | 5442  | 5740  |
| 0                     | 182      | 5153                 | 5368  | 5475  | 5774  |
| 0                     | 183      | 5185                 | 5400  | 5508  | 5808  |
| 0                     | 184      | 5217                 | 5433  | 5541  | 5841  |
| 0                     | 185      | 5249                 | 5466  | 5574  | 5875  |
| 0                     | 186      | 5281                 | 5498  | 5606  | 5909  |
| 0                     | 187      | 5313                 | 5531  | 5639  | 5943  |
| 0                     | 188      | 5345                 | 5563  | 5672  | 5977  |
| 0                     | 189      | 5377                 | 5596  | 5705  | 6011  |
| 0                     | 190      | 5409                 | 5629  | 5738  | 6045  |
| 0                     | 191      | 5441                 | 5661  | 5771  | 6078  |
| 0                     | 192      | 5473                 | 5694  | 5804  | 6112  |
| 0                     | 193      | 5505                 | 5727  | 5837  | 6146  |
| 0                     | 194      | 5537                 | 5760  | 5871  | 6180  |
| 0                     | 195      | 5569                 | 5792  | 5904  | 6214  |
| 0                     | 196      | 5601                 | 5825  | 5937  | 6247  |
| 0                     | 197      | 5633                 | 5858  | 5969  | 6281  |
| 0                     | 198      | 5665                 | 5891  | 6002  | 6315  |
| 0                     | 199      | 5697                 | 5923  | 6035  | 6349  |
| 0                     | 200      | 5729                 | 5956  | 6068  | 6383  |

## 0 NOTES:

- 0 1. For capacity beyond 200 circuits, divide the traffic by 32.4 to  
0 determine the number of circuits required.

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0 TABLE X: IRLCM Capacity (CCS)

0 TABLE X-a: IRLCM Capacity (CCS)

0 Links to Host: 2

| 0 | J Intra | 0    | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   |
|---|---------|------|------|------|------|------|------|------|------|------|
| 0 | TML     |      |      |      |      |      |      |      |      |      |
| 0 | 0.001   | 1436 | 1541 | 1663 | 1808 | 1982 | 2196 | 2464 | 2806 | 3243 |
| 0 | 0.005   | 1561 | 1675 | 1807 | 1965 | 2153 | 2385 | 2676 | 3047 | 3499 |
| 0 | 0.010   | 1625 | 1743 | 1881 | 2045 | 2241 | 2482 | 2784 | 3169 | 3625 |
| 0 | 0.015   | 1665 | 1787 | 1928 | 2096 | 2297 | 2544 | 2854 | 3246 | 3704 |
| 0 | 0.019   | 1691 | 1813 | 1957 | 2127 | 2332 | 2582 | 2896 | 3293 | 3752 |
| 0 | 0.020   | 1696 | 1819 | 1963 | 2134 | 2339 | 2591 | 2906 | 3304 | 3762 |
| 0 | 0.025   | 1721 | 1846 | 1992 | 2165 | 2373 | 2628 | 2948 | 3351 | 3809 |
| 0 | 0.030   | 1742 | 1868 | 2016 | 2192 | 2402 | 2660 | 2983 | 3390 | 3848 |
| 0 | 0.040   | 1776 | 1905 | 2056 | 2235 | 2449 | 2712 | 3041 | 3453 | 3912 |
| 0 | 0.050   | 1804 | 1935 | 2088 | 2270 | 2487 | 2754 | 3088 | 3504 | 3962 |
| 0 | 0.060   | 1827 | 1960 | 2115 | 2299 | 2519 | 2790 | 3127 | 3547 | 4006 |
| 0 | 0.070   | 1847 | 1982 | 2139 | 2324 | 2547 | 2820 | 3161 | 3584 | 4041 |
| 0 | 0.080   | 1865 | 2001 | 2150 | 2346 | 2571 | 2847 | 3191 | 3616 | 4073 |
| 0 | 0.090   | 1881 | 2018 | 2178 | 2366 | 2593 | 2871 | 3217 | 3645 | 4100 |
| 0 | 0.100   | 1896 | 2033 | 2194 | 2384 | 2613 | 2892 | 3241 | 3670 | 4125 |

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|   |       |      |      |      |      |      |      |      |      |      |
|---|-------|------|------|------|------|------|------|------|------|------|
| 0 | 0.190 | 1985 | 2130 | 2298 | 2497 | 2735 | 3026 | 3388 | 3825 | 4274 |
| 0 | 0.200 | 1993 | 2137 | 2306 | 2506 | 2745 | 3036 | 3399 | 3837 | 4285 |

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0 TABLE X-b: IRLCM Capacity (CCS)

0 Links to Host: 3

| 0 J Intra | 0    | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   |
|-----------|------|------|------|------|------|------|------|------|------|
| 0 TML     |      |      |      |      |      |      |      |      |      |
| 0 0.001   | 2346 | 2517 | 2717 | 2951 | 3209 | 3458 | 3684 | 3884 | 4062 |
| 0 0.005   | 2510 | 2692 | 2906 | 3154 | 3423 | 3677 | 3903 | 4102 | 4278 |
| 0 0.010   | 2593 | 2782 | 3002 | 3258 | 3530 | 3785 | 4010 | 4208 | 4384 |
| 0 0.015   | 2646 | 2838 | 3063 | 3324 | 3599 | 3854 | 4978 | 4276 | 4451 |
| 0 0.019   | 2678 | 2873 | 3101 | 3364 | 3641 | 3896 | 4120 | 4317 | 4492 |
| 0 0.020   | 2686 | 2881 | 3109 | 3373 | 3650 | 3905 | 4129 | 4326 | 4502 |
| 0 0.025   | 2718 | 2915 | 3146 | 3413 | 3691 | 3946 | 4170 | 4367 | 4542 |
| 0 0.030   | 2745 | 2944 | 3177 | 3446 | 3726 | 3981 | 4205 | 4401 | 4576 |
| 0 0.040   | 2789 | 2991 | 3228 | 3500 | 3782 | 4037 | 4261 | 4457 | 4632 |
| 0 0.050   | 2824 | 3029 | 3269 | 3544 | 3827 | 4082 | 4306 | 4502 | 4676 |
| 0 0.060   | 2853 | 3061 | 3303 | 3581 | 3865 | 4121 | 4345 | 4540 | 4715 |
| 0 0.070   | 2879 | 3088 | 3332 | 3612 | 3897 | 4153 | 4377 | 4572 | 4746 |
| 0 0.080   | 2901 | 3112 | 3358 | 3639 | 3925 | 4181 | 4404 | 4600 | 4774 |
| 0 0.090   | 2921 | 3133 | 3381 | 3664 | 3950 | 4206 | 4429 | 4624 | 4798 |
| 0 0.100   | 2939 | 3152 | 3401 | 3868 | 3973 | 4229 | 4452 | 4647 | 4820 |
| 0 0.190   | 3048 | 3269 | 3527 | 3819 | 4109 | 4365 | 4586 | 4780 | 4953 |
| 0 0.200   | 3056 | 3278 | 3537 | 3829 | 4119 | 4375 | 4597 | 4790 | 4963 |

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0 TABLE X-c: IRLCM Capacity (CCS)

0 Links to Host: 4

| 0 J Intra | 0    | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   |
|-----------|------|------|------|------|------|------|------|------|------|
| 0 TML     |      |      |      |      |      |      |      |      |      |
| 0 0.001   | 3286 | 3524 | 3778 | 4009 | 4219 | 4423 | 4616 | 4789 | 4927 |
| 0 0.005   | 3483 | 3735 | 4001 | 4238 | 4454 | 4664 | 4862 | 5031 | 5163 |
| 0 0.010   | 3583 | 3843 | 4113 | 4352 | 4571 | 4783 | 4982 | 5149 | 5277 |
| 0 0.015   | 3647 | 3911 | 4184 | 4425 | 4646 | 4860 | 5058 | 5224 | 5349 |
| 0 0.019   | 3685 | 3952 | 4228 | 4470 | 4692 | 4907 | 5105 | 5270 | 5394 |
| 0 0.020   | 3694 | 3961 | 4237 | 4480 | 4702 | 4917 | 5116 | 5280 | 5403 |
| 0 0.025   | 3732 | 4002 | 4280 | 4523 | 4747 | 4963 | 5161 | 5324 | 5447 |
| 0 0.030   | 3764 | 4036 | 4316 | 4560 | 4785 | 5001 | 5200 | 5362 | 5483 |
| 0 0.040   | 3816 | 4092 | 4375 | 4620 | 4846 | 5064 | 5262 | 5423 | 5542 |
| 0 0.050   | 3858 | 4137 | 4421 | 4667 | 4895 | 5113 | 5311 | 5471 | 5589 |
| 0 0.060   | 3893 | 4174 | 4459 | 4708 | 4936 | 5156 | 5354 | 5513 | 5630 |
| 0 0.070   | 3922 | 4206 | 4493 | 4741 | 4971 | 5191 | 5389 | 5547 | 5663 |
| 0 0.080   | 3948 | 4233 | 4522 | 4771 | 5001 | 5222 | 5419 | 5577 | 5692 |
| 0 0.090   | 3971 | 4258 | 4547 | 4797 | 5028 | 5249 | 5446 | 5603 | 5717 |
| 0 0.100   | 3992 | 4280 | 4570 | 4821 | 5052 | 5273 | 5470 | 5626 | 5740 |
| 0 0.190   | 4116 | 4413 | 4708 | 4962 | 5196 | 5419 | 5614 | 5767 | 5877 |
| 0 0.200   | 4125 | 4423 | 4718 | 4972 | 5207 | 5430 | 5625 | 5777 | 5887 |

0 TABLE X-d: IRLCM Capacity (CCS)

0 Links to Host: 5

|   |       |      |
|---|-------|------|
| 0 | TML   |      |
| 0 | 0.001 | 4244 |
| 0 | 0.005 | 4472 |
| 0 | 0.010 | 4587 |
| 0 | 0.015 | 4659 |
| 0 | 0.019 | 4704 |
| 0 | 0.020 | 4714 |
| 0 | 0.025 | 4757 |
| 0 | 0.030 | 4794 |
| 0 | 0.040 | 4853 |
| 0 | 0.050 | 4900 |
| 0 | 0.060 | 4940 |
| 0 | 0.070 | 4973 |
| 0 | 0.080 | 5002 |
| 0 | 0.090 | 5028 |
| 0 | 0.100 | 5051 |
| 0 | 0.190 | 5187 |
| 0 | 0.200 | 5197 |

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0 TABLE X-e: IRLCM Capacity (CCS)

0 Links to Host: 6

|   |       |      |
|---|-------|------|
| 0 | TML   |      |
| 0 | 0.001 | 5215 |
| 0 | 0.005 | 5470 |
| 0 | 0.010 | 5600 |
| 0 | 0.015 | 5681 |
| 0 | 0.019 | 5731 |
| 0 | 0.020 | 5742 |
| 0 | 0.025 | 5790 |
| 0 | 0.030 | 5831 |
| 0 | 0.040 | 5897 |
| 0 | 0.050 | 5949 |
| 0 | 0.060 | 5992 |
| 0 | 0.070 | 6028 |
| 0 | 0.080 | 6060 |
| 0 | 0.090 | 6088 |
| 0 | 0.100 | 6113 |
| 0 | 0.190 | 6260 |
| 0 | 0.200 | 6271 |

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## 0 NOTES:

- 0 1. Table X defines the HDBH capacity for International RLCM (IRLCM)  
0 version of the Remote Line Concentrating Module. The principal  
0 difference between this model and the domestic RLCM is that Host-  
0 bound links employ the PCM-30 format. This means that all chan-  
0 nels from an LCA port equipped with PCM-30 will go to the Host  
0 and none will be available for use as intra- channels. Only une-  
0 quipped ports provide inter / intra-channels. It should be noted  
0 that five (5) and six (6) link IRLCM configurations cannot sup-  
0 port intraswitching due to the lack of intra-channels.
- 0 2. 5 and 6 link IRLCMs do not support Intra-office switching.

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0 | TABLE 8: LCME Capacity (CCS Per Channel)

0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0   SWITCH<br>0   CHANN | HD/ABS RATIO |             |      |            |      |
|-------------------------|--------------|-------------|------|------------|------|
|                         | 1.1          | 1.15        | 1.2  | 1.3        |      |
|                         |              | ABSBH       |      |            | HDBH |
|                         |              | IML = 0.003 |      | IML = 0.03 |      |
| 0   32                  | 655          | 649         | 641  | 622        | 757  |
| 0   36                  | 763          | 756         | 746  | 722        | 877  |
| 0   40                  | 873          | 864         | 853  | 824        | 998  |
| 0   44                  | 984          | 974         | 960  | 926        | 1121 |
| 0   48                  | 1096         | 1084        | 1068 | 1029       | 1244 |
| 0   52                  | 1210         | 1196        | 1178 | 1133       | 1369 |
| 0   56                  | 1324         | 1308        | 1287 | 1237       | 1495 |
| 0   60                  | 1439         | 1421        | 1398 | 1341       | 1621 |
| 0   64                  | 1554         | 1534        | 1509 | 1446       | 1748 |
| 0   68                  | 1670         | 1648        | 1620 | 1550       | 1876 |
| 0   72                  | 1787         | 1763        | 1732 | 1655       | 2004 |
| 0   76                  | 1904         | 1878        | 1844 | 1760       | 2133 |
| 0   80                  | 2022         | 1993        | 1956 | 1865       | 2262 |
| 0   84                  | 2140         | 2109        | 2068 | 1971       | 2392 |
| 0   88                  | 2258         | 2224        | 2181 | 2076       | 2522 |
| 0   92                  | 2376         | 2340        | 2294 | 2181       | 2653 |
| 0   96                  | 2495         | 2456        | 2407 | 2286       | 2784 |
| 0   100                 | 2615         | 2573        | 2520 | 2392       | 2915 |
| 0   104                 | 2734         | 2689        | 2633 | 2497       | 3047 |
| 0   108                 | 2853         | 2806        | 2746 | 2602       | 3179 |
| 0   112                 | 2973         | 2923        | 2859 | 2706       | 3311 |
| 0   116                 | 3093         | 3040        | 2972 | 2811       | 3444 |
| 0   120                 | 3213         | 3156        | 3085 | 2917       | 3576 |
| 0   124                 | 3333         | 3273        | 3198 | 3022       | 3709 |
| 0   128                 | 3453         | 3390        | 3312 | 3128       | 3843 |
| 0   132                 | 3573         | 3508        | 3425 | 3233       | 3976 |
| 0   136                 | 3693         | 3625        | 3538 | 3338       | 4110 |
| 0   140                 | 3814         | 3742        | 3651 | 3443       | 4243 |
| 0   144                 | 3934         | 3859        | 3763 | 3548       | 4377 |
| 0   148                 | 4055         | 3976        | 3876 | 3652       | 4512 |
| 0   152                 | 4175         | 4093        | 3990 | 3757       | 4646 |
| 0   156                 | 4296         | 4210        | 4103 | 3863       | 4780 |

0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |        |      | HD/ABS RATIO |      |            |      |
|---|--------|------|--------------|------|------------|------|
| 0 |        | 1.1  | 1.15         | 1.2  | 1.3        |      |
| 0 | SWITCH |      |              |      |            |      |
| 0 | CHANN  |      | ABSBH        |      |            | HDBH |
| 0 |        |      | IML = 0.003  |      | IML = 0.03 |      |
| 0 | 160    | 4416 | 4327         | 4217 | 3968       | 4915 |
| 0 | 164    | 4537 | 4444         | 4330 | 4073       | 5050 |
| 0 | 168    | 4658 | 4560         | 4443 | 4178       | 5185 |
| 0 | 172    | 4778 | 4677         | 4556 | 4284       | 5320 |
| 0 | 176    | 4899 | 4795         | 4669 | 4389       | 5455 |
| 0 | 180    | 5020 | 4912         | 4782 | 4494       | 5590 |
| 0 | 184    | 5140 | 5029         | 4894 | 4598       | 5726 |
| 0 | 188    | 5260 | 5147         | 5007 | 4703       | 5862 |
| 0 | 192    | 5380 | 5264         | 5121 | 4807       | 5997 |
| 0 | 196    | 5501 | 5381         | 5234 | 4912       | 6133 |
| 0 | 200    | 5621 | 5498         | 5347 | 5016       | 6289 |
| 0 | 204    | 5742 | 5614         | 5460 | 5120       | 6405 |
| 0 | 208    | 5863 | 5731         | 5573 | 5224       | 6541 |
| 0 | 212    | 5984 | 5847         | 5686 | 5327       | 6677 |
| 0 | 216    | 6105 | 5964         | 5799 | 5431       | 6814 |
| 0 | 220    | 6225 | 6082         | 5912 | 5534       | 6950 |
| 0 | 224    | 6346 | 6199         | 6024 | 5638       | 7087 |
| 0 | 228    | 6466 | 6316         | 6136 | 5741       | 7223 |
| 0 | 232    | 6587 | 6433         | 6249 | 5844       | 7360 |
| 0 | 236    | 6707 | 6550         | 6360 | 5947       | 7497 |
| 0 | 240    | 6827 | 6666         | 6472 | 6049       | 7634 |
| 0 | 244    | 6947 | 6783         | 6584 | 6152       | 7771 |
| 0 | 248    | 7068 | 6900         | 6696 | 6255       | 7908 |
| 0 | 252    | 7189 | 7016         | 6807 | 6358       | 8045 |
| 0 | 256    | 7309 | 7132         | 6918 | 6460       | 8182 |
| 0 | 260    | 7430 | 7249         | 7030 | 6562       | 8319 |
| 0 | 264    | 7550 | 7364         | 7140 | 6667       | 8456 |
| 0 | 268    | 7671 | 7480         | 7251 | 6773       | 8594 |
| 0 | 272    | 7791 | 7596         | 7362 | 6879       | 8731 |
| 0 | 276    | 7911 | 7711         | 7472 | 6986       | 8800 |
| 0 | 280    | 8031 | 7827         | 7583 | 7092       | 8937 |
| 0 | 284    | 8151 | 7942         | 7695 | 7197       | 9075 |
| 0 | 288    | 8271 | 8057         | 7809 | 7303       | 9213 |

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|   |     |      |      |      |      |      |
|---|-----|------|------|------|------|------|
| 0 | 292 | 8391 | 8172 | 7922 | 7409 | 9350 |
| 0 | 296 | 8510 | 8286 | 8036 | 7515 | 9488 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |             | HD/ABS RATIO |       |       |            |
|---|-------------|--------------|-------|-------|------------|
| 0 |             | 1.1          | 1.15  | 1.2   | 1.3        |
| 0 | SWITCH      |              |       |       |            |
| 0 | CHANN       | ABSBH        |       |       | HDBH       |
| 0 | IML = 0.003 |              |       |       | IML = 0.03 |
| 0 | 300         | 8630         | 8401  | 8151  | 7621       |
| 0 | 304         | 8749         | 8516  | 8264  | 7727       |
| 0 | 308         | 8868         | 8631  | 8378  | 7833       |
| 0 | 312         | 8987         | 8749  | 8491  | 7938       |
| 0 | 316         | 9106         | 8866  | 8605  | 8044       |
| 0 | 320         | 9224         | 8984  | 8718  | 8149       |
| 0 | 324         | 9343         | 9102  | 8832  | 8255       |
| 0 | 328         | 9461         | 9219  | 8945  | 8361       |
| 0 | 332         | 9579         | 9337  | 9059  | 8466       |
| 0 | 336         | 9698         | 9454  | 9172  | 8572       |
| 0 | 340         | 9816         | 9571  | 9285  | 8676       |
| 0 | 344         | 9938         | 9689  | 9399  | 8783       |
| 0 | 348         | 10059        | 9806  | 9511  | 8887       |
| 0 | 352         | 10180        | 9924  | 9625  | 8993       |
| 0 | 356         | 10301        | 10040 | 9738  | 9098       |
| 0 | 360         | 10422        | 10158 | 9850  | 9203       |
| 0 | 364         | 10543        | 10275 | 9964  | 9309       |
| 0 | 368         | 10664        | 10392 | 10076 | 9414       |
| 0 | 372         | 10785        | 10509 | 10189 | 9519       |
| 0 | 376         | 10905        | 10626 | 10302 | 9624       |
| 0 | 380         | 11026        | 10742 | 10415 | 9730       |
| 0 | 384         | 11147        | 10860 | 10528 | 9835       |
| 0 | 388         | 11268        | 10976 | 10640 | 9940       |
| 0 | 392         | 11388        | 11093 | 10753 | 10044      |
| 0 | 396         | 11509        | 11210 | 10865 | 10149      |
| 0 | 400         | 11629        | 11326 | 10978 | 10254      |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |             |       | HD/ABS RATIO |            |      |      |
|---|-------------|-------|--------------|------------|------|------|
| 0 | 1.1         |       | 1.15         | 1.2        | 1.3  |      |
| 0 | SWITCH      |       |              |            |      |      |
| 0 | CHANN       | ABSBH |              |            |      | HDBH |
| 0 | IML = 0.005 |       |              | IML = 0.05 |      |      |
| 0 | 32          | 690   | 684          | 677        | 657  | 833  |
| 0 | 36          | 802   | 794          | 785        | 761  | 959  |
| 0 | 40          | 915   | 906          | 894        | 866  | 1087 |
| 0 | 44          | 1029  | 1018         | 1005       | 971  | 1215 |
| 0 | 48          | 1144  | 1132         | 1116       | 1077 | 1344 |
| 0 | 52          | 1260  | 1246         | 1228       | 1184 | 1474 |
| 0 | 56          | 1377  | 1361         | 1341       | 1290 | 1605 |
| 0 | 60          | 1495  | 1477         | 1454       | 1397 | 1737 |
| 0 | 64          | 1613  | 1593         | 1568       | 1504 | 1869 |
| 0 | 68          | 1731  | 1710         | 1682       | 1612 | 2001 |
| 0 | 72          | 1850  | 1827         | 1796       | 1719 | 2134 |
| 0 | 76          | 1970  | 1944         | 1910       | 1826 | 2268 |
| 0 | 80          | 2090  | 2061         | 2024       | 1934 | 2401 |
| 0 | 84          | 2210  | 2179         | 2139       | 2041 | 2535 |
| 0 | 88          | 2331  | 2297         | 2254       | 2149 | 2670 |
| 0 | 92          | 2451  | 2415         | 2369       | 2257 | 2737 |
| 0 | 96          | 2572  | 2533         | 2484       | 2364 | 2805 |
| 0 | 100         | 2693  | 2652         | 2599       | 2471 | 2940 |
| 0 | 104         | 2815  | 2770         | 2713       | 2579 | 3075 |
| 0 | 108         | 2936  | 2889         | 2828       | 2687 | 3211 |
| 0 | 112         | 3058  | 3008         | 2944       | 2794 | 3346 |
| 0 | 116         | 3179  | 3126         | 3059       | 2901 | 3482 |
| 0 | 120         | 3301  | 3245         | 3174       | 3008 | 3619 |
| 0 | 124         | 3423  | 3363         | 3289       | 3115 | 3755 |
| 0 | 128         | 3545  | 3482         | 3404       | 3221 | 3891 |
| 0 | 132         | 3666  | 3601         | 3519       | 3327 | 4028 |
| 0 | 136         | 3788  | 3720         | 3634       | 3433 | 4165 |
| 0 | 140         | 3910  | 3839         | 3749       | 3542 | 4302 |
| 0 | 144         | 4032  | 3957         | 3864       | 3650 | 4439 |
| 0 | 148         | 4154  | 4076         | 3979       | 3758 | 4577 |
| 0 | 152         | 4276  | 4194         | 4094       | 3866 | 4714 |
| 0 | 156         | 4398  | 4314         | 4208       | 3974 | 4852 |
| 0 | 160         | 4521  | 4432         | 4322       | 4082 | 4990 |

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PRACTICE 297-1001-450

|   |     |      |      |      |      |      |
|---|-----|------|------|------|------|------|
| 0 | 164 | 4643 | 4551 | 4436 | 4190 | 5127 |
| 0 | 168 | 4765 | 4670 | 4549 | 4297 | 5265 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |             | HD/ABS RATIO |      |      |            |
|---|-------------|--------------|------|------|------------|
| 0 |             | 1.1          | 1.15 | 1.2  | 1.3        |
| 0 | SWITCH      |              |      |      |            |
| 0 | CHANN       | ABSBH        |      |      | HDBH       |
| 0 | IML = 0.005 |              |      |      | IML = 0.05 |
| 0 | 172         | 4887         | 4788 | 4665 | 4405       |
| 0 | 176         | 5009         | 4906 | 4780 | 4512       |
| 0 | 180         | 5131         | 5025 | 4896 | 4619       |
| 0 | 184         | 5253         | 5142 | 5011 | 4726       |
| 0 | 188         | 5375         | 5260 | 5127 | 4833       |
| 0 | 192         | 5497         | 5377 | 5242 | 4940       |
| 0 | 196         | 5619         | 5496 | 5357 | 5046       |
| 0 | 200         | 5741         | 5615 | 5473 | 5152       |
| 0 | 204         | 5862         | 5734 | 5588 | 5258       |
| 0 | 208         | 5984         | 5853 | 5703 | 5364       |
| 0 | 212         | 6105         | 5973 | 5817 | 5472       |
| 0 | 216         | 6226         | 6091 | 5932 | 5581       |
| 0 | 220         | 6347         | 6211 | 6046 | 5689       |
| 0 | 224         | 6468         | 6329 | 6161 | 5797       |
| 0 | 228         | 6590         | 6448 | 6275 | 5905       |
| 0 | 232         | 6713         | 6557 | 6388 | 6013       |
| 0 | 236         | 6835         | 6685 | 6502 | 6121       |
| 0 | 240         | 6958         | 6804 | 6616 | 6229       |
| 0 | 244         | 7080         | 6922 | 6730 | 6337       |
| 0 | 248         | 7203         | 7040 | 6846 | 6445       |
| 0 | 252         | 7325         | 7158 | 6962 | 6552       |
| 0 | 256         | 7447         | 7276 | 7077 | 6660       |
| 0 | 260         | 7569         | 7393 | 7193 | 6768       |
| 0 | 264         | 7690         | 7511 | 7308 | 6875       |
| 0 | 268         | 7812         | 7628 | 7423 | 6983       |
| 0 | 272         | 7934         | 7747 | 7538 | 7090       |
| 0 | 276         | 8056         | 7866 | 7654 | 7198       |
| 0 | 280         | 8177         | 7985 | 7769 | 7305       |
| 0 | 284         | 8298         | 8104 | 7884 | 7412       |
| 0 | 288         | 8419         | 8223 | 7999 | 7519       |
| 0 | 292         | 8540         | 8342 | 8113 | 7627       |
| 0 | 296         | 8661         | 8461 | 8228 | 7734       |
| 0 | 300         | 8782         | 8580 | 8343 | 7841       |

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**PRACTICE 297-1001-450**

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|   |     |      |      |      |      |       |
|---|-----|------|------|------|------|-------|
| 0 | 304 | 8903 | 8699 | 8458 | 7948 | 9932  |
| 0 | 308 | 9026 | 8817 | 8572 | 8055 | 10002 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |             | HD/ABS RATIO |       |       |       |
|---|-------------|--------------|-------|-------|-------|
| 0 |             | 1.1          | 1.15  | 1.2   | 1.3   |
| 0 | SWITCH      |              |       |       |       |
| 0 | CHANN       |              | ABSBH |       | HDBH  |
| 0 | IML = 0.005 |              |       |       |       |
| 0 | 312         | 9148         | 8936  | 8687  | 8162  |
| 0 | 316         | 9271         | 9054  | 8801  | 8269  |
| 0 | 320         | 9393         | 9173  | 8916  | 8375  |
| 0 | 324         | 9515         | 9291  | 9030  | 8482  |
| 0 | 328         | 9637         | 8410  | 9145  | 8589  |
| 0 | 332         | 9759         | 9528  | 9259  | 8696  |
| 0 | 336         | 9881         | 9646  | 9373  | 8802  |
| 0 | 340         | 10003        | 9764  | 9487  | 8909  |
| 0 | 344         | 10125        | 9883  | 9601  | 9016  |
| 0 | 348         | 10247        | 10000 | 9715  | 9122  |
| 0 | 352         | 10369        | 10119 | 9829  | 9229  |
| 0 | 356         | 10490        | 10236 | 9943  | 9335  |
| 0 | 360         | 10612        | 10354 | 10057 | 9442  |
| 0 | 364         | 10733        | 10472 | 10171 | 9548  |
| 0 | 368         | 10855        | 10590 | 10285 | 9655  |
| 0 | 372         | 10976        | 10708 | 10399 | 9761  |
| 0 | 376         | 11098        | 10825 | 10512 | 9868  |
| 0 | 380         | 11219        | 10942 | 10626 | 9974  |
| 0 | 384         | 11340        | 11060 | 10740 | 10081 |
| 0 | 388         | 11461        | 11177 | 10853 | 10187 |
| 0 | 392         | 11583        | 11295 | 10967 | 10293 |
| 0 | 396         | 11704        | 11412 | 11080 | 10399 |
| 0 | 400         | 11825        | 11530 | 11194 | 10505 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |             |      | HD/ABS RATIO |      |      |      |
|---|-------------|------|--------------|------|------|------|
| 0 |             | 1.1  | 1.15         | 1.2  | 1.3  |      |
| 0 | SWITCH      |      |              |      |      |      |
| 0 | CHANN       |      | ABSBH        |      |      | HDBH |
| 0 | IML = 0.007 |      | IML = 0.07   |      |      |      |
| 0 | 32          | 713  | 707          | 699  | 680  | 874  |
| 0 | 36          | 826  | 819          | 809  | 786  | 1003 |
| 0 | 40          | 941  | 932          | 921  | 892  | 1134 |
| 0 | 44          | 1057 | 1047         | 1033 | 999  | 1265 |
| 0 | 48          | 1174 | 1162         | 1147 | 1107 | 1397 |
| 0 | 52          | 1292 | 1278         | 1260 | 1215 | 1530 |
| 0 | 56          | 1410 | 1395         | 1375 | 1324 | 1663 |
| 0 | 60          | 1530 | 1512         | 1489 | 1432 | 1797 |
| 0 | 64          | 1649 | 1630         | 1605 | 1541 | 1932 |
| 0 | 68          | 1770 | 1748         | 1720 | 1650 | 2067 |
| 0 | 72          | 1890 | 1866         | 1835 | 1759 | 2202 |
| 0 | 76          | 2011 | 1985         | 1951 | 1868 | 2338 |
| 0 | 80          | 2132 | 2104         | 2067 | 1976 | 2474 |
| 0 | 84          | 2254 | 2223         | 2183 | 2085 | 2610 |
| 0 | 88          | 2376 | 2342         | 2299 | 2194 | 2747 |
| 0 | 92          | 2498 | 2462         | 2415 | 2303 | 2815 |
| 0 | 96          | 2620 | 2581         | 2531 | 2411 | 2883 |
| 0 | 100         | 2742 | 2701         | 2648 | 2520 | 3020 |
| 0 | 104         | 2865 | 2820         | 2763 | 2628 | 3158 |
| 0 | 108         | 2987 | 2940         | 2880 | 2738 | 3295 |
| 0 | 112         | 3110 | 3060         | 2996 | 2847 | 3433 |
| 0 | 116         | 3232 | 3179         | 3112 | 2956 | 3571 |
| 0 | 120         | 3355 | 3299         | 3228 | 3066 | 3709 |
| 0 | 124         | 3478 | 3419         | 3344 | 3175 | 3847 |
| 0 | 128         | 3601 | 3539         | 3460 | 3284 | 3985 |
| 0 | 132         | 3724 | 3658         | 3575 | 3392 | 4123 |
| 0 | 136         | 3847 | 3778         | 3692 | 3501 | 4262 |
| 0 | 140         | 3970 | 3898         | 3808 | 3609 | 4401 |
| 0 | 144         | 4093 | 4017         | 3925 | 3718 | 4540 |
| 0 | 148         | 4215 | 4136         | 4042 | 3827 | 4679 |
| 0 | 152         | 4339 | 4255         | 4158 | 3936 | 4818 |
| 0 | 156         | 4461 | 4375         | 4274 | 4046 | 4957 |
| 0 | 160         | 4585 | 4495         | 4390 | 4155 | 5096 |

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|   |     |      |      |      |      |      |
|---|-----|------|------|------|------|------|
| 0 | 164 | 4707 | 4616 | 4506 | 4254 | 5236 |
| 0 | 168 | 4830 | 4736 | 4622 | 4373 | 5375 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |             | HD/ABS RATIO |      |      |            |
|---|-------------|--------------|------|------|------------|
| 0 |             | 1.1          | 1.15 | 1.2  | 1.3        |
| 0 | SWITCH      |              |      |      |            |
| 0 | CHANN       | ABSBH        |      |      | HDBH       |
| 0 | IML = 0.007 |              |      |      | IML = 0.07 |
| 0 | 172         | 4952         | 4855 | 4738 | 4482       |
| 0 | 176         | 5074         | 4976 | 4853 | 4591       |
| 0 | 180         | 5196         | 5095 | 4970 | 4700       |
| 0 | 184         | 5320         | 5215 | 5086 | 4808       |
| 0 | 188         | 5443         | 5334 | 5203 | 4916       |
| 0 | 192         | 5567         | 5454 | 5319 | 5025       |
| 0 | 196         | 5690         | 5573 | 5436 | 5133       |
| 0 | 200         | 5813         | 5692 | 5552 | 5241       |
| 0 | 204         | 5936         | 5811 | 5668 | 5349       |
| 0 | 208         | 6059         | 5932 | 5784 | 5456       |
| 0 | 212         | 6182         | 6052 | 5900 | 5564       |
| 0 | 216         | 6305         | 6172 | 6016 | 5671       |
| 0 | 220         | 6427         | 6292 | 6131 | 5779       |
| 0 | 224         | 6550         | 6412 | 6247 | 5886       |
| 0 | 228         | 6672         | 6531 | 6362 | 5994       |
| 0 | 232         | 6794         | 6651 | 6478 | 6101       |
| 0 | 236         | 6917         | 6770 | 6593 | 6208       |
| 0 | 240         | 7040         | 6890 | 6708 | 6315       |
| 0 | 244         | 7164         | 7009 | 6823 | 6422       |
| 0 | 248         | 7287         | 7128 | 6938 | 6529       |
| 0 | 252         | 7410         | 7247 | 7052 | 6635       |
| 0 | 256         | 7533         | 7366 | 7167 | 6742       |
| 0 | 260         | 7656         | 7485 | 7281 | 6849       |
| 0 | 264         | 7778         | 7604 | 7396 | 6955       |
| 0 | 268         | 7901         | 7722 | 7510 | 7062       |
| 0 | 272         | 8023         | 7841 | 7624 | 7168       |
| 0 | 276         | 8146         | 7959 | 7739 | 7275       |
| 0 | 280         | 8268         | 8078 | 7853 | 7382       |
| 0 | 284         | 8390         | 8195 | 7966 | 7488       |
| 0 | 288         | 8513         | 8314 | 8080 | 7596       |
| 0 | 292         | 8634         | 8431 | 8194 | 7707       |
| 0 | 296         | 8757         | 8550 | 8308 | 7817       |
| 0 | 300         | 8878         | 8667 | 8422 | 7928       |

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|   |     |      |      |      |      |       |
|---|-----|------|------|------|------|-------|
| 0 | 304 | 9000 | 8785 | 8535 | 8038 | 10083 |
| 0 | 308 | 9122 | 8902 | 8651 | 8149 | 10154 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |             | HD/ABS RATIO |       |            |       |
|---|-------------|--------------|-------|------------|-------|
| 0 |             | 1.1          | 1.15  | 1.2        | 1.3   |
| 0 | SWITCH      |              |       |            |       |
| 0 | CHANN       | ABSBH        |       | HDBH       |       |
| 0 | IML = 0.007 |              |       | IML = 0.07 |       |
| 0 | 312         | 9243         | 9020  | 8768       | 8258  |
| 0 | 316         | 9364         | 9137  | 8886       | 8368  |
| 0 | 320         | 9486         | 9255  | 9003       | 8478  |
| 0 | 324         | 9607         | 9372  | 9120       | 8589  |
| 0 | 328         | 9728         | 9489  | 9238       | 8699  |
| 0 | 332         | 9849         | 9608  | 9355       | 8809  |
| 0 | 336         | 9970         | 9729  | 9472       | 8920  |
| 0 | 340         | 10090        | 9849  | 9588       | 9029  |
| 0 | 344         | 10211        | 9970  | 9707       | 9140  |
| 0 | 348         | 10332        | 10090 | 9822       | 9249  |
| 0 | 352         | 10453        | 10211 | 9941       | 9360  |
| 0 | 356         | 10573        | 10331 | 10057      | 9469  |
| 0 | 360         | 10694        | 10452 | 10174      | 9579  |
| 0 | 364         | 10815        | 10573 | 10291      | 9689  |
| 0 | 368         | 10939        | 10693 | 10408      | 9800  |
| 0 | 372         | 11063        | 10814 | 10525      | 9910  |
| 0 | 376         | 11187        | 10935 | 10642      | 10020 |
| 0 | 380         | 11310        | 11055 | 10759      | 10130 |
| 0 | 384         | 11434        | 11175 | 10876      | 10239 |
| 0 | 388         | 11558        | 11296 | 10992      | 10349 |
| 0 | 392         | 11682        | 11416 | 11109      | 10458 |
| 0 | 396         | 11806        | 11537 | 11226      | 10568 |
| 0 | 400         | 11929        | 11657 | 11343      | 10679 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |            |       | HD/ABS RATIO |      |      |      |
|---|------------|-------|--------------|------|------|------|
| 0 | 1.1        | 1.15  | 1.2          | 1.3  |      |      |
| 0 | SWITCH     |       |              |      |      |      |
| 0 | CHANN      | ABSBH |              |      | HDBH |      |
| 0 | IML = 0.01 |       | IML = 0.1    |      |      |      |
| 0 | 32         | 737   | 731          | 723  | 704  | 903  |
| 0 | 36         | 852   | 845          | 836  | 812  | 1034 |
| 0 | 40         | 969   | 960          | 949  | 920  | 1167 |
| 0 | 44         | 1087  | 1077         | 1063 | 1029 | 1300 |
| 0 | 48         | 1206  | 1194         | 1179 | 1139 | 1434 |
| 0 | 52         | 1326  | 1312         | 1294 | 1249 | 1569 |
| 0 | 56         | 1446  | 1430         | 1410 | 1359 | 1704 |
| 0 | 60         | 1567  | 1549         | 1526 | 1469 | 1840 |
| 0 | 64         | 1688  | 1669         | 1643 | 1579 | 1976 |
| 0 | 68         | 1810  | 1788         | 1760 | 1690 | 2112 |
| 0 | 72         | 1932  | 1908         | 1877 | 1800 | 2249 |
| 0 | 76         | 2054  | 2028         | 1994 | 1910 | 2386 |
| 0 | 80         | 2177  | 2149         | 2111 | 2020 | 2524 |
| 0 | 84         | 2300  | 2269         | 2229 | 2131 | 2661 |
| 0 | 88         | 2423  | 2389         | 2346 | 2242 | 2799 |
| 0 | 92         | 2546  | 2510         | 2463 | 2352 | 2868 |
| 0 | 96         | 2670  | 2631         | 2581 | 2463 | 2938 |
| 0 | 100        | 2793  | 2751         | 2698 | 2573 | 3076 |
| 0 | 104        | 2917  | 2872         | 2815 | 2683 | 3214 |
| 0 | 108        | 3040  | 2993         | 2932 | 2794 | 3353 |
| 0 | 112        | 3164  | 3114         | 3050 | 2905 | 3492 |
| 0 | 116        | 3288  | 3234         | 3168 | 3016 | 3631 |
| 0 | 120        | 3411  | 3355         | 3286 | 3126 | 3770 |
| 0 | 124        | 3535  | 3475         | 3403 | 3237 | 3909 |
| 0 | 128        | 3659  | 3596         | 3520 | 3347 | 4049 |
| 0 | 132        | 3783  | 3718         | 3637 | 3456 | 4189 |
| 0 | 136        | 3907  | 3839         | 3755 | 3566 | 4328 |
| 0 | 140        | 4030  | 3960         | 3873 | 3675 | 4468 |
| 0 | 144        | 4154  | 4080         | 3990 | 3784 | 4608 |
| 0 | 148        | 4277  | 4201         | 4108 | 3893 | 4748 |
| 0 | 152        | 4402  | 4322         | 4225 | 4002 | 4888 |
| 0 | 156        | 4526  | 4442         | 4342 | 4111 | 5028 |
| 0 | 160        | 4650  | 4563         | 4460 | 4219 | 5168 |

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|   |     |      |      |      |      |      |
|---|-----|------|------|------|------|------|
| 0 | 164 | 4774 | 4685 | 4577 | 4331 | 5309 |
| 0 | 168 | 4898 | 4806 | 4693 | 4443 | 5449 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |            | HD/ABS RATIO |       |      |      |           |
|---|------------|--------------|-------|------|------|-----------|
| 0 |            | 1.1          | 1.15  | 1.2  | 1.3  |           |
| 0 | SWITCH     |              |       |      |      |           |
| 0 | CHANN      |              | ABSBH |      |      | HDBH      |
| 0 | IML = 0.01 |              |       |      |      | IML = 0.1 |
| 0 | 172        | 5022         | 4926  | 4810 | 4554 | 5590      |
| 0 | 176        | 5145         | 5047  | 4926 | 4666 | 5730      |
| 0 | 180        | 5269         | 5168  | 5042 | 4778 | 5871      |
| 0 | 184        | 5393         | 5288  | 5158 | 4889 | 6012      |
| 0 | 188        | 5517         | 5409  | 5273 | 5000 | 6152      |
| 0 | 192        | 5641         | 5529  | 5389 | 5111 | 6293      |
| 0 | 196        | 5765         | 5649  | 5505 | 5223 | 6434      |
| 0 | 200        | 5889         | 5769  | 5624 | 5334 | 6575      |
| 0 | 204        | 6013         | 5888  | 5742 | 5445 | 6716      |
| 0 | 208        | 6136         | 6007  | 5861 | 5556 | 6857      |
| 0 | 212        | 6260         | 6127  | 5979 | 5667 | 6998      |
| 0 | 216        | 6383         | 6246  | 6097 | 5778 | 7139      |
| 0 | 220        | 6506         | 6364  | 6215 | 5889 | 7281      |
| 0 | 224        | 6629         | 6485  | 6334 | 5999 | 7422      |
| 0 | 228        | 6752         | 6607  | 6452 | 6110 | 7563      |
| 0 | 232        | 6875         | 6729  | 6570 | 6220 | 7705      |
| 0 | 236        | 6997         | 6851  | 6688 | 6330 | 7846      |
| 0 | 240        | 7120         | 6972  | 6806 | 6441 | 7987      |
| 0 | 244        | 7242         | 7094  | 6923 | 6551 | 8129      |
| 0 | 248        | 7364         | 7216  | 7041 | 6661 | 8270      |
| 0 | 252        | 7486         | 7337  | 7159 | 6771 | 8412      |
| 0 | 256        | 7610         | 7459  | 7276 | 6881 | 8553      |
| 0 | 260        | 7736         | 7580  | 7394 | 6991 | 8695      |
| 0 | 264        | 7860         | 7701  | 7511 | 7101 | 8837      |
| 0 | 268        | 7985         | 7822  | 7628 | 7210 | 8978      |
| 0 | 272        | 8109         | 7943  | 7745 | 7320 | 9120      |
| 0 | 276        | 8234         | 8064  | 7863 | 7430 | 9191      |
| 0 | 280        | 8358         | 8185  | 7980 | 7539 | 9333      |
| 0 | 284        | 8482         | 8306  | 8097 | 7648 | 9475      |
| 0 | 288        | 8607         | 8427  | 8213 | 7758 | 9616      |
| 0 | 292        | 8731         | 8547  | 8330 | 7867 | 9758      |
| 0 | 296        | 8856         | 8668  | 8447 | 7977 | 9900      |
| 0 | 300        | 8980         | 8789  | 8564 | 8086 | 10042     |

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|   |     |      |      |      |      |       |
|---|-----|------|------|------|------|-------|
| 0 | 304 | 9104 | 8909 | 8680 | 8195 | 10184 |
| 0 | 308 | 9228 | 9029 | 8796 | 8304 | 10255 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |        | HD/ABS RATIO |       |       |       |           |
|---|--------|--------------|-------|-------|-------|-----------|
| 0 |        | 1.1          | 1.15  | 1.2   | 1.3   |           |
| 0 | SWITCH |              |       |       |       |           |
| 0 | CHANN  |              | ABSBH |       |       | HDBH      |
| 0 |        | IML = 0.01   |       |       |       | IML = 0.1 |
| 0 | 312    | 9351         | 9149  | 8913  | 8413  | 10397     |
| 0 | 316    | 9475         | 9270  | 9029  | 8523  | 10539     |
| 0 | 320    | 9599         | 9390  | 9145  | 8636  | 10681     |
| 0 | 324    | 9723         | 9510  | 9261  | 8748  | 10823     |
| 0 | 328    | 9846         | 9630  | 9378  | 8859  | 10965     |
| 0 | 332    | 9970         | 9750  | 9493  | 8971  | 11107     |
| 0 | 336    | 10094        | 9870  | 9610  | 9084  | 11249     |
| 0 | 340    | 10217        | 9989  | 9725  | 9195  | 11320     |
| 0 | 344    | 10340        | 10109 | 9845  | 9307  | 11462     |
| 0 | 348    | 10463        | 10229 | 9963  | 9419  | 11605     |
| 0 | 352    | 10587        | 10348 | 10082 | 9532  | 11758     |
| 0 | 356    | 10710        | 10468 | 10200 | 9642  | 11911     |
| 0 | 360    | 10833        | 10587 | 10319 | 9755  | 12064     |
| 0 | 364    | 10956        | 10706 | 10437 | 9866  | 12217     |
| 0 | 368    | 11078        | 10827 | 10555 | 9978  | 12370     |
| 0 | 372    | 11201        | 10949 | 10674 | 10090 | 12523     |
| 0 | 376    | 11324        | 11071 | 10793 | 10201 | 12676     |
| 0 | 380    | 11447        | 11192 | 10911 | 10313 | 12829     |
| 0 | 384    | 11569        | 11314 | 11029 | 10425 | 12982     |
| 0 | 388    | 11692        | 11436 | 11148 | 10537 | 13135     |
| 0 | 392    | 11814        | 11557 | 11266 | 10648 | 13288     |
| 0 | 396    | 11937        | 11679 | 11384 | 10760 | 13441     |
| 0 | 400    | 12059        | 11801 | 11503 | 10872 | 13594     |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |            | HD/ABS RATIO |       |      |           |
|---|------------|--------------|-------|------|-----------|
| 0 |            | 1.1          | 1.15  | 1.2  | 1.3       |
| 0 | SWITCH     |              |       |      |           |
| 0 | CHANN      |              | ABSBH |      | HDBH      |
| 0 | IML = 0.02 |              |       |      | IML = 0.2 |
| 0 | 32         | 785          | 780   | 772  | 752       |
| 0 | 36         | 905          | 898   | 888  | 864       |
| 0 | 40         | 1026         | 1017  | 1006 | 976       |
| 0 | 44         | 1148         | 1137  | 1124 | 1089      |
| 0 | 48         | 1270         | 1258  | 1242 | 1202      |
| 0 | 52         | 1393         | 1379  | 1361 | 1315      |
| 0 | 56         | 1517         | 1501  | 1480 | 1428      |
| 0 | 60         | 1641         | 1623  | 1599 | 1542      |
| 0 | 64         | 1765         | 1745  | 1719 | 1655      |
| 0 | 68         | 1890         | 1867  | 1838 | 1769      |
| 0 | 72         | 2015         | 1990  | 1958 | 1882      |
| 0 | 76         | 2140         | 2113  | 2078 | 1995      |
| 0 | 80         | 2265         | 2235  | 2198 | 2108      |
| 0 | 84         | 2390         | 2358  | 2318 | 2222      |
| 0 | 88         | 2515         | 2481  | 2438 | 2336      |
| 0 | 92         | 2641         | 2604  | 2558 | 2450      |
| 0 | 96         | 2766         | 2727  | 2677 | 2564      |
| 0 | 100        | 2892         | 2850  | 2797 | 2678      |
| 0 | 104        | 3018         | 2973  | 2916 | 2792      |
| 0 | 108        | 3143         | 3096  | 3035 | 2905      |
| 0 | 112        | 3269         | 3219  | 3156 | 3018      |
| 0 | 116        | 3395         | 3341  | 3277 | 3132      |
| 0 | 120        | 3520         | 3464  | 3397 | 3246      |
| 0 | 124        | 3646         | 3586  | 3518 | 3361      |
| 0 | 128        | 3772         | 3709  | 3638 | 3475      |
| 0 | 132        | 3897         | 3833  | 3758 | 3589      |
| 0 | 136        | 4023         | 3956  | 3877 | 3703      |
| 0 | 140        | 4148         | 4080  | 3997 | 3817      |
| 0 | 144        | 4273         | 4203  | 4117 | 3931      |
| 0 | 148        | 4398         | 4327  | 4236 | 4044      |
| 0 | 152        | 4525         | 4450  | 4357 | 4158      |
| 0 | 156        | 4651         | 4573  | 4478 | 4271      |
| 0 | 160        | 4777         | 4695  | 4598 | 4384      |

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|   |     |      |      |      |      |      |
|---|-----|------|------|------|------|------|
| 0 | 164 | 4903 | 4818 | 4719 | 4497 | 5387 |
| 0 | 168 | 5029 | 4940 | 4839 | 4610 | 5528 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |            |      | HD/ABS RATIO |      |      |       |
|---|------------|------|--------------|------|------|-------|
| 0 |            | 1.1  | 1.15         | 1.2  | 1.3  |       |
| 0 | SWITCH     |      |              |      |      |       |
| 0 | CHANN      |      | ABSBH        |      |      | HDBH  |
| 0 | IML = 0.02 |      |              |      |      |       |
| 0 | 172        | 5156 | 5064         | 4959 | 4723 | 5670  |
| 0 | 176        | 5281 | 5187         | 5079 | 4836 | 5811  |
| 0 | 180        | 5407 | 5311         | 5199 | 4948 | 5953  |
| 0 | 184        | 5533 | 5434         | 5319 | 5060 | 6094  |
| 0 | 188        | 5658 | 5558         | 5439 | 5173 | 6236  |
| 0 | 192        | 5783 | 5681         | 5558 | 5285 | 6378  |
| 0 | 196        | 5908 | 5805         | 5678 | 5397 | 6519  |
| 0 | 200        | 6034 | 5928         | 5797 | 5509 | 6661  |
| 0 | 204        | 6161 | 6051         | 5917 | 5621 | 6803  |
| 0 | 208        | 6287 | 6174         | 6036 | 5733 | 6945  |
| 0 | 212        | 6413 | 6296         | 6155 | 5844 | 7087  |
| 0 | 216        | 6539 | 6419         | 6273 | 5956 | 7229  |
| 0 | 220        | 6665 | 6542         | 6392 | 6068 | 7371  |
| 0 | 224        | 6791 | 6664         | 6411 | 6180 | 7513  |
| 0 | 228        | 6917 | 6787         | 6630 | 6291 | 7655  |
| 0 | 232        | 7043 | 6909         | 6748 | 6403 | 7797  |
| 0 | 236        | 7169 | 7031         | 6867 | 6518 | 7939  |
| 0 | 240        | 7294 | 7153         | 6985 | 6634 | 8081  |
| 0 | 244        | 7420 | 7275         | 7103 | 6749 | 8224  |
| 0 | 248        | 7545 | 7397         | 7221 | 6865 | 8366  |
| 0 | 252        | 7670 | 7519         | 7339 | 6981 | 8508  |
| 0 | 256        | 7795 | 7640         | 7457 | 7096 | 8650  |
| 0 | 260        | 7921 | 7762         | 7575 | 7212 | 8793  |
| 0 | 264        | 8045 | 7883         | 7693 | 7327 | 8935  |
| 0 | 268        | 8171 | 8005         | 7811 | 7443 | 9077  |
| 0 | 272        | 8295 | 8126         | 7932 | 7558 | 9220  |
| 0 | 276        | 8420 | 8247         | 8053 | 7674 | 9291  |
| 0 | 280        | 8545 | 8369         | 8175 | 7789 | 9434  |
| 0 | 284        | 8669 | 8490         | 8297 | 7904 | 9576  |
| 0 | 288        | 8794 | 8611         | 8417 | 8019 | 9718  |
| 0 | 292        | 8918 | 8732         | 8540 | 8134 | 9861  |
| 0 | 296        | 9043 | 8853         | 8662 | 8249 | 10003 |
| 0 | 300        | 9167 | 8975         | 8783 | 8365 | 10146 |



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|   |     |      |      |      |      |       |
|---|-----|------|------|------|------|-------|
| 0 | 304 | 9291 | 9100 | 8905 | 8480 | 10289 |
| 0 | 308 | 9415 | 9225 | 9026 | 8596 | 10360 |

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0 | TABLE 8: LCME Traffic Capacity (CCS Per Channel)

| 0 |        | HD/ABS RATIO |       |       |           |
|---|--------|--------------|-------|-------|-----------|
| 0 |        | 1.1          | 1.15  | 1.2   | 1.3       |
| 0 | SWITCH |              |       |       |           |
| 0 | CHANN  | ABSBH        |       |       | HDBH      |
| 0 |        | IML = 0.02   |       |       | IML = 0.2 |
| 0 | 312    | 9539         | 9349  | 9146  | 8710      |
| 0 | 316    | 9663         | 9473  | 9268  | 8825      |
| 0 | 320    | 9787         | 9598  | 9389  | 8941      |
| 0 | 324    | 9911         | 9723  | 9511  | 9055      |
| 0 | 328    | 10035        | 9847  | 9633  | 9170      |
| 0 | 332    | 10158        | 9972  | 9754  | 9285      |
| 0 | 336    | 10284        | 10097 | 9875  | 9400      |
| 0 | 340    | 10411        | 10220 | 9996  | 9514      |
| 0 | 344    | 10539        | 10344 | 10118 | 9630      |
| 0 | 348    | 10665        | 10469 | 10238 | 9744      |
| 0 | 352    | 10793        | 10594 | 10360 | 9860      |
| 0 | 356    | 10920        | 10717 | 10480 | 9974      |
| 0 | 360    | 11047        | 10841 | 10601 | 10088     |
| 0 | 364    | 11174        | 10965 | 10722 | 10204     |
| 0 | 368    | 11301        | 11090 | 10843 | 10318     |
| 0 | 372    | 11428        | 11213 | 10964 | 10433     |
| 0 | 376    | 11555        | 11338 | 11085 | 10548     |
| 0 | 380    | 11682        | 11462 | 11206 | 10662     |
| 0 | 384    | 11809        | 11586 | 11326 | 10776     |
| 0 | 388    | 11935        | 11710 | 11448 | 10891     |
| 0 | 392    | 12063        | 11834 | 11568 | 11006     |
| 0 | 396    | 12189        | 11958 | 11689 | 11120     |
| 0 | 400    | 12316        | 12081 | 11810 | 11234     |

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**TABLE 9: RCCI Capacity (CCS) (Carried Load)**

| LINKS | INTRA CH | HDBH  |
|-------|----------|-------|
| 2     | 462      | 1216  |
| 3     | 437      | 2003  |
| 4     | 412      | 2808  |
| 5     | 387      | 3624  |
| 6     | 362      | 4447  |
| 7     | 337      | 5274  |
| 8     | 312      | 6107  |
| 9     | 287      | 6942  |
| 10    | 262      | 7780  |
| 11    | 237      | 8619  |
| 12    | 212      | 9461  |
| 13    | 187      | 10304 |
| 14    | 162      | 11148 |
| 15    | 137      | 11995 |
| 16    | 112      | 12843 |

**TABLE 10: LGCI Capacity (CCS) (Carried Load)  
(CARRIED LOAD)**

| LINKS | CHANNELS | HDBH  |
|-------|----------|-------|
| 3     | 90       | 2741  |
| 4     | 120      | 3760  |
| 5     | 150      | 4791  |
| 6     | 180      | 5829  |
| 7     | 210      | 6871  |
| 8     | 240      | 7919  |
| 9     | 270      | 8971  |
| 10    | 300      | 10022 |
| 11    | 330      | 11078 |
| 12    | 360      | 12136 |
| 13    | 390      | 13195 |
| 14    | 420      | 14256 |
| 15    | 450      | 15319 |

|   |    |    |  |     |  |       |
|---|----|----|--|-----|--|-------|
| 0 |    | 16 |  | 480 |  | 16381 |
| 0 | \$ |    |  |     |  |       |

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## 0 8.0 ISDN 2B1Q Simplified Traffic

0 This document provides the worksheets and traffic tables for provi-  
0 sioning 2B1Q ISDN equipment.

0 The ISDN 2B1Q offering supports the American National Standards Insti-  
0 tute (ANSI) standard ISDN 2B1Q (Two Binary One Quarternary) U-line and  
0 S/T line interface for ISDN Basic Rate Access (BRA) terminations. The  
0 2B1Q Access Subsystem will be subtended from a DMS-100 ISDN LTC/LGC or  
0 ISDN RSC peripheral. It will provide access for most existing LCM  
0 line types plus ISDN 2B1Q-U and S/T line interface types for both the  
0 domestic and Offshore markets. Note that for notational purposes,  
0 where this ECM refers to ISDN LGC/LTC equipment, then the comments  
0 also refer to ISDN LGCO and ISDN RSCO equipment (also known as ISDN  
0 PLGC/PLTC and ISDN PRSC (PCM30) equipment) unless explicit equipment  
0 types are stated. See section 2.2 HARDWARE DEPENDENCIES below for  
0 market specific hardware information.

0 The ISDN 2B1Q Access Subsystem will offer the North American Standard-  
0 ized 2B1Q U and S/T line ISDN BRA from an enhanced capacity ISDN LCM  
0 (LCME). The LCME is basically an LCMI that has been utilized for the  
0 2B1Q interface. BCS 32 will expand the LCME services to offer EBS  
0 (P-Phone), Datapath, S/T ISDN and POTS services. The 2B1Q Access Sub-  
0 system will not support the AMI line card.

0 The ISDN 2B1Q Access Subsystem adds the following components to the  
0 LCME:

- 0 - A single slot 2B1Q U-Line ISDN line card (U-ISLC)
- 0 - A new high capacity line drawer
- 0 - A new Enhanced Bus Interface Card
- 0 - New ISDN LCM power packs

0 The 2B1Q line card will be used in both host and remote lo-  
0 cations. ISDN terminals on 2B+D BRA loops will have the option  
0 of being configured with either ISDN Functional signalling, or  
0 Meridian Feature Transparency (MFT) stimulus signalling. Func-  
0 tional and MFT sets can co-exist on the same BRA interface.

0 The 2B1Q line drawer will accomodate 60 single slot line cards,  
0 with eight (8) line drawers per LCME. Thus the LCME will support

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0 480 single slot ("U") 2B1Q linecards, or 240 "S/T" interface  
0 linecards.

0 Note that there are several "flavours" or variations of ISDN sup-  
0 ported by DMS systems for various markets, each of which is (in  
0 general) based on the CCITT Blue Book (1988) ISDN Recommenda-  
0 tions:

- 0 - North American (Bellcore) ISDN
- 0 - Australian (Austel) ISDN
- 0 - European (ETSI MoU) ISDN

0 This ECM supports the engineering of both North American ISDN  
0 (specifically for the Canadian marketplace) as well as the engi-  
0 neering of Australian ISDN.

0 North American ISDN is based on Bellcore Technical Requirements  
0 which describe in detail the desired ISDN implementation for the  
0 U.S. marketplace. Currently various vendors and telecommuni-  
0 cations administrations are participating in the Bellcore driven  
0 National ISDN-1 (NI-1) program, which defines a set of Technical  
0 Recommendations to be followed by all service providers and man-  
0 ufacturers of ISDNs. NI-2 and NI-3 programs are also in the  
0 planning stages.

0 Australian ISDN is similar to Bellcore ISDN in that it is based  
0 (in general) on the CCITT Blue Book. However, Standards  
0 Australia has developed specific standards for BRA and PRA for  
0 the Australian marketplace (Austel Technical Standards TS13 and  
0 TS14). Australian ISDN is supported by the Offshore/PCM30 XPMs  
0 (XPMOs or PXPMS).

0 The European BRA and PRA is based on, and in compliance with, the  
0 relevant European telecommunications standards produced by the  
0 European Telecommunications Standards Institute (ETSI) in satis-  
0 faction of the work program resulting from the European Confer-  
0 ence of Postal and Telecommunications Administrations (CEPT)  
0 Memorandum of Understanding (MoU). ETSI ISDN engineering rules  
0 and Grade of Service criteria will be included in a future issue  
0 of this ECM.

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## 0 8.1 HARDWARE PROVISIONING

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### 0 8.1.1 HARDWARE USAGE RESTRICTIONS

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0 | There are several ECMs which address ISDN 2B1Q engineering. For  
0 | U.S. markets see ECM 497 (Simplified Traffic Provisioning) as  
0 | well as ECM 616 (building blocks simplified ISDN 2B1Q). This  
0 | document addresses ISDN 2B1Q simplified teletraffic engineering  
0 | rules for the Canadian and Australian markets, and includes the  
0 | relevant Grade of Service provisioning tables.

0 | For hardware and software ordering information for the domestic  
0 | (Canadian) market, see ECM-418. For international/offshore hard-  
0 | ware and software ordering information, see ECM 529.

0 | The rules in this ECM apply to two processor ISDN XPMS and XPMOs,  
0 | (the ISDN LGC and ISDN LTC for the Canadian market, as well as  
0 | the ISDN LGCO and ISDN RSCO for the Australian market). ISDN RSCs  
0 | are NOT being deployed in the Canadian marketplace for ISDN ser-  
0 | vices.

0 | The two processor (MP/SP) RSCO will NOT support the following :

- 0 | - Emergency Stand-Alone (ESA)
- 0 | - P-side trunking or P-side remote links
- 0 | - Dual remote concentrators (dual RCCOs)

0 | Intra-switching WILL be supported on the RSCO in BCS34. The rules  
0 | for RSCO intra-switching are included in this ECM. All of the  
0 | above capabilities will be supported by the RSC-Sonet (RSC-S) in  
0 | the future.

0 | Engineering rules for coin lines (LCMs) have been removed from  
0 | this ECM, since coin lines are not provisionable on LCMEs. For

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0 | engineering teletraffic rules for coin lines, refer to ECM-497  
0 | (North America only).

0 | For RSCOs, the Packet Handler (PH) resides at the host.

0 | In host applications, the PH equipment may reside at the ISDN  
0 | LTC/LGC/LGCO location or at a centralized location. The PH may  
0 | be accessed via the P-Side or the C-side of the ISDN  
0 | LTC/LGC/LGCO. Due to the capacity loss inherent in C-side ISDN  
0 | (Dd and Bd) loopbacks, C-side PH links are the preferred sol-  
0 | ution.

0 | In a 2B1Q ISDN office, the ISDN controller interfaces LCMEs,  
0 | DCHs, and PH links. Although primarily designed to handle 2B1Q  
0 | traffic exclusively, LCMEs can accommodate (at BCS 32 and above)  
0 | mixed services in the same line drawer (i.e. 2B1Q ISDN, POTS,  
0 | DATAPATH etc.).

0 | The LGCO which is acting as host to an RSCO must have 64KB clear  
0 | channel capability. Likewise, any DTC that provides links to the  
0 | Packet Handler must be equipped for 64KB clear channel capabil-  
0 | ity. This is accomplished by equipping XPMS with the appropriate  
0 | DS-1/PCM30 circuit packs. Consult ECM-418 and ECM-529 for hard-  
0 | ware and software ordering information and details.

#### 0 8.1.2 HARDWARE DEPENDENCIES

0  
0 | All hardware dependencies are documented in ECM-418 (domestic)  
0 | and ECM-529 (international/offshore).

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### 0 8.1.3 PROVISIONING CONSIDERATIONS

0  
0 See section 2.6 for a description of the traffic tables used in  
0 this ECM as well as a discussion of the Grade of Service (GOS)  
0 employed in the various markets.

0 It is assumed all traffic terminating on LCMs, DTCs, LTCs, LGCs,  
0 and RSCs will be traffic engineered per the existing methods  
0 found in ECM 350, and that only the residual non-ISDN lines, if  
0 any, and all non-ISDN lines that will home on the LCMEs will be  
0 considered as Inputs along with the 2B1Q equipment.

0 An ISDN Logical Terminal Identifier (LTID) is a data structure  
0 associated with ISDN BRA terminals (both B-channel and D-channel  
0 terminals). Note the following LTID restrictions :

- 0 - 511 LTIDs per DCH (maximum)
- 0 - 2 B-channel LTIDs per 2B+D BRA loop (maximum)
- 0 - no more than 8 B-channel or D-channels LTIDs/loop

0 The average DPPS (Data Packets Per Second) per D-channel terminal  
0 is restricted to a maximum of 0.4 DPPS for each terminal con-  
0 nected to a 2B+D loop. Increasing the number of packets above  
0 0.4 DPPS/D-terminal will require additional D-Channel Handlers  
0 (DCHs) due to the current limit of 50 DPPS per DCH. (Note : the  
0 50 DPPS limit has been set based on a data packet size of 128  
0 bytes).

0 The Statistical Multiplex Ratio (SMR), which is used to determine  
0 the amount of concentration of ISDN D-channel data into Packet  
0 Handler links (Bd links) can be specified by the operating com-  
0 pany from a value of 0 to 64:1.

0 The LCME provides flexible provisioning of Time Division Multi-  
0 plex (TDM) Dd groups. Any four ISDN lines from the same LCME  
0 physical drawer can belong to the same Dd group. Lines from the  
0 same Dd group must belong to the same physical drawer. Consult  
0 ECM 418 for further details on 2B1Q line drawer line card dis-  
0 tribution. See also section 2.4.3 below.

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0 The trunk allocation algorithm is employed for PCM30 links from  
0 and RSC0, as well as PCM30 links to an LGC0 packet handler. This  
0 is reflected in the calculations sections for single controller  
0 configurations. Note that the trunk allocation algorithm will no  
0 longer be employed for RSC0 PCM30 trunks at a host LGC0 as of  
0 BCS34. This will be reflected in a future issue of this ECM.

0 Six sections make up the teletraffic method. Iteration is re-  
0 quired when the calculations indicate overloading of equipment.  
0 The paragraphs below give tips on parameters that can be adjusted  
0 to help deload equipment.

0 Where there is an alphabetical suffix associated with a formula  
0 (eg : R44a, R44b), choose the appropriate formula which repres-  
0 ents the market under consideration (eg : R44a - Canada; R44b -  
0 Australia).

0 Equipment summary sheets follow the traffic tables.

#### 0 | TRAFFIC MODEL INPUT PARAMETERS

0  
0 The first section (Traffic Model Input Parameters) covers the  
0 line traffic characteristics (number of lines, CCS/line, etc.).

0 Q1 asks for LCME line fill, while Q2 asks for the HDBH/ABSBH ra-  
0 tio. Either of these can be adjusted as required. For example,  
0 if the real-time analysis shows that the configuration should be  
0 deloaded, or if processing capacity is affected by an RSC0 sub-  
0 tended 50 miles or more beyond the host peripheral, Q1 or Q2 can  
0 be adjusted appropriately.

0 Q16 and Q17 ask for terminal configuration data. These figures  
0 are used in the parameter verification section to check that DMS  
0 ISDN datafill limits are not exceeded. In particular, C3 and C4  
0 check to see that LTID limits are not exceeded. LTIDs are also  
0 checked during DCH calculations (see below). See section 2.4  
0 above for a further discussion of ISDN LTIDs.

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0 Q40 is a parameter associated with (residual) engineering of  
0 LGC0s which subtend RSC0 PCM30 links to the network. This is  
0 only valid for single LGC0 applications. Use of Q40 implies that  
0 the number of links from RSC0s is known (i.e. that the number of  
0 PCM30s from the RSC0s was engineered on a previous pass through  
0 this ECM). Q41 describes the number of PH bound DS0s (for Bb or  
0 Bd links) which are embedded WITHIN the quantity of RSC0 PCM30s  
0 (as described by Q40).

## 0 | GENERAL CALCULATIONS

0  
0 The General Calculation section assembles overall LCME parameters  
0 (e.g. physical number of 2B1Q and residual non-ISDN lines, card  
0 slots, and host/network circuits required).

## 0 | LCME CALCULATIONS

0  
0 The LCME Calculations section determines the physical number of  
0 LCMEs required and the number of DS30A links required (minimum of  
0 2, maximum of 18) to the ISDN LGC/LTC/RCC controller based on av-  
0 erage traffic per line (per LCME).

0 Note that these rules will support multiple LCMEs per controller  
0 for configurations which run a high percentage of POTS or other  
0 low capacity non-ISDN applications. However, a 100% ISDN config-  
0 uration is limited to one LCME per controller (LGC/LTC/RCC) be-  
0 cause of the inherent loss of C-side controller channels due to  
0 ISDN BRA Dd loopbacks.

0 In certain circumstances (for example, configurations which have  
0 only sparsely provisioned ISDN 2B1Q lines) it may be more appro-  
0 priate to calculate the number of required TDM Dd groups based on

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0 the number of line drawers per LCME (instead of simply number of  
0 ISDN lines per LCME, as is the case with R12/R13). This is due  
0 to the fact that in sparse ISDN concentrations non-full Dd groups  
0 may be a practical reality. In this case, the following method  
0 may be employed to obtain a more accurate figure :

- 0 i) Obtain total number of ISDN lines per LCME (R12)  
0 ii) divide by 8 (line drawers per LCME) and ROUND UP  
0 (this gives # ISDN lines/drawer)  
0 iii) multiply by 8 (gives corrected # ISDN lines (R12'))

0 Note that this section also has Q1 and Q2 as product factors  
0 (R14). LCME calculation once again has Q1 and Q2 as product fac-  
0 tors. This allows for ABSBH traffic input parameters (Q2 > 1) or  
0 HDBH traffic input parameters (Q2 = 1) as well as LCME line fill  
0 adjustments.

0 The switched channels/LCME calculation (R16) allows for the se-  
0 lection of various GOS values for the various markets. Use the  
0 Traffic/LCME figure as the index into the Delay/Loss tables and  
0 read the value from the channels column which corresponds to the  
0 desired GOS. If the number of DS30A links per LCME is greater  
0 than 18, deloading is required. To deload, either alter the  
0 traffic model or adjust Q1 (PM line fill) or Q2 as appropriate.

#### 0 DCH (PER LCME) CALCULATIONS

0  
0 The DCH per LCME Calculation section determines the number of DCH  
0 circuit packs required for call control signalling and packet  
0 data. The requirements are calculated for each generic LCME;  
0 that is, on a per LCME basis.

0 The checks at the end of the section verify that the total  
0 SAPI-16 data rate of 50 DPPS is not exceeded and that the LTID  
0 load per DCH is not exceeded.

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0 | If the data rate per DCH requires deloading (C20) then one of the  
0 | following parameters requires derating : Number of D-terminals  
0 | per loop (Q17), DPPS per D-terminal (Q25), or the SMR (Q26).

0 | If the LTID per DCH load is exceeded (C21), then either the num-  
0 | ber of D-terminals per loop (Q17) or the SMR (Q26) need to be de-  
0 | rated.

#### 0 | LGC/LTC/LGCO CALCULATIONS

0  
0 | The ISDN LGC/LTC/LGCO Calculations comprise several sections  
0 | which allow for single/multiple controller configurations, as  
0 | well as P-side or C-side PH link engineering. Note that P-side  
0 | PH links are valid only for single LGC/LTC/LGCO configurations,  
0 | since provisioning groups of controllers each of which has par-  
0 | tially filled PCM30/DS-1 PH links is poor engineering practice.

0 | The calculations determine the number of ports required for  
0 | DS30A, LCME, DCH, and PCM30 interfaces measured against the P-  
0 | side capacity of 20 ports, as well as the number of C-side ports  
0 | required for ISDN loopbacks, PH interfaces, and circuit switched  
0 | traffic. C-side requirements are analytically determined and  
0 | measured against the physical capacity of 480 channels.

0 | The first section (GENERAL) determines the number of controllers  
0 | required based on the number of DS30A and DCH ports required per  
0 | LCME.

#### 0 | SINGLE CONTROLLER (C-SIDE PH)

0 | The Single Controller (C-side PH links) section begins at step  
0 | R40. Circuit switched channels to the network use a non-blocking  
0 | criteria for Canadian networks and a GOS of 0.01 for Australian  
0 | configurations (R43). This configuration allows for RSCOs sub-  
0 | tended from the LGCO controller, and includes the effect of the

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0 | spreading the RSC0 PCM30 links at the C-side of the LGCO as per  
0 | the trunk allocation algorithm.

0 | R44 calculates the number of channels that will be reserved by  
0 | the Trunk Allocation algorithm. This applies if there are PCM30  
0 | links from a subtended RSC0 (Australian configurations only). To  
0 | determine the number of reserved channels, divide the number of  
0 | PCM30 links (Q40) by four and then Round Up. This is then multi-  
0 | plied by four (trunk allocation algorithm reserves groups of four  
0 | C-side DS30 ports) and once again by 30 to obtain the reserved  
0 | number of channels. R45 calculates the number of channels re-  
0 | quired based on teletraffic considerations only, disregarding the  
0 | effect of the trunk allocation algorithm. R44 and R45 are used  
0 | by succeeding calculations to determine the actual number of  
0 | links/channels used up on the C-side of the controller. The two  
0 | values are compared and the larger of the two is selected.

0 | R46 and R47 ensure that there is enough bandwidth for the re-  
0 | quired number of C-side links and channels, respectively. Note  
0 | that this includes checking DS0 64K channels to the C-side PH  
0 | (nailed up via SPECCON), as well as checking Dd loopback chan-  
0 | nels, switched channels for voice traffic, and nailed up PCM30  
0 | links from subtended RSC0s (taking into consideration the trunk  
0 | allocation requirements by comparing R44 and R45). Deloading may  
0 | be required if any of the limits are exceeded. Note that  
0 | MAX(R44,R45) indicates that the largest value should be used af-  
0 | ter comparing R44 and R45.

#### 0 | SINGLE CONTROLLER (P-SIDE PH)

0 | The Single Controller (P-side PH) links section uses similar cri-  
0 | teria as per the C-side PH section, but additional calculations  
0 | are required. Both P-side RSC0 links as well as P-side PH links  
0 | are allowed in this configuration. The effect of the trunk allo-  
0 | cation algorithm is also included in the calculations.

0 | Note that the calculations in this section support the configura-  
0 | tion in which ALL PH DS0s enter and exit the XPM via the P-side  
0 | only (ie : to and from LCMEs, RSC0s, and PH ports on the P-side).  
0 | For C-side PH connections, see 2.4.5.1 above. Mixing of P-side  
0 | and C-side PH DS0s on the same XPM is NOT supported in this ECM.

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0 R50 calculates the number of P-side PH ports required. Note that  
0 Australian configurations must consider not only local LCME PH  
0 links (R41), but also RSC0 LCME PH links (Q41).

0 R52 checks to ensure that there are enough P-side hardware slots  
0 for DCH and PH PCM30/DS-1 cards.

0 R53 and R54 are similar to R44 and R45 above. The number of  
0 channels reserved by the trunk allocation algorithm and the num-  
0 ber of traffic channels (disregarding the trunk allocation algo-  
0 rithm) are calculated for comparison purposes. In this case,  
0 note that channel totals (for Australian configurations) include  
0 both RSC0 as well as PH channel requirements.

0 R55 and R56 check C-side bandwidth (similar to R46 and R47  
0 above).

#### 0 | MULTIPLE CONTROLLER CONFIGURATIONS

0 The multiple ISDN LGC/LTC/LGC0 section begins at step R60. When  
0 configuring multiple ISDN LGCs/LTCs/LGC0s, the number of LCME  
0 modules may not be distributed evenly across all controllers.  
0 This will result in a group of identical controllers (calcu-  
0 lations for common controllers begins at R60) as well as one con-  
0 troller which is engineered with the residual LCMEs (calculations  
0 for the residual controller begin at R70).

0 Note that multiple controller configurations do not allow P-side  
0 PH connectivity or subtended PCM30 links from RSC0s. The trunk  
0 allocation algorithm is therefore not relevant for multiple con-  
0 troller configurations.

0 R60 is always  $\geq 1$  (since R30 is always  $\leq 1$ ) and therefore R60  
0 will give the number of LCMEs associated with each of the identi-  
0 cal controllers. The other calculations (R60-R70) are similar to  
0 calculations for single controllers with C-side PH connections.  
0 See the above paragraphs for details on the effect of different  
0 parameters (R40-R50).

0 R70 calculates the number of residual LCMEs for the residual con-  
0 troller. Note that while there may be several LCMEs associated

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0 with the residual controller, at most there can only be ONE resi-  
0 dual controller per office. If R70 = 0, this indicates that  
0 there are no residual controllers and that the engineering exer-  
0 cise is complete.

## 0 RSC0 CALCULATIONS (AUSTRALIA)

0  
0 This section is valid for single RSC0 configurations (Australia  
0 only) and includes C-side PH host link calculations.

0 R80 checks the number of RCC0 P-side ports required for LCME and  
0 DCH interfaces (determined in earlier sections) measured against  
0 the physical capacity of 19 ports (i.e. 20 ports minus the spare  
0 DCH port).

0 R81 checks the total P-side port requirement (DS30As, DCHs, and  
0 RMMs). If a total of more than 20 ports are required, then de-  
0 loading of either the LCME traffic (see Q1, Q2, Q20-Q24), or of  
0 RMMs (Q32) or the number of DCHs (increasing Q26) is required.

0 If the maximum number of host links are exceeded (R90) then the  
0 LCME traffic parameters must be deloaded (see above paragraph  
0 concerning Q1, Q2, Q20-Q24).

0 The rules in this ECM include intra-switching for both MP/SP and  
0 UP RSCOs (which will be available in BCS34). For configurations  
0 which will not include intra-switching, simply set Q31 = 100 (%  
0 of featured calls for originating intra traffic).

0 If there are insufficient channels for intra-switching and Dd  
0 loopbacks (R93), then one method for deloading the intra traffic  
0 would be to choose a lower GOS (such as 0.09) in step (R91), thus  
0 reducing the number of intra-channels required. Otherwise, reduce  
0 the LCME traffic (Q1, Q2, Q20-Q24). If one of these methods is  
0 not used then the blocking on intra-switched traffic will be  
0 greater than the desired GOS.



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0 8.1.4 OFFICE LAYOUT INFORMATION

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0 N/A

0 8.1.5 TRAFFIC TABLES

0  
0 Traffic tables based on Canadian and international HDBH load lev-  
0 els for switched ISDN 2B1Q and non-ISDN lines follow the work-  
0 sheets.

0 Terminating Matching Loss (TML) refers to the blocking probab-  
0 ility of the terminating portion of a call. At low blocking proba-  
0 bilities, this may be expressed (conservatively) as the sum of  
0 the blocking at each stage of the terminating path. In DMS sys-  
0 tems, TML is expressed as the sum of the blocking probabilities  
0 in the concentrator (LCME) and the controller (LGC/LTC/RCC). In-  
0 coming Matching Loss (IML) further defines terminating path  
0 blocking as the sum of TML + the probability of blocking through  
0 the network element.

0 DMS network elements are provisioned with a High Day Busy Hour  
0 (HDBH) blocking probability of 1% (0.01), or with an Average Busy  
0 Season Busy Hour (ABSBH) probability of 0.1% (0.001). See NTP  
0 297-1001-450 for further traffic criteria information.

0 TML for the Canadian ISDN market is composed of 9% (0.09) within  
0 the LCME and 0% blocking (1:1) in the ISDN LGC/LTC controller.  
0 IML for the Canadian market will therefore be 10% (0.1) at HDBH.

0 TML for the Australian ISDN market is composed of 1% (0.01) in  
0 both the LCME and LGGO/LTCO/RCCO controller. IML for the  
0 Australian market will therefore be 3% (0.03) at HDBH.

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0 The traffic tables used in this ECM are based on the Northern  
0 Telecom delay/loss model. A delay-loss system consists of two  
0 traffic streams combining loss (or blocking) with various delay  
0 models. The originations are queued, while the terminations are  
0 given loss treatment when all channels or service circuits are  
0 busy. In practice, this may not always be the case, particularly  
0 since originating subscribers who encounter blocking usually try  
0 again immediately; however, for low blocking/delay probabilities,  
0 this model closely approximates actual traffic characteristics.  
0 DMS systems actually queue originating subscribers until an idle  
0 channel is available; terminating calls are given two attempts at  
0 securing an idle channel before being routed to loss treatment.

0 The delay/loss tables in this ECM use a simple two stream delay  
0 loss ratio of 55/45. Originations comprise 55% of the traffic  
0 model and are based on the Erlang C model (lost calls queued).  
0 Terminations comprise 45% of the traffic model and are based on  
0 Erlang B assumptions (lost calls cleared). A comparison of these  
0 tables with standard traffic tables shows that the 55/45 delay  
0 loss model lies inbetween typical Poisson and Erlang B curves.  
0 Varying the origination/termination ratio produces slight differ-  
0 ences as may be expected; favouring originations produces more  
0 conservative traffic capacity values.

0 Note that in DMS systems delay due to channel congestion is much  
0 lower than delay due to real-time processing in peripheral equip-  
0 ment. For this reason Dial Tone Delay (DTD) and Incoming Start  
0 Dial Delay (ISDD) are not used as parameters or input for the  
0 traffic model.

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0 8.2 PRODUCT/SYSTEM SPECIFICATION

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0 8.2.1 PHYSICAL CHARACTERISTICS

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N/A

0 8.2.2 EMI/EARTHQUAKE INFORMATION

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N/A

0 8.2.3 SPARING INFORMATION

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N/A

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0 8.3 SOFTWARE PROVISIONING

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0 8.3.1 REQUIRED SOFTWARE PACKAGES AND INTERDEPENDENCIES

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0 N/A

0 8.3.2 SOFTWARE USAGE RESTRICTIONS

0

0 N/A

0 8.3.3 MEMORY PROVISIONING

0

0 N/A

0 8.3.4 REAL TIME IMPACT

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0 For peripheral real-time considerations see System Engineering  
0 Bulletin (SEB) 91-11-001, issue 1, "BCS33 PERIPHERAL PROCESSOR  
0 OCCUPANCY ALLOCATIONS AND CALL TIMING TABLES".

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0 For LCME real-time considerations, see SEB 91-05-002, issue 001,  
0 "Enhanced Line Concentrating Module (LCME) Performance and Admin-  
0 istration Guidelines".

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0 APPENDIX S

0 SOFTWARE FEATURES

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Software Features  
Appendix S

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0 SOFTWARE FEATURES  
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0 1.0 Software Features

0 1.1 General

0 This section captures the feature requirements of the office. Indi-  
0 vidual features are grouped into a number of entities called Feature  
0 Packages. Feature packages are identified by DMS Product Engineering  
0 Codes (PEC), e.g. Common Basic Package: NTX001AA04.

0 Feature packages relate to software only. Hardware required to imple-  
0 ment individual features must be identified and ordered separately un-  
0 der the appropriate hardware sections.

0 The feature packages are further grouped into Master Packages. Cus-  
0 tomers can order either by Master Packages (e.g. NTX071BB01 Bell  
0 Canada - Local) or by individual feature packages, or a combination of  
0 both.

0 To find out the available features within one available package, the  
0 customer has to refer to subsection 1.5.1 of this chapter which is up-  
0 dated automatically to include the RTM features.

0| This release includes the feature packages contained in BCS-36.

0 The following describes the grouping of Feature Packages into Master  
0 Packages and also new feature packages introduced via various BCS's:

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0 As a result of the grouping of Feature Packages into Master Packages,  
0 a certain rationalization was undertaken which necessitated the cre-  
0 ation of five (5) "phantom" Feature Packages, namely:

|            |                    |
|------------|--------------------|
| 0 NTX901AA | Local Features I   |
| 0 NTX902AA | Local Features II  |
| 0 NTX801AA | Toll Features I    |
| 0 NTX802AA | Toll Features II   |
| 0 NTX701AA | Autovon Features I |

0 These packages are not orderable and therefore, are not found in this  
0 section.

0 With this new scheme, a two-level packaging concept has evolved. By  
0 definition, a Feature Package consists of features only and a Master  
0 Package consists of Feature Packages only.

0 TARGET

0 Unless specified, the packages are applicable to either NT40 or  
0 SuperNode. If TARGET is shown, the package can only be ordered for a  
0 switch containing that core. TARGETs are only shown against feature  
0 packages in the Feature Package Content and against master packages in  
0 the Master Package Content sections.

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0 1.2 Feature Package Selection

0 To facilitate the Telco to select the right master and feature pack-  
0 ages, two listings are provided:

0 Subsection 1.5.1 Feature Package Content

0 Subsection 1.5.2 Alphabetical List of Features

0 These two listings detail all the DMS-100 family features which are  
0 currently available.

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0 1.3 Master Packages

0 As indicated in subsection 1.1 under General, Customer can order by:

0 a) Feature Packages

0 b) Master Packages

0 c) Combination of a) and b).

0 Care must be taken not to duplicate Feature Packages. For example, it  
0 is superfluous to order NTX002AB (a Master Package) and NTX053AA as  
0 NTX053AA is already included in NTX002AB.

0 Having checked off the required packages the Telco refers to sub-  
0 section 1.5.3 Master Packages to verify that the selected feature  
0 packages are not duplicated in the master packages selected.

0 The following rule applies:

0 (i) If any of the selected feature packages are included in the  
0 master packages selected, these feature packages are then  
0 eliminated.

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0 1.4 Feature Package Interdependencies

0 Certain packages are dependent upon other packages in order to func-  
0 tion. These prerequisite packages must be ordered when dependent  
0 packages are.

0 Having checked off the required packages the Telco refers to sub-  
0 section 1.5.4 Feature Package Interdependencies to verify whether all  
0 prerequisite packages have been ordered.

0 The following rule applies:

0 (i) If prerequisites exist for any of the packages selected, the  
0 prerequisites are then added to the selection.

0  
0 For any Canadian office which has ordered software package  
0 NTX250AA Datapath - Basic, software package NTX255AA Datapath  
0 Provisioning (Canada) must also be ordered. NTX255AA is not  
0 available to U.S. offices.

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0 1.5 Listings of Software Packages/Features

0 1.5.1 Feature Package Content

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0 NTG230AA01 STATUS LTD  
0 TOPS VOICE SERVICE NODE FOR  
0 AABS (GENERIC)

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | TABS CALL DISTRIBUTOR                          | AG1221 |
| 0 | TABS CONTROL LINK INTERFACE TO DMS             | AG1223 |
| 0 | TABS OA&M                                      | AG1222 |
| 0 | T1 RESOURCE MANAGER & VOICE CONNECTION MANAGER | AG1250 |

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0 NTXA00AB02 STATUS A+M  
0 CLASS - CALL SETUP (UPGRADE OF  
0 NTXA00AA IN BCS32)

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | CLASS - AUTOMATIC CALL BACK/AUTOMATIC RECALL | AG0728 |
| 0 | CLASS: AUTOMATIC CALL BACK AUTOMATIC RECALL  | AG1228 |
| 0 | ENHANCEMENTS                                 |        |
| 0 | CLASS: AUTOMATIC RECALL DATE AND TIME        | AG1631 |
| 0 | NETWORK DIAL PLAN DISPLAY                    | AG0981 |

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0 NTXA00AC01 STATUS RTM  
0 CLASS - CALL SETUP

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | CLASS - AUTOMATIC CALL BACK/AUTOMATIC RECALL | AG0728 |
| 0 | CLASS: AUTOMATIC CALL BACK AUTOMATIC RECALL  | AG1228 |
| 0 | ENHANCEMENTS                                 |        |
| 0 | CLASS: AUTOMATIC RECALL DATE AND TIME        | AG1631 |
| 0 | NETWORK DIAL PLAN DISPLAY                    | AG0981 |

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0 NTXA01AA02 STATUS RTM  
0 CLASS: CALLING NUMBER DISPLAY

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | CLASS CMR FIRMWARE (C SIDE INTERFACE)        | AC0439 |
| 0 | CLASS CMR FIRMWARE (CALLING NUMBER DELIVERY) | AG1216 |
| 0 | CLASS CMR FIRMWARE (DIAGNOSTICS)             | AC0438 |
| 0 | CLASS CMR FIRMWARE (FIRMWARE DOWNLOADING)    | AG1215 |
| 0 | CLASS CMR FIRMWARE (OVERVIEW)                | AC0440 |
| 0 | CLASS: CALLING NUMBER DELIVERY               | AG0781 |
| 0 | CLASS: CMR LOADING                           | AG1160 |
| 0 | CLASS: CMR MAINTENANCE                       | AG1161 |
| 0 | CLASS: CND INTEGRATION                       | AG0782 |
| 0 | CLASS: MODEM CARD DIAGNOSTIC                 | AG0780 |

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0 NTXA02AA02 STATUS RTM  
0 CLASS: CUSTOMER ORIGINATED  
0 TRACE

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | CLASS CUSTOMER ORIGINATED TRACE               | AG0762 |
| 0 | CLASS: CUSTOMER ORIGINATED TRACE ENHANCEMENTS | AG1151 |

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0 NTXA03AA02 STATUS RTM  
0 REMOTE DLM WITH ESA

0 RDLM ESA AD0641

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0 -----0 NTXA05AA03 STATUS RTM  
0 SCOPEDIAL/ISUP INTERWORKING

|                                                       |        |
|-------------------------------------------------------|--------|
| 0 ATTENDANT CONSOLE AND ISUP TRUNK CALL PROCESSING -  | AD0342 |
| 0 PHASE I                                             |        |
| 0 ATTENDANT CONSOLE AND ISUP TRUNKS CALL PROCESSING - | AD0343 |
| 0 PHASE 11                                            |        |
| 0 AUTOVON AGENTS AND CCS7 IBN TRUNK INTERWORKING      | AD1292 |
| 0 AVINSW/IBN ISUP INTERWORKING & SUPERVISION          | AD1517 |
| 0 ENHANCEMENTS                                        |        |
| 0 ISUP AV INTERSWITCH TRUNKS AND SCOPEDIAL LINE       | AD0364 |
| 0 INTERWORKING                                        |        |
| 0 ISUP AVINSW TRUNKS AND IBN TRUNKS INTERWORKING      | AD0358 |
| 0 ISUP TRUNKS & ATTENDANT CONSOLE INTERWORKING-BSY    | AD0359 |
| 0 VERIFY LINE                                         |        |
| 0 NETWORK RING AGAIN ON AUTOVON                       | AD1528 |
| 0 PREEMPTION OF CALLS INVOLVING AC AND AUTOVON ISUP   | AD0879 |
| 0 TRUNKS.                                             |        |
| 0 SCOPEDIAL LINE AND ISUP AVINSW TRUNK INTERWORK-II   | AD1155 |

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0 NTXA08AA01 STATUS RTM  
0 CCC DP/DTMF TANDEM OFFICE  
0 TREATMENT

0 SS7 SERVICES ENHANCEMENTS AG0489

0

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0 NTXA09AA01 STATUS RTM  
0 SL-100 PAD PROVISIONING

0 PAD PROVISIONING SOFTWARE AG0621

0

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0 NTXA10AA01 STATUS RTM  
0 MERIDIAN SL-100 CABINETIZED  
0 SOFTWARE

0 MMI SOFTWARE INTERFACE FOR CABINETIZED MERIDIAN SL- AD0757  
0 100

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0 NTXA11AA01 STATUS RTM  
0 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25

0 PATCH ADMINISTRATION AND DOWNLOADING VIA NOP/X.25 AG0814

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0 NTXA15AA01 STATUS RTM  
0 CALL PROGRESS TONES

0 CALL PROGRESS / COMFORT TONES AL0810

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0 NTXA16AA01 STATUS RTM  
0 ENHANCED WATS OPERATION (POTS)

0 ENHANCED WATS AF1092

0

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0 NTXA17AA02 STATUS RTM  
0 AUTOMATIC ALTERNATE BILLING  
0 SERVICE

0 AABS VSN XP RESTRUCTURE AF3011  
0 BILLING METHOD COLLECTION AF1528  
0 BILLING VERIFICATION AF1529

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0 NTXA18AA01 STATUS RTM  
0 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING

0 SUBSCRIBER CONTROLLED TOLL RESTRICTION AF1094

0

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0 NTXA20AA01 STATUS RTM  
0 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE

0 TOPS OPEN INFORMATION ACCESS (OIA) AF1095

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0 NTXA22AA01 STATUS RTM  
0 ENHANCED ARS

0 IDDD VIA ARS AF1097

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0 NTXA24AA01 STATUS RTM  
0 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL

0 EQUAL ACCESS ENHANCED CARRIER TOLL DENIAL AF1098

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0 NTXA26AA01 STATUS RTM  
0 TOPS INCOMING FEATURE GROUP D  
0 SIGNALLING

0 TOPS INCOMING FEATURE GROUP D SIGNALLING

AF1102

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0 -----0 NTXA27AA01 STATUS RTM  
0 EXECUTIVE CONFERENCE

0 EXECUTIVE CONFERENCE

AF1268

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0 -----0 NTXA28AA02 STATUS RTM  
0 TOPS AWT ENHANCEMENTS0 BUSY LINE VERIFY AWT ENHANCEMENT  
0 SPECIAL VERIFY AWT ENHANCEMENT  
0 TOPS AMA ON OPERATOR SEQUENCE CALLS

AF1120

AF1121

AF1103

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0 NTXA30AA01 STATUS RTM  
0 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD

0 VFG LOOK AHEAD AF1269

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0 NTXA31AA01 STATUS RTM  
0 DISA THIRD DIAL TONE - IBN

0 DISA THIRD DIAL TONE AF1270

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0 NTXA32AA01 STATUS RTM  
0 DISTINCTIVE CALL WAITING  
0 RINGBACK

0 DISTINCTIVE CALL WAITING RINGBACK AF1271

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0 NTXA33AA01 STATUS RTM  
0 MADN RING FORWARD

0 MADN RING FORWARD AF1272

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0 NTXA35AA03 STATUS RTM  
0 NETWORK NUMBER DISPLAY0 NETWORK DIAL PLAN DISPLAY AG0981  
0 NETWORK DISPLAY ENHANCEMENT AG1255  
0 NETWORKED EBS DISPLAY AC0263

0

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0 NTXA36AA01 STATUS RTM  
0 NETWORK WIDE RING AGAIN

0 NETWORK WIDE RING AGAIN AC0262

0

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0 NTXA38AA03 STATUS RTM  
0 SCOPEDIAL NAS0 CALLING NUMBER AND NCOS DISPLAY ON ATTENDANT AD0360  
0 CONSOLE.  
0 DSN NETWORK "0+" DIALING AD2430  
0 NCOS AND CLID DISPLAY ON AC-II AD1154  
0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE AD0361  
0 1  
0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE AD0388  
0 2  
0 NETWORK ATTENDANT CONTROL AD1521  
0 NETWORK ATTENDANT RECALL AD1523  
0 NETWORK CAMP-ON-I AD1153

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0 NETWORK CAMP-ON-II AD1518  
0 NETWORK CLID AND NCOS DISPLAY INTERACTION WITH 3WC AD1525

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0 NTXA38AB01 STATUS RTM  
0 SCOPEDIAL NAS (UPG OF  
0 NTXA38AA)

0 BIDS NON-COMPLIANT -- REMOTE TRUNK ID DISPLAY AT AC AD3288  
0 CALLING NUMBER AND NCOS DISPLAY ON ATTENDANT AD0360  
0 CONSOLE.  
0 DSN NETWORK "0+" DIALING AD2430  
0 NAS RLT AC SPECIAL FUNCTION KEY AD3286  
0 NAS RLT AUTOVON/IBN ISUP TRUNK INTERACTIONS AD3285  
0 NAS RLT TABLE CONTROL AND ISUP MESSAGING AD3287  
0 NCOS AND CLID DISPLAY ON AC-II AD1154  
0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE AD0361  
0 1  
0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE AD0388  
0 2  
0 NETWORK ATTENDANT CONTROL AD1521  
0 NETWORK ATTENDANT RECALL AD1523  
0 NETWORK CAMP-ON-I AD1153  
0 NETWORK CAMP-ON-II AD1518  
0 NETWORK CLID AND NCOS DISPLAY INTERACTION WITH 3WC AD1525

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0 NTXA39AA02 STATUS RTM  
0 MERIDIAN NETWORK ATTENDANT  
0 SERVICE

0 CALLING NUMBER AND NCOS DISPLAY ON ATTENDANT AD0360  
0 CONSOLE.  
0 NCOS AND CLID DISPLAY ON AC-II AD1154  
0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE AD0361



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0 1  
0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE AD0388  
0 2  
0 NETWORK ATTENDANT CONTROL AD1521  
0 NETWORK ATTENDANT RECALL AD1523  
0 NETWORK CAMP-ON-I AD1153  
0 NETWORK CAMP-ON-II AD1518  
0 NETWORK CLID AND NCOS DISPLAY INTERACTION WITH 3WC AD1525

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0 NTXA41AA01 STATUS RTM  
0 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION

0 CALLING NUMBER DELIVERY BLOCKING BASIC FUNCTIONALITY AG0778  
0 CLASS: CALLING NUMBER DELIVERY BLOCKING AG1155

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0 NTXA42AA01 STATUS RTM  
0 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING

0 CLASS : DISTINCTIVE RINGING/CALL WAITING AG1629

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0 NTXA43AA01 STATUS RTM  
0 CALL FORWARD REMOTE ACTIVATION

0 CALL FORWARDING - REMOTE ACCESS BR0781

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0 NTXA45AA01 STATUS RTM  
0 CLASS SELECTIVE CALL  
0 ACCEPTANCE

0 CLASS : SELECTIVE CALL ACCEPTANCE AG1675

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0 NTXA50AA01 STATUS RTM  
0 RSC - DLM WITH ESA

0 RSC-DLM ESA AND INTRASWITCHING AD0902

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0 NTXA52AB01 STATUS RTM  
0 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)

0 REMOTE ACD LOAD MANAGEMENT AD0826  
0 REMOTE ACD SHOW AD0825

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0 NTXA53AA01 STATUS RTM  
0 MILITARY NETWORK MANAGEMENT  
0 VIA X.25

0 DSN NWM CONTROLS VIA X.25 AD0294  
0 NWM NOTIFICATION TO SRCF AD0858

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0 NTXA54AA01 STATUS RTM  
0 MOST ECONOMICAL ROUTING PHASE  
0 II

0 MOST ECONOMICAL ROUTING PHASE II AD0291

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0 NTXA55AA01 STATUS RTM  
0 SCP COMMON

0 NSDB - ROUTING TABLE CAPABILITY AG0237

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0 NTXA56AA02 STATUS RTM  
0 DVI MODE MAINTENANCE

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | DMS REMOTE ALARM SERVICE                     | AI0156 |
| 0 | NSDB - MAINTENANCE OF DVI NODE               | AG0186 |
| 0 | NSDB - PROVIDE HOOKS FOR NEW NODE TYPE - DVI | AG0187 |

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0 NTXA60AA02 STATUS RTM  
0 TOPS CLOSEDOWN(REPLACES  
0 NTX134BB AND NTX039AB)

|   |                                          |        |
|---|------------------------------------------|--------|
| 0 | O.C. NIGHT CLOSEDOWN                     | AF0040 |
| 0 | OC DATA LINK CALL PROCESSING ASPECT      | BC0695 |
| 0 | OC DATA LINK TABLE CONTROL               | BC0696 |
| 0 | OC DATA LINK UTILITY INTERFACE           | BC0694 |
| 0 | OC MESSAGE DEFINITION INTERFACE          | BC0699 |
| 0 | OC REMOTE TOPS TERMINATOR                | BV1128 |
| 0 | OPERATOR CENTRALIZATION - REMOTE (ETOF)  | BV0776 |
| 0 | REMOTE ONI VIA O.C.                      | BR0602 |
| 0 | REMOTE TOPS MP O.C. - DATA LINK HANDLING | AF0807 |
| 0 | TOPS OC CROSS PROCESSOR CHANGES          | BC0564 |
| 0 | TOPS OC SETUP PROCESSOR CHANGES          | BC0565 |

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0 NTXA62AA01 STATUS RTM  
0 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | TOPSMPVR FOLDBACK: ARU & DATALINK   | AF0739 |
| 0 | TOPSMPVR FOLDBACK: ARU CALLP        | AF0742 |
| 0 | TOPSMPVR FOLDBACK: CALL PROCESSING  | AF0741 |
| 0 | TOPSMPVR FOLDBACK: FORCE MANAGEMENT | AF0740 |

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0 NTXA63AA01 STATUS RTM  
0 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING

0 TOPSMPVR FOLDBACK: HOOKS, SIMULATOR, &amp; CCI PROTOCOL AF0738

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0 NTXA64AA05 STATUS RTM  
0 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE0 DIGIT COLLECTION ENHANCEMENTS-RESIDENTIAL ENHANCED AG0504  
0 SERVICES  
0 MISCELLANEOUS IBN FEATURE ENHANCEMENTS AG0503  
0 RES FEATURE SET EXPANSION 1 AG0967  
0 RES FEATURE SET EXPANSION 2 AG0968  
0 RES/CLASS SERVICE ORDER SIMPLIFICATION AND OA&M AG1246  
0 RES: SERVICE ORDER SIMPLIFICATION FOR HUNT GROUPS AG1542  
0 RES: TOLL DENIED AG1543  
0 RES: 1MR SERVICE IN RES AG1544  
0 RESIDENTIAL ENHANCED SERVICES AG0508  
0 TEEN SERVICE ON RES AF1442  
0 WATS ON RES AF2244

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0 NTXA67AA01 STATUS RTM  
0 EXTENDED XPM DIAGNOSTICS

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | XPM IMC DIAGNOSTICS                           | AL0562 |
| 0 | XPM MATE DIAGNOSTIC                           | AL0476 |
| 0 | XPM TASK LEVEL UART IMC MESSAGING ENHANCEMENT | AG0312 |
| 0 | XPM 6X45BA MAINTENANCE ENHANCEMENTS           | AG0965 |

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0 NTXA68AA01 STATUS RTM  
0 NETWORK MESSAGE SERVICE

0 MESSAGE SERVICE - NETWORK MESSAGE WAITING INDICATOR AG1638

0

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0 NTXA72AA01 STATUS RTM  
0 SECONDARY MADN CALL FORWARDING

0 CFW FOR MADN SECONDARY MEMBERS AG0985

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0 NTXA73AA01 STATUS RTM  
0 LOUDSPEAKER PAGING ANSWER

0 MEET ME PAGE AF1275

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0 NTXA74AA01 STATUS RTM  
0 OUTGOING RESTRICTION CONTROL

0 OUTGOING RESTRICTION CONTROL AF1276

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0 NTXA77AA01 STATUS RTM  
0 ENHANCED UCD

0 UCD ON EBS AND UCD SD POINT AL0818

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0 NTXA79AA03 STATUS RTM  
0 IBN TRUNKS WITH ISUP  
0 SIGNALLING

0 AC TO IBNISUP INTERWORKING AD1318  
0 IBN TRUNKS WITH ISUP SIGNALLING AG0671

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0 NTXA80AA02 STATUS RTM  
0 NETWORK NAME DISPLAY

0 NETWORK NAME DISPLAY AG0980  
0 NETWORK NAME DISPLAY FOR ATTENDANT CONSOLES AG1104

0

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0 NTXA81AA01 STATUS RTM  
0 EXTENSION BRIDGED SERVICES

0 EXTENSION BRIDGING AF0827

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0 NTXA82AA03 STATUS RTM  
0 CLASS LINE OFFICE DATA

0 CLASS: CALL MEMORY ENHANCEMENTS AG1152  
0 CLASS: FEATURE NOT ALLOWED ANNOUNCEMENT AG2057  
0 CLASS: INCOMING/OUTGOING MEMORY SLOT CALL PROCESSING AG0959  
0 HOOKS  
0 CLASS: LINE AND OFFICE DATA AC0258  
0 CLASS: SUBSCRIPTION USAGE SENSITIVE PRICING/BILLING AG1154

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0 NTXA83AA02 STATUS RTM  
0 TOPS MESSAGE SWITCH

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | INTEGRATED MP MAINTENANCE                   | AF1727 |
| 0 | INTEGRATED MP MAP SUPPORT                   | AF1991 |
| 0 | INTEGRATED TPC MAINTENANCE                  | AF1992 |
| 0 | INTEGRATED TPC MAP SUPPORT                  | AF1940 |
| 0 | ORDB ACCESS VIA TMS/TOPS - LTCI             | AF2070 |
| 0 | TDC MAINTENANCE FOR TMS                     | AF2161 |
| 0 | TMS BASE CHANGES FOR TMS NETWORKING.        | AF2597 |
| 0 | TMS BASE MAINTENANCE (PP)                   | AF1472 |
| 0 | TMS DA/ORDB PRODUCT VERIFICATION            | AF2394 |
| 0 | TMS ISP ROUTER (PP)                         | AF2110 |
| 0 | TMS MAINTENANCE HOOKS (CC)                  | AF1652 |
| 0 | TMS OM                                      | AF2409 |
| 0 | TMS PROTOCOL ADMIN/ROUTER (PP)              | AF1473 |
| 0 | TMS ROUTE TABLE LOADER (PP)                 | AF1581 |
| 0 | TMS STATIC DATA(CC)                         | AF1728 |
| 0 | TMS STATIC DATA/ROUTE TABLE MANAGEMENT (PP) | AF1474 |
| 0 | TMS SWACT/DCH MEMORY MAINTENANCE (PP)       | AF1993 |
| 0 | TMS TDC MAINTENANCE (PP)                    | AF1214 |
| 0 | TMS X.25 BASE (PP)                          | AF1471 |
| 0 | TPC/MP DATAFILL FOR TMS                     | AF1687 |

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0 -----0 NTXA84AA01 STATUS RTM  
0 EBS - MUSIC ON HOLD

0 MUSIC ON HOLD FOR EBS AD0989

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0 NTXA85AB02 STATUS RTM  
0 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)

|   |                             |        |
|---|-----------------------------|--------|
| 0 | SMSR BASIC MTC I CC         | BC2153 |
| 0 | SMSR BASIC MTC XPM          | AF0164 |
| 0 | SMSR CALL PROCESSING I XPM  | AF0163 |
| 0 | SMSR CALL PROCESSING II XPM | AF1794 |
| 0 | SMSR LINES SUPPORT XPM      | AF1789 |
| 0 | SMSR OPERATOR VERIFICATION  | AF2678 |
| 0 | SMSR PROVISIONING AND MAP   | BC2150 |
| 0 | SMSR PRS RESOLUTION         | AF3377 |
| 0 | SMSR SERVING LINES SUPPORT  | BC2147 |
| 0 | SMSR WARM SWACT - CC        | AF2676 |
| 0 | SMSR WARM SWACT - XPM       | AF2677 |
| 0 | SMSR-RCC ESA MTC CC         | AF1791 |
| 0 | SMSR-RCC ESA MTC XPM        | AF1790 |

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0 NTXA87AA01 STATUS RTM  
0 CMS LONG DISTANCE INDICATOR

0 CLASS/CMS LONG DISTANCE INDICATOR AG1841

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0 NTXA88AA02 STATUS RTM  
0 MDR VIA AMA STREAM

|   |                            |        |
|---|----------------------------|--------|
| 0 | AUTHCODE FOR MDR           | AF1980 |
| 0 | MDR DATA IN THE AMA STREAM | AF1455 |

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0 NTXA89AA01 STATUS RTM  
0 SMDR TIME DUMP FOR BNM

0 RECORDING DATA TIMER DUMP AF1456

0

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0 NTXA90AA07 STATUS RTM  
0 TOPS-MP TERMINAL HANDLER HIGH  
0 SPEED

|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | ENHANCED MAINTENANCE FOR TPC RACKMOUNT | AF0732 |
| 0 | FRENCH MMI FOR TOPS_MP                 | AF1388 |
| 0 | HSDA ROM MAINTENANCE                   | AF0533 |
| 0 | LOCALITY ENHANCEMENTS FOR BT DAS       | NC0116 |
| 0 | OPERATOR LOGON PASSWORD FOR TOPS_MP    | AF1463 |
| 0 | PORTING MPC S/W TO TPC HSDA            | AF0721 |
| 0 | REMOTE SONALERT FOR TOPS_MP            | AF1509 |
| 0 | TERMINAL HANDLING SOFTWARE FOR TOPS MP | BC2139 |
| 0 | TPC ADMINISTRATION                     | BC2158 |
| 0 | TPC DEBUG TERMINAL HANDLER             | BC2146 |
| 0 | TPC DIAGNOSTIC ENHANCEMENTS            | AF0744 |
| 0 | TPC DIAGNOSTICS                        | BC2141 |
| 0 | TPC DRIVERS                            | BC2142 |
| 0 | TPC ENHANCEMENT FOR GLOBALIZATION      | AF4168 |
| 0 | TPC HSDA DIAGNOSTICS                   | AF1723 |
| 0 | TPC HSDA DOWNLOAD SERVER               | AF0534 |
| 0 | TPC HSDA DRIVER                        | AF0535 |
| 0 | TPC HSDA MAINTENANCE SERVER            | AF0536 |
| 0 | TPC HSDA MMI                           | AF1318 |
| 0 | TPC HSDA MTC ENHANCEMENTS              | AF1998 |
| 0 | TPC HSLI SOFTWARE ENHANCEMENTS         | AF1426 |
| 0 | TPC INTEGRATED MAINTENANCE             | AF1802 |
| 0 | TPC INTEGRATED MP DIAGNOSTICS          | AF1975 |
| 0 | TPC INTEGRATED TAMI ENHANCEMENTS       | AF1974 |

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|---|--------------------------------|--------|
| 0 | TPC MASS STORAGE SCSI SUPPORT  | AF1563 |
| 0 | TPC MESSAGE HANDLER            | AF1319 |
| 0 | TPC MESSAGING SYSTEM           | AF0746 |
| 0 | TPC MP GREY SCALE ENHANCEMENTS | AF2085 |
| 0 | TPC MP SERVICES INTERWORKING   | AF0547 |
| 0 | TPC OPERATOR HANDOFF TO AABS   | AF2378 |
| 0 | TPC SA LOGON ENHANCEMENTS      | AF2374 |
| 0 | TPC SYSTEM SUPPORT             | BC2157 |
| 0 | TPC TAMI ENHANCEMENTS          | AF1317 |
| 0 |                                | AF1909 |
| 0 | TPC TUTOR INTERFACE            | BC2145 |
| 0 | TPC-CC MESSAGING VIA HSDA      | AF1699 |

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0 NTXA91AA02 STATUS RTM  
0 STANDARD INTERFACE FOR DA/  
0 INTERCEPT APPLICATIONS

|   |                                          |        |
|---|------------------------------------------|--------|
| 0 | FORWARD NUMBER CAPABILITY FOR TOPS-MP DA | AF2642 |
| 0 | APPLICATION.                             |        |
| 0 | TPC CCI DA APPLICATION MESSAGING         | AF0970 |
| 0 | TPC DIRECTORY ASSISTANCE APPLICATION     | AF0540 |

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0 NTXA92AA01 STATUS RTM  
0 SL100 FEATURE GROUP D

|   |                           |        |
|---|---------------------------|--------|
| 0 | FEATURE GROUP-D ON SL-100 | AD1313 |
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0 NTXA94AA01 STATUS RTM  
0 RES FEATURES

0 RES FEATURE SET EXPANSION 1 AG0967

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0 NTXA95AA01 STATUS RTM  
0 CLASS SELECTIVE CALL  
0 FORWARDING

0 CLASS : SELECTIVE CALL FORWARDING AG1628

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0 NTXA96AA01 STATUS RTM  
0 CLASS SELECTIVE CALL REJECTION

0 CLASS : SELECTIVE CALL REJECTION AG1605

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0 NTXB00AA01 STATUS RTM  
0 INTL - TRAFFIC SEPARATION

0 INTL TRAFFIC SEPARATION AC0131

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0 NTXB01AA01 STATUS RTM  
0 INTL - TRAFFIC SEPARATION  
0 REPORT

0 INTL TRAFFIC SEPARATION

AC0131

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0 NTXB02AA01 STATUS RTM  
0 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC

0 INTL SERVICE ANALYSIS BASE

AE0153

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0 NTXB03AA01 STATUS RTM  
0 SERVICE ANALYSIS - LOCAL

0 INTL SERVICE ANALYSIS LOCAL

AE0167

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0 NTXB04AA01 STATUS RTM  
0 PBX LINE SUPPORT

0 LINE REVERSAL ON SEIZURE AE0169

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0 NTXB07AA01 STATUS RTM  
0 INTER ADMINISTRATION  
0 ACCOUNTING

0 INTER ADMINISTRATION ACCOUNTING AE0154

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0 NTXB08AA02 STATUS RTM  
0 ITOPS FOR CEP

0 ITOPS BILLING AND RATING FOR CEP AG0717

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0 NTXB10AA03 STATUS RTM  
0 CHINA COMMON BASIC

0 C1 CALL PROCESSING AG0708  
0 C1 LINE SIGNALLING AG0707  
0 C1 MFC TRUNK IMPLEMENTATION ON THE GENERIC R2 SYSTEM AJ0782  
0 - CC  
0 C1 MFC TRUNK IMPLEMENTATION ON THE GENERIC R2 SYSTEM AJ0819

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0 - XPM

0 C1 REGISTER SIGNALLING

AG0711

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0 NTXB11AA02 STATUS RTM

0 DP REGISTER SIGNALLING

0 C1 LINE SIGNALLING

AG0707

0 NTRS05 ENHANCEMENTS - II

AJ0498

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0 NTXB13AA06 STATUS A+M

0 ITOPS TOLL BASIC(UPG. BY

0 NTXB13AB)

0 ITOPS CALL PROCESSING KEY FUNCTIONS

AG0714

0 ITOPS FORCE MANAGEMENT SYSTEM

AG0713

0 ITOPS ICAMA FORMAT

AG0636

0 ITOPS INTERNATIONAL CALL HANDLING

AG0716

0 ITOPS SCREEN DISPLAYS

AG0712

0 ITOPS SUPERVISORY POSITIONS

AG0715

0 ITOPS: APS CALL HANDLING

AG1233

0 ITOPS: ASSISTANCE MONITOR CAPABILITY

AG1230

0 ITOPS: ASSISTANCE PAGING CAPABILITY

AJ0180

0 ITOPS: BOOKED CALL DATABASE SIZE INCREASE

AJ0804

0 ITOPS: FLEXIBLE SUBSCRIBER NUMBER DISPLAY

AJ0182

0 ITOPS: POSITION DATA STREAMLINING

AJ0572

0 ITOPS: ROUTING DATABASE

AJ0178

0 ITOPS: TBI FUNCTIONALITY

AG1234

0 ITOPS: TRAVER CAPABILITY

AJ0803

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0 NTXB13AB01 STATUS RTM  
0 ITOPS TOLL - ENHANCED  
0 QUEUEING(UPG.FR. NTXB13AA)

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | ITOPS CALL PROCESSING KEY FUNCTIONS           | AG0714 |
| 0 | ITOPS FORCE MANAGEMENT SYSTEM                 | AG0713 |
| 0 | ITOPS ICAMA FORMAT                            | AG0636 |
| 0 | ITOPS INTERNATIONAL CALL HANDLING             | AG0716 |
| 0 | ITOPS SCREEN DISPLAYS                         | AG0712 |
| 0 | ITOPS SUPERVISORY POSITIONS                   | AG0715 |
| 0 | ITOPS: APS CALL HANDLING                      | AG1233 |
| 0 | ITOPS: ASSISTANCE MONITOR CAPABILITY          | AG1230 |
| 0 | ITOPS: ASSISTANCE PAGING CAPABILITY           | AJ0180 |
| 0 | ITOPS: BOOKED CALL DATABASE SIZE INCREASE     | AJ0804 |
| 0 | ITOPS: ENHANCED ACD (CALL PROCESSING)         | AJ0802 |
| 0 | ITOPS: ENHANCED ACD (QUEUEING SYSTEM)         | AJ0801 |
| 0 | ITOPS: ENHANCED QUEUEING (CALL PROCESSING) II | AJ1024 |
| 0 | ITOPS: FLEXIBLE SUBSCRIBER NUMBER DISPLAY     | AJ0182 |
| 0 | ITOPS: POSITION DATA STREAMLINING             | AJ0572 |
| 0 | ITOPS: ROUTING DATABASE                       | AJ0178 |
| 0 | ITOPS: TBI FUNCTIONALITY                      | AG1234 |
| 0 | ITOPS: TRAVER CAPABILITY                      | AJ0803 |

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0 NTXB14AA02 STATUS RTM  
0 CHINA LOCAL BASIC

0 TOLL BREAK IN FOR CHINA - DMS-100 AG0710

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0 NTXB17AA02 STATUS RTM  
0 ATTENDANT PAY STATION LOCAL

0 ATTENDANT PAY STATION II AG1291

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0 NTXB21AA01 STATUS RTM  
0 COEXISTENCE (TRUNK TYPE)

0 JAPAN300 SUPERNODE AND ITOPS COMPATIBILITY AE0523  
0 TESTLINES FOR THE COEXISTENCE SWITCH AE0481

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0 NTXB55AA01 STATUS A+M  
0 DPNSS FEATURES II(UPG BY  
0 NTXB55AB)

0 DPNSS RING BACK WHEN FREE AE0328

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0 NTXB55AB01 STATUS RTM  
0 DPNSS FEATURES II(UPG FR.  
0 NTXB55AA)

0 DPNSS BUSY INFORMATION NC0259  
0 DPNSS CALL DIVERSION AE0782

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0 93 12 030 DPNSS CALL OFFER  
0 DPNSS RING BACK WHEN FREEAE0781  
AE0328

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0 -----0 NTXB55AC01 STATUS RTM  
0 DPNSS FEATURES II(UPG FR.  
0 NTXB55AB)0 DPNSS BUSY INFORMATION  
0 DPNSS CALL DIVERSION  
0 DPNSS CALL OFFER  
0 DPNSS RING BACK WHEN FREENC0259  
AE0782  
AE0781  
AE0328

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0 -----0 NTXB56AA01 STATUS RTM  
0 CDR BILLING ON CENTREX

0 CDR BILLING ON CENTREX

AE0277

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0 -----0 NTXB57AA02 STATUS RTM  
0 OPEN NUMBER TRANSLATIONS0 FLEXIBLE DIGIT ANALYSIS ON CENTREX LINES - CC  
0 OPEN NUMBER TRANSLATIONSAE0629  
AE02760  
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0 NTXB58AA01 STATUS RTM  
0 CC MNTCE0 CC MAINTENANCE SUPPORT OF PLCM  
0 CC MAINTENANCE SUPPORT OF PLGCAE0219  
AE0218

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0 -----0 NTXB59AA01 STATUS RTM  
0 IBN TRUNK UK 3J III/IV  
0 SIGNALLING

0 BT3J III/IV SIGNALLING ON IBN TRUNK TYPES

AE0356

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0 -----0 NTXB63AA01 STATUS RTM  
0 NAILED UP CONNECTIONS

0 NAILED UP CONNECTIONS

AE0365

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0 NTXB64AA01 STATUS RTM  
0 ISUP PROTECTION

0 DYNAMIC CONSOLE MEASUREMENTS

AE0366

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0 NTXB68AA01 STATUS RTM  
0 ISC ARTER0 ARTER FOR DMS-300 - ORIGINATING  
0 ARTER FOR TURKEYAE0283  
AE0273

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0 -----0 NTXB69AA04 STATUS RTM  
0 R2 FOR DMS-100 INTL

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | ANALOG R2 PROTOCOL                                | AE0137 |
| 0 | BRAZIL R2 ENHANCEMENTS                            | AJ1124 |
| 0 | COMPELLED REGISTER SIGNALLING TRANSACTOR          | AE0172 |
| 0 | COMPELLER TRANSACTOR AND PROTOCOL (INTERNATIONAL) | AE0171 |
| 0 | CRST - TAT PROTOCOL                               | AE0173 |
| 0 | DMS300 - DIGITAL R2 PROTOCOL                      | AE0130 |
| 0 | MFC CC/XPM PROTOCOL                               | AE0144 |
| 0 | MFCR2 - DE BUG TOOLS                              | AE0136 |
| 0 | MFCR2 IN PDTC - MAIN FEATURE                      | AE0139 |
| 0 | MFCR2 LINE SIGNALLING PRIMITIVES.                 | AE0141 |
| 0 | MFCR2 TASK IN PDTC                                | AE0145 |
| 0 | MFCR2 TRUNKS - DATA AND MAINTENANCE               | AE0143 |
| 0 | MOROCCAN R2 LINE SIGNALLING                       | AE0514 |
| 0 | R2 FOR DMS100 INTL - CC DESCRIPTION               | AE0140 |
| 0 | TWO-WAY INTERNATIONAL R2                          | AE0893 |

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0 NTXB70AA01 STATUS RTM  
0 VARIABLE H/W PAD SETTING

0 VARIABLE H/W PAD SETTING FOR NT6X98AA LINE CARD AE0183

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0 NTXB74AA03 STATUS RTM  
0 EBI/A-LAW

0 EVEN BIT INVERSION AE0334  
0 INTERNATIONAL A-LAW ENET VERIFICATION AE0927  
0 SELECTIVE EBI FOR CCS AE0644

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0 NTXB75AA01 STATUS RTM  
0 IMPLEMENTATION OF RMM ON IRLCM

0 IMPLEMENTATION OF RMM ON IRLCM AE0293

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0 NTXB81AA01 STATUS RTM  
0 EBI ON MSB7

0 NT6X44EA TIMESWITCH ON BDTC AND MSB7 AE0449

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0 NTXB83AA01 STATUS RTM  
0 ITOPS TO INTL R2 INTERWORKING

0 C1 TRUNK ITOPS POSITION INTERACTIONS AG1294

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0 NTXB84AA04 STATUS RTM  
0 INTERNATIONAL RATING SYSTEM

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | INT'L RATING ENHANCEMENTS          | AJ1446 |
| 0 | INT'L RATING: CHARGE CALCULATOR    | AG1236 |
| 0 | INT'L RATING: MASS TABLE CONTROL   | AG1235 |
| 0 | INT'L RATING: RATE STEP CALCULATOR | AG1237 |
| 0 | INT'L RATING: SUB-MINUTE BILLING   | AJ1256 |
| 0 | INT'L RATING: TAX CALCULATION      | AJ1025 |
| 0 | INT'L RATING: TEST CI COMMAND      | AG1231 |
| 0 | ITOPS: CCITT CREDIT CARD FORMAT    | AJ1445 |

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0 NTXB85AA01 STATUS RTM  
0 ISDN INTERNATIONAL -  
0 MAINTENANCE

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | LINE MAINTENANCE COEXISTENCE                     | AE0392 |
| 0 | PM MAINTENANCE COEXISTENCE                       | AE0389 |
| 0 | TELPORT & CALL PROCESSING ASPECT FOR MAINTENANCE | AE0391 |
| 0 | COEXISTENCE                                      |        |
| 0 | TRUNK MAINTENANCE COEXISTENCE                    | AE0390 |

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0 NTXB87AA01 STATUS A+M  
0 DOWNLOADABLE TONES - AUSTRIA (  
0 REP. BY NTXH09AA)

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|---|--------------------|--------|
| 0 | DOWNLOADABLE TONES | AE0397 |
|---|--------------------|--------|

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0 NTXB88AA01 STATUS A+M  
0 DOWNLOADABLE TONES - NORTH  
0 AMERICA ( REP. BY NTXH09AA)

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| 0 | DOWNLOADABLE TONES | AE0397 |
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0 NTXB89AA02 STATUS A+M  
0 DOWNLOADABLE TONES - TURKEY (  
0 REP. BY NTXH09AA)

0 DOWNLOADABLE TONES AE0397  
0 DOWNLOADABLE TURKEY INTL TONES AE0473

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0 NTXB90AA01 STATUS A+M  
0 DOWNLOADABLE TONES - UK(REP.  
0 BY NTXU17AA)

0 DOWNLOADABLE TONES AE0397

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0 NTXB91AA01 STATUS A+M  
0 DOWNLOADABLE TONES - MCL(REP.  
0 BY NTXU17AA)

0 DOWNLOADABLE TONES AE0397

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0 NTXB92AA01 STATUS A+M  
0 DOWNLOADABLE TONES - SPAIN (  
0 REP. BY NTXH09AA)

0 DOWNLOADABLE TONES AE0397

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0 NTXB93AA01 STATUS A+M  
0 DOWNLOADABLE TONES - CEP (  
0 REP. BY NTXH09AA)

0 DOWNLOADABLE TONES

AE0397

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0 NTXB94AA01 STATUS A+M  
0 DOWNLOADABLE TONES - HUNGARY (  
0 REP. BY NTXH09AA)

0 DOWNLOADABLE TONES

AE0397

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0 NTXB95AA01 STATUS A+M  
0 DOWNLOADABLE TONES - CHINA (  
0 REP. BY NTXH09AA)

0 DOWNLOADABLE TONES

AE0397

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0 NTXE00AA01 STATUS RTM  
0 TOPS OPERATOR PASSWORD

0 TOPS OPERATOR PASSWORD AG0931

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0 NTXE01AA06 STATUS RTM TARGET SUPERNODE  
0 ENHANCED NETWORK - BASIC

|                                                     |        |
|-----------------------------------------------------|--------|
| 0 CM - ENET S/W COMMUNICATION VIA NT9X36BA          | AL1011 |
| 0 ENABLE U-LAW                                      | AL2107 |
| 0 ENET BIT ERROR RATE TEST (BERT)                   | AL0854 |
| 0 ENET C_SIDE LINK MTCE                             | AL0571 |
| 0 ENET CARD MAINTENANCE                             | AL1069 |
| 0 ENET CARD MTCE SYSTEM STRUCTURE DEFINITION        | AL0575 |
| 0 ENET CLOCK SYNC                                   | AL0577 |
| 0 ENET CONNECTION CONTROL                           | AL0583 |
| 0 ENET DATABASE                                     | AL0470 |
| 0 ENET FIBER XPM SUPPORT                            | AL0687 |
| 0 ENET INTEGRITY FAULT HANDLER                      | AL0585 |
| 0 ENET INTEGRITY HANDLING ENHANCEMENTS              | AL1326 |
| 0 ENET IOSYSTEM PSLINK TARGETS                      | AL0586 |
| 0 ENET LOCAL PROCESSOR NODE TRANSACTOR              | AL0582 |
| 0 ENET MAINTENANCE                                  | AL0856 |
| 0 ENET MAP                                          | AL0572 |
| 0 ENET MAP ENHANCEMENTS                             | AL1230 |
| 0 ENET MATRIX TEST SW                               | AL0853 |
| 0 ENET MESSAGE RESWITCHING                          | AL0855 |
| 0 ENET NODE TEST CONTROL                            | AL0580 |
| 0 ENET OPERATIONAL MEASUREMENTS                     | AL0573 |
| 0 ENET PATH DIAGNOSTICS                             | AL0960 |
| 0 ENET PATHEND TEST MMI                             | AL0857 |
| 0 ENET PM TABLE CONTROL MODIFICATIONS               | AL0958 |
| 0 ENET PSLINK PHYSICAL LINK MAINTENANCE             | AL0584 |
| 0 ENET REX TEST                                     | AL0957 |
| 0 ENET SHELF TEST                                   | AL0959 |
| 0 ENET SUPPORT FOR 9X45BA                           | AL2038 |
| 0 ENET SWITCHING MATRIX DIAGNOSTICS SUPPORT         | AL0851 |
| 0 ENET SWITCHING MATRIX TRANSACTOR NETWORK PHASE II | AL1240 |

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|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | ENET SYSTEM RECOVERY                           | AL0850 |
| 0 | ENET 9X35 MAINTENANCE S/W                      | AL0578 |
| 0 | ENHANCED NETWORK CENTRAL NODE MAINTENANCE      | AL0486 |
| 0 | NT9X45 MMI                                     | AL2162 |
| 0 | PATHEND EXPANSION FOR ENET                     | AL1229 |
| 0 | PORT MTS AND TPS TO ENET PROCESSOR             | AL0457 |
| 0 | SUPPORT FOR WARM SWACT RECOVERY TIME REDUCTION | AL2260 |
| 0 | FEATURE                                        |        |
| 0 | 128KENET FXPM SUPPORT                          | AL1231 |

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|---|--------------------------|-----|
| 0 | NTXE04AA02 STATUS        | RTM |
| 0 | SCREENED SERVICE ROUTING |     |

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | TOPS SERVICE NUMBER ROUTING        | AJ0167 |
| 0 | TOPS SERVICE NUMBER ROUTING - PREP | AG0933 |
| 0 | TOPS SERVICE NUMBER ROUTING ON MP  | AF3023 |

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|---|------------------------|-----|
| 0 | NTXE05AA01 STATUS      | RTM |
| 0 | TOPS - MP DA/INTERCEPT |     |
| 0 | MESSAGING - OPEN       |     |

|   |                               |        |
|---|-------------------------------|--------|
| 0 | IBM DA PROTOCOL AND SIMULATOR | AF1266 |
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0 NTXE09AA01 STATUS A+M  
0 ACD ON 2500 SET(UPG. BY  
0 NTXE09AB)

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | ACD DISTINCTIVE RINGING                   | AD1929 |
| 0 | ACD ON 2500 SET FEATURE ASSIGNMENT        | AD1950 |
| 0 | ACD 2500 SET CALL PROCESSING INTERACTIONS | AD1857 |
| 0 | ACD 2500 SET LOAD MANAGEMENT AND ACDSHOW  | AD1862 |
| 0 | ACD 2500 SET LOGIN/LOGOUT                 | AD1858 |
| 0 | ACD 2500 SET NOT READY                    | AD1863 |

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0 NTXE09AB01 STATUS RTM  
0 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | ACD DISTINCTIVE RINGING                   | AD1929 |
| 0 | ACD OBSERVE AGENT FROM 2500 SET           | NC0185 |
| 0 | ACD ON 2500 SET FEATURE ASSIGNMENT        | AD1950 |
| 0 | ACD 2500 SET CALL PROCESSING INTERACTIONS | AD1857 |
| 0 | ACD 2500 SET LOAD MANAGEMENT AND ACDSHOW  | AD1862 |
| 0 | ACD 2500 SET LOGIN/LOGOUT                 | AD1858 |
| 0 | ACD 2500 SET NOT READY                    | AD1863 |

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0 NTXE13AB01 STATUS RTM  
0 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | FEATURE GROUP B (FGB) INTERWORKING WITH SS7 | AF2105 |
| 0 | ISUP EO FGD SIGNALLING                      | AG1253 |
| 0 | ISUP FGD SIGNALLING - END OFFICE TO CARRIER | AG1639 |

0  
0 RELEASE 28.01  
0 93 12 030 ISUP OPERATIONS ADMIN. AND MAINTENANCE (OA&M) AG1539  
0 ENHANCEMENTS

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0 NTXE14AB03 STATUS RTM  
0 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)0 FEATURE GROUP B (FGB) INTERWORKING WITH SS7 AF2105  
0 ISUP ACCESS TANDEM FGD SIGNALLING AG1254  
0 ISUP ACCESS TANDEM FGD SIGNALLING II AG1576  
0 ISUP OPERATIONS ADMIN. AND MAINTENANCE (OA&M) AG1539  
0 ENHANCEMENTS  
0 LEAS INTERWORKING WITH SS7 AF2361  
0 TOPS TRUNKS INTERWORKING WITH CCS7 TRUNKS. AF2331

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0 NTXE18AA01 STATUS RTM  
0 TOPS AMA ENHANCEMENTS

0 TOPS EXPANDED BELLCORE AMA FORMAT (EBAF) EXTENSIONS AF1715

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0 NTXE20AA01 STATUS RTM  
0 TOPS EXTENDED BELLCORE AMA  
0 FORMAT(EBAF)

0 TOPS EXPANDED BELLCORE AMA FORMAT AF1726

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0 NTXE21AA01 STATUS RTM  
0 CMS NAC INTERFACE

|   |                           |        |
|---|---------------------------|--------|
| 0 | SPC-CMS: CALL PROCESSING  | AG1553 |
| 0 | SPC-CMS: DATA STRUCTURES  | AG1499 |
| 0 | SPC-CMS: LOGS AND OMS     | AG1554 |
| 0 | SPC-CMS: TABLE CONTROL    | AG1501 |
| 0 | SPC-CMS: TCAP APPLICATION | AG1537 |

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0 -----0 NTXE22AA02 STATUS RTM  
0 ACD SUPERGROUP

|   |                                          |        |
|---|------------------------------------------|--------|
| 0 | NETWORKED ACD - ALGORITHM IMPLEMENTATION | AD2257 |
| 0 | NETWORKED ACD - MIS ENHANCEMENTS         | AD2259 |
| 0 | NETWORKED ACD - RLM ENHANCEMENTS         | AD2258 |

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0 -----0 NTXE23AA01 STATUS RTM  
0 CELLULAR INTERCONNECT - END  
0 OFFICE

0 AMA FOR TYPE 1 AND 2B CELLULAR INTERCONNECTION AF1394

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0 NTXE24AB01 STATUS LTD TARGET SUPERNODE  
0 STP SEAS INTERFACE RELEASE 3.0  
0 (UPG. OF NTXE24AA)0 SEAS 3.0 - APPLICATION CONTROL MESSAGES AL1428  
0 SEAS 3.0 - AUTONOMOUS MESSAGE REPORTING AL1426  
0 SEAS 3.0 - DATA COLLECTION AL1427

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0 NTXE25AA01 STATUS RTM  
0 ISDN CIRCUIT SWITCH MODEM  
0 POOLING

0 ISDN PREFIX OUTBOUND MODEM POOLING AC0547

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0 -----0 NTXE27AA01 STATUS RTM  
0 CLASS DIALABLE NUMBER DELIVERY

0 CLASS: CALLING NUMBER DELIVERY - DIALABLE NUMBER AG1515

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0 Software Features  
0 Appendix S



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0 NTXE28AA02 STATUS RTM  
0 AMA MOD (LAMA MODULES)

0 CLASS OF SERVICE INDICATION ON AMA CALLS NC0078  
0 ZONE INDICATOR AF1504

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0 NTXE29AA03 STATUS A+M  
0 BCS PROCESS ENHANCED

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | BCS APPLICATION DRIVER                           | AG1511 |
| 0 | CACHING DMOPRO                                   | AG1513 |
| 0 | DUMP & RESTORE: CHECK COMMAND ENHANCEMENTS       | AG1560 |
| 0 | DUMP AND RESTORE - PHASE II                      | AG1859 |
| 0 | DUMP AND RESTORE: PROGRESS REPORTING             | AG1570 |
| 0 | DUMP AND RESTORE: REAL TIME SAVINGS              | AG1563 |
| 0 | ENHANCED S/ DISTRIBUTION - SECURITY ENHANCEMENTS | AG1857 |
| 0 | TABLE CHECKSUM DELTA                             | AG1506 |
| 0 | TABLE REFORMATS AT LOGICAL LEVEL                 | AG1858 |

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0 NTXE30AA01 STATUS RTM  
0 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7

0 MTP - BERT CAPABILITY FOR SSP AC0442

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0 NTXE32AA01 STATUS RTM  
0 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION

0 MTP - PREVENTATIVE CYCLIC RETRANSMISSION

AC0222

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0 NTXE33AA02 STATUS RTM  
0 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS

0 CONSOLE CALL FORCING

AD0941

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0 NTXE35AA01 STATUS RTM  
0 ALTERNATE CARRIER SELECTION

0 ALTERNATE CARRIER SELECTION

AF1781

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0 NTXE36AA01 STATUS RTM  
0 AUTOMATIC DA CALL COMPLETION

0 AUTOMATIC DA CALL COMPLETION

AF1777

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0 NTXE36AB01 STATUS RTM  
0 AUTOMATIC DA CALL COMPLETION  
0 (UPG OF NTXE36AA)

0 ADACC TOLL RESTRICTIONS NC0316  
0 AUTOMATIC DA CALL COMPLETION AF1777

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0 NTXE38AB01 STATUS RTM  
0 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)

0 CLASS FOR SMS: PHASE 1A - CND AF1813

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0 NTXE39AA01 STATUS RTM  
0 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS

0 CALL FORWARD BUSY/DON'T ANSWER - INTERNAL/EXTERNAL AG1371

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0 NTXE40AA01 STATUS A+M  
0 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. BY NTXE40AB)

0 CALLING NAME INSPECT KEY AG1403

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0 NTXE40AB01 STATUS RTM  
0 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)

0 AUTO DISPLAY FOR MERIDIAN BUSINESS SETS AG1549  
0 CALLING NAME INSPECT KEY AG1403

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0 NTXE43AA01 STATUS RTM  
0 TERMINATING BILLING OPTION

0 TERMINATING BILLING OPTION AF1922

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0 NTXE44AA01 STATUS RTM  
0 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT

0 EXECUTIVE BUSY OVERRIDE ON MADN AF1923

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0 NTXE46AA01 STATUS RTM  
0 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING

0 BLOCK CALLING NAME/NUMBER DELIVERY BLOCKING PER CALL AG1550

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0 NTXE47AA02 STATUS RTM  
0 MERIDIAN DISPLAY COMMUNICATION0 CALL REQUEST CALL PROCESSING ENHANCEMENTS AG1626  
0 EXECUTIVE MESSAGE SERVICE ENHANCEMENT - MULTI EMW AG1627  
0 PER DN  
0 MESSAGE SERVICE - LEAVE MESSAGE AG1625  
0 MESSAGE SERVICE - LIST MANAGEMENT AG1624

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0 NTXE52AA01 STATUS RTM  
0 CALLING NAME DELIVERY SWITCH  
0 BASED

0 CLASS: CALLING NAME DELIVERY AG1726

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0 NTXE54AA01 STATUS RTM TARGET SUPERNODE  
0 SYSTEM LOAD MODULE II

0 SLM-II ENHANCEMENTS AL1174

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0 NTXE55AB01 STATUS LTD TARGET SUPERNODE  
0 STP SEAS INTERFACE RELEASE 2.0  
0 (REPLACES NTXE55AA IN BCS31)

0 SEAS - LOG REPORTING SUPPORT FOR SEAS RELEASE 2.0 AL0991  
0 SEAS - RC&V COMMAND IMPLEMENTATION FOR SEAS RELEASE AL0990  
0 2.0

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0 NTXE56AA02 STATUS RTM  
0 CLASS SCREENING LIST EDITING

0 CLASS : SELECTIVE LIST EDITING FOR SCREENING LISTS AG1580  
0 SLE ENHANCEMENTS AF2384

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0 NTXE58AA01 STATUS RTM  
0 CLASS ON MVP

0 CLASS (PHASE I) ON MVP AG1546

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0 NTXE60AA01 STATUS RTM  
0 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)

0 DATAPATH CUG FOR U.S. MARKET AC0461

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0 NTXE62AA01 STATUS RTM  
0 EBS CALL FORWARD UNIVERSAL PER  
0 KEY0 EBS CALL FORWARDING ON A PER KEY BASIS AL0211  
0 EBS CALL FORWARDING PER KEY-XPM CHANGES AD1805

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0 NTXE64AA02 STATUS RTM  
0 #4ESS AT&T INTERWORKING0 ENHANCEMENT FOR #4ESS AND #5ESS AM0162  
0 ENHANCEMENTS TO SIGMAN FOR AT&T AD1804  
0 PRA VERSION CONTROL FOR INTEREXCHANGE CARRIER AD1800  
0 INTERWORKING

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0 NTXE65AA01 STATUS RTM  
0 MPC X.25 INTERFACE

|   |                        |                  |        |
|---|------------------------|------------------|--------|
| 0 | MPC 1980 CCITT X.25 CC | PROTOCOL SUPPORT | AF1767 |
| 0 | MPC 1980 CCITT X.25 PP | ARCHITECTURE     | AF1768 |
| 0 | MPC 1980 CCITT X.25 PP | L1               | AF1770 |
| 0 | MPC 1980 CCITT X.25 PP | L2 AND L3        | AF1769 |

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0 NTXE66AA02 STATUS RTM  
0 CCS7 ISUP OPTION CONTROLS

|   |                      |        |
|---|----------------------|--------|
| 0 | ISUP TIMER CONTROL   | AG1532 |
| 0 | ISUP TRUNK OPTIONS 1 | AG1531 |

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0 NTXE67AA01 STATUS RTM  
0 EQUAL ACCESS INTERMEDIATE  
0 TANDEM

|   |                                  |        |
|---|----------------------------------|--------|
| 0 | EQUAL ACCESS INTERMEDIATE TANDEM | AF2016 |
|---|----------------------------------|--------|

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0 NTXE68AA01 STATUS RTM  
0 TOPS EXPANDED CALLING CARD  
0 FORMAT0 TOPS INTERNATIONAL TELEPHONE CREDIT CARD (CC AG1447  
0 TOPS SCREEN AND BELLCORE AMA EXPANDED CALLING CARD AF2017

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0 NTXE70AA01 STATUS RTM  
0 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT

0 TWO TERMINAL DIRECTORY ASSISTANCE/INTERCEPT AF2018

0

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0 NTXE71AA01 STATUS RTM  
0 TOPS DIRECTORY ASSISTANCE/TOLL  
0 BRANDING

0 DIRECTORY ASSISTANCE/TOLL BRANDING AF2019

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0 NTXE72AA01 STATUS RTM  
0 TOPS EXPANDED CALLING CARD  
0 FORMAT - CCS7 VALIDATION  
0 (U.S.)

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0 TOPS EXPANDED CALLING CARD FORMAT -- CSS7 VALIDATION AF2020

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0 NTXE73AA01 STATUS RTM  
0 IMPROVED STATSPAC

0 IMPROVED STATSPAC FORCE MANAGEMENT CAPABILITY AF2022

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0 NTXE74AA01 STATUS RTM  
0 PRESET CONFERENCE - EXPANDED  
0 CAPACITY

0 PRESET CONFERENCE (LARGE) AF2014

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0 NTXE75AA05 STATUS A+M  
0 OFFNET ACCESS SERVICES(UPG. BY  
0 NTXE75AB)

|   |                                      |        |
|---|--------------------------------------|--------|
| 0 | MERIDIAN SUPERNODE BILLING           | AD1809 |
| 0 | MERIDIAN SUPERNODE PLATFORM          | AD1808 |
| 0 | MSN DEDICATED ACCESS TRUNK INTERFACE | AD2176 |
| 0 | MSN FEATURE GROUP A INTERFACE        | AD2177 |
| 0 | MSN FEATURE GROUP B INTERFACE        | AD1806 |
| 0 | MSN FEATURE GROUP D INTERFACE        | AD1803 |
| 0 | MSN REAL TIME DOCUMENTATION          | AD2178 |
| 0 | NSS DESTINATION DIALING ENHANCEMENT  | AM0237 |
| 0 | NSS FGD ANI SCREENING DATABASE       | AD2857 |

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|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | NSS FGD ID DIGIT AND CASUAL CALLER SCREENING  | AD2858 |
| 0 | NSS OFFNET ACCESS DIALING PLAN DRIVER         | AD2471 |
| 0 | NSS TRAVER ENHANCEMENTS                       | AD2470 |
| 0 | NSS VALIDATED ACCOUNT CODES AND AUTHCODE LAST | AD2854 |
| 0 | DIALING PLAN                                  |        |

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|---|--------------------------------|--|
| 0 | NTXE75AB01 STATUS LTD          |  |
| 0 | OFFNET ACCESS SERVICES (UPG OF |  |
| 0 | NTXE75AA)                      |  |

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | MERIDIAN SUPERNODE BILLING                   | AD1809 |
| 0 | MERIDIAN SUPERNODE PLATFORM                  | AD1808 |
| 0 | MSN DEDICATED ACCESS TRUNK INTERFACE         | AD2176 |
| 0 | MSN FEATURE GROUP A INTERFACE                | AD2177 |
| 0 | MSN FEATURE GROUP B INTERFACE                | AD1806 |
| 0 | MSN FEATURE GROUP D INTERFACE                | AD1803 |
| 0 | MSN REAL TIME DOCUMENTATION                  | AD2178 |
| 0 | NSS DESTINATION DIALING ENHANCEMENT          | AM0237 |
| 0 | NSS FGD ANI SCREENING DATABASE               | AD2857 |
| 0 | NSS FGD ID DIGIT AND CASUAL CALLER SCREENING | AD2858 |
| 0 | NSS OFFNET ACCESS DIALING PLAN DRIVER        | AD2471 |
| 0 | NSS TRAVER ENHANCEMENTS                      | AD2470 |

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|---|-----------------------|--|
| 0 | NTXE76AA01 STATUS RTM |  |
| 0 | TRAVEL CARD SERVICES  |  |

|   |                                 |        |
|---|---------------------------------|--------|
| 0 | MSN TRAVEL CARD CALL PROCESSING | AD2185 |
| 0 | MSN TRAVEL CARD NUMBER DATABASE | AD1946 |

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0 NTXE77AA01 STATUS RTM  
0 700/800/900 SERVICES

0 MSN N00 DIALING AD1802

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0 -----0 NTXE78AA04 STATUS RTM  
0 SL-100 ENHANCED TANDEM  
0 SERVICES0 FEATURE GROUP D ANI DELIVERY AD2175  
0 NSS ANI DELIVERY AD2468  
0 NSS VALIDATED ACCOUNT CODES AND AUTHCODE LAST AD2854  
0 DIALING PLAN  
0 NSS: PIN COLLECTION ON CENTREX ORIGINATIONS AM0145  
0 PERSONAL IDENTIFICATION NUMBERS AD2146  
0 PRIVATE SPEED CALLING AND HOTLINE DIALING AD2186

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0 -----0 NTXE94AA02 STATUS RTM  
0 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS0 ADDING OPTIONS ON A SECONDARY DIRECTORY NUMBER (DN) AF2021  
0 PREP FOR MULTIPLE DIRECTORY NUMBERS (DNS) PER LEN AF2860

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0 NTXE96AA01 STATUS RTM  
0 ENHANCED MDC WATS

0 MDC ENHANCED WATS

AF1664

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0 NTXE98AA02 STATUS RTM  
0 HIGH SPEED MPC

0 HIGH-SPEED MPC ROM AND DIAGNOSTICS  
0 HIGH-SPEED MPC, ROM AND DIAGNOSTICS

AF1514

AF2412

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0 NTXF05AA03 STATUS LTD TARGET SUPERNODE  
0 ETHERNET INTERFACE UNIT

0 EIU CENTRAL CONTROL  
0 EIU ENHANCEMENTS  
0 LAN MANAGEMENT FROM DMS MAP  
0 TCP/IP AND FTP ENHANCEMENTS

AL1208

AL1403

AJ0447

AL2276

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0 NTXF10AA01 STATUS RTM  
0 AUTOMATED DA CALL COMPLETION  
0 WITH ALTERNATE BILLING

0 AUTOMATED DA CALL COMPLETION - WITH ALTERNATE AF2086  
0 BILLING

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0 NTXF14AA01 STATUS RTM  
0 HIGH CAPACITY DPP

0 DMS CC SOFTWARE FOR HIGH CAPACITY DPP AF1407

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0 NTXF15AA01 STATUS RTM TARGET SUPERNODE  
0 DMS-CORE MC68030 33MHZ  
0 PROCESSOR

0 SOFTWARE SUPPORT FOR 68030 AT 33 MHZ AL0934

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0 NTXF16AA01 STATUS RTM TARGET SUPERNODE  
0 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR

0 SOFTWARE SUPPORT FOR 68030 AT 40 MHZ AL1189

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0 NTXF17AA02 STATUS LTD  
0 CALL RE-ORIGINATION/RESET  
0 DIALING0 CALL REORIGINATION / RESET DIALING AD1807  
0 REORIGINATION DIALING ENHANCEMENT AM0238

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0 NTXF19AA02 STATUS LTD TARGET SUPERNODE  
0 TCP/IP PROTOCOLS0 EIU ENHANCEMENTS AL1403  
0 LAN MANAGEMENT FROM DMS MAP AJ0447  
0 TCP/IP AND FTP ENHANCEMENTS AL2276  
0 UDP/IP DEVELOPMENT TO SUPPORT NFS DELIVERY AL1917

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0 NTXF20AA02 STATUS RTM TARGET SUPERNODE  
0 LMS ON LPP0 LIM CM MTC I AI0116  
0 LIM CM MTC II AI0118  
0 LINK INTERFACE MODULE LOCAL CONTROL AI0036  
0 LINK INTERFACE MODULE MAINTENANCE ENHANCEMENTS AI0167  
0 LMS ISOLATION AL1895  
0 MAP FOR THE STP LIM AI0038  
0 OM'S AND LOGS FOR THE STP LIM AI0039  
0 REX TEST ON LPP AL1271

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|   |                           |        |
|---|---------------------------|--------|
| 0 | STP LIM CLOCK DIAGNOSTIC  | AI0103 |
| 0 | STP LIM LOCAL MTC         | AI0117 |
| 0 | TABLE CONTROL FOR STP LIM | AI0040 |

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|---|-------------------|----------------------------|--------|-----------|
| 0 | NTXF25AC01 STATUS | RTM                        | TARGET | SUPERNODE |
| 0 |                   | FRAME RELAY BASIC (UPG FR. |        |           |
| 0 |                   | NTXF25AB) (FOR BCS35 REL)  |        |           |

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | FRAME RELAY CONNECTION DATABASE                   | AL1059 |
| 0 | FRAME RELAY INTERFACE UNIT ADDITION TO LPP        | AI0235 |
| 0 | FRAME RELAY INTERFACE UNIT PM MAINTENANCE PHASE 1 | AL1058 |
| 0 | FRAME RELAY INTERFACE UNIT SOFTWARE BASE          | AI0234 |
| 0 | FRAME RELAY T1 TRUNKING                           | AL1907 |
| 0 | FRIU DATA LOOP DIAGNOSTICS                        | AL1284 |
| 0 | FRIU MAINTENANCE SUPPORT                          | AL1282 |
| 0 | FRIU PER CHANNEL OA&M                             | AL1286 |
| 0 | FRIU PERFORMANCE ENHANCEMENTS                     | AL1908 |
| 0 | FRIU PM LOGS AND ALARMS                           | AL1283 |
| 0 | FRIU ROBUSTNESS                                   | AL1672 |
| 0 | FRIU SWITCHING THREAD                             | AL1288 |
| 0 | FRIU T1 MTCE SUPPORT                              | AL1287 |

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|---|-------------------|---------------------------|--------|-----------|
| 0 | NTXF25AD01 STATUS | LTD                       | TARGET | SUPERNODE |
| 0 |                   | FRAME RELAY BASIC (UPG FR |        |           |
| 0 |                   | NTXF25AC)                 |        |           |

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | FRAME RELAY CONNECTION DATABASE                   | AL1059 |
| 0 | FRAME RELAY INTERFACE UNIT ADDITION TO LPP        | AI0235 |
| 0 | FRAME RELAY INTERFACE UNIT PM MAINTENANCE PHASE 1 | AL1058 |
| 0 | FRAME RELAY INTERFACE UNIT SOFTWARE BASE          | AI0234 |
| 0 | FRAME RELAY T1 TRUNKING                           | AL1907 |
| 0 | FRIU DATA LOOP DIAGNOSTICS                        | AL1284 |
| 0 | FRIU MAINTENANCE SUPPORT                          | AL1282 |



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|---|-------------------------------|--------|
| 0 | FRIU PER CHANNEL OA&M         | AL1286 |
| 0 | FRIU PERFORMANCE ENHANCEMENTS | AL1908 |
| 0 | FRIU PM LOGS AND ALARMS       | AL1283 |
| 0 | FRIU ROBUSTNESS               | AL1672 |
| 0 | FRIU SWITCHING THREAD         | AL1288 |
| 0 | FRIU T1 MTCE SUPPORT          | AL1287 |

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|---|------------------------|-----|--------|-----------|
| 0 | NTXF26AA01 STATUS      | RTM | TARGET | SUPERNODE |
| 0 | SYNCHRONIZATION - BITS |     |        |           |
| 0 | COMPOSITE MASTER       |     |        |           |

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | MASTER EXTERNAL CLOCK SUPPORT FOR COMPOSITE CLOCK | AL1161 |
| 0 | SIGNAL                                            |        |

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|---|---------------------------------|-----|--------|-----------|
| 0 | NTXF27AA01 STATUS               | RTM | TARGET | SUPERNODE |
| 0 | SYNCHRONIZATION - CESIUM, LORAN |     |        |           |
| 0 | - C MASTER                      |     |        |           |

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | MASTER EXTERNAL/INTERNAL CLOCK SYNCHRONIZATION | AL0688 |
|---|------------------------------------------------|--------|

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|---|-------------------------|-----|
| 0 | NTXF40AA01 STATUS       | RTM |
| 0 | DSN PRIMARY RATE ACCESS |     |

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | AUTOVON AGENTS AND IBNT2 PRA INTERWORKING    | AD2073 |
| 0 | AUTOVON INTERSWITCH PRA BASE CALL PROCESSING | AD2083 |
| 0 | AUTOVON INTERSWITCH PRA TRUNK PREEMPTION     | AD2082 |

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|---|----------------------------------------------------|--------|
| 0 | AUTOVON INTERSWITCH PRA TRUNK PREEMPTION II        | AD2251 |
| 0 | AV AGENTS TO IBN PRA INTERWORKING (VALIDATION)     | AD2788 |
| 0 | AVINSW PRA TRUNK IBN FEATURE INTERACTIONS PHASE I  | AD2253 |
| 0 | AVINSW PRA TRUNK TO ATTENDANT CONSOLE BASE CALL    | AD2255 |
| 0 | PROCESSING                                         |        |
| 0 | AVINSW PRA TRUNK TO ATTENDANT CONSOLE PREEMPTION   | AD2256 |
| 0 | AVINSW PRA TRUNK TO IBN TERMINALS AND 4WIRE SETS   | AD2252 |
| 0 | AVPRA AND IBN FEATURE INTERACTIONS PHASE II        | AD2532 |
| 0 | AVPRA CALL PROCESSING BASE (VALIDATION)            | AD2786 |
| 0 | AVPRA INTERWORKING TO AUTOVON AGENTS               | AD2537 |
| 0 | AVPRA MISCELLANEOUS MAINTENANCE TASKS              | AD2533 |
| 0 | AVPRA PREEMPTION (VALIDATION)                      | AD2783 |
| 0 | AVPRA PREEMPTION II VALIDATION                     | AD2779 |
| 0 | AVPRA TABLE CONTROL (VALIDATION)                   | AD2785 |
| 0 | AVPRA TO ATTENDANT CONSOLE CP (VALIDATION)         | AD2781 |
| 0 | AVPRA TO ATTENDANT CONSOLE INTERWORKING PHASE II   | AD2529 |
| 0 | AVPRA TO ATTENDANT CONSOLE PREEMPTION (VALIDATION) | AD2784 |
| 0 | AVPRA TO IBN FEATURES (VALIDATION)                 | AD2782 |
| 0 | AVPRA TO IBN TERMINAL INTERWORKING (VALIDATION)    | AD2780 |
| 0 | LAYER 2 OM'S FOR D-CHANNEL BACKUP                  | AD3513 |
| 0 | TABLE CONTROL FOR AUTOVON INTERSWITCH PRA TRUNKS   | AD2084 |

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|   |            |                         |     |
|---|------------|-------------------------|-----|
| 0 | NTXF42AA01 | STATUS                  | RTM |
| 0 |            | MONITOR OF MAP TERMINAL |     |
| 0 |            | ACTIVITY                |     |

|   |                       |        |
|---|-----------------------|--------|
| 0 | MONITOR USER ACTIVITY | AD2066 |
|---|-----------------------|--------|

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|---|------------|------------------------------|-----|
| 0 | NTXF43AA01 | STATUS                       | RTM |
| 0 |            | DSN DYNAMIC OVERLOAD CONTROL |     |
| 0 |            | VIA CCS7                     |     |

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0 93 12 030 AUTOVON DOC VIA SS7 SUPPORT S/W AD2664  
0 DYNAMIC OVERLOAD CONTROL VIA SS7 AD2542

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0 NTXF44AA01 STATUS RTM  
0 DSN ISDN BRA

0 DSN ISDN BASIC RATE ACCESS INTERWORKING AD2534

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0 NTXF46AA04 STATUS RTM TARGET SUPERNODE  
0 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | CC IDT MAINTENANCE II                          | AF2443 |
| 0 | CP TOOLS I                                     | AF2155 |
| 0 | DIAGNOSTICS FOR THE EISP                       | AF2864 |
| 0 | EOC ROUTER                                     | AF2656 |
| 0 | PP IDT MAINTENANCE II                          | AF2442 |
| 0 | RFT EVENT HANDLER                              | AF2687 |
| 0 | RFT EXTERNAL ALARM INTERFACE                   | AF2444 |
| 0 | RFT IMC REMOTE ACCESS/ TEST BYPASS PAIR ACCESS | AF2969 |
| 0 | RFT LINE PROVISIONING                          | AF2614 |
| 0 | RFT LINE TEST POSITION I                       | AF2688 |
| 0 | RFT LINE TEST POSITION II                      | AF2967 |
| 0 | RFT LINES TABLE CONTROL II                     | AF2530 |
| 0 | RFT SUBSCRIBER PREMISES TESTS                  | AF2970 |
| 0 | SMA AND IDT OMS                                | AF2686 |
| 0 | SMA BASE UPGRADE                               | AF2724 |
| 0 | SMA CC EOC/TMC/CSC PATH PROTECTION SWITCHING   | AF2651 |
| 0 | SMA CC IDT MAINTENANCE III                     | AF2998 |
| 0 | SMA CLASS CALL CONTROL                         | AF2650 |
| 0 | SMA COIN CALL CONTROL                          | AF2521 |
| 0 | SMA EBS CALL CONTROL                           | AF2522 |
| 0 | SMA ISDN & MADN CALL CONTROL                   | AF2726 |

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|---|---------------------------------------|--------|
| 0 | SMA MAINTENANCE AND TABLE CONTROL     | AF1966 |
| 0 | SMA MDC SERVICES VERIFICATION         | AF2762 |
| 0 | SMA PERIPHERAL IDT MAINTENANCE III    | AF2971 |
| 0 | SMA PERIPHERAL IDT MAINTENANCE IV     | AF2997 |
| 0 | SMA RFT TEST RESPONSE CIRCUIT SUPPORT | AF2649 |

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0 NTXF55AA02 STATUS RTM  
0 CLASS BULK CALLING LINE  
0 IDENTIFICATION

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | BCLID: USP BILLING & DN CHANGES IN MESSAGE FORMAT | AF2810 |
| 0 | BULK CALLING LINE IDENTIFICATION                  | AG1839 |

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0 NTXF56AA01 STATUS RTM  
0 CLASS ON MDC (BASE)

|   |                                   |        |
|---|-----------------------------------|--------|
| 0 | CLASS-MDC: CLASS ON CENTREX BASIC | AG1877 |
|---|-----------------------------------|--------|

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0 NTXF58AA01 STATUS LTD  
0 POTS - INTRALATA PIC IN EAE0

|   |                        |        |
|---|------------------------|--------|
| 0 | INTRALATA PIC FOR POTS | AF2332 |
|---|------------------------|--------|

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0 NTXF60AA01 STATUS RTM  
0 CLASS ON MVP II

0 CLASS : CLASS PHASE TWO ON MULTIVARIETY PACKAGE AG1785

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0 -----0 NTXF61AA02 STATUS LTD  
0 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | DMS INTEGRATED E911 PSAP FUNCTIONALITY         | AF2147 |
| 0 | E911 CALL TRANSFER CP SUPPORT                  | AF1646 |
| 0 | E911 INTEGRATED PSAP ACD FUNCTIONALITY         | AF2739 |
| 0 | E911 ORIGINATION TABLE CONTROL                 | AF1336 |
| 0 | E911 PSAP CALL PROCESSING SUPPORT              | AF1643 |
| 0 | E911 SINGLE BUTTON TRANSFER OPERATION          | AF2145 |
| 0 | E911 TRANSLATIONS                              | AF1338 |
| 0 | E911 TRUNK ORIGINATION                         | AF1335 |
| 0 | E911 TRUNK ORIGINATION CALL PROCESSING SUPPORT | AF1337 |

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0 -----0 NTXF69AA01 STATUS LTD  
0 IBN - INTRALATA PIC IN EAEO

0 INTRALATA PIC FOR IBN AF2333

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0 NTXF70AA01 STATUS RTM TARGET SUPERNODE  
0 SUPERNODE SN-20 PROCESSOR

|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | CENTRAL MESSAGE SWITCH MAINTENANCE    | BC1826 |
| 0 | CM IN-SYNC MAINTENANCE SOFTWARE       | BC1827 |
| 0 | DISTRIBUTED LOG SYSTEM                | BC2003 |
| 0 | REMOTE LOGIN                          | BC1932 |
| 0 | TIME OF DAY SUPPORT FOR ENHANCED CORE | BC1909 |

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0 NTXF71AA01 STATUS A+M TARGET SUPERNODE  
0 SUPERNODE ENHANCED  
0 MESSAGING(UPG.BY NTXF71AB)

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | BUFFER MANAGEMENT SYSTEM                    | AI0124 |
| 0 | FTS PHASE 1                                 | AI0047 |
| 0 | FTS ROBUSTNESS AND FAULT HANDLING           | AI0123 |
| 0 | SEPARATE MMI FROM CONTROL                   | AI0037 |
| 0 | TPS ROBUSTNESS AND PERFORMANCE IMPROVEMENTS | AI0126 |
| 0 | TPS 3.5 (SOS)                               | AI0051 |

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0 NTXF72AB01 STATUS RTM  
0 CLASS ON MBS (UPG OF NTXF72AA)

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | CLASS - SCREENING LIST FEATURES ON MBS/MADN | AG2160 |
| 0 | CLASS-MDC: CLASS FOR EBS AND MADN BASIC     | AG1881 |

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0 NTXF82AA01 STATUS RTM  
0 RES SINGLE LINE VARIETY  
0 PACKAGE

0 SINGLE LINE VARIETY

AF2307

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0 NTXF87AA02 STATUS RTM  
0 SERVICE ORDER SIMPLIFICATION0 ACCESS FEATURE GROUP ENHANCEMENT  
0 ACCESS FEATURE GROUPINGAG1866  
AG1162

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0 NTXF88AA03 STATUS A+M  
0 MBS INTERACTIVE DISPLAYS(UPG  
0 BY NTXF88AB)0 BRA: MERIDIAN FEATURE TRANSPARENCY-POWER SOFTKEYS  
0 INTERACTIVE DISPLAY SERVICE ORDER  
0 MBS POWER FEATURE - NAME PROGRAMMINGAC0538  
AJ0443  
AJ0445

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0 NTXF88AB01 STATUS RTM  
0 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)

0 BRA: MERIDIAN FEATURE TRANSPARENCY-POWER SOFTKEYS AC0538  
0 INTERACTIVE DISPLAY SERVICE ORDER AJ0443  
0 MBS POWER FEATURE - NAME PROGRAMMING AJ0445

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0 NTXF92AA02 STATUS RTM  
0 ISDN OAM BASE

0 DS1 MAPPING FOR ISDN PH AJ0577  
0 ISDN OAM LAPB/LAPD CONFIGURATION (DMS) AJ0945  
0 ISDN OAM MAP LEVEL AND OAMP DOWNLOADING AJ0956

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0 NTXF93AA02 STATUS RTM  
0 ISDN PROVISIONING

0 DMS QUERY CI FOR ISDN OAM AJ0301  
0 DMS-BASED PH SERVER FOR ISDN OAM PROCESSOR AJ0303  
0 E.164 SUPPORT FOR PVCS AND DCS AJ0942  
0 PH DATA TABLE AND AUDIT PROCESS AJ0304  
0 SERVORD ENHANCEMENTS FO RISDN OAM AJ0305

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0 NTXF94AB01 STATUS RTM  
0 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)0 ISDN PACKET HANDLER MAINTENANCE DATA COLLECTION AJ0607  
0 NCS ACCESS FROM MAP AJ0576

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0 NTXF95AA03 STATUS RTM  
0 ISDN OAM PROCESSOR0 DMS ISDN OAM PACKET HANDLER NAS CO-EXISTENCE AJ0493  
0 G27 SERVICE DATA SUPPORT AJ1230  
0 INTEGRATED HARDWARE MAINTENANCE FOR PH - OAMP AJ1018  
0 RESIDENT S/W  
0 ISDN OAM LAPB/LAPD CONFIGURATION (OAMP) AJ0955  
0 ISDN OAM SESSION SERVICE MANAGER AJ0302  
0 ISDN PACKET HANDLER SERVICE DATA FILE COMPILER/ AJ0398  
0 DECOMPILER  
0 ISDN PACKET HANDLER SERVICE PROVISIONING INTERFACE AJ0397  
0 ISDN PACKET HANDLER TO OAM PROCESSOR UPLOAD/DOWNLOAD AJ0399  
0 ISDN PROVISIONING PACKET HANDLER ACTIVATION AJ0400  
0 ISDN SERVORD ENHANCEMENTS - OAMP RESIDENT AJ0943  
0 ISDNOAM UPGRADE TO G26 SERVICE DATA AJ0944  
0 NETWORK PACKET HANDLER AJ1340

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0 NTXF97AA02 STATUS RTM  
0 BRISC SERIES SUPERNODE BASE0 BRISC RTIF FIRMWARE AQ0697  
0 FOOTPRINT SUPPORT FOR RISC AL1587

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0 NTXG01AA06 STATUS RTM  
0 DMS-250 PRA

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|-------------------------------------------------------|--------|
| 0 BASIC PRA CALL PROCESSING FOR DMS-250               | AD0883 |
| 0 DMS-250 PRA TRUNK SUBSCRIPTION PARMS                | AD0520 |
| 0 ESN ON DMS-250 PRA/ISUP I                           | AD1543 |
| 0 ISDN DTC B/D MAINTENANCE                            | AD2228 |
| 0 ISDN DTC PM MAINTENANCE                             | AJ0385 |
| 0 ISDN DTC ROBUSTNESS                                 | AD2606 |
| 0 ISDN DTC TABLE CONTROL                              | AD2097 |
| 0 ISDN DTCI SPECIAL CONNECTIONS                       | AD2231 |
| 0 ISDN ISA CLID/CSI SCREENING                         | AM0077 |
| 0 ISDN NETWORK BASED ACD - TRANSPORT OF MSL-100       | AM0084 |
| 0 LAYER 2 OM'S FOR D-CHANNEL BACKUP                   | AD3513 |
| 0 PRA OFF HOOK QUEUEING                               | AM0070 |
| 0 PRA/ CCS7 ISUP INTERWORKING FOR USSPRINT ON DMS-250 | AD1172 |
| 0 PRA250 DEFAULT CALLTYPE                             | AD2563 |
| 0 PRA250 NETWORK TRANSPORT                            | AD2564 |
| 0 USSPRINT PRA250 TO TCAP INTERWORKING                | AD2567 |
| 0 UTR DIGIT COLLECTION ON USSPRINT PRA250             | AD1799 |

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0 NTXG01CA07 STATUS RTM  
0 DMS-250 PRA (TYPE III)

|                                           |        |
|-------------------------------------------|--------|
| 0 ANI DELIVERY ON UNANSWERED PRI CALLS    | AD3400 |
| 0 ATR INTERWORKING WITH PRA250 TRUNKS     | AD2358 |
| 0 BASIC PRA CALL PROCESSING FOR MCI       | AD1715 |
| 0 DIGITAL DATA PHASE-II FOR MCI           | AD3423 |
| 0 GD AND GA IES FOR MCI ISDN - XPM AND CC | AD3398 |
| 0 ISDN DTC B/D MAINTENANCE                | AD2228 |
| 0 ISDN DTC PM MAINTENANCE                 | AJ0385 |
| 0 ISDN DTC ROBUSTNESS                     | AD2606 |
| 0 ISDN DTC TABLE CONTROL                  | AD2097 |

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|---|---------------------------------------------------|--------|
| 0 | ISDN DTCI SPECIAL CONNECTIONS                     | AD2231 |
| 0 | LAYER 2 OM'S FOR D-CHANNEL BACKUP                 | AD3513 |
| 0 | MCI ANI DELIVERY IN ALL B-CHANNELS BUSY CONDITION | AD3128 |
| 0 | MCI PRI DIGITAL DATA - PHASE I                    | AD3129 |
| 0 | PRA DATABASES FOR MCI                             | AD1714 |
| 0 | PRA250 DEFAULT CALLTYPE                           | AD2563 |
| 0 | PRA250 NETWORK TRANSPORT                          | AD2564 |
| 0 | UTR DIGIT COLLECTION ON MCI PRA250                | AD2566 |

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|---|---------------------------|-----|
| 0 | NTXG03AA02 STATUS         | RTM |
| 0 | DMS-250 CC BILLING SERVER |     |
| 0 | (TYPE II)                 |     |

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | AUTOMATIC SWITCH BACK TO LOCAL BILLING      | AD2240 |
| 0 | BILLING SERVER CLIENT                       | AD0704 |
| 0 | SNS BILLING SERVER LOGS, OMS, ALARMS, MAPCI | AD0703 |
| 0 | SNS GENERIC CDR FORMATTER                   | AD0493 |

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|---|---------------------------|-----|
| 0 | NTXG05AA02 STATUS         | RTM |
| 0 | DMS-250 CC BILLING SERVER |     |
| 0 | (TYPE III)                |     |

|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | AUTOMATIC SWITCH BACK TO LOCAL BILLING | AD2240 |
| 0 | BILLING SERVER ENHANCEMENTS FOR MCI.   | AD1241 |

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0 NTXG06AA02 STATUS RTM  
0 DMS-250 EIOC MAP  
0 IMPLEMENTATION & NODE MTCE

0 CMC/CMC MAINTENANCE ENHANCEMENTS AD1234  
0 CMC/CMC SOFTWARE MAINTENANCE AD1149  
0 NT-40 EIOC SOFTWARE PACKAGING AD1147

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0 NTXG07AA01 STATUS RTM  
0 DMS-250 EIOC/CC RASL ACCESS  
0 TYPES

0 CMC/CMC SOFTWARE MAINTENANCE AD1149

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0 NTXG08AA01 STATUS RTM  
0 DMS-250 CCS7 MTP TEST DRIVER

0 MTP TEST DRIVER AD0104

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0 NTXG09AA03 STATUS RTM  
0 DVS XMS PASCAL BASED FEATURES

0 BILLING SERVER CONFIGURATION MMI AD0926  
0 CDRSEARCH FOR SPRINT EHNANCEMENTS AD1247

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|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | CDRSEARCH INTERFACE                    | AD1320 |
| 0 | CHIPS ENHANCEMENTS FOR DAM SUBSYSTEM   | AD0922 |
| 0 | DAIS CONFIGURATION SERVICE             | AD1662 |
| 0 | DVIX APPLICATION MONITOR               | AD0919 |
| 0 | DVIX PATCHER INTERFACE                 | AD1536 |
| 0 | DVIX SNS-CHIPS ROBUSTNESS              | AD1236 |
| 0 | DVS CAMPUSNET TEST FACILITY            | AD1665 |
| 0 | DVS-BASED CDR/OSR SEARCH FOR US SPRINT | AD1740 |
| 0 | DV1 DVS PATCHER UTILITY                | AD0450 |
| 0 | EIOC CLOCK SYNCHRONIZATION             | AD1661 |
| 0 | MTS ENHANCEMENTS FOR BILLING SERVER.   | AD0487 |
| 0 | PATCHER ENHANCEMENTS                   | AD1274 |
| 0 | PATCHER ENHANCEMENTS FOR REMOTE/DVIX   | AD1275 |
| 0 | SNSFTS DSESSION - DS30 TRANSPORT       | AD0983 |
| 0 | TRANSPORT LAYER - DVS                  | AD1273 |

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0 NTXG09CA01 STATUS RTM  
0 DVS XMS PASCAL BASED FEATURES  
0 (TYPE III)

|   |                                                            |        |
|---|------------------------------------------------------------|--------|
| 0 | CDRSEARCH INTERFACE                                        | AD1320 |
| 0 | DAIS CONFIGURATION SERVICE                                 | AD1662 |
| 0 | DVIX APPLICATION MONITOR                                   | AD0919 |
| 0 | DVIX PATCHER INTERFACE                                     | AD1536 |
| 0 | DVS CAMPUSNET TEST FACILITY                                | AD1665 |
| 0 | EDNCMS NCS MESSAGE FORMATTER                               | AD1582 |
| 0 | EIOC CLOCK SYNCHRONIZATION                                 | AD1661 |
| 0 | EIOC/DVIX NCS COMMUNICATIONS MANAGEMENT SYSTEM<br>(EDNCMS) | AD1580 |
| 0 | MCI NCS LINK I/F                                           | AD1226 |
| 0 | NCS INTERFACE                                              | AD1322 |
| 0 | NEMAS RTT & STS ON DVS                                     | AD1581 |
| 0 | PATCHER ENHANCEMENTS                                       | AD1274 |
| 0 | PATCHER ENHANCEMENTS FOR REMOTE/DVIX                       | AD1275 |
| 0 | TRANSPORT LAYER - DVS                                      | AD1273 |

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0 NTXG11AA01 STATUS RTM  
0 DMS-250 NRAG ON DMS250 PRA/  
0 ISUP

0 NRAG ON DMS-250 PRA/ISUP AD1539

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0 NTXG12AA06 STATUS RTM  
0 DMS-250 EOPS

|                                                       |        |
|-------------------------------------------------------|--------|
| 0 (FI) REMOVAL OF DMS-250 EOPS CALL ARRIVAL TONE      | AD2521 |
| 0 DIRECT ACCESS TO FROM EOPS DAL FXS, FG-A, IMT       | AD1163 |
| 0 DMS-250 EOPS CALLING CALLED PARTY HOLD              | AD2485 |
| 0 DMS-250 PTS IMT ACCESS TO EOPS                      | AD2364 |
| 0 DMS-250 STRATEGIC EOPS DS IMPROVEMENTS              | AD2871 |
| 0 EOPS ENHANCEMENTS TO INCREASE NUMBER OF LOGICAL     | AD2148 |
| 0 QUEUES                                              |        |
| 0 ISUP FGD TO EOP                                     | AD3150 |
| 0 OSR BILLING ON EIOC                                 | AD1725 |
| 0 PROPAGATE DIRECT ACCESS TO EOPS FOR DS1SIG          | AD1199 |
| 0 PROPAGATION OF TOPS FAST FEATURES TO BCS27.         | AD1132 |
| 0 RETRANSLATIONS FROM EOPS                            | AD2482 |
| 0 STRATEGIC DMS-250 EOPS BILLING ENHANCEMENTS         | AM0153 |
| 0 STRATEGIC DMS250 EOPS START/END OF CALL MESSAGE     | AM0155 |
| 0 INDICATORS                                          |        |
| 0 STRATEGIC HLD DMS-250 ISUP IMT TO EOPS              | AD2367 |
| 0 UCS DMS-250 EOPS ROUTING TO OPERATOR QUEUE BY TRUNK | AM0154 |
| 0 GROUP                                               |        |
| 0 UCS DMS-250 OSR UPGRADES FOR ISUP IMT WITH RLT      | AD2869 |
| 0 UCS DMS-250 OSR/CDR ON OST                          | AD2428 |
| 0 UCS EOPS FEATURE ENHANCEMENTS                       | AD1717 |

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0 NTXG12CA06 STATUS RTM  
0 DMS-250 EOPS (TYPE III)

|                                                        |        |
|--------------------------------------------------------|--------|
| 0 (FI) INTERNATIONAL OPERATOR SERVICES ON THE ISN      | AD4082 |
| 0 PLATFORM                                             |        |
| 0 (FI) MCI PRISON SCREENING                            | AD2547 |
| 0 (FI) REMOVAL OF DMS-250 EOPS CALL ARRIVAL TONE       | AD2521 |
| 0 ACCOUNT CODE PASSES TO EOPS                          | AD1560 |
| 0 DMS-250 EOPS CALLING CALLED PARTY HOLD               | AD2485 |
| 0 DMS-250 EOPS INTERNATIONAL PARTITIONED PREXLA        | AD2373 |
| 0 DMS-250 EOPS MCI INBOUND INTERNATIONAL GNRL          | AD2481 |
| 0 ASSISTANCE CALLS                                     |        |
| 0 DMS-250 EOPS OSR FOR OST                             | AD2369 |
| 0 DMS-250 MCI 32 WORD OSR ENHANCEMENTS                 | AD2366 |
| 0 DMS-250 PTS IMT ACCESS TO EOPS                       | AD2364 |
| 0 DMS-250 STRATEGIC EOPS DS IMPROVEMENTS               | AD2871 |
| 0 EOPS ENHANCEMENTS TO INCREASE NUMBER OF LOGICAL      | AD2148 |
| 0 QUEUES                                               |        |
| 0 MCI DIRECT ACCESS TO EOPS                            | AD1559 |
| 0 MCI DMS-250 EOPS OSR UPGRADES TO 8.1                 | AM0159 |
| 0 MCI EOPS/MCCS ROTARY CALLING                         | AD1554 |
| 0 MCI INBOUND/OUTBOUND INTERNATIONAL OPERATOR SERVICES | AD2863 |
| 0 PHAS II                                              |        |
| 0 MCI MCSS ACCESS TO EOPS                              | AD1553 |
| 0 MCI OPERATOR SERVICES PRS/CSR FATURES ON THE DMS-250 | AD3618 |
| 0 MCI OPERATOR SERVICES RECORDS                        | AD1556 |
| 0 RETRANSLATIONS FROM EOPS                             | AD2482 |
| 0 ROTARY MAJOR CREDIT CARD TO EOPS                     | AD2384 |
| 0 STRATEGIC DMS-250 EOPS BILLING ENHANCEMENTS          | AM0153 |
| 0 STRATEGIC DMS250 EOPS START/END OF CALL MESSAGE      | AM0155 |
| 0 INDICATORS                                           |        |
| 0 STRATEGIC HLD DMS-250 ISUP IMT TO EOPS               | AD2367 |

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0 NTXG13AA01 STATUS RTM  
0 DMS BASE DATA ACCESS  
0 INTERFACE SESSION (DAIS)

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | DAIS INTERFACE FOR DVIX APPLICATIONS       | AD1583 |
| 0 | DAIS/DUTL MMI, LOGS AND OM                 | AD1617 |
| 0 | DATA ACCESS INTERFACE SESSION (DAIS) - XMS | AD1279 |
| 0 | PHASE I - IMPLEMENTATION OF DAIS ON DMS    | AD1285 |

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0 NTXG16AA01 STATUS RTM  
0 DMS-250 EIOC MAP PASS-THRU

|   |                            |        |
|---|----------------------------|--------|
| 0 | MAP-PASS THROUGH FOR EIOC. | AD1242 |
|---|----------------------------|--------|

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0 NTXG18AA02 STATUS RTM  
0 DMS-250 SAFE STORE TAP

|   |                       |        |
|---|-----------------------|--------|
| 0 | SAFE STORE TAP        | AD1604 |
| 0 | TAPE COPY ENHANCEMENT | AD3140 |

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0 NTXG18BA01 STATUS RTM  
0 DMS-250 SAFE STORE TAP

0 SAFE STORE TAP AD1604

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0 NTXG19AA01 STATUS RTM  
0 DMS-250 LOG TAP

0 LOG TAP AD1619

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0 NTXG20AA02 STATUS RTM  
0 DMS-250 SS7 FGD (TR-394)

0 DMS-250 SS7 FGD PHASE III AD2628  
0 DMS250 SS7 FGD PHASE 1A AD2169  
0 DMS250 SS7 FGD PHASE 2 AD2170  
0 SS7 FGD PHASE 1 AD1848

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0 NTXG21AA06 STATUS RTM TARGET NT40  
0 DMS-250 EIOC BASE PACKAGE

0 DISK SYSTEM THRUPUT ENHANCEMENT PHASE II AM0088  
0 DMS250 PERFORMANCE ENHANCEMENTS AD2959  
0 EIOC 4 MEG MEMORY BOARD DESIGN AD2511

0  
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0 93 12 030 MEMORY DIAGNOSTIC FOR 4 MEG. MEMORY BOARD  
0 REPACKAGING AREA COMMON FOR EIOCAD2462  
AD2546

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0 NTXG22AA01 STATUS RTM  
0 DMS-250 UCS OUTGOING FGD  
0 ENHANCEMENTS

0 (FI) UCS DMS-250 OUTGOING FG-D ENHANCEMENTS

AD2478

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0 NTXG23AA01 STATUS RTM  
0 DMS-250 TCN LOG ENHANCEMENT

0 TCN LOG ENHANCEMENT

AD2351

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0 NTXG24AA03 STATUS RTM  
0 DMS-250 INTEGRATED ECHO  
0 CANCELLOR0 DS1/EC CC CALL PROCESSING & MTCE  
0 DS1/EC XPM INTERFACE  
0 INTEGRATED ECHO CANCELLER ENHANCEMENTS - CALL  
0 PROCESSING  
0 INTEGRATED ECHO CANCELLOR (PREP)  
0 INTERGRATED ECHO CANCELLER BASIC OA&M  
0 NT6X50EC DSP FIRMWAREAD2624  
AD2623  
AM0046  
AD1689  
AM0030  
AD2411

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AM0122

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0 -----0 NTXG25AA01 STATUS RTM  
0 DMS-250 BLUE BOX FRAUD0 BLUE BOX DSP MICROCODE AD1013  
0 CALL PROCESSING FOR STR BBF AD1193  
0 LP BLUE BOX FIRMWARE AD1014  
0 XPM MTCE AND CP FOR STR BBF AD1000

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0 -----0 NTXG26AA01 STATUS RTM  
0 DMS-250 MULTIPLE OPERATOR  
0 CENTER CALL ROUTING

0 MULTIPLE OPERATOR CENTER CALL ROUTING PHASE I AD2486

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0 -----0 NTXG27AA01 STATUS RTM  
0 DMS-250 DBLOCK CI COMMAND

0 ENHANCEMENT TO CLASS OF SERVICE SCREENING AD1682

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0 NTXG28AA01 STATUS RTM  
0 DMS-250 ENHANCED COS SCREENING

0 ENHANCEMENT TO CLASS OF SERVICE SCREENING AD1682

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0 -----0 NTXG29AA02 STATUS RTM  
0 DMS-250 DISTRIBUTED OM SYSTEM0 DISTRIBUTED OM SYSTEM IMPLEMENTATION PHASE I AD2458  
0 DISTRIBUTED OM SYSTEM IMPLEMENTATION PHASE II AM0091

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0 -----0 NTXG30AA02 STATUS RTM  
0 DMS-250 UCS SINGLE RELEASE  
0 LINK TRUNK0 DMS-250 UCS IMT WITH RELEASE LINK TRUNK AD2357  
0 UCS OPERATOR SERVICES RELEASE LINK TRUNK PHASE II AD2865

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0 NTXG30CA02 STATUS RTM  
0 DMS-250 SINGLE RELEASE LINK  
0 TRUNK (TYPE III)

0 (FI) NON-VALIDATED REORIGINATION FOR MCI ACD BASED AD4011  
0 BOC CARD  
0 MCI OPERATOR SERVICES RELEASE LINK TRUNK PHASE I AD2866  
0 MCI OPERATOR SERVICES TIME AND CHARGES AD3477

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0 NTXG31AA01 STATUS RTM  
0 DMS-250 EOPS COIN CONTROL

0 PHASE I DMS-250 EOPS COIN CONTROL AD2365

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0 NTXG32AA01 STATUS RTM  
0 DMS-250 PRA INTERWORKING WITH  
0 SYSTEM-85 PRI

0 DMS-250 PRA INTERWORKING WITH 1988 41449 AD2229

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0 NTXG33AA01 STATUS RTM  
0 DMS-250 PRA D-CHANNEL BACKUP

0 PRA D-CHANNEL BACKUP-CC AM0071  
0 PRA-D CHANNEL BACKUP - XPM. AM0055

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0 NTXG34AA01 STATUS RTM  
0 DMS-250 TRUNK GROUP AND CLLI  
0 NAME ANALYSIS

0 TRUNK GROUP AND CLLI NAME ANALYSIS TOOL AD2632

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0 NTXG35AA01 STATUS RTM  
0 DMS-250 PAY STATION  
0 PRETRANSLATOR

0 (FI) TRAVELING PIN AND CASUAL ANI/INT'L CALLS AD2620

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0 NTXG35BA01 STATUS RTM  
0 DMS-250 PAY STATION  
0 PRETRANSLATOR (TYPE II)

0 (FI) TRAVELING PIN AND CASUAL ANI/INT'L CALLS AD2620

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0 NTXG36AA01 STATUS RTM  
0 DMS-250 OP250 COIN CONTROL

0 OP250 COIN CONTROL

AD2603

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0 NTXG37AA01 STATUS RTM  
0 DMS-250 EOPS CALL CHARGE/  
0 QUOTATION INTERFACE

0 CHARGE QUOTATION INFO TRANSFER  
0 DMS-250 STRATEGIC CALL CHARGING/RATING

AM0102  
AD2868

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0 NTXG38AA01 STATUS RTM  
0 DMS-250 EOPS CALL SEQUENCING

0 DMS-250 STRATEGIC OPERATOR SERVICES REORIGINATION

AD2870

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0 NTXG40AA02 STATUS RTM  
0 DMS-250 TRUNK GROUP  
0 UTILIZATION0 ENHANCED T1 ACCESS AD3405  
0 TRUNK GROUP UTILIZATION ENHANCEMENTS AD2236

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0 -----0 NTXG41BA05 STATUS RTM  
0 DMS-250 OPERATOR SERVICES0 (FI) OPERATOR ANSWER SIGNAL ENHANCEMENTS AD3409  
0 (FI) OP250 TRUNK RESTRICTION REMOVAL AM0057  
0 (FI) TERMINATING OP250 WITH 10 DIGIT ANI AD2454  
0 CALL PROMPTER INTERFACE AD0821  
0 CDRID TO CALLID DATABASE AND ACCESS ROUTINES AD0138  
0 END OFFICE CALL PROCESSING FOR OPERATOR SERVICES AD0158  
0 EXPANDED OPERATOR SERVICE TYPES AM0180  
0 INCOMING OPERATOR SERVICES TRUNK CALL PROCESSING AD0136  
0 ISDN OPERATOR - CALL PROCESSING AM0196  
0 ISDN OPERATOR - ENHANCEMENTS AD3328  
0 ISDN OPERATOR - INTERWORKING AM0197  
0 ISDN PRI TO OPERATOR CENTER\_PROTOCOL SPEC. AM0198  
0 OPERATOR SERVICES - PHASE III AD0339  
0 OPERATOR SERVICES BILLING AND CDR HOOKS AD0135  
0 OPERATOR SERVICES BRIDGING AD0817  
0 OPERATOR SERVICES GATEWAY SWITCH SIMULATOR AD0159  
0 OUTGOING OPER. SERV. TRUNK CALL PROCESSING AND TABLE AD0139  
0 CONTROL  
0 US SPRINT OPERATOR SERVICES, PHASE 1. AD0220  
0 VPN/FTS OPERATOR SERVICES AD0819

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0 NTXG42AA01 STATUS RTM  
0 DMS-250 SS7 IMT TERMINATIONS  
0 TO DTU

0 DMS250 SS& IMT TERMINATIONS TO DTU. AD2184

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0 NTXG43AA05 STATUS RTM  
0 DMS-250 3-WAY CALLING ON  
0 FONCARD

0 (FI) 3WC STR DIGIT AMBIGUITY ENHANCEMENT II AD3931  
0 THREE WAY CALLING AD2599  
0 3-WAY CALLING ON FONCARD (PREP) AD2354

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0 NTXG44AA01 STATUS RTM  
0 DMS-250 INTER VPN DIALING

0 INTER VPN DIALING AD1179

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0 NTXG45AA06 STATUS RTM  
0 DMS-250 INTERNATIONAL SERVICE  
0 CALL FEATURES

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|---|---------------------------------|--------|
| 0 | (FI) GVPN NETID EXPANSION       | AD3928 |
| 0 | DIAL SPRINT DIRECT              | AD2580 |
| 0 | DMS250 / DMS300 CCS#7 ISC       | AM0065 |
| 0 | INTERNATIONAL OPERATOR SERVICES | AD2638 |
| 0 | INTERNATIONAL VPN               | AD2581 |
| 0 | INTERNATIONAL 800 SERVICE       | AD2582 |
| 0 | VPN 6 DIGIT DIALLING.           | AM0056 |

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|---|----------------------------|-----|
| 0 | NTXG46AA01 STATUS          | RTM |
| 0 | DMS-250 DIRECT TERMINATION |     |
| 0 | SERVICE                    |     |

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|---|----------------------------|--------|
| 0 | DIRECT TERMINATION SERVICE | AM0031 |
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|---|--------------------------|-----|
| 0 | NTXG47AA02 STATUS        | RTM |
| 0 | DMS-250 LEC CALLING CARD |     |

|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | LEC CALLING CARD VALIDATION (BONG TONE)             | AD2671 |
| 0 | MCCS ON PURE FG-D FOR LEC CALLING CARD              | AM0050 |
| 0 | TCAP LINE INFORMATION DATABASE (LIDB) FOR BONG TONE | AM0188 |

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|---|---------------------------------|-----|
| 0 | NTXG48AA02 STATUS               | RTM |
| 0 | DMS-250 VARIABLE LEGNTH CALLING |     |
| 0 | CARD                            | 2   |

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|---|--------------------------------------------------|--------|
| 0 | (FI) FONCARD DIALING WITHOUT LEADING 0           | AD3026 |
| 0 | VARIABLE LENGTH CALLING CARD                     | AM0060 |
| 0 | VARIABLE LENGTH CALLING CARD ENHANCEMENTS        | AD3337 |
| 0 | VARIABLE LENGTH CALLING CARD TABLE CONTROL & MMI | AM0121 |

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|---|------------------------------|-----|
| 0 | NTXG49AA03 STATUS            | RTM |
| 0 | DMS-250 UCS SS#7 UNIVERSAL   |     |
| 0 | CARRIER PROTOCOL (BASE ISUP) |     |

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | DMS-250 UCS IMT WITH RELEASE LINK TRUNK           | AD2357 |
| 0 | ENHANCED DMS-250 ISUP IMT'S TO EOPS               | AD2450 |
| 0 | IEC/IXC CORPORATE NETWORKING FOR CCS7             | AM0186 |
| 0 | UCS OPERATOR SERVICES RELEASE LINK TRUNK PHASE II | AD2865 |

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|---|-------------------------|-----|
| 0 | NTXG52AA04 STATUS       | RTM |
| 0 | MTX INTEGRATED CELLULAR |     |
| 0 | PERIPHERAL (ANALOG)     |     |

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | ACU MAINTENANCE                                    | AD1627 |
| 0 | CC BASE HOOKS FOR DIGITAL CELLULAR MAINTENANCE OMS | AD3214 |
| 0 | CC CALL PROCESSING SUPPORT FOR THE ICP             | AD2215 |
| 0 | CC MAINT & TABLE CONTROL FOR DIGITAL CELLULAR      | AD3216 |
| 0 | CC MAINT FOR ICP CELL 60 DEGREE SECTORS            | AM0120 |
| 0 | CC MAINT FOR MULTIPLE DATALINKS TO DCP CELL        | AM0105 |
| 0 | CC MAINTENANCE FOR ICP-BASED CELL                  | AD2200 |
| 0 | CC MMI HOOKS FOR DIGITAL CELLULAR                  | AD3217 |
| 0 | CC MTCE FOR NBS800                                 | AD1631 |
| 0 | CSM MAINTENANCE                                    | AD2202 |
| 0 | HOOKS AND STATIC DATA FOR ICP                      | AD2199 |
| 0 | ICP CALL PROCESSING SUPPORT FOR NBS800             | AD1630 |
| 0 | ICP INTERFACE TO ACU                               | AD1629 |
| 0 | ICP INTERFACE TO NBS800 BST                        | AD1628 |
| 0 | ICP SUPPORT FOR 60 DEGREE SECTORIZATION            | AD2332 |

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|---|----------------------------------------------|--------|
| 0 | ICP SUPPORT OF MULTIPLE D-CHANNELS PER CELL. | AM0118 |
| 0 | ISP INTERFACE FOR CELLULAR MESSAGING         | AD2203 |
| 0 | MAINTENANCE MMI FOR ICP-BASED CELL           | AD2218 |
| 0 | NEW CELL CONFIGURATION TABLE CONTROL         | AD2221 |
| 0 | NEW CELL DATALINK MAINTENANCE                | AD2211 |
| 0 | TRUNK TESTS FOR BST VOICE CHANNEL            | AD2212 |
| 0 | XPM DATA STRUCTURES FOR ICP                  | AD2204 |
| 0 | XPM STATIC & DYNAMIC DATA FOR ICP            | AD2214 |
| 0 | XPM SUPPORT FOR CSM                          | AD2210 |

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|---|-------------------------------|-----|
| 0 | NTXG60AA02 STATUS             | RTM |
| 0 | DMS-250 INTERNATIONAL CP CORE |     |
| 0 | (IDC)                         |     |

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | ACCESS LINE FOR INTERNATIONAL DMS-250          | AD1822 |
| 0 | BILLING INTEGRATION                            | AD2193 |
| 0 | CALL PROCESSING CDR DATA CAPTURE & FORMATTING  | AD2166 |
| 0 | CCITT & NTT-NCCI #7 ISUP MAINTENANCE           | AD1849 |
| 0 | CCITT#7 ISUP XPM SOFTWARE                      | AD1838 |
| 0 | CLISCRN & FDNTOC DATABASE ENHANCEMENTS         | AM0081 |
| 0 | CP-CORE VRE SERVICE AND MAINTENANCE            | AD2165 |
| 0 | CREDIT CARD CALL PROC W REMOTE DB              | AD2158 |
| 0 | CREDIT CARD CALL PROCESSING                    | AD2150 |
| 0 | CREDIT CARD DATABASE FOR INTERNATIONAL DMS-250 | AD1818 |
| 0 | CREDIT CARD INTEGRATION                        | AD2223 |
| 0 | DATA COMM FOR REMOTE CREDIT CARD ACCESS        | AD2233 |
| 0 | DEVELOP CC SOFTWARE FOR CALL BACK ISDCALLS     | AD2144 |
| 0 | DIGIT COLLECTION ON ISUP USING UTR             | AD1840 |
| 0 | DIGIT MANIPULATION AND ANALISYS                | AD2157 |
| 0 | DMOPRO & BILLING FILE TRANSFER                 | AD2234 |
| 0 | DMS-250/DMS-300 SERVICE INTEGRATION TEST       | AD2189 |
| 0 | DMS-300 & INTL DMS-250 CABINETIZATION          | AD1964 |
| 0 | DMS250 INT'L BASE ISUP CALL PROC & TRUNK MAINT | AD2161 |
| 0 | DMS250 INTERNATIONAL ISUP CC CALL PROCESSING   | AD1844 |
| 0 | DMS250/DMS300 CCITT #7 INTERGRATION            | AD2159 |
| 0 | IDC BILL SERVER USER PROCS                     | AD1997 |
| 0 | INBOUND FREE DIAL TO COUNTRY CODE DATABASE     | AD1823 |
| 0 | INSERT DELAY FOR PAYPHONE CALLS                | AM0083 |
| 0 | INTERNATIONAL DMS-250 CALL CHARGE DATABASE     | AD1826 |
| 0 | INTERNATIONAL DMS-250 CDR FORMATTER & CAPTURE  | AD1824 |

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0 ROUTINES  
0 INTERNATIONAL DMS-250 CLI SCREENING TABLE AD1821  
0 INTERNATIONAL DMS-250 CREDIT CARD DATABASE ACCESS AD1999  
0 INTERNATIONAL FREE DIAL AND 3RD PARTY, BILLED CALLS AD2222  
0 NTT-NCCI #7 ISUP XPM SOFTWARE AD1837  
0 PROVIDE ACCESS TO C.P. F.O., PAY PHONE, AND MOBILE AD2205  
0 PHONE  
0 PROVIDE REQUIRED NM CONTROLS FOR INTERNATIONAL DMS- AD1963  
0 250  
0 TRUNK GROUP/SUBGROUP DB FOR INTERNATIONAL DMS250 AD1820  
0 UNIVERSAL TRANSLATION ENHANCEMENT FOR INTERNATIONAL AD1825  
0 DMS-250  
0 VERIFY AND/OR IMPLEMENT CP OM'S. AD2191  
0 VRE SERVICE & MAINTENANCE INTEGRATION AD2192  
0 XPM SUPPORT FOR CALLBACK ON ISUP AD2163

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0 NTXG61AA02 STATUS RTM  
0 DMS-250 INTERNATIONAL EIOC  
0 (IDC)

0 BASE HOOKS FOR IDC DATA COMM. AD2190  
0 CREDIT CARD DATABASE FOR INTERNATIONAL DMS-250 AD1818  
0 DATA COMM FOR REMOTE CREDIT CARD ACCESS AD2233  
0 DMOPRO & BILLING FILE TRANSFER AD2234  
0 EIOC-FP BASED CDR SEARCH FOR IDC AD2001  
0 EIOC-FP VRE BISYNC CONNECTION AD1996  
0 ICCAS, PHASE 1A AD2232  
0 IDC - VRE INTERFACE FOR CALL CHARGE QUOTATION AD1998  
0 IDC BILL SERVER USER PROCS AD1997  
0 INTERNATIONAL CALL CHARGE ANNOUNCEMENT SYSTEM AD2000  
0 INTERNATIONAL DMS-250 CDR FORMATTER & CAPTURE AD1824  
0 ROUTINES  
0 INTERNATIONAL DMS-250 CREDIT CARD DATABASE ACCESS AD1999

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0 NTXG62AA01 STATUS RTM  
0 MANUAL FILE TRANSFER OVER X.25

0 DMOPRO & BILLING FILE TRANSFER AD2234  
0 X.25 COMMUNICATION LINK FOR BILLING ON DMS300 AE0730

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0 NTXG70AA01 STATUS RTM  
0 DMS-250 ISDN ISA ON SS7

0 ISDN ISA ON CCS #7 AM0073

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0 NTXG71AA01 STATUS RTM  
0 DMS-250 ISDN ISA ROUTING

0 ISDN ISA ROUTING AM0075

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0 NTXG72AA01 STATUS RTM  
0 DMS-250 ISDN ISA CALLTYPE  
0 THROTTLING

0 ISDN ISA CALLTYPE THROTTLING AM0079

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0 NTXG73AA01 STATUS RTM  
0 DMS-250 PRA ANI DELIVERY0 ANI DELIVERY ENHANCEMENTS AM0086  
0 PRA ANI DELIVERY - TEMPORARY SIG. CONNECTIONS XPM AM0085

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0 NTXG74AA02 STATUS RTM  
0 DMS-250 ISDN/SS7 BEARER  
0 CAPABILITY0 ISDN/CCS7 BEARER CAPABILITY SCREENING & ROUTING AM0074  
0 USSPRINT 56K/B ENHANCEMENTS AJ1293

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0 NTXG75AA02 STATUS RTM  
0 DMS-250 ISDN CALL FORWARD  
0 RELEASE LINK0 ISDN CALL FORWARD - RELEASE LINK AM0076  
0 ISDN CALL FORWARD - RELEASE LINK - PREP AM0078  
0 ISDN RELEASE LINK TRUNK - XPM AM0177

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0 NTXG76AA01 STATUS RTM  
0 DMS-250 PRETRANSLATOR AND CALL  
0 TYPING ENHANCEMENTS

0 PRETRANSLATION AND CALL TYPING ENHANCEMENTS AD1688

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0 NTXG77AA01 STATUS RTM  
0 DMS-250 LONG CALL CDR AUDIT

0 LONG CALL CDR AUDIT AM0059

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0 NTXG78AA02 STATUS RTM  
0 DMS-250 TCAP BASED LOCAL EXCH.  
0 CARRIER (LEC) CALLING CARD

0 MCI TCAP BASED LOCALL EXCHANGE CARRIER (LEC) CALLING AD2765  
0 CARD  
0 OPERATOR SERVICE INTERWORKING WITH LEC CARD FOR MCI AD3131

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0 NTXG80AA03 STATUS RTM  
0 MTX DIGITAL CELLULAR

0 ACU MAINTENANCE AD1627  
0 CC BASE HOOKS FOR DIGITAL CELLULAR MAINTENANCE OMS AD3214



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|---|--------------------------------------------------|--------|
| 0 | CC CALL PROCESSING SUPPORT FOR THE ICP           | AD2215 |
| 0 | CC DIGITAL CELLULAR ICP MAINTENANCE ENHANCEMENTS | AD2937 |
| 0 | CC MAINT & TABLE CONTROL FOR DIGITAL CELLULAR    | AD3216 |
| 0 | CC MAINT FOR ICP CELL 60 DEGREE SECTORS          | AM0120 |
| 0 | CC MAINTENANCE FOR ICP-BASED CELL                | AD2200 |
| 0 | CC MMI HOOKS FOR DIGITAL CELLULAR                | AD3217 |
| 0 | CSM MAINTENANCE                                  | AD2202 |
| 0 | HOOKS AND STATIC DATA FOR ICP                    | AD2199 |
| 0 | ICP INTERFACE TO ACU                             | AD1629 |
| 0 | ICP SUPPORT FOR 60 DEGREE SECTORIZATION          | AD2332 |
| 0 | ISP INTERFACE FOR CELLULAR MESSAGING             | AD2203 |
| 0 | MAINTENANCE MMI FOR ICP-BASED CELL               | AD2218 |
| 0 | NEW CELL CONFIGURATION TABLE CONTROL             | AD2221 |
| 0 | TRUNK TESTS FOR BST VOICE CHANNEL                | AD2212 |
| 0 | XPM DATA STRUCTURES FOR ICP                      | AD2204 |
| 0 | XPM STATIC & DYNAMIC DATA FOR ICP                | AD2214 |
| 0 | XPM SUPPORT FOR CSM                              | AD2210 |

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0 NTXG83AA02 STATUS RTM  
0 MTX UNIVERSAL NETWORK  
0 MESSAGING

|   |                                          |        |
|---|------------------------------------------|--------|
| 0 | MTX NETWORK DISTRIBUTED DATABASES        | AD2209 |
| 0 | MTX NETWORKING MESSAGING                 | BV2066 |
| 0 | MTX UNIVERSAL FEATURE USAGE              | AD2208 |
| 0 | NX25 LEVEL 3 (PACKET LAYER) ENHANCEMENTS | BV2063 |
| 0 | PHASE 1 NX25 CALL PROCESSING ACCESS      | BV2064 |
| 0 | UNIVERSAL MTX DIALING PLAN               | AD2903 |
| 0 | VERTICAL FEATURE HANDOFF ENHANCEMENTS    | AD1447 |

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0 NTXG84AA01 STATUS RTM  
0 MTX NORTH AMERICAN DIALLING  
0 PLAN

0 UNIVERSAL MTX DIALING PLAN AD2903

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0 NTXG85AA01 STATUS RTM  
0 MTX UNIVERSAL DIALLING PLAN

0 UNIVERSAL MTX DIALING PLAN AD2903

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0 NTXG97BA01 STATUS RTM TARGET SUPERNODE  
0 ACD FORCE MANAGEMENT TERMINAL  
0 EMULATOR DOCUMENTATION PKG.

0 UPDATE ACD FM PRODUCT SPEC FOR BCS32 AD3490

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0 NTXH00AA01 STATUS RTM  
0 MOROCCAN TONES

0 MOROCCAN TONES AE0448

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0 NTXH01AA02 STATUS RTM  
0 MOROCCAN LINE CARD DIAGNOSTICS0 MOROCCAN TYPE A LINE CARD DIAGNOSTICS AE0513  
0 MOROCCAN TYPE B LINE CARD DIAGNOSTICS AE0536

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0 -----0 NTXH02AA01 STATUS RTM  
0 MOROCCAN PHYSICAL RINGING

0 MOROCCAN PHYSICAL RINGING AE0515

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0 -----0 NTXH03AA01 STATUS RTM  
0 SOCOTEL BASE SIGNALLING0 MOROCCAN SOCOTEL CALL PROCESSING AE0567  
0 MOROCCAN SOCOTEL REGISTER SIGNALLING AE0568

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0 NTXH04AA01 STATUS RTM  
0 CCITT 2-BIT LINE SIGNALLING

0 MOROCCAN R2 LINE SIGNALLING AE0514

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0 NTXH05AA03 STATUS RTM  
0 MOROCCAN LOCAL SIGNALLING

0 MOROCCAN SOCOTEL CALL PROCESSING AE0567  
0 MOROCCAN SOCOTEL REGISTER SIGNALLING AE0568  
0 R2 AND SOCOTEL TANDEM OPERATION AE0897  
0 R2 PROTOCOL ENHANCEMENTS AJ0205  
0 SECOND DIAL-TONE OVER TRUNKS AE0898

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0 NTXH06AA03 STATUS RTM  
0 MOROCCAN TOLL SIGNALLING

0 MOROCCAN SOCOTEL CALL PROCESSING AE0567  
0 MOROCCAN SOCOTEL REGISTER SIGNALLING AE0568  
0 R2 AND SOCOTEL TANDEM OPERATION AE0897  
0 R2 PROTOCOL ENHANCEMENTS AJ0205  
0 SECOND DIAL-TONE OVER TRUNKS AE0898

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0 NTXH07AA01 STATUS RTM  
0 BERLIZE R2 SIGNALLING

0 BELIZE R2 REGISTER SIGNALLING

AJ0578

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0 NTXH09AA02 STATUS RTM  
0 DOWNLOADABLE TONE

0 DMS100I DOWNLOADABLE TONES  
0 DOWNLOADABLE TONES  
0 DOWNLOADABLE TURKEY INTL TONES

AJ0731  
AE0397  
AE0473

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0 NTXH10AA02 STATUS RTM  
0 PCM300 MAINTENANCE  
0 ENHANCEMENTS

0 CARRIER MAINTENANCE ENHANCEMENT  
0 6X27 INTERFACE CONTROL

AE0480  
AE0777

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0 NTXH11AA01 STATUS RTM TARGET SUPERNODE  
0 M20 MAINTENANCE

0 DEBUG TOOLS FOR M20/TTC INTERFACE  
0 M20/TTC DIAGNOSTICS

AE0491  
AE0489

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0 93 12 030 M20/TTC MAINTENANCE INTERFACE AE0490  
0 M20/TTC SIGNALLING INTERFACE AE0485  
0 M20B MAINTENANCE - CC SUPPORT AE0484

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0 NTXH12AA01 STATUS RTM  
0 ITOPS ENHANCEMENTS FOR JAPAN

0 ITOPS ENHANCEMENT AE0546

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0 NTXH13AA01 STATUS RTM  
0 FIXED DURATION CALLS

0 ITOPS: FIXED DURATION CALLS AJ0177

0

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0 NTXH14AA01 STATUS RTM  
0 NTT NCCI CCITT #7 MTP0 JAPAN CCS7 MTP MANAGEMENT AL1104  
0 JAPAN CCS7 MTP MESSAGE FORMATS AL1103  
0 JAPAN SS7 L1 L2 F/W AND S/W AL1088

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0 NTXH16AA01 STATUS RTM  
0 ESTIMATED CALL CHARGES FOR  
0 ITOPS

0 ITOPS: ESTIMATED CALL CHARGES AJ0181

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0 NTXH17AA01 STATUS RTM  
0 INTERNATIONAL ATME 2 FOR  
0 DMS100/200I

0 ATME 2 FOR DMS100I MFC AJ0832

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0 NTXH22AA01 STATUS RTM  
0 INTERNATIONAL LOCAL METERING

|   |                                                 |        |
|---|-------------------------------------------------|--------|
| 0 | APERIODIC METERING                              | AG1477 |
| 0 | APERIODIC METERING (PM)                         | AG1476 |
| 0 | CC - MAINTENANCE & MONITOR (PART II)            | BC1759 |
| 0 | CC - METERING CHANGEOVER CONTROL                | BC1760 |
| 0 | CC - METERING CHARGE RECORDING                  | BC1058 |
| 0 | CC - METERING RATE DETERMINATION                | BV1207 |
| 0 | CC - METERING SYSTEM MAINTENANCE/MONITOR        | BV1208 |
| 0 | CC - METERING TARIFF APPLICATION                | BC1758 |
| 0 | CC METERING FOR FEATURES                        | AC0054 |
| 0 | CC-INTERNAL CHANGEOVER FOR METERING             | BV1277 |
| 0 | HARDWARE METERING FOR TRUNKS TABLE CONTROL      | AJ0573 |
| 0 | HARDWARE PULSE GENERATION FOR TRUNKS            | AJ0570 |
| 0 | MAINTAIN DATA IN TARIFF TABLE AND TARIFF NUMBER | BC1905 |
| 0 | TABLE IN XPM                                    |        |
| 0 | METER COUNT PRINTOUT                            | AE0056 |
| 0 | METERING LINE CAPACITY ENHANCEMENTS             | AE0292 |

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|---|-------------------------------------------------|--------|
| 0 | REMOVE TPS FROM TOD                             | AG1466 |
| 0 | SOFTWARE METERS FOR TRUNK CC II                 | AJ0571 |
| 0 | SOFTWARE METERS FOR TRUNKS (CC)                 | AG1479 |
| 0 | SOFTWARE METERS FOR TRUNKS (XPM)                | AG1478 |
| 0 | TRANSACTOR AND CALL PROCESSING FOR METERED COIN | BF0677 |
| 0 | LINE                                            |        |
| 0 | UTILITIES FOR INTL CC FEATURE METERING          | AC0053 |
| 0 | XPM - CHANGEOVER CONTROL FOR METERING           | BF0780 |
| 0 | XPM - MAINTENANCE FOR METERING DATA TABLES      | BF0711 |
| 0 | XPM SUPPORT FOR CC METERING                     | AL0218 |

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| 0 | NTXH23AA02 STATUS           | RTM |
| 0 | METERING OVER JUNCTION(MOJ) |     |

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | METER PULSE RECEPTION AND TANDEM I (PREP) | AJ0581 |
| 0 | METER PULSE RECEPTION AND TANDEM II       | AJ0851 |

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|---|---------------------|-----|
| 0 | NTXH38AA03 STATUS   | RTM |
| 0 | GLOBAL TOPS - BASIC |     |

|   |                             |        |
|---|-----------------------------|--------|
| 0 | OPEN NUMBERING              | NC0284 |
| 0 | TELMEX DELVS                | AF4222 |
| 0 | TOPS GLOBALIZATION AMA      | AF4166 |
| 0 | TOPS OPEN NUMBERING PLAN II | AF4167 |

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0 NTXH40AA03 STATUS RTM  
0 CCITT NO.7 TUP BASIC

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | BIT ERROR RATE TEST ENHANCEMENTS                 | NC0168 |
| 0 | LOOPAROUND TESTLINE FOR CCITT ISUP (DMS-300)     | AE0548 |
| 0 | NUMBER 7 TUP AND ATUP TRK MTCE FOR AUSTRALIA     | AJ0568 |
| 0 | TESTLINES FOR BTUP, TUP+, AND TUPE               | AE0748 |
| 0 | XPM TUP/ATUP/CTUP PROTOCOL CONVERTOR ENHANCEMENT | AJ1250 |

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0 NTXH44AA01 STATUS A+M  
0 AUSTRALIAN TUP FOR DMS100(UPG.  
0 BY NTXH44AB)

|   |                  |        |
|---|------------------|--------|
| 0 | CCS7 ATUP TRUNKS | AJ0947 |
|---|------------------|--------|

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0 NTXH44AB02 STATUS RTM TARGET SUPERNODE  
0 AUSTRALIAN TUP FOR DMS100(UPG.  
0 FR NTXH44AA)

|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | ATUP - ATTENDANT CONSOLE INTERWORKING | AJ1067 |
| 0 | ATUP - MCT INTERWORKING               | AJ1063 |
| 0 | ATUP FEATURE INTERACTIONS PART I      | AJ1035 |
| 0 | ATUP FEATURE INTERACTIONS PART II     | AJ1061 |
| 0 | CC OVERLAP SIGNALLING FOR ATUP        | AJ1091 |
| 0 | CCS7 ATUP CALL PROCESSING II          | AJ1032 |
| 0 | CCS7 ATUP TRUNKS                      | AJ0947 |
| 0 | XPM - OVERLAP SIGNALLING FOR ATUP     | AJ1092 |

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0 NTXH45AA01 STATUS RTM  
0 OTC TONES

0 AUSTRALIA TONESET  
0 CALL PROGRESS TONES

AJ0497  
AJ0822

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0 NTXH48AA02 STATUS RTM  
0 AUSTRALIAN ACCS SUPPORT

0 ACCS FOR AUSTRALIA

AJ0123

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0 NTXH49AA02 STATUS A+M  
0 AUSTRALIAN VPN - SSP(UPG. BY  
0 NTXH49AB)

0 ACCS/VPN ENHANCEMENTS  
0 SSP-BASED PVN FOR AUSTRALIA

AJ1254  
AG2062

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0 NTXH49AB01 STATUS RTM  
0 AUSTRALIAN VPN - SSP (UPG FR.  
0 NTXH49AA)

0 ACCS/VPN ENHANCEMENTS AJ1254  
0 SSP-BASED PVN FOR AUSTRALIA AG2062

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0 NTXH51AA02 STATUS RTM  
0 PCM-30 LGCO/DTCO SUPPORT

0 PCM30 ON LGC AE0749  
0 PCM30 PERIPHERALS FOR ISDN AND CCS7 - CC PORTION AJ1062  
0 PCM30 PERIPHERALS FOR ISDN AND CCS7 - XPM PORTION AJ1033

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0 NTXH52AA01 STATUS LTD  
0 PCM30 RSC0 SUPPORT

0 PCM30 RSC PM MAINTENANCE AJ1122  
0 PCM30 RSC XPM SOFTWARE AJ1123

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0 NTXH53AA01 STATUS RTM  
0 FLEXIBLE NUMBERING PLAN FOR  
0 BELLCORE AMA

0 EBAF ENHANCEMENTS FOR OPEN NUMBERING

AJ1137

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0 NTXH54AA02 STATUS RTM  
0 ITOPS - ACCOUNT CODE ACCESS

0 ITOPS: ACCOUNT CODES I  
0 ITOPS: ACCOUNT CODES II

AJ1026

AJ1255

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0 NTXH57AB01 STATUS LTD  
0 AUSTRALIAN BASIC RATE ACCESS

0 AUSTRALIA BRA - PROTOCOL ENHANCEMENTS  
0 BRA / AISUP BASIC CALL INTERWORKING  
0 BRA TO ATUP INTERWORKING  
0 ISDN A-LAW BEARER CAPABILITY ENHANCEMENTS  
0 ISDN OCTET 5,A-D BEARER CAPABILITY  
0 TS13 TO AISUP INTERWORKING II

AJ1438

AJ1300

AJ1299

AJ1268

AJ1537

AJ1536

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0 NTXH58AA01 STATUS RTM  
0 GUYANA R2 SIGNALLING

0 GUYANA SIGNALLING AJ1265

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0 NTXH60AA01 STATUS RTM  
0 MOROCCO ITOPS TRUNK  
0 INTERWORKING

0 SOCOTEL TO ITOPS INTERWORKING AE0735

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0 NTXH62AA01 STATUS RTM  
0 PERFORM ON PLGC/PDTC/PRCC

0 PERFORM ON PLGC/PDTC AG2293

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0 NTXH71AA01 STATUS RTM  
0 ITOPS INTRUSION TONES

0 ITOPS: INTRUSION TONES AJ0179

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0 NTXH74AA01 STATUS RTM TARGET SUPERNODE  
0 JAPAN DID INTERFACE

0 JAPANESE DID

AR0019

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0 NTXH78AA02 STATUS A+M  
0 AUSTRALIAN ISUP FOR DMS-  
0 100(UPG BY NTXH78AB)

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | AISUP FEATURE INTERACTIONS                         | AJ1243 |
| 0 | DMS-100 AUSTRALIAN ISDN (AISUP) CALL PROCESSING II | AJ1248 |
| 0 | DMS-100 AUSTRALIAN ISUP (AISUP CALL PROCESSING I   | AJ1246 |
| 0 | DMS-100 XPM AUSTRALIAN ISUP (AISUP)                | AJ1244 |
| 0 | DMS100 AISUP CALL PROCESSING ENHANCEMENTS          | AJ1491 |
| 0 | NUMBER 7 AISUP TRK MTCE FOR AUSTRALIA              | AJ1247 |
| 0 | PM AISUP OVERLAP OUTPULSING ON DMS100              | AJ1492 |

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0 NTXH78AB01 STATUS LTD TARGET SUPERNODE  
0 AUSTRALIAN ISUP FOR DMS-  
0 100(UPG FR. NTXH78AA)

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | AISUP FEATURE INTERACTIONS                         | AJ1243 |
| 0 | DMS-100 AUSTRALIAN ISDN (AISUP) CALL PROCESSING II | AJ1248 |
| 0 | DMS-100 AUSTRALIAN ISUP (AISUP CALL PROCESSING I   | AJ1246 |
| 0 | DMS-100 XPM AUSTRALIAN ISUP (AISUP)                | AJ1244 |
| 0 | DMS100 AISUP CALL PROCESSING ENHANCEMENTS          | AJ1491 |

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0 NUMBER 7 AISUP TRK MTCE FOR AUSTRALIA  
0 PM AISUP OVERLAP OUTPULSING ON DMS100

AJ1247  
AJ1492

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0 NTXH79AA01 STATUS RTM  
0 BRAZIL SIGNALLING

0 BRAZIL R2 ENHANCEMENTS

AJ1124

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0 NTXH80AA02 STATUS RTM  
0 MEXICO SIGNALLING

0 BRAZIL R2 ENHANCEMENTS  
0 MEXICAN R2 AND FIXED ANI TRUNKS

AJ1124  
AJ1423

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0 NTXH84AA02 STATUS RTM  
0 ENHANCED 008 FOR AUSTRALIA

0 AUSIN - SSP PORTION OF E008 SERVICE

AG2161

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0 NTXH85AA02 STATUS RTM TARGET SUPERNODE  
0 CCITT #7 AND NCCI #7 FOR DMS-  
0 100

0 NCCI/CCITT#7 ON DMS-100

AG2345

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0 NTXH86AA01 STATUS A+M TARGET SUPERNODE  
0 JAPAN LINE INTERFACE

0 LINE CALL PROCESSING FOR JAPAN SMS  
0 LINE MAINTENANCE FOR NEW JAPAN LINE CARD - 6X33  
0 TONES FOR JAPAN SMS LINE CALL PROCESSING

AG2196  
AG2163  
AG2197

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0 NTXH86AB01 STATUS RTM TARGET SUPERNODE  
0 JAPAN LINE INTERFACE

0 LINE CALL PROCESSING FOR JAPAN SMS  
0 LINE MAINTENANCE FOR NEW JAPAN LINE CARD - 6X33  
0 TONES FOR JAPAN SMS LINE CALL PROCESSING

AG2196  
AG2163  
AG2197

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0 NTXH88AA01 STATUS RTM TARGET SUPERNODE  
0 NETWORK MANAGEMENT FOR  
0 UNIVERSAL XLA

0 PROVIDE REQUIRED NM CONTROLS FOR INTERNATIONAL DMS- AD1963  
0 250

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0 NTXH89AA01 STATUS RTM  
0 RING BACK PRICE FOR VPN

0 RING BACK PRICE CAPABILITY AJ1447

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0 NTXH96AA01 STATUS RTM TARGET SUPERNODE  
0 SRU BASIC

0 BASE LCM LOAD DEVELOPMENT FOR SRU AE0834  
0 LCM SRU ENHANCEMENTS AE0895  
0 SMALL REMOTE UNIT (SRU) CC SOFTWARE FOR BASIC AE0820  
0 FUNCTIONALITY  
0 SRU MAINTENANCE ENHANCEMENTS AE0907  
0 SUPPORT FOR RMM ON SRU AE0906

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0 NTXH98AA01 STATUS RTM  
0 CHINESE NO.1 SIGNALLING

0 C1 LINE SIGNALLING AG0707  
0 C1 MFC TRUNK IMPLEMENTATION ON THE GENERIC R2 SYSTEM AJ0782  
0 - CC  
0 C1 MFC TRUNK IMPLEMENTATION ON THE GENERIC R2 SYSTEM AJ0819  
0 - XPM

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0 NTXJ00AA03 STATUS RTM  
0 ISDN ON RSC (REP BY NTXJ00AB)

0 ISDN ESA BASE AF2274  
0 ISDN ESA STIMULUS CP AF2275  
0 ISDN RCCI CC MAINTENANCE I AL1046  
0 ISDN RCCI XPM BASE AL1043  
0 PRCC ISDN - CC PORTION AJ1308  
0 PRCC ISDN - XPM PORTION AJ1260  
0 RCCI BCS SWACT, BERP SUPPORT AND PERFORM TOOLS AF2267  
0 RCCI DUAL SUPPORT AND ISDN ESA TRUNK INTEGRATION AF2452  
0 RCCI INTRASWITCHING AF2118  
0 RCCI ISDN ESA FUNCTIONAL CALL PROCESSING AF2276  
0 RCCI ISDN ESA LINE INTEGRATION AF2450  
0 RCCI ISDN ESA STATIC DATA AF2273  
0 RCCI ISDN ESA SWACT AF2454  
0 RCCI NON-ISDN ESA SUPPORT AF2271  
0 RCCI WARMSWACT AF2270  
0 RCCI 2B1Q MAINTENANCE AND CALL PROCESSING AF2476  
0 INTEGRATION.

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0 NTXJ00AB01 STATUS LTD  
0 ISDN ON RSC (UPG OF NTXJ00AA)

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | ISDN ESA BASE                                    | AF2274 |
| 0 | ISDN ESA STIMULUS CP                             | AF2275 |
| 0 | ISDN RCCI CC MAINTENANCE I                       | AL1046 |
| 0 | ISDN RCCI XPM BASE                               | AL1043 |
| 0 | PRCC ISDN - CC PORTION                           | AJ1308 |
| 0 | PRCC ISDN - XPM PORTION                          | AJ1260 |
| 0 | RCCI BCS SWACT, BERP SUPPORT AND PERFORM TOOLS   | AF2267 |
| 0 | RCCI DUAL SUPPORT AND ISDN ESA TRUNK INTEGRATION | AF2452 |
| 0 | RCCI INTRASWITCHING                              | AF2118 |
| 0 | RCCI ISDN ESA FUNCTIONAL CALL PROCESSING         | AF2276 |
| 0 | RCCI ISDN ESA LINE INTEGRATION                   | AF2450 |
| 0 | RCCI ISDN ESA STATIC DATA                        | AF2273 |
| 0 | RCCI ISDN ESA SWACT                              | AF2454 |
| 0 | RCCI NON-ISDN ESA SUPPORT                        | AF2271 |
| 0 | RCCI WARMSWACT                                   | AF2270 |
| 0 | RCCI 2B1Q MAINTENANCE AND CALL PROCESSING        | AF2476 |
| 0 | INTEGRATION.                                     |        |

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0 NTXJ10AA01 STATUS RTM  
0 OPERATOR HAND OFF TO AABS

0 OPERATOR HAND-OFF TO AABS NC0013

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0 NTXJ35AA02 STATUS RTM  
0 MAINTENANCE MANAGERS REPORT

|   |                               |        |
|---|-------------------------------|--------|
| 0 | EXECUTIVE MORNING REPORT      | AJ0190 |
| 0 | MORNING MAINTENANCE REPORT II | AJ0472 |

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0 NTXJ36AA02 STATUS RTM  
0 AUTO SET RELOCATE0 IVD ASR FEATURE OPERATION - PHASE II AD2494  
0 IVD ASR MAINTENANCE AD2489  
0 IVD AUTO SET RELOCATION FEATURE OPERATION AD2492  
0 IVD AUTO SET RELOCATION TABLE CONTROL AD2491  
0 IVD AUTO SET RELOCATION XPM INTERACTION AD2493

0

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0 NTXJ37AA01 STATUS RTM  
0 TOPS EXTERNAL PERSONAL AUDIO  
0 RESPONSE SYSTEM (PARS)

0 TOPS PERSONAL AUDIO RESPONSE SYSTEM (CC) NC0003

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0 NTXJ38AA01 STATUS RTM  
0 MDC WARM LINE

0 MDC WARM LINE NC0011

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0 NTXJ39AA01 STATUS RTM  
0 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR

0 CLASS MESSAGE WAITING INDICATOR AG1954

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0 NTXJ40AA02 STATUS LTD TARGET SUPERNODE  
0 LIU7 GATEWAY VERIFICATION  
0 TOOLS

0 CCS7 STP GATEWAY TRAVER TOOL AL1500

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0 NTXJ41AA01 STATUS RTM  
0 CCS7 TEST TOOLS

0 CCS7 BASIC TEST UTILITY AF2367

0

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0 NTXJ42AA02 STATUS RTM  
0 FEATURE GROUP D ON MDC

0 FEATURE GROUP-D ON SL-100 AD1313  
0 VIRTUAL ACCESS TO PRIVATE NETWORKS AG2286

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0 NTXJ43AA02 STATUS RTM

0 #5ESS AT&T INTERWORKING

0 ENHANCEMENT FOR #4ESS AND #5ESS

AM0162

0 ENHANCEMENTS TO SIGMAN TO INTERWORK #5ESS

AD2247

0

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0 NTXJ44AA01 STATUS RTM TARGET SUPERNODE

0 SLM FILE SYSTEM

0 DIRP ON SLM

AF2316

0 SLM FILE SYSTEM ENHANCEMENTS

AL1062

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0 NTXJ47AA01 STATUS RTM

0 TEEN SERVICE ON MDC

0 TEEN SERVICE ON MDC

NC0019

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0 NTXJ48AA01 STATUS RTM  
0 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED

0 ISDN PACKET HANDLER AM/RM MAINTENANCE AJ0605  
0 ISDN PACKET HANDLER NAS ACTIVATION FROM MAP AJ0957

0

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0 NTXJ51AA02 STATUS RTM  
0 ISDN DIGITAL TEST ACCESS

0 ISDN DIGITAL TEST ACCESS MAINTENANCE AL1321  
0 ISDN XPM DIGITAL TEST ACCESS AL1320

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0 NTXJ54AA01 STATUS RTM  
0 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS

0 CRM/CRA OPTIONALITY FOR TR-394 ISUP AG1913

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0 NTXJ55AA02 STATUS RTM  
0 ISDNAP

0 CC CALL PROPROCESSING CHANGES FOR SCAI AD2585  
0 OBSERVE AGENT ON SCAI - ACD TRUNKS AD2888

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|   |                                      |        |
|---|--------------------------------------|--------|
| 0 | SCAI - CC STATIC DATA                | AD2594 |
| 0 | SCAI - XPM STATIC DATA               | AD2593 |
| 0 | SCAI TABLE CONTROL                   | AD2592 |
| 0 | SCAI WARM SWACT                      | AD2892 |
| 0 | TIME & CHARGE MODIFICATIONS          | AD2893 |
| 0 | XPM AUDIT FOR SCAI                   | AD2891 |
| 0 | XPM CALL PROCESSING CHANGES FOR SCAI | AD2586 |

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|   |                   |                            |  |
|---|-------------------|----------------------------|--|
| 0 | NTXJ57AA02 STATUS | RTM                        |  |
| 0 |                   | NSS DATABASE CONTROL POINT |  |

|   |               |        |
|---|---------------|--------|
| 0 | NSS DBCP SYNC | AD3467 |
| 0 | NSS-DBCP BASE | AD2472 |

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|   |                   |                              |  |
|---|-------------------|------------------------------|--|
| 0 | NTXJ58AA01 STATUS | RTM                          |  |
| 0 |                   | CANCEL CALL WAITING PER LINE |  |

|   |                                |        |
|---|--------------------------------|--------|
| 0 | CANCEL CALL WAITING - PER LINE | AF1731 |
|---|--------------------------------|--------|

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|   |                   |                               |  |
|---|-------------------|-------------------------------|--|
| 0 | NTXJ59AB03 STATUS | A+M                           |  |
| 0 |                   | COMPUCALL BASE UTILITIES(UPG. |  |
| 0 |                   | FR. NTXJ59AA)                 |  |

|   |                                   |        |
|---|-----------------------------------|--------|
| 0 | CALL PROCESSING INTERFACE FOR ISI | AG1946 |
| 0 | ISI BASE - ECM ROBUSTNESS         | AG2337 |
| 0 | ISI BASE - SESSION MANAGEMENT     | AG2336 |



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|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | Q.932 FACILITY INTERFACE TO RO SERVICE IN LTCI | AJ0908 |
| 0 | TABLE CONTROL FOR ISI SERVICES                 | AG1945 |
| 0 | X.25 TRANSPORT FOR SCAI                        | AR0004 |

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|   |                               |     |
|---|-------------------------------|-----|
| 0 | NTXJ59AC01 STATUS             | RTM |
| 0 | COMPUCALL BASE UTILITIES (UPG |     |
| 0 | OF NTXJ59AB)                  |     |

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | CALL PROCESSING INTERFACE FOR ISI              | AG1946 |
| 0 | ISI BASE - ECM ROBUSTNESS                      | AG2337 |
| 0 | ISI BASE - SESSION MANAGEMENT                  | AG2336 |
| 0 | Q.932 FACILITY INTERFACE TO RO SERVICE IN LTCI | AJ0908 |
| 0 | TABLE CONTROL FOR ISI SERVICES                 | AG1945 |
| 0 | X.25 TRANSPORT FOR SCAI                        | AR0004 |

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|---|--------------------------------|-----|
| 0 | NTXJ60AB01 STATUS              | RTM |
| 0 | ISI COORDINATED VOICE AND DATA |     |
| 0 | (UPG OF NTXJ60AA)              |     |

|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | CO-ORDINATED VOICE AND DATA FOR ACD INTERFACE       | AJ0909 |
| 0 | ECM INBOUND - REDIRECTION AND EXTENDED CALL HISTORY | AG2195 |
| 0 | INBOUND ECM - INCREASED EVENT REPORTING             | AG2005 |

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0 NTXJ62AB STATUS NAP TARGET SUPERNODE  
0 THIRD-PARTY CALL CONTROL

0 COMPUTER ASSISTED SIGNALLING OVER ISI AG2003  
0 SCAI - CONSULTATION XFER/3WC AG2481

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0 NTXJ67AA01 STATUS RTM  
0 TOPS DA SUBTENDING TMS

0 DEDICATED DA SUBTENDING TMS AF2395

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0 NTXJ68AA01 STATUS RTM  
0 IBN ISUP NETINFO TRANSLATIONS

0 IBN ISUP NETINFO TRANSLATIONS AD2467

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0 NTXJ69AA01 STATUS RTM  
0 RESIDENTIAL CALL HOLD

0 RESIDENTIAL CALL HOLD NC0028

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0 NTXJ70AA01 STATUS RTM  
0 CALL FORWARD OF CALL WAITING  
0 CALLS

0 CALL FORWARDING OF CALL WAITING CALLS NC0025

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0 NTXJ73AA01 STATUS RTM  
0 TOPS ACCOUNT CODE BILLING

0 ACCOUNT CODE BILLING NC0035

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0 NTXJ78AA02 STATUS RTM  
0 CLASS II ON MDC

0 CLASS-MDC: SCREENING LIST EDITING FEATURE AG1880

0 INTERACTIONS

0 CLASS-MDC: SCREENING LIST EDITING ON CENTREX AG1928

0 DIALPLANS

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0 NTXJ82AA02 STATUS RTM  
0 CALL HUNTING- 1A TRANSPARENCY

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | MULTIPILOT DIRECTORY NUMBERS ON MLH GROUP | NC0056 |
| 0 | SECRETARIAL HUNT                          | AF1085 |
| 0 | SERIES COMPLETIONS ENHANCEMENTS           | AF2859 |

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0 NTXJ84AA02 STATUS RTM  
0 CALL FORWARDING- 1A  
0 TRANSPARENCY

|   |                                                 |        |
|---|-------------------------------------------------|--------|
| 0 | CALL FORWARD BUSY - INHIBIT MAKE & INHIBIT LINE | NC0084 |
| 0 | BUSY.                                           |        |
| 0 | CALL FORWARD DO NOT ANSWER AND CALL WAITING     | NC0055 |
| 0 | INTERACTION                                     |        |
| 0 | CFBL INHIBIT LINE BUSY/INHIBIT MB ENHANCEMENTS  | NC0200 |
| 0 | DT AFTER CFW CANCEL AND SPD CALL PROGRAMMING    | AL0604 |
| 0 | RING REMINDER OFF/ON OPTION PER LINE            | NC0053 |

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0 NTXJ90AA01 STATUS RTM  
0 PRECEDENCE PROGRESSIVE  
0 CONFERENCING

|   |                                      |        |
|---|--------------------------------------|--------|
| 0 | PRECEDENCE PROGRESSIVE CONFERENCING. | AD2852 |
|---|--------------------------------------|--------|

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0 NTXJ91AA01 STATUS LTD TARGET SUPERNODE  
0 CCS7 MESSAGE DETAIL RECORDING

0 MDR7 - SS#7 MESSAGE DETAIL RECORDING AL1677  
0 MDR7: EIU TRANSMIT FUNCTION AL1640

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0 NTXJ93AA01 STATUS RTM  
0 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS

0 SERVICE ORDER SIMPLIFICATION FOR HUNT GROUPS NC0077

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0 NTXJ94AA01 STATUS RTM  
0 MANDATORY PARALLEL AMA

0 MANDATORY DIRP PARALLEL RECORDING NC0079

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0 NTXJ96AA01 STATUS RTM  
0 ENHANCED MFADS

0 ENHANCED MFADS. AF2529

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0 NTXJ97AA01 STATUS RTM  
0 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS

0 DIRECT STATION SELECTION/BUSYLAMP FIELD FOR MBS NC0081

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0 NTXJ98AA01 STATUS RTM  
0 MERIDIAN BUSINESS SET CAMP ON

0 STATION CAMP ON FOR MERIDIAN BUSINESS SET NC0080

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0 NTXK00AA02 STATUS A+M  
0 PCM 30 LINE DRAWER(UPG.BY  
0 NTXK00AB)

0 DTMF OUTPULSING ON PLD NC0180  
0 PCM30 LINE DRAWER AE0595

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0 NTXK00AB01 STATUS RTM  
0 PCM 30 LINE DRAWER(UPG.FR  
0 NTXK00AA)

0 DTMF OUTPULSING ON PLD NC0180  
0 PCM30 LINE DRAWER AE0595  
0 SOFTWARE TO SUPPORT SIGNALLING CODE ENHANCEMENT FOR AE0928  
0 PLD

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0 NTXK01AA01 STATUS RTM  
0 DIRECTORY NUMBER FORMATTING

0 MCL DIRECTORY NUMBER FORMATTING AE0597

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0 NTXK02AA01 STATUS RTM  
0 MCL STANDARD CALL DETAIL  
0 RECORD

0 UK STANDARD CALL DETAIL RECORD FOR 100 BYTES. NC0044

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0 NTXK03AA01 STATUS RTM  
0 PABX ACCESS TRUNK WITH DC5 AND  
0 AC15

0 PBX ACCESS TRUNK AND 3J2/4 ON DMS100 AE0684

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0 NTXK12AA01 STATUS RTM  
0 IRISH R2 SIGNALLING PROTOCOL

0 IRISH R2 SIGNALLING PROTOCOL AE0630

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0 NTXK13AA01 STATUS RTM  
0 IRISH DOWNLOADABLE TONES

0 DOWNLOADABLE TONES AE0397  
0 DOWNLOADABLE TONES FOR IRELAND AE0671

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0 NTXK18AA01 STATUS A+M  
0 DPNSS/BTUP INTERWORKING WITH  
0 OVERLAP (REP BY NTXK18AB)

0 BTUP TO DPNSS BASIC CALL INTERWORKING AE0737

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0 NTXK18AB01 STATUS RTM  
0 DPNSS/BTUP INTERWORKING WITH  
0 OVERLAP (UPG OF NTXK18AA)

0 BTUP TO DPNSS BASIC CALL INTERWORKING

AE0737

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0 NTXK32AA01 STATUS A+M  
0 DOWNLOADABLE TONES-BT(REP.  
0 U17AA OR K58AA)

0 DMS100I DOWNLOADABLE TONES

AJ0731

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0 NTXK33AA01 STATUS RTM  
0 DOWNLOADABLE TONES FOR DMS100

0 AUSTRALIA TONES FOR PLGC, PDTC, LGCI

AJ0948

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0 NTXK33AB01 STATUS RTM  
0 DOWNLOADABLE TONES FOR DMS-  
0 100(UPG OF NTXK33AA)

0 AUSTRALIA TONES FOR PLGC, PDTC, LGCI AJ0948

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0 NTXK34AA01 STATUS LTD  
0 3J1 INCOMING TRUNK WITH TWO  
0 STAGE CALL SETUP

0 2 STAGE CALL SETUP WITH AUTHORISATION ON IBN TRUNK NC0058  
0 3J.T1 AUTHCODE ACCESS AE0741

0

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0 NTXK43AA01 STATUS A+M  
0 DPNSS TRANSPARENCY OVER CCS7

0 DPNSS TRANSIT TRANSPARENCY - REAL CALL AE0909  
0 DPNSS TRANSIT TRANSPARENCY - VIRTUAL CALL AE0910

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0 NTXK43AB01 STATUS LTD  
0 DPNSS TRANSPARENCY OVER CCS7

0 DPNSS TRANSIT TRANSPARENCY - REAL CALL AE0909  
0 DPNSS TRANSIT TRANSPARENCY - VIRTUAL CALL AE0910

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0 NTXK44AA01 STATUS RTM  
0 DPNSS TEST UNIT

0 DPNSS TEST UTILITY AE0241

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0 NTXK45AA01 STATUS A+M  
0 ANSI ISUP - DPNSS BASIC CALL  
0 INTERWORKING(UPG.BY NTXK47AB)

0 DPNSS-ANSI ISUP INTERWORKING (BASIC CALL CLID) NC0125

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0 -----0 NTXK45AB01 STATUS LTD  
0 ANSI ISUP - DPNSS BASIC CALL  
0 INTERWORKING(UPG.FR NTXK45AA)0 DPNSS CBWF/ISUP NRAG INTERWORKING- PREP AE0831  
0 DPNSS-ANSI ISUP INTERWORKING (BASIC CALL CLID) NC0125

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0 NTXK48AA01 STATUS A+M  
0 ECHO CONTROL FOR CCS7 - DMS300

0 DMS300 ECHO CONTROL UTILITIES AE0768  
0 FF - DMS300 ECHO CONTROL PER CALL (RS232 I/F) NC0068

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0 NTXK49AA02 STATUS LTD  
0 CCS7 TEST MAINTENANCE

0 C7 TEST UTILITY ENHANCEMENT (DMS300 ISSU) NC0069

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0 NTXK50AA01 STATUS A+M  
0 TTP - DIGITAL JACK - ENDED  
0 TRUNKS(UPG.BY NTXK50AB)

0 DIGITAL TEST ACCESS (DMS300) NC0070

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0 NTXK50AB02 STATUS RTM  
0 ENHANCED JACK AND MONITORING

0 DIGITAL TEST ACCESS (DMS300) NC0070  
0 DIGITAL TEST ACCESS (8 PORT) AE0934

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0 NTXK54AA01 STATUS RTM  
0 BT7 MALICIOUS CALL  
0 INTERWORKING

0 BT7 MALICIOUS CALL INTERWORKING (CC) AE0817

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0 NTXK55AA01 STATUS RTM  
0 EMERGENCY SERVICES OVER ISDN

0 CLID PRESENTATION RESTRICTION OVERRIDE AJ1494

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0 NTXK56AA01 STATUS RTM  
0 PCM30 TIME SLOT FLEXIBILTY

0 PCM30 TIMESLOT FLEXIBILITY AE0551

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0 NTXK61AA02 STATUS RTM  
0 REAL TIME ROUTE STATUS

0 REAL TIME ROUTE STATUS NC0273

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0 NTXK62AA01 STATUS RTM  
0 CLASSMARKS ON BTUP

0 CLASSMARKS FOR BTUP NC0260

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0 NTXK63AA01 STATUS RTM  
0 INTERNATIONAL BERT

0 BERT FOR INTERNATIONAL APPLICATIONS AE0654

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0 NTXK65AA02 STATUS RTM  
0 EIGHT PORT NDS0 CARRIER  
0 MAINTENANCE

0 DIGITAL TEST ACCESS (8 PORT) AE0934

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0 NTXK68AA01 STATUS RTM TARGET SUPERNODE  
0 LPP USING DS0 ON PDTC

0 LPP USING DS0 ON PDTC.

AE0805

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0 NTXK93AA01 STATUS RTM  
0 ATUP - ANSI ISUP/AISUP  
0 INTERWORKING

0 ATUP - ANSI ISUP/AISUP INTERWORKING

AJ1242

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0 NTXK94AA01 STATUS RTM  
0 ANSI ISUP APPLICATION ON CCITT  
0 MTP

0 ANSI ISUP COMPATIBILITY WITH CCITT MTP

AJ1806

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0 NTXK95AA01 STATUS RTM  
0 AUTOMATIC CONGESTION CONTROL

0 AUTOMATIC CONGESTION CONTROL SUPPORT NC0179

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0 NTXK96AA01 STATUS LTD TARGET SUPERNODE  
0 BT #7 TUP VERSION 2+ (DMS-100)

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | BTUP INTERWORKING TO CONFERENCE FEATURES  | AE0687 |
| 0 | BTUP TO ATTENDANT CONSOLE - PHASE 1       | AE0738 |
| 0 | BTUP TO IBN LINE - PART II                | AE0569 |
| 0 | BTUP TO IBN LINES TONES AND ANNOUNCEMENTS | NC0047 |
| 0 | BT7 CALLED PARTY CONTROL                  | AE0818 |
| 0 | BT7 CHARGE/NO CHARGE                      | AE0917 |
| 0 | BT7 CLI AND SM                            | AE0816 |
| 0 | BT7 EMERGENCY CALLS                       | AE0901 |
| 0 | BT7 I/W ANSI ISUP - BASIC CALL            | AE0819 |
| 0 | BT7 LAST PARTY RELEASE                    | AE0900 |
| 0 | BT7 MALICIOUS CALL INTERWORKING (XPM)     | AE0829 |
| 0 | BT7 TRANSIT CALLS ENHANCEMENT             | AE0470 |
| 0 | CC OVERLAP SIGNALLING FOR BTUP            | AE0587 |
| 0 | DP TO BTUP OVERLAP SIGNALLING             | AE0667 |
| 0 | PCM30 TIMESLOT FLEXIBILITY                | AE0551 |
| 0 | TRANSITING BT7 OPERATOR MESSAGES          | AE0729 |

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0 NTXK97AA01 STATUS LTD  
0 DMS-300 ECHO CONTROL

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | DMS300 ECHO CONTROL UTILITIES                 | AE0768 |
| 0 | FF - DMS300 ECHO CONTROL PER CALL (RS232 I/F) | NC0068 |

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0 NTXL02AA03 STATUS RTM  
0 DMS-250 UCS DIALLING PLAN  
0 ENHANCEMENTS0 ENHANCED FILED AUTHCODE ON FGD AM0201  
0 UCS CDR ENHANCEMENTS AM0113  
0 UCS DIALING PLAN ENHANCEMENTS AD2618  
0 UCS SPEED NUMBERS AND MCCS LOG AD2621

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0 -----0 NTXL04AA02 STATUS RTM  
0 DMS-250 UCS SS7 INTRA/INTER-  
0 NETWORKING0 IEC/IXC CORPORATE NETWORKING FOR CCS7 AM0186  
0 UCS SS7 FGD AND I/W WITH DEX VIA ISUP IMT AM0112

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0 -----0 NTXL06AA01 STATUS RTM  
0 DMS-250 EOPS FGD ROUTING  
0 ENHANCEMENTS

0 UCS FGD ROUTING ENHANCEMENTS AD2771

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0 NTXL11AA01 STATUS RTM  
0 DMS-250 UCS TO MCI ISUP  
0 INTERWORKING

0 IEC/IXC CORPORATE NETWORKING FOR CCS7

AM0186

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0 NTXL12AA01 STATUS RTM  
0 DMS-250 UCS TO FGD ISUP  
0 INTERWORKING

0 IEC/IXC CORPORATE NETWORKING FOR CCS7

AM0186

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0 NTXL14AA01 STATUS RTM  
0 DMS-250 UCS INTERNATIONAL  
0 PARTITION

0 UCS DMS-250 INTERNATIONAL PARTITION ROUTING

AM0152

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0 NTXL15AA01 STATUS RTM  
0 DMS-250 ACCESS TRANSPORT PRI/  
0 SS7

0 ACCESS TRANSPORT PRI/SS7 - XPM AM0185  
0 ACCESS TRANSPORT PRI/SS7 -CC AM0184

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0 NTXL16AA01 STATUS RTM  
0 DMS-250 UCS 800 NXX EXPANSION

0 800 NXX EXPANSION AM0200

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0 NTXL30AA01 STATUS RTM  
0 CUSTOM ACD BASED BOC CALLING  
0 CARD (TYPE III)

0 ACD BASED BOC CALLING CARD CALL PROCESSING AM0156  
0 SCAI PROTOCOL SUPPORT FOR ACD BASED BOC CALLING CARD AM0167

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0 NTXL31AA01 STATUS RTM  
0 CUSTOM ATR ENHANCEMENT FOR ACD  
0 PLATFORM (TYPE III)

0 MCI'S ATR ENHANCEMENT FOR ACD PLATFORM AM0157

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0 NTXL32AA01 STATUS RTM  
0 CUSTOM PRIVATE NETWORK  
0 ENHANCEMENTS FOR SCAI (TYPE  
0 III)

0 PRIVATE NETWORK ENHANCEMENTS FOR SCAI AM0160

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0 NTXL36AA01 STATUS RTM  
0 DMS-250/ACD VNET OPERATOR  
0 SERVICES

0 MCI DMS-250/ACD VNET OPERATOR SERVICES AM0158

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0 NTXL39AA02 STATUS RTM  
0 DMS-250 TCAP PROTOCOL TO NCS/  
0 DAP0 CP, MMI, & OM'S FOR TCAP PROTOCOL TO NCS/DAP FOR MCI AD3136  
0 TCAP PROTOCOL TO NCS/DAP FOR MCI AD3135

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0 NTXL40AA01 STATUS RTM  
0 DMS-250 INBAND ANI DELIVERY

0 (FI) INBAND ANI DELIVERY AD3111

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0 NTXL41AA01 STATUS RTM  
0 DMS-250/300 TERMINAL PASSWORD  
0 ENHANCEMENTS

0 DMS-250/300 TERMINAL PASSWORD ENHANCEMENTS AJ1291

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0 NTXL42AA01 STATUS RTM  
0 DMS-250 CUSTOMER GROUP  
0 TRANSPORT ON PRI-GLOBAL

0 CUSTOMER GROUP TRANSPORT ON PRI-GLOBAL NETWORKING AM0210

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0 NTXL43AA01 STATUS RTM  
0 DMS-250/EIOC LOG FORMATTER

0 USSPRINT CONDITIONAL CDR LOG ENHANCEMENTS AJ1292

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0 NTXL44AA01 STATUS RTM  
0 DMS-250 LOG DATABASE

0 USSPRINT CONDITIONAL CDR LOG ENHANCEMENTS

AJ1292

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0 NTXL45AA03 STATUS RTM  
0 DMS-250 ISDN N X 64KB SERVICES

0 ISDN NX64 MULTI-BUSINESS GROUPS

AM0211

0 ISDN NX64 TABLE CONTROL

AM0192

0 N X 64KB SERVICES - XPM

AM0178

0 PREP FOR NX64 CALL PROCESSING

AD3643

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0 NTXL46AA01 STATUS RTM  
0 DMS-250 MULTIPLE STAGE  
0 OUTPULSING ON FG-D

0 (FI) MULTIPLE STAGE OUTPULSING ON FG-D

AM0191

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0 NTXL47AA01 STATUS RTM  
0 DMS-250 LOWER LAYER  
0 COMPATIBILITY

0 LOWER LAYER COMPATIBILITY AM0066

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0 NTXL70AA01 STATUS RTM  
0 DMS-250 TR444

0 DMS-250 TR-444 COMPLIANCE AD3520

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0 NTXL70CA01 STATUS RTM  
0 DMS-250 TR444 (TYPE III)

0 MCI TR444 AD3442

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0 NTXL71AA01 STATUS RTM  
0 DMS-250 OPNET PHASE II

0 MCI DMS-250 OPNET PHASE II ANI DATABASE EXPANSION AD3512  
0 MCI DMS-250 OPNET PHASE II CALL PROCESSING AD3478  
0 MCI OPNET PHASE II TABLE CONTROL AD3504

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0 NTXL76AA03 STATUS RTM  
0 DMS-250 NARS0 ISDN FAC IE MODIFICATIONS FOR NARS MENU BILLING INFO AD3395  
0 -XPM/CC  
0 NARS BILLING - CP CAPTURE MODIFICATIONS AD3401  
0 NARS CALL TRANSFER VIA ISDN RLT AD2963  
0 NARS TABLE CONTROL AND CC MODIFICATIONS AD3397

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0 NTXL77AA01 STATUS RTM  
0 DMS-250 NCS ACCESS USING EMPC

0 NCS ACCESS USING EMPC AD3524

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0 NTXL82AA01 STATUS RTM  
0 DMS-250 VPN HOTLINE EXPANSION

0 VPN HOTLINE EXPANSION AD3302

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0 NTXL83AA02 STATUS RTM  
0 DMS-250 VOICE ACTIVATED  
0 CALLING PLATFORM (VAP)

|   |                                                 |        |
|---|-------------------------------------------------|--------|
| 0 | ENHANCED SERVICES PLATFORM (ESP) REORIGINATIONS | AD3647 |
| 0 | ENHANCED SERVICES PLATFORM - OUTGOING ACCESS    | AD3350 |
| 0 | ESP INTERWORKING                                | AD3352 |
| 0 | ISDN PRI PROTOCOL FOR ESP                       | AD3329 |

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0 NTXL84AA01 STATUS RTM  
0 DMS-250 ANI TREATMENT AND LOGS  
0 ENHANCEMENTS

|   |                                |        |
|---|--------------------------------|--------|
| 0 | TREATMENT AND LOG ENHANCEMENTS | AD3334 |
|---|--------------------------------|--------|

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0 NTXL88AA01 STATUS RTM  
0 DMS-250 GLOBAL FON CARD

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | GLOBAL FONCARD ENHANCEMENTS               | AD3338 |
| 0 | VARIABLE LENGTH CALLING CARD ENHANCEMENTS | AD3337 |

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0 NTXL89AA01 STATUS RTM  
0 DMS-250 OM ENHANCEMENT FOR N00  
0 SERVICE

0 OM ENHANCEMENT FOR N00 SERVICE AD3336

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0 NTXL90AA02 STATUS RTM  
0 DMS-250 LISTAB EXPANSION

0 (FI) LISTAB EXPANSION AD3645

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0 NTXL91AA03 STATUS RTM  
0 DMS-250 VPN DARWIN

0 VPN DARWIN - INTERACTIONS AD3644  
0 VPN DARWIN - TCAP PREP. AD3641  
0 VPN DARWIN ISUP AND ROUTING AD3642  
0 VPN DARWIN TRIGGER TABLE (PREP) AD3646

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0 NTXL92AA01 STATUS RTM  
0 DMS-250 FOCUSED TRUNK  
0 MAINTENANCE

0 FOCUSED TRUNK MAINTENANCE AD3407

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0 NTXL93AA01 STATUS RTM  
0 DMS-250 GLOBAL TITLE  
0 TRANSLATIONS

0 GLOBAL TITLE TRANSLATIONS ENHANCEMENTS AD3648

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0 NTXL94AA01 STATUS RTM  
0 DMS-250 FRAME RELAY BILLING  
0 FORMATTER/SEARCH (FOR CM &  
0 EIOC

0 CDR SEARCH AJ1482  
0 USSPRINT FRAME RELAY BILLING AJ1481

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0 NTXL99AA01 STATUS RTM  
0 DMS-250 SPECIAL FEATURE  
0 HOTLINE ENHANCEMENTS

0 (FI) SPECIAL FEATURE HOTLINE ENHANCEMENTS AD3932

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0 NTXM01AA01 STATUS RTM  
0 DMS-250 MCI TO FGD ISUP  
0 INTERWORKING

0 MCI CCS7 ISUP TO RESELLER INTERWORKING AD3148

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0 NTXM02AA01 STATUS RTM  
0 DMS-250 MCI TO DEX ISUP  
0 INTERWORKING

0 MCI CCS7 ISUP TO RESELLER INTERWORKING AD3148

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0 NTXM04AA01 STATUS RTM  
0 DMS-250 MCI TO ACD ISUP  
0 INTERWORKING

0 MCI CCS7 ISUP TO RESELLER INTERWORKING AD3148

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0 NTXM07AA01 STATUS RTM  
0 DMS-250 RENAME TRUNK TYPE  
0 (RENAME CLLI)

0 (FI) RENAME TRUNK TYPE (RENAME CLLI) AD3949

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0 NTXM09AA01 STATUS RTM  
0 DMS-250 USSPRINT(USP) TO UCS  
0 ISUP INTERWORKING

0 IEC/IXC CORPORATE NETWORKING FOR CCS7 AM0186

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0 NTXM11AA01 STATUS RTM  
0 DMS-250 USSPRINT(USP) TO FGD  
0 ISUP INTERWORKING

0 IEC/IXC CORPORATE NETWORKING FOR CCS7 AM0186

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0 NTXM12AA01 STATUS RTM  
0 DMS-250 USSPRINT(USP) TO ACD  
0 ISUP INTERWORKING

0 IEC/IXC CORPORATE NETWORKING FOR CCS7 AM0186

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0 NTXN00AA01 STATUS LTD TARGET SUPERNODE  
0 INTEGRATED SSP/STP - SINGLE  
0 POINT CODE

0 INTEGRATED NODE (SINGLE POINT CODE) AL1678

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0 NTXN01AA01 STATUS A+M  
0 MULTI-LOCATION BUSINESS  
0 GROUPS(UPG BY NTXN01AB)

0 ISUP SHARED TRUNKING ENHANCEMENT AG1984  
0 MULTI-LOCATION BUSINESS GROUP I AG1252

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0 NTXN01AB01 STATUS RTM  
0 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)

0 ISUP SHARED TRUNKING ENHANCEMENT AG1984  
0 MULTI-LOCATION BUSINESS GROUP I AG1252

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0 NTXN04AA01 STATUS RTM  
0 PARS REMOTE

0 PARS OC REMOTE. AF2601

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0 NTXN07AA01 STATUS RTM  
0 SMDI PRIVATE CLID SUPPRESSION

0 BLOCKING OF RESTRICTED NUMBER TO SMDI AG1980

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0 NTXN07AB01 STATUS LTD  
0 SMDI PRIVATE CLID SUPPRESSION

0 BLOCKING OF RESTRICTED NUMBER TO SMDI AG1980

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0 NTXN10AA01 STATUS RTM  
0 HIGH SPEED SMDI

0 MPC CC ASYNCHRONOUS SUPPORT AF2475  
0 MPC PP ASYNCHRONOUS LEVEL-1 AF2473  
0 MPC PP ASYNCHRONOUS SUPPORT AF2474  
0 SMDI COVERION TO USE MPC AF2471

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0 NTXN11AA01 STATUS RTM  
0 TEN DIGIT GTT FOR CLASS  
0 FEATURES

0 TEN DIGIT GTT FOR CLASS FEATURES

AG2035

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0 -----0 NTXN12AA01 STATUS RTM  
0 NCEO/LEAS INTERFACE

0 DMS-100 INCREASED DIGIT OUTPUTSING

AF2370

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0 -----0 NTXN13AA01 STATUS RTM  
0 CCS7 RELEASE LINE TRUNK

0 SCAI - SS7 RELEASE LINK TRUNK (RLT)

AD2587

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0 NTXN14AA01 STATUS RTM  
0 TRUNKS AS SCAI ACD AGENTS

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | CALL PROCESSING FOR TRUNKS AS SCAI ACD AGENTS | AD2885 |
| 0 | MISC. SUPPORT FOR TRUNKS AS SCAI ACD AGENTS   | AD2886 |
| 0 | TABLE CONTROL FOR TRUNKS AS SCAI ACD AGENTS   | AD2889 |
| 0 | XPM SOFTWARE FOR SCAI ACD TRUNK AGENTS        | AD2887 |

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0 NTXN16AA01 STATUS RTM  
0 ENHANCED DRAM

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | CC S/W SUPPORT FOR ENHANCED DRAM (E-DRAM). | AL1696 |
|---|--------------------------------------------|--------|

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0 NTXN17AA01 STATUS RTM  
0 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE

|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | E911 DIRECT ACCESS TO CCI ALI DATABASE | AF2146 |
|---|----------------------------------------|--------|

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0 NTXN18AA04 STATUS RTM TARGET SUPERNODE  
0 FBUS - LIU BASE

|   |                               |        |
|---|-------------------------------|--------|
| 0 | ENHANCED LIU MAINTENANCE      | AL1333 |
| 0 | F-BUS SUPPORT FOR 2 SLOT LIU7 | AL1449 |

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|---|------------------------------------------------|--------|
| 0 | FBUS MTCE ENHANCEMENTS FOR LIU FAULT ISOLATION | AL1834 |
| 0 | FULL MTCE OF STP FBUS                          | AI0119 |
| 0 | GENERIC LIU MAINTENANCE                        | AI0273 |
| 0 | INTEGRATED PROCESSOR AND FBUS INTERFACE (IPF)  | AL1328 |
| 0 | SOFTWARE                                       |        |
| 0 | LIU MAINTENANCE SUPPORT FOR MININODE           | AL1405 |
| 0 | LIU7 - CM MTCE PHASE II                        | AC0383 |
| 0 | LIU7 - ENHANCED LIU DIAGS                      | AI0226 |
| 0 | LIU7-MTC BASE DEVELOPMENT                      | AC0203 |
| 0 | PHYSICAL LEVEL MAINTENANCE FOR FBUS            | AI0086 |
| 0 | RATE ADAPTER DIAGNOSTICS FOR THE STP LIM       | AI0059 |
| 0 | RATE ADAPTER FIRMWARE                          | AI0060 |
| 0 | 9X73 OD1 ENHANCEMENTS                          | AI0115 |
| 0 | 9X74 CARD ID FIRMWARE                          | AI0153 |

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|---|-------------------|--------------|---------|------------|
| 0 | NTXN19AA02 STATUS | RTM          | TARGET  | SUPERNODE  |
| 0 |                   | LIU7         | FOR LPP | BASED CCS7 |
| 0 |                   | APPLICATIONS |         |            |

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | CCITT#7 MTP LEVEL 3 ON LPP                     | AL1343 |
| 0 | CCS7 ENHANCEMENTS TO SUPPORT LPP ON A CCS7 SSP | AL1247 |
| 0 | LIU7 - MTCE PHASE II                           | AC0382 |
| 0 | LIU7 - MTCE ST LOADING                         | AC0381 |
| 0 | LPP ON SCP                                     | AL1498 |
| 0 | MTP - DIAGNOSTICS FOR 9X76/9X77/9X78 CARDS     | AC0124 |
| 0 | MTP - LGP L2/L3 INTERFACE                      | AC0219 |
| 0 | STP V.35 CAPABILITY FOR STP                    | AC0425 |

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|---|-------------------|-------------------------------|
| 0 | NTXN25AA02 STATUS | RTM                           |
| 0 |                   | EXTENDED PERIPHERAL EQUIPMENT |

|   |                             |        |
|---|-----------------------------|--------|
| 0 | ANALOG LINES ON IPE         | AM0128 |
| 0 | ATTENDANT CONSOLES ON IPE'S | AD3064 |

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|---|---------------------------------------|--------|
| 0 | CC/IPE FEATURE REGRESSION             | AM0035 |
| 0 | DTSR, AUDITS FOR IPE'S                | AM0134 |
| 0 | IPE DOWNLOADING                       | AM0034 |
| 0 | IPE LINES MAINTENANCE - PHASE II      | AM0126 |
| 0 | IPE LINES TABLE CONTROL               | AM0039 |
| 0 | IPE ON RCC                            | AM0133 |
| 0 | IPE PM MAINTENANCE - PHASE I          | AM0037 |
| 0 | IPE PM MAINTENANCE - PHASE II         | AM0033 |
| 0 | IPE PM MAINTENANCE - PHASE III        | AM0125 |
| 0 | IPE PM TABLE CONTROL/CALL PROCESSING  | AM0041 |
| 0 | IPE SERVICE ORDERS/QUERY COMMANDS     | AM0036 |
| 0 | OVERLOAD CONTROL FOR IPE'S            | AM0132 |
| 0 | PMDEBUG INTERFACE TO XPEC MONITOR     | AM0135 |
| 0 | XPE LINES MAINTENANCE - PHASE I       | AM0040 |
| 0 | XPE LINK DIAGNOSTICS                  | AM0127 |
| 0 | XPEC CALL PROCESSING - PHASE I        | AM0032 |
| 0 | XPEC CALL PROCESSING - PHASE II       | AM0130 |
| 0 | XPEC MAINTENANCE - PHASE I            | AM0044 |
| 0 | XPEC MAINTENANCE- PHASE II            | AM0124 |
| 0 | XPEC MESSAGE INTERFACE - PHASE II     | AM0129 |
| 0 | XPEC MESSAGE TRANSLATION              | AM0043 |
| 0 | XPEC MONITOR                          | AM0042 |
| 0 | XPEC SELF TEST & DIAGNOSTICS FIRMWARE | AM0140 |
| 0 | XPM SUPPORT OF IPE'S                  | AM0038 |
| 0 | XPM-IPE INTERFACE OPTIMIZATION        | AM0131 |

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0 NTXN29AA01 STATUS RTM  
0 IBM DA TPC

|   |                                  |        |
|---|----------------------------------|--------|
| 0 | TPC IBM DA APPLICATION           | AF2261 |
| 0 | TPC IBM DA APPLICATION MESSAGING | AF2262 |

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0 NTXN31AA02 STATUS RTM  
0 OSS INTERFACE ENHANCEMENT

0 QCUST CONSOLIDATION AND QUERY CALL FORWARD SEQUENCES AJ1266

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0 NTXN33AA01 STATUS RTM  
0 NSS TRAVEL CARD NUMBER  
0 VALIDATION

0 NSS-DBCP TRAVEL CARD NUMBER VALIDATION AD2856

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0 NTXN35AA01 STATUS RTM  
0 COT ENHANCEMENTS

0 USER SPECIFIED COT ANNOUNCEMENT NC0117

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0 NTXN38AA01 STATUS RTM TARGET SUPERNODE  
0 VIP CALL SERVICES

0 VIP SERVICE AG2159

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0 NTXN49AA01 STATUS RTM  
0 AUTOMATED INTERCEPT CALL  
0 COMPLETION

0 AUTOMATED INTERCEPT CALL COMPLETION. NC0146

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0 NTXN50AA01 STATUS RTM  
0 MDC SINGLE BUTTON TRANSFER

0 E911 SINGLE BUTTON TRANSFER OPERATION AF2145

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0 NTXN51AA01 STATUS RTM  
0 TOPS MP SUPPORT OF INTERNAL  
0 DRAM

0 TOPS-MP: INTERNAL VOICE RESPONSE CAPABILITY AJ1130

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0 NTXN52AA01 STATUS RTM  
0 TWO DIGIT ANI - TOPS OFFICE

0 TWO DIGIT ANI - TOPS OFFICE NC0149

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0 NTXN53AA02 STATUS RTM  
0 ENHANCED PRA MAINTENANCE

0 LAYER 2 OM'S FOR D-CHANNEL BACKUP AD3513  
0 PRA D-CHANNEL BACKUP-CC AM0071  
0 PRA-D CHANNEL BACKUP - XPM. AM0055

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0 NTXN54AA01 STATUS RTM  
0 HOST/REMOTE NETWORKING VIA  
0 CALL TYPE

0 HOST/REMOTE NETWORKING BY QUEUE TYPE. NC0152

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0 NTXN55AA01 STATUS A+M  
0 TMS INTERWORKING

0 TMS DATAFILL FOR INTRA TMS NETWORKING. AF2592

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0 NTXN59AA02 STATUS RTM  
0 RINGBACK TO E911 CALLERS

0 RINGBACK TO 911 CALLERS (ON-HOOK/OFF-HOOK) NC0030

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0 NTXN60AA01 STATUS RTM  
0 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE

0 DIAL-UP INTO ALI DB FOR SRDB UPDATE. NC0162

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0 NTXN65AA01 STATUS RTM  
0 MDC FAST TRANSFER

0 FAST TRANSFER FOR MERIDIAN BUSINESS SET NC0112

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0 NTXN66AA01 STATUS RTM  
0 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE

0 E911 DIRECT ACCESS TO AT&T ALI CONTROLLER AF2759

0

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0 NTXN67AA01 STATUS RTM  
0 MERIDIAN AUTOMATIC ROUTE  
0 SELECTION

0 (FI) MARS-MERIDIAN AUTOMATIC ROUTE SELECTION AD2641

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0 NTXN68AA01 STATUS RTM  
0 XPM BROADCAST PATCHING

0 BROADCAST PATCHING FOR ACTIVE AND INACTIVE XPMS AF2582  
0 UNITS

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0 NTXN69AA01 STATUS LTD  
0 SCOPE DIAL PRA SIGNALLING ON  
0 PAL TRUNKS

0 ISDN PRA SIGNALING AND PREEMPTION FOR PALS AD2536

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0 NTXN71AA01 STATUS RTM  
0 NSS CDR BILLING

0 NSS BILLING PLATFORM AD2859

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0 NTXN75AA01 STATUS RTM  
0 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN

0 REMOTE CALL FORWARDING WITHOUT UNIQUE PIN NC0192

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0 NTXN80AA01 STATUS A+M  
0 ENHANCED TAPE HANDLING

0 MULTI-VOLUME TAPE FILES AF1725

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0 NTXN81AA01 STATUS RTM  
0 TWO DIGIT ANI ID - END  
0 OFFICE(LAMA)

0 TWO DIGIT ANI I.D. - END OFFICE NC0199

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0 NTXN82AB01 STATUS RTM  
0 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)0 PP CALL PROCESSING FOR RCC WARM ESA: PHASE I AF2700  
0 PP MAINTENANCE FOR RCC WARM ESA: PHASE I AF2699  
0 RCC WARM ESA HIGH LEVEL DESIGN AF2659  
0 RSC - FAST COLD EXIT DRIVER AND INSTANT RTS OF LINES AF2701  
0 RSC - INSTANT RTS OF LINKS FOR FAST COLD EXIT AF2702  
0 RSC - INSTANT RTS OF NODES FOR FAST COLD EXIT AF2865  
0 RSC ESA WARM ENTRY FOR TRUNKS AF3374

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0 -----0 NTXN83AA02 STATUS RTM TARGET SUPERNODE  
0 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS

0 DMS-BUS SUPPORT OF 0, 1, AND 2 LIU SHELVES AL1458

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0 NTXN84AA01 STATUS RTM  
0 AUTOMATIC OIA SESSION START

0 OIA (ORDB) ENHANCEMENTS FOR AUTOMATIC SESSION START AF2703

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0 NTXN85AA01 STATUS RTM  
0 MPC 1984 X.25

0 MPC 1984 X.25 CC DEVELOPMENT AF2777

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0 NTXN86AA01 STATUS LTD  
0 E911 ACD PSAP MIS ENHANCEMENTS

0 E911 ACDPSAP MIS ENHANCEMENTS AF2560

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0 NTXN97AA01 STATUS LTD  
0 CALL WAITING DISPLAY

0 CLASS: SPONTANEOUS CALL WAITING IDENTIFICATION AG2073  
0 SPONTANIOUS CALL WAITING ID XPM CHANGES AF2830

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0 NTXN99AA01 STATUS RTM  
0 ISDN INBOUND MODEM POOLING

0 ISDN INBOUND MODEM POOLING DELIVERABLE AC0615

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0 NTXP00AA01 STATUS RTM  
0 LINE CARD MONITOR

0 LINE CARD MONITOR NC0109

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0 NTXP01AA03 STATUS RTM TARGET SUPERNODE  
0 INTELLIGENT NETWORK 0.0 BASE

0 DIRECTORY NUMBER TRIGGER FOR AMERITECH IN RELEASE 0 AG2243

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0 NTXP03AA01 STATUS RTM  
0 NSS BILLING PLATFORM

0 NSS BILLING PLATFORM I AM0144  
0 NSS BILLING PLATFORM II AM0143

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0 NTXP04AA01 STATUS RTM  
0 NSS UCS BCS26 CDR FORMATTER

0 UCS CDR BILLING ON NSS AM0142

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0 NTXP08AA01 STATUS RTM  
0 TRUNK GROUP MEMBER USAGE

0 TERMINATING TRUNK GROUP USAGE NC0248

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0 NTXP12AA01 STATUS RTM  
0 CLASS: ANONYMOUS CALLER  
0 REJECTION

0 CLASS: ANONYMOUS CALLER REJECTION AF2879

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0 NTXP13AA02 STATUS RTM TARGET SUPERNODE  
0 ENET SWITCH PATH DIAGNOSTICS

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | ENET - ICTS                                 | AL1912 |
| 0 | ENET - ICTS APPLICATIONS (ICERT AND NETFAB) | AL1978 |
| 0 | XPM BIT ERROR RATE TEST                     | AL0478 |

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0 NTXP14AA01 STATUS RTM  
0 DIRP PARALLEL STORAGE SIZE  
0 INCREASE

|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | PARALLEL STORAGE SIZE INCREASE AND MMI IMPROVEMENTS | AF2704 |
|---|-----------------------------------------------------|--------|

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0 NTXP15AA01 STATUS RTM  
0 MAP ACCESS VIA MPC PHASE V

|   |                            |        |
|---|----------------------------|--------|
| 0 | MAP ACCESS VIA MPC PHASE I | AF3022 |
|---|----------------------------|--------|

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0 NTXP38AA01 STATUS RTM  
0 BD CHANNEL LOOPBACK

0 BD CHANNEL LOGICAL LOOPBACK AL2040

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0 NTXP48AA01 STATUS RTM  
0 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST

0 CC COT ENHANCEMENTS FOR CUTOVER (2 WIRE TRUNKS) AJ1485  
0 XPM COT ENHANCEMENTS FOR CUTOVER (2 WIRE TRUNKS) AJ1486

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0 NTXP53AA01 STATUS RTM  
0 ACD ACCESS FEATURE GROUPING

0 ACD SERVICE ORDER ENHANCEMENTS AG1978

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0 NTXP55AA01 STATUS RTM  
0 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/LDR)

0 DCR: DYNAMIC NETWORK MODIFICATIONS (ADD & DEL AG1974  
0 DESTINATIONS)  
0 DCR: MULTIPLE OUTPULSING SCHEMES AG1630

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0 RELEASE 28.01  
0 93 12 030 DYNAMICALLY CONTROLLED ROUTING BV1534  
0 HIGH PERFORMANCE ROUTING BC1989  
0 TIME OF DAY ROUTING BV1136

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0 NTXP55AB01 STATUS LTD  
0 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/LDR) (UPG OF P55AA)0 DCR: DYNAMIC NETWORK MODIFICATIONS (ADD & DEL AG1974  
0 DESTINATIONS)  
0 DCR: MULTIPLE OUTPULSING SCHEMES AG1630  
0 DYNAMICALLY CONTROLLED ROUTING BV1534  
0 HIGH PERFORMANCE ROUTING BC1989  
0 TIME OF DAY ROUTING BV1136

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0 NTXP56AA01 STATUS RTM  
0 TWO DIGIT ANI - CAMA

0 TWO DIGIT ANI I.D. - END OFFICE NC0199

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0 -----0 NTXP57AA01 STATUS RTM  
0 CALL WAKE-UP SERVICE

0 DMS-100 CENTREX WAKEUP-CALL SERVICE NC0343

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0 NTXP58AA01 STATUS RTM  
0 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)0 VFG SUPPORT FOR INCOMING ISUP AND LOCAL CALLS TO NC0295  
0 E911

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0 NTXP73AA01 STATUS RTM  
0 CNDB OFFICE-WIDE ACTIVATION

0 OFFICE WIDE ACTIVATION OF CNDB FOR POTS NC0292

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0 NTXP79AB01 STATUS LTD  
0 TOPS FRENCH/ENGLISH AABS0 AABS DUAL LANGUAGE CAPABILITIES NC0297  
0 AABS/ACCS CALL SCREENING NC0298  
0 BILLING METHOD COLLECTION AF1528  
0 BILLING VERIFICATION AF1529

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0 NTXP80AA01 STATUS RTM  
0 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS

0 DDN AR VOICEBACK NC0299

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0 NTXP81AA01 STATUS RTM  
0 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL

0 LINE LOAD CONTROL - PHASE II AF1750

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0 NTXP82AA01 STATUS RTM  
0 AMA MOD (CAMA MODULES)

0 BBF AMA RECORD. NC0240  
0 CLASS OF SERVICE INDICATION ON AMA CALLS NC0078  
0 ZONE INDICATOR AF1504

0

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0 NTXP85AA02 STATUS RTM  
0 ISUP BROADCAST FAN OUT

0 BROADCAST FAN-OUT NODAL SETUP AD3093  
0 BROADCAST FAN-OUT NODAL TERMINATION AD3091

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0 BROADCAST INTERWORKING / FEATURE INTERACTIONS AD3259  
0 BROADCAST TABLE CONTROL ENHANCEMENTS AD3092  
0 NETWORK BROADCAST REMOTE TERMINATION AD3258  
0 POWER CALL PROCESSING ARCHITECTURE ENHANCEMENTS AD3257  
0 POWER FEATURE ENHANCEMENTS & MAINTENANCE SUPPORT AD3366

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0 NTXP86AA01 STATUS RTM  
0 ANI TO ISUP CONVERSION

0 ANI TO ISUP CONVERSION NC0303

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0 NTXP90AA01 STATUS RTM TARGET SUPERNODE  
0 MERIDIAN SUPERNODE OPTION 201

0 MERIDIAN SUPERNODE OPTION 201: S/W SUPPORT AD3248

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0 NTXP92AA01 STATUS A+M  
0 RSC-S BASIC

0 CPM BASIC RSC APPLICATIONS SUPPORT AF2791  
0 CPM DATA STRUCTURES AND MMI AF2784  
0 CPM DIAGNOSTICS AF2790  
0 CPM DS1 SOFTWARE: SUPPORT FOR 4 X 2 DS1 I/F PACKS AF2788  
0 CPM ISDN APPLICATIONS SUPPORT FOR RCC2 AF2793  
0 CPM MATRIX SOFTWARE AF2787  
0 CPM NEW HARDWARE DEPENDENCIES AG2798

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0 CPM PCM SIGNALLING PROCESSOR MAINTENANCE AF2786  
0 CPM PMTYPES AND BASIC HOOKS AF2866  
0 CPM UP SOFTWARE AND BASIC MAINTENANCE AF2785  
0 CPM: INTRASWITCHING AND DUAL RCC2 CP SUPPORT AF2867  
0 NEW CPM EXTENSION SHELF AND DS60 PACK SUPPORT FOR AF2792  
0 CPM

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0 NTXP92AB01 STATUS RTM  
0 RSC-S BASIC (UPG OF NTXP92AA)

0 CPM BASIC RSC APPLICATIONS SUPPORT AF2791  
0 CPM DATA STRUCTURES AND MMI AF2784  
0 CPM DIAGNOSTICS AF2790  
0 CPM DS1 SOFTWARE: SUPPORT FOR 4 X 2 DS1 I/F PACKS AF2788  
0 CPM ISDN APPLICATIONS SUPPORT FOR RCC2 AF2793  
0 CPM MATRIX SOFTWARE AF2787  
0 CPM NEW HARDWARE DEPENDENCIES AG2798  
0 CPM PCM SIGNALLING PROCESSOR MAINTENANCE AF2786  
0 CPM PMTYPES AND BASIC HOOKS AF2866  
0 CPM UP SOFTWARE AND BASIC MAINTENANCE AF2785  
0 CPM: INTRASWITCHING AND DUAL RCC2 CP SUPPORT AF2867  
0 NEW CPM EXTENSION SHELF AND DS60 PACK SUPPORT FOR AF2792  
0 CPM

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0 NTXP97AA01 STATUS RTM TARGET SUPERNODE  
0 IEM BASIC EVENT CONSOLIDATION

0 IEM BASIC EVENT CONSOLIDATION AL1729

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0 NTXP99AA01 STATUS A+M  
0 E911 REMOTE CALL EVENT  
0 RECORD(UPG.BY NTXP99AB)

0 ONE-LINE E911 CALL RECORD NC0317

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0 NTXP99AB01 STATUS RTM  
0 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)

0 ONE-LINE E911 CALL RECORD NC0317

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0 NTXQ12AA01 STATUS RTM  
0 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | PP CALL PROCESSING FOR RCC WARM ESA: PHASE I         | AF2700 |
| 0 | PP MAINTENANCE FOR RCC WARM ESA: PHASE I             | AF2699 |
| 0 | RCC WARM ESA HIGH LEVEL DESIGN                       | AF2659 |
| 0 | RSC - FAST COLD EXIT DRIVER AND INSTANT RTS OF LINES | AF2701 |
| 0 | RSC - INSTANT RTS OF LINKS FOR FAST COLD EXIT        | AF2702 |
| 0 | RSC - INSTANT RTS OF NODES FOR FAST COLD EXIT        | AF2865 |

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0 NTXQ21AA01 STATUS RTM  
0 MERIDIAN TELECENTER

0 MERIDIAN TELECENTER AM0164

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0 NTXQ23AA02 STATUS LTD TARGET SUPERNODE  
0 TOPS ADAS

0 AABS VSN XP RESTRUCTURE AF3011

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0 NTXQ27AA02 STATUS RTM  
0 MFT DISPLAY ENHANCEMENTS

0 FEATURE DISPLAY ENHANCEMENTS AJ0591

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0 NTXQ29AA01 STATUS RTM  
0 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES

0 CLASS: CALLING NAME DISPLAY ENHANCEMENTS

AF3020

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0 NTXQ34AA01 STATUS RTM TARGET SUPERNODE  
0 FRAME RELAY BILLING BASE  
0 PACKAGE

0 FRAME RELAY BILLING REQUIREMENTS  
0 FRIU BILLING DATA COLLECTION

AJ1480

AL2182

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0 NTXQ35AA01 STATUS RTM TARGET SUPERNODE  
0 FRAME RELAY LEC BILLING

0 BELLCORE FRAME RELAY BILLING

AR0102

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0 NTXQ39AA01 STATUS RTM  
0 SSP 800 BILLING ENHANCEMENTS

0 BILLING ENHANCEMENTS FOR ENHANCED 800+

AG2326

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0 NTXQ40AA02 STATUS LTD  
0 SSP 800 OVERFLOW CALL ROUTING

0 OVERFLOW CALL ROUTING FOR 800+ AG2186

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0 NTXQ51AA01 STATUS RTM TARGET SUPERNODE  
0 MS SR512 LIS CONTROLLER

0 DMS-BUS S/W FOR FIBERIZED LIU SHELF (FLIS) AL1784

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0 NTXQ60AA01 STATUS RTM  
0 SL-100 ISDN CABINET CIRCUIT  
0 LOCATOR

0 MISCELLANEOUS CKTLOC UPDATES AD3339

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0 NTXQ65AB01 STATUS RTM  
0 CCS7 AUTO ATTENDANT RELEASE  
0 LINK TRUNK (UPG OF NTXQ65AA)

0 RLT WITH NO THIRD PARTY INTERACTION AG2329

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0 NTXQ73AA01 STATUS RTM  
0 ISUP TO MF 2 STAGE  
0 OUTPULSING(CANADA)

0 INTERWORKING OF ISUP TO MF WITH 2 STAGE OUTPULSING AG2553

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0 NTXQ74AA01 STATUS RTM  
0 NSS CUSTOMER GROUP TRANSPORT  
0 FOR PRI

0 CUSTOMER GROUP TRANSPORT ON PRI-GLOBAL NETWORKING AM0210

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0 NTXQ75AA01 STATUS RTM  
0 NSS VALIDATED ACCOUNT CODES

0 NSS VALIDATED ACCOUNT CODES AND AUTHCODE LAST AD2854  
0 DIALING PLAN

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0 NTXQ79AA01 STATUS RTM  
0 TWO DIGIT ANI I.D - END OFFICE  
0 NON-LAMA

0 TWO DIGIT ANI I.D. - END OFFICE NC0199

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0 NTXQ81AA01 STATUS RTM  
0 CLASS - NAME DISPLAY ON MADN  
0 CLASS CALLING NAME DELIVERY ON MADN

AF2858

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0 NTXR40AA01 STATUS RTM  
0 PCR ON MSB7  
0 PCR, Q.791 AND QUASI ASSOCIATED BACKUP (DMS300)

NC0073

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0 NTXR45AA01 STATUS LTD  
0 AUTO ATTENDANT - RLT (DMS-100)

0 RLT WITH NO THIRD PARTY INTERACTION AG2329

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0 NTXR46AA01 STATUS RTM  
0 ROBUSTNESS ENHANCEMENTS

0 RUN-TIME SYSTEM DATA CHECKSUM AL2236

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0 NTXR51AA02 STATUS RTM  
0 GLOBAL OPERATOR SERVICES  
0 RATING SYSTEM

0 GOS RATING SYSTEM AF4169  
0 TELMEX DELVS AF4222

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0 NTXR55AA01 STATUS LTD  
0 TL1 TESTING INTERFACE PARSER

0 IDCC OSS INTERFACE PARSING BASE AL1999

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0 NTXR58AA01 STATUS RTM  
0 GLOBAL OPERATOR SERVICES  
0 BOOKED CALL DATA BASE0 GOS BOOKED CALL DATABASE  
0 TELMEX DELVSAF4170  
AF4222

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0 NTXR65AA01 STATUS RTM TARGET SUPERNODE  
0 FLEXIBLE DWS ACCESS

0 POWER - N\*64 WIDEBAND OPTIONALITY

AD3879

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0 NTXR72AA01 STATUS RTM TARGET SUPERNODE  
0 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS0 CCITT #7 MTP (DMS-250)  
0 CCITT#7 MTP AUSTRALIAN SCREENING  
0 CCITT7 NATIONAL NETWORK POINT CODE MMI  
0 CCS7 - SIGNALING TERMINAL  
0 CCS7 BASE  
0 CCS7 BCS INSERTION  
0 CCS7 CC STORE REDUCTION FOR NT40  
0 CCS7 LINK SET MGMT  
0 CCS7 MSB COMMISSIONING LOAD  
0 CCS7 MSB ST INTERFACE HANDLINGAE0313  
AL1344  
AL1474  
BF0650  
BC1814  
BC2289  
AL1499  
BV2000  
BF0551  
BF0526

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|---|--------------------------------------------------|--------|
| 0 | CCS7 MSB ST/STAI AUDITS                          | BF0529 |
| 0 | CCS7 ROUTE SET MGMT                              | BV2001 |
| 0 | CCS7 SCCP FOR SSP                                | BF0658 |
| 0 | CCS7 ST COMMISSIONING LOAD                       | BF0550 |
| 0 | CCS7 ST MP BUFFER RETRIEVAL                      | BF0457 |
| 0 | CCS7 ST MP PRO/CONGESTION CONTROL & FLOW CONTROL | BF0454 |
| 0 | CCS7 STATIC DATA AUDITS                          | AL1249 |
| 0 | CCS7 TIMER ENHANCEMENTS                          | AC0361 |
| 0 | DATA MANAGER ROBUSTNESS                          | AC0443 |
| 0 | GENERALIZE XPM/MSB7 CHANNEL ALLOCATION           | BF1025 |
| 0 | LINKSET - BASIC LINK MANAGEMENT - MSB            | BC1807 |
| 0 | LINKSET - MAN MACHINE INTERFACE - CC             | BC1811 |
| 0 | LINKSET TABLE CONTROL - CC                       | BC1813 |
| 0 | MTP - CC RESTART HANDLING IMPROVEMENTS           | AC0228 |
| 0 | MTP - CC ROUTING CAPABILITY                      | AC0150 |
| 0 | MTP - CONGESTION HANDLING                        | BC2292 |
| 0 | MTP - CONGESTION/TIMER OPTION TABLE CONTROL      | BC2290 |
| 0 | MTP - COV, CBK, REROUTE ENHANCEMENTS             | AC0149 |
| 0 | MTP - DISTRIBUTED DATA AUDITS & OM COLLECTION    | AC0225 |
| 0 | MTP - DISTRIBUTED MTP DATA                       | AC0226 |
| 0 | MTP - GENERIC DISTRIBUTED DATA MANAGER           | AC0148 |
| 0 | MTP - MESSAGE TRANSFER PART                      | AL0076 |
| 0 | MTP - MULTI-MSB CAPABILITY                       | AC0223 |
| 0 | MTP - MULTI-MSB MMI                              | AC0220 |
| 0 | MTP - POINT CODE ROUTING ALGORITHM               | BF1024 |
| 0 | MTP - QUASI ASSOCIATED SIGNALLING                | BC2291 |
| 0 | MTP - ROBUSTNESS IMPROVEMENTS                    | AC0411 |
| 0 |                                                  | BF0989 |
| 0 | MTP - ST POOLS FOR CCS7 SIGNALLING LINKS         | BC2293 |
| 0 | MTP AUDITS FOR CCS7                              | BF0942 |
| 0 | Q791 MTP PERFORMANCE ENHANCEMENTS.               | AE0775 |
| 0 | REMOVAL OF CLLI FROM CCS7 RTESET AND LINKSET     | AL1496 |
| 0 | ROUTESET - BASIC ROUTING CONTROL - MSB           | BC1798 |
| 0 | ROUTESET - DISTRIBUTER - MSB                     | BC1800 |
| 0 | ROUTESET - MAN MACHINE INTERFACE - CC            | BC1803 |
| 0 | ROUTESET - ROUTER - MSB                          | BC1799 |
| 0 | ROUTESET - TABLE CONTROL - CC                    | BC1804 |
| 0 | ROUTESET-CHANGEOVER/CHANGEBACK-MSB               | BF0941 |
| 0 | SCCP - AUDITS AND ENHANCEMENTS                   | AC0107 |
| 0 | SCCP - DATA DISTRIBUTION                         | AC0141 |
| 0 | SCCP - FOR DMS-SCP                               | AC0143 |
| 0 | SCCP - MANAGEMENT CHANGES                        | AC0142 |
| 0 | SCCP - MMI CHANGES                               | AC0144 |
| 0 | SCCP - MMI EVOLUTION FOR STP                     | AC0306 |
| 0 | SCCP - ROUTING CONTROL                           | AC0140 |
| 0 | SCCP MAN MACHINE INTERFACE                       | BC1749 |
| 0 | SCCP MANAGEMENT ROBUSTNESS                       | AC0431 |

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|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | SCCP TABLE CONTROL                          | BC1750 |
| 0 | SCCP-CONNECTIONLESS CONTROL                 | BC2046 |
| 0 | SCCP-MANAGEMENT-PC MGMT                     | BC2047 |
| 0 | SCCP-MANAGEMENT-SUBSYSTEM                   | BC2048 |
| 0 | SCCP-ROUTING CONTROL                        | BC2045 |
| 0 | SIGNALLING LINK MARGINAL PERFORMANCE REPORT | AL1330 |
| 0 | STP ROBUSTNESS                              | AL1893 |

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0 NTXS11AA01 STATUS LTD TARGET SUPERNODE  
0 FILE TRANSFER PROTOCOL (DARPA)

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | FILE TRANSFER CLIENT INTERFACE FOR DMS-SCP II | AL1693 |
|---|-----------------------------------------------|--------|

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0 NTXS25AA01 STATUS RTM TARGET SUPERNODE  
0 DWS BASE

|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | POWER : WIDE BAND CALL MACHINE & GLARE RECOVERY     | AD3321 |
| 0 | (XPM)                                               |        |
| 0 | POWER : WIDE BAND CHANNEL MANAGEMENT (XPM)          | AD3319 |
| 0 | POWER : WIDE BAND INTEGRITY MANAGEMENT (PM)         | AD3322 |
| 0 | POWER : WIDE BAND TRUNK DATAFILL AND MAINTENANCE    | AD3318 |
| 0 | (CC)                                                |        |
| 0 | POWER : WIDE BAND TRUNK SELECTION (CC)              | AD3317 |
| 0 | POWER : WIDEBAND ISUP AND MAINTENANCE IN DTC7 (XPM) | AD3320 |
| 0 | POWER : WIDEBAND SWACT SUPPORT IN DTC7 (XPM)        | AD3443 |

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0 NTXS35AA01 STATUS LTD  
0 AABS CALL SCREENING

0 AABS/ACCS CALL SCREENING NC0298

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0 NTXU17AA01 STATUS LTD  
0 DMS-100 UK TONESET

0 DOWNLOADABLE TONES AE0397

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0 NTXV07AA01 STATUS A+M  
0 ETSI PRI (T)

0 PRA/ISUP INTERWORKING AC0339

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0 NTXV08AA01 STATUS LTD  
0 AUSTRALIA ISDN PRI

0 PRA/ISUP INTERWORKING AC0339

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0 NTXW00AA02 STATUS RTM  
0 WORLD LINE CARD BASE

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | WORLD LINE CARD IN THE LCM         | AE0896 |
| 0 | WORLD LINE CARD SOFTWARE SUPPORT   | AE0905 |
| 0 | WORLD-LC NEW HARDWARE DEPENDENCIES | AG2800 |

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0 NTXW20AA01 STATUS RTM  
0 WORLD LINE CARD 900 +2

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | WLC TYPE A TEMPLATE FOR NORTH AMERICAN 900 +2 | AE0958 |
| 0 | APPLICATIONS                                  |        |

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0 NTXW22AA01 STATUS LTD  
0 WORLD LINE CARD, UK

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | WLC TYPE A TEMPLATE FOR UK PSTN APPLICATIONS | AE0959 |
|---|----------------------------------------------|--------|

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0 NTXX89AA01 STATUS RTM  
0 XPM+ ON ICP (MTX)

0 XPM PLUS BASED ICP AD4761

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0 NTXZ00AA01 STATUS RTM TARGET SUPERNODE  
0 ACD SUPPORT SOFTWARE 1 (EQ110)

|                                                |        |
|------------------------------------------------|--------|
| 0 AC-EXTENDED CALLS TO CFB/CFD                 | AC0038 |
| 0 ACCESS TO CCSA                               | BC0204 |
| 0                                              | BV0420 |
| 0                                              | BV0488 |
| 0 ACCESS TO CO FROM PBX                        | BV0480 |
| 0                                              | BV0485 |
| 0 ACCESS TO ETN                                | BV0585 |
| 0 ATTENDANT - AUTO DIAL                        | BC0964 |
| 0 ATTENDANT CALL PARK RECALL TIMER             | BR0525 |
| 0 ATTENDANT CALL SELECTION                     | BV0489 |
| 0 ATTENDANT CAMP-ON                            | BV0446 |
| 0 ATTENDANT CONFERENCE (MAXIMUM SIX CONFEREES) | BV0437 |
| 0 ATTENDANT CONSOLE CALL HOLD RECALL           | AD2488 |
| 0 ATTENDANT CONSOLE DATA (SEE V0432)           | BZ0013 |
| 0 ATTENDANT CONSOLE DISPLAY                    | BV0592 |
| 0 ATTENDANT CONSOLE DISPLAY (ENHANCE 1)        | BV0608 |
| 0 ATTENDANT CONSOLE DISPLAY (ENHANCE 2)        | BV0891 |
| 0 ATTENDANT CONTROL OF TRUNK GROUP ACCESS      | BV0490 |
| 0                                              | BV0557 |
| 0 ATTENDANT LOCKED LOOP OPERATION              | BV0438 |
| 0 ATTENDANT RELEASE UPON COMPLETION OF DIALING | BV1134 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE              | BC0205 |
| 0                                              | BC0206 |
| 0                                              | BC0207 |
| 0                                              | BC0208 |
| 0                                              | BV0548 |
| 0                                              | BV0549 |
| 0                                              | BV0550 |
| 0                                              | BV0551 |
| 0                                              | BV0556 |

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|   |                                                        |        |
|---|--------------------------------------------------------|--------|
| 0 | ATTENDANT SPEED CALLING                                | BV0584 |
| 0 | ATTENDANT TRANSFER                                     | BV0436 |
| 0 | AUDIO TABLE EXPANSION                                  | AD0822 |
| 0 | AUTOMATIC RECALL                                       | BV0443 |
| 0 |                                                        | BV0457 |
| 0 | BLIND TRANSFER RECALL                                  | AD0905 |
| 0 | BLIND TRANSFER RECALL INDENTIFICATION                  | AD0990 |
| 0 | BUSY VERIFICATION - STATIONS                           | BV0440 |
| 0 | BUSY VERIFICATION -TRUNKS                              | BV0441 |
| 0 | CALL FORWARD ALL CALLS                                 | BV0451 |
| 0 | CALL FORWARD BUSY                                      | BV0453 |
| 0 | CALL FORWARD NO ANSWER                                 | BV0452 |
| 0 | CALL FORWARD DON'T ANSWER INTERACTION WITH 3WC         | AG1541 |
| 0 | CALL PARK                                              | BV0534 |
| 0 | CALL PICKUP                                            | BV0455 |
| 0 | CALL WAITING                                           | BV0456 |
| 0 | CCSA AMA RECORDING                                     | BC1263 |
| 0 | CFD FROM HUNT GROUP STATION                            | AD0906 |
| 0 | CFGDA FOR HUNT GROUPS                                  | AD1164 |
| 0 | CLASS OF SERVICE RESTRICTIONS FULLY RESTRICTED         | BV0415 |
| 0 | SERVICE                                                |        |
| 0 |                                                        | BV0416 |
| 0 | CODE CALL ACCESS                                       | BV0501 |
| 0 | CODE RESTRICTION                                       | BV0421 |
| 0 | CONSULTATION HOLD                                      | BV0418 |
| 0 | CPU DATAFILL ENHANCEMENTS                              | BC1453 |
| 0 | CUSTOMER DATA (SEE V0412)                              | BZ0009 |
| 0 | CUSTOMER GROUP TRANSPARENCY                            | BR0682 |
| 0 | DATA CALL PROTECTION                                   | BV0442 |
| 0 | DIAL PULSE CONVERSION DP TO DTMF                       | BV0422 |
| 0 |                                                        | BV0423 |
| 0 |                                                        | BV0486 |
| 0 | DIAL TONE UPON TRUNK SEIZURE                           | BV0908 |
| 0 | DICTION ACCESS AND CONTROL (DTMF ONLY)                 | BV0504 |
| 0 | DIRECT INWARD DIALLING (DID)                           | BV0413 |
| 0 | DIRECT OUTWARD DIALLING (DOD)                          | BV0414 |
| 0 | DIRECTED CALL PARK                                     | BV1535 |
| 0 | DISTINCTIVE RINGING ENHANCEMENTS                       | AF2303 |
| 0 | EARTH-CALLING POST DIAL DELAY REDUCTION                | AE0401 |
| 0 | END TO END SIGNALLING VIA SPEED CALL                   | NC0001 |
| 0 | ENHANCED SERIAL CALLING                                | AD2068 |
| 0 | ESN - TONE DETECTION                                   | BV0787 |
| 0 | FLEXIBLE INTERCEPT                                     | BV0427 |
| 0 | FLEXIBLE STATION CONTROLLED CONFERENCE (500/2500 SETS) | BV0913 |
| 0 | GOC - 990 NXX CODE                                     | BC0810 |
| 0 | IBN ATTENDANT CONSOLE - DMODEM ROBUSTNESS              | AG1489 |

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|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | IBN CALL FORWARD VALIDATION                          | BR0549 |
| 0 | IBN CONSOLE INTERFACE (SEE V0432)                    | BZ0023 |
| 0 | IBN EXPANDED SPEED CALL LISTS                        | AC0265 |
| 0 | IBN EXPANSION - FTRQ FACILITY AND EXT BLOCKS         | AC0312 |
| 0 | IBN FEATURE ACTIVATION OM'S I                        | BC1753 |
| 0 | IBN LCC COMPATIBILITY WITH FRO LINE OPTION           | AF1936 |
| 0 | IBN LINE DATA (SEE V0412)                            | BZ0010 |
| 0 | IBN QUANTITY CONTROL (100 LINES)                     | BR0526 |
| 0 | IBN TRUNK DATA (SEE V0412)                           | BZ0011 |
| 0 | IBNRTE TABLE CAPACITY INCREASE                       | AF2012 |
| 0 | INCREASE IN NUMBER OF IBN CUSTOMER GROUPS            | BC0811 |
| 0 | INCREASE NUMBER OF EQUIVALENT DN APPEARANCES FOR IBN | BC1482 |
| 0 | INTERPOSITION CALLS AND TRANSFERS                    | BV0591 |
| 0 | LOCKOUT                                              | BV0448 |
| 0 | LOUD SPEAKER & RADIO PAGING ACCESS                   | BV0502 |
| 0 |                                                      | BV0503 |
| 0 | MAP DISPLAY FOR ATTENDANT OM                         | BV0838 |
| 0 | MEET-ME CONFERENCE                                   | BV0477 |
| 0 | MULTIPLE CONSOLE OPERATION                           | BV0435 |
| 0 | MULTIPLE LISTED DIRECTORY NUMBERS                    | BV0434 |
| 0 | NIGHT SERVICE TRUNK ANSWER FROM ANY                  | BV0445 |
| 0 | STATION                                              |        |
| 0 |                                                      | BV0505 |
| 0 | NIGHT SERVICE - FLEXIBLE                             | BV0688 |
| 0 | OFFHOOK QUEUING WITH NEW PROMPT TONE                 | BV1214 |
| 0 | OPERATIONAL MEASUREMENTS - IBN                       | BC0203 |
| 0 |                                                      | BV0460 |
| 0 |                                                      | BV0461 |
| 0 | OPTIONAL ANSWER SUPERVISION FROM ATTENDANT QUEUE     | AL0213 |
| 0 | OVERRIDE ACR FOR CFU                                 | AD2810 |
| 0 | PERMANENT HOLD (500/2500 SETS)                       | BV0944 |
| 0 | POSITION BUSY                                        | BV0560 |
| 0 | QUERY FUNCTIONAL STATION GROUPINGS                   | BR0795 |
| 0 | RING AGAIN                                           | BV0533 |
| 0 | RING AGAIN CANCELLATION TIMER                        | AD2851 |
| 0 | SECREC Y                                             | BV0449 |
| 0 | SERVICE ORDER SYSTEM                                 | BV0462 |
| 0 | SIMPLIFIED DIALING                                   | BV0509 |
| 0 | SPECIAL INTERCEPT THROUGH SERVICE ORDERS             | BR0461 |
| 0 | SPEED CALLING GROUP-LONG LIST                        | BV0459 |
| 0 | SPEED CALLING INDIVIDUAL-SHORT LIST                  | BV0458 |
| 0 | STATION TO STATION CALLING                           | BV0412 |
| 0 | STORING OF 24 DIALED DIGITS                          | BC1027 |
| 0 | STRAIGHTFORWARD OUTWARD COMPLETION                   | BV0432 |
| 0 | TGB/TAC ACCESS THRU SPECIAL KEY                      | BC0510 |
| 0 | THROUGH DIALLING                                     | BV0491 |
| 0 | TRUNK BUSY VERIFY TONE                               | BC1246 |

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|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | TWO-WAY SPLITTING                                 | BV0450 |
| 0 | UNIFORM CALL DISTRIBUTION FROM QUEUE              | BV0433 |
| 0 | UNIFORM NUMBERING PLAN CAPABILITY                 | BV0417 |
| 0 | VARIABLE LENGTH/SAME LEADING DIGIT(S) TRANSLATION | BR0740 |
| 0 | WILD CARD KEY                                     | BC0500 |
| 0 | 2-WAY DIGITAL FX TRUNK - BUSINESS SERVICES        | BR0369 |
| 0 | 2-WAY FX SERVICE WITH DCM TERMINATION             | BV0482 |
| 0 | 3-WAY CONFERENCE/TRANSFER                         | BV0454 |
| 0 | 3WC DIAL 0 FOR 608 CORD BOARD                     | BC1477 |
| 0 | 3WC/CXR TO 2500 SET CALL WAITING INTERACTIONS     | AL0664 |
| 0 | 6 PORT CONFERENCE CIRCUIT USE CONTROL             | BV1122 |

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0 NTXZ01AA01 STATUS RTM TARGET SUPERNODE  
0 ACD SUPPORT SOFTWARE 2 (EQ111)

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | ATTENDANT ANSWER TIME BY PRECEDENCE              | BV1932 |
| 0 | ATTENDANT CONSOLE END-TO-END SIGNALLING          | BR0791 |
| 0 | ATTENDANT DISPLAY OF QUEUED CALLS BY ICI KEY     | BV1920 |
| 0 | ATTENDANT TO UCD                                 | BC1937 |
| 0 | AUDIO INPUT ON INCOMING CALLS IN QUEUE           | BV0602 |
| 0 | AUDIO INTERLUDE                                  | BC0946 |
| 0 | DISTINCTIVE AND RING AGAIN RINGING - FREQUENCY   | BR0531 |
| 0 | RINGING                                          |        |
| 0 | DISTINCTIVE RINGING                              | BV0586 |
| 0 | DTMF OUTPULSING ON A LINE                        | BV1124 |
| 0 | EXECUTIVE RIGHT OF WAY                           | BV0597 |
| 0 | FLEXIBLE CONSOLE ALERTING.                       | BV1132 |
| 0 | GENERALIZED DISTINCTIVE RINGING                  | AD0011 |
| 0 | LAST NUMBER REDIAL (LNR)                         | BC1204 |
| 0 | OUTPULSING VERIFICATION USING DMIS               | BC0689 |
| 0 | SECOND AND THIRD DELAY ANNOUNCEMENTS.            | AD1128 |
| 0 | UCD QUEUE STATUS LAMP.                           | AD0236 |
| 0 | UNIFORM CALL DISTRIBUTION (TO 500/2500 TELEPHONE | BV0601 |
| 0 | SETS)                                            |        |
| 0 | VARIABLE TYPES OF OUTPULSING ON SAME CALL        | BV0971 |
| 0 | 3WC/CALL TRANSFER FOR UCD                        | AF1277 |

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0 NTXZ02AA01 STATUS RTM TARGET SUPERNODE  
0 ACD SUPPORT SOFTWARE 3 (EQ911)

|                                                       |              |
|-------------------------------------------------------|--------------|
| 0 'LCM CND SUPPORT'                                   | AG1109       |
| 0 AC DC RINGING                                       | BT0023       |
| 0 AE LTD INTERFACE                                    | BR0061       |
| 0 AE-21 INTERFACE                                     | BR0095       |
| 0 ALT DADDY & TIDY CLEANUP                            | BC0553       |
| 0 AMA: SEPARATION OF BILLING AND ROUTING FUNCTION.    | AF1439       |
| 0 ANALOG COIN FUNCTIONS ON LCM                        | BF0803       |
| 0 ANI (BELL STD) OUTPUTS IN RESPONSE TO WINK SIGNAL   | BR0453       |
| 0 ANI (1 & 2 PARTY)                                   | BT0050       |
| 0 AUTO RETEST OF ALT FAILURES                         | BC0829       |
| 0 AUTOMATIC LINE TESTING REWRITE                      | AG0156       |
| 0 AUTOMATIC LINE TESTING SPEEDUP                      | BR0511       |
| 0 BADGER 612 INTERFACE                                | BR0057       |
| 0 BRIDGED AND GROUNDED RINGERS ON SAME LINE           | BR0075       |
| 0 CALL FWD ASGNMT TO PBX MESS RATE LINE (CFW FOR PBM) | AL0499       |
| 0 CALLED PARTY RELEASED TIMING ENHANCEMENT            | AF0966       |
| 0 CALLING LINE IDENTIFICATION                         | BT0072       |
| 0 CHANGE LINE TREATMENT GROUP COMMAND                 | AG1285       |
| 0 CHARGE-A-CALL (COIN FREE DIALING)                   | BR0427       |
| 0 CLASS OF SERVICE TONES                              | BR0052       |
| 0 CLI - TRUNK TERMINATION                             | BR0320       |
| 0 COD OPTION ON OFFICE BASIS                          | BR0653       |
| 0 CODED RINGING(5 CODES)                              | BV0051       |
| 0 COIN CONTROL                                        | BR0152       |
| 0 COIN CONTROL                                        | THIRD WIRE   |
| 0 COIN CONTROL                                        | TIP AND RING |
| 0 COIN DISPOSAL SIGNAL POLARITY OPTION                | BC2135       |
| 0 COIN FEATURES - AT & T DTF                          | BR0437       |
| 0 COIN LINES (DTF)                                    | BT0044       |
| 0 DACS TRUNK (DP/MF) (A/D)                            | BT0035       |
| 0 DATA FACILITY FOR 3X09 MTA                          | BC0866       |
| 0 DENIED ORIGINATION - TWO OR FOUR PARTY ANI          | BR0436       |
| 0 DENIED SERVICE OPTIONS                              | BT0057       |
| 0 DETECTION OF OPEN LINE AT MDF                       | BR0460       |
| 0 DIAL TONE SPEED MEASUREMENT                         | BC0329       |
| 0 DIAL TONE SPEED TEST                                | BV0198       |
| 0 DIGITAL..ANALOGUE MF RECEIVER COMPATABILITY         | BR0129       |

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|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | DIGITONE RECEIVER                                    | BT0027 |
| 0 | DISTINCTIVE RINGING ON RING SIDE ONLY                | AG1973 |
| 0 | DN ATTRIBUTES SERVICE ORDER ENHANCEMENTS             | AG0923 |
| 0 | DN NETWORK ATTRIBUTES                                | AD0633 |
| 0 | DP RECEIVER                                          | BT0028 |
| 0 | DTSR ON A PER PM BASIS                               | AL0495 |
| 0 | EAS TRUNK (DP/MF) (A/D)                              | BT0034 |
| 0 | ENHANCED LINE ACCESS MEASUREMENTS                    | AG0649 |
| 0 | ENHANCED LINE ACCESS MEASUREMENTS - PART 2           | AG1318 |
| 0 | EXEC STORE EXPANSION                                 | BF0791 |
| 0 | EXPANDED INBAND SIGNALLING                           | BR0433 |
| 0 | EXPANSION OF LCD NUMBER TO 1000                      | AL1541 |
| 0 | E800 ON PX TRUNKS                                    | AF2565 |
| 0 | FAILURE FLAGS FROM LINE DIAGNOSTICS                  | BC0552 |
| 0 | FLASH IGNORE (PBX - 2 SEC DISC)                      | BV0019 |
| 0 | FLEXIBLE ANI ID=8,9 ASSIGNMENT                       | BR0501 |
| 0 | FRAUD PREVENTION                                     | BR0020 |
| 0 | FREE NUMBER TERMINATING                              | BR0094 |
| 0 |                                                      | BT0058 |
| 0 | FREQUENCY RINGING (DECIMONIC)                        | BR0028 |
| 0 | FREQUENCY RINGING (HARMONIC) 20HZ BASE               | BR0193 |
| 0 | FREQUENCY RINGING (SYNCHROMONIC 16)                  | BR0089 |
| 0 | FREQUENCY RINGING (SYNCHROMONIC 20)                  | BR0153 |
| 0 | FREQUENCY RINGING (20 HZ)                            | BR0030 |
| 0 | FULLY- & SEMI-SELECTIVE(SUPERIMPOSED) RINGING..U.S.. | BR0134 |
| 0 | FX LINES (LINE CARD TERMINATION)                     | BT0052 |
| 0 | GROUND START                                         | BT0025 |
| 0 | GUARANTEED DIAL TONE                                 | BF0490 |
| 0 | HARMONIC RINGING (FIVE FREQUENCIES)                  | BR0029 |
| 0 | HOTEL/MOTEL (RB & 3RD WIRE)                          | BT0061 |
| 0 | HUNTING                                              | BV0424 |
| 0 | HUNTING (MLH,DLH,DNH)(LIN/DIST/CIRC)                 | BT0042 |
| 0 | I-F TO S-L NO. 14 LTD                                | BR0122 |
| 0 | IMMEDIATE ANSWER REPORTING                           | BC1931 |
| 0 | IMR/INW READ RESET BY NNX                            | BR0491 |
| 0 | INBAND COIN CONTROL                                  | BT0059 |
| 0 | INC/OUT TTSTL LOOP AROUND                            | BT0342 |
| 0 | INC/OUT TTSTL SYNCHRONOUS                            | BT0341 |
| 0 | INDIVIDUAL FLAT RATE LINES                           | BT0020 |
| 0 | INDIVIDUAL MESSAGE RATE LINES                        | BT0021 |
| 0 | INFORMATION AND REPAIR ROUTED TO KEY SYSTEMS         | BR0114 |
| 0 | INITIAL COIN RETURN AND INITIAL COIN RETAIN OPTION   | BR0463 |
| 0 | INTERCEPT TRUNK (A/D)                                | BT0060 |
| 0 | INTERFACE WITH TERADYNE LOOP TEST                    | BR0148 |
| 0 | UNIT                                                 |        |
| 0 | INTERFACE WITH PULSAR II IMTS                        | BR0031 |
| 0 | INTERFACE WITH SARTS                                 | BR0073 |

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|---|-----------------------------------------------|--------|
| 0 | LCM - MEMORY RECOVERY                         | BF0411 |
| 0 | LCM - RINGING MAINTENANCE                     | BF0200 |
| 0 | LCM MAINTENANCE ENHANCEMENT                   | BF0287 |
| 0 | LCM RINGING/ANI/COIN                          | BF0197 |
| 0 | LINE CARD CODE EXPANSION                      | AL1608 |
| 0 | LINE CUT OFF RELAY OPERATION ON DISCONNECT    | BC0157 |
| 0 |                                               | BR0197 |
| 0 | LINE DATA BASE QUERIES                        | BR0229 |
| 0 |                                               | BV0196 |
| 0 | LINE STATUS IN JOURNAL FILE                   | BC0844 |
| 0 | LINE TREATMENT ON CALL DISCONNECT             | BR0060 |
| 0 | LM - TAKEOVER/TAKEBACK ENHANCEMENT            | BF1027 |
| 0 | LM ENHANCEMENTS TO SUPPORT NET/PM SPEECH LINK | BF0498 |
| 0 | DIAGNOSTICS                                   |        |
| 0 | LM/RLM WARM TAKEBACK                          | BC0805 |
| 0 | LM/RLM WARM TAKEOVER                          | BC0807 |
| 0 | LOOP AROUND TEST - ATT MODE                   | BR0282 |
| 0 | LOOP START                                    | BT0024 |
| 0 | LTG CAPACITY INCREASE                         | AF1756 |
| 0 | LTP AND ASSOCIATED LEVEL                      | BT0095 |
| 0 | LTP CIBINCOM REWRITE                          | AG0358 |
| 0 | LTSL - OPEN CIRCUIT (I/C)                     | BT0084 |
| 0 | LTSTL - SHORT CIRCUIT (I/C)                   | BT0083 |
| 0 | LTSTL - 1000 (BAL) (O/G & I/C)                | BT0087 |
| 0 | LTSTL - 1111 (NETLOSS) (I/C)                  | BT0088 |
| 0 | LTSTL - 1120 (NONSYN) (I/C)                   | BT0085 |
| 0 | LTSTL - 1181 (SYNC) (I/C)                     | BT0090 |
| 0 | MANUAL LINES                                  | BT0022 |
| 0 | MTA GATING FACILITY                           | BC0867 |
| 0 | MULTIPARTY FLAT RATE                          | BV0045 |
| 0 | MULTIWINK COIN CONTROL                        | BR0036 |
| 0 | NEW LEN NUMBERING CLEANUP                     | BC0749 |
| 0 | NO REVERTIVE RING                             | BR0063 |
| 0 | NO.14 LOCAL TEST DESK                         | BT0039 |
| 0 | NPE - DIGIT COLLECTION DATA DOWN LOADING      | BC0731 |
| 0 | NPE - OMS FOR LCM                             | BV1109 |
| 0 | N11 SERVICE CODE CALLS TERMINATING TO LINES   | BR0154 |
| 0 | O/G TTSTL SYNCHRONOUS                         | BT0150 |
| 0 | OFFICE LINE TOTALS/QNCOS                      | AD0943 |
| 0 | OM-LOCAL (PEGS & USAGE)                       | BT0347 |
| 0 | OPERATOR VERIFICATION TRUNK (DP/MF)(A/D)      | BT0064 |
| 0 | PBX FLAT RATE (DID)                           | BT0097 |
| 0 | PBX FLAT RATE NON DID                         | BT0049 |
| 0 | PBX MESSAGE RATE                              | BT0054 |
| 0 | PENDING ORDER FILE ON DISK                    | BR0219 |
| 0 | PER CALL LOOP TEST ON GROUND                  | BR0450 |
| 0 | PERMANENT SIGNAL TIME OUT - OPEN INTERVAL     | BR0670 |

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|---|-----------------------------------------------------|--------|
| 0 | PORTA SYSTEM LINE TEST INTERFACE                    | BR0256 |
| 0 | PREPAY COIN FIRST                                   | BR0242 |
| 0 | PREPAY COIN FIRST COIN LINE                         | BV0087 |
| 0 | PS/PD TREATMENT                                     | BT0069 |
| 0 | PURPLE BOX WIRE TAP                                 | BT0045 |
| 0 | RECEIVER OFF HOOK TRUNK                             | BT0068 |
| 0 | REVERTIVE CALL PEG COUNT REGISTER                   | BR0269 |
| 0 | REVERTIVE CALLING - RINGING TO BOTH PARTIES ON 4    | BR0606 |
| 0 | PARTY ON                                            |        |
| 0 | REVERTIVE RINGING                                   | BT0047 |
| 0 | REVERTIVE RINGING FOR PARTIES ON DIFFERENT SIDES    | BF0556 |
| 0 | RING DOWN TRUNK FOR 911 SERVICE                     | BC0123 |
| 0 | SEMI-POST PAY COIN LINE                             | BV0088 |
| 0 | SO - SYSTEM RESPONSE TO QDN                         | BR0686 |
| 0 | SPLIT LINE-OPTION PROMPTING FROM COMPATIBILITY      | BC1671 |
| 0 | CHECKING                                            |        |
| 0 | STATION RINGER                                      | BT0063 |
| 0 | STATION RINGER TEST - 3 DIGIT ACCESS CODE           | BR0623 |
| 0 | STATION RINGER TEST NUMBER FOR DMS-100              | BR0283 |
| 0 | SUPERIMPOSED RINGING                                | BV0071 |
| 0 | TASK NEEDS A TITLE                                  | AF2668 |
| 0 | TEST ACCESS OF INDIVIDUAL LINES IN A HUNT GROUP     | BR0585 |
| 0 | TEST ASSIGNED/UNASSIGNED LEN (HOST & RLM)           | BR0493 |
| 0 | TEST DESK ROBUSTNESS.                               | AF2599 |
| 0 | TEST HEADS MULTIPLE BADGER                          | BR0128 |
| 0 | TEST LINES: LOOP AROUND                             | BR0281 |
| 0 | THRESHOLD ON PERMANENT SIGNALS(LINE CABLE FAILURES) | BR0235 |
| 0 |                                                     | BV0076 |
| 0 | TIP AND RING COIN CONTROL                           | BR0236 |
| 0 | TOLL DIVERSION ENHANCEMENTS                         | BR0519 |
| 0 | TOLL DIVERT                                         | BT0056 |
| 0 | TOUCH TONE TESTING - EXTERNAL FACILITIES            | BV0034 |
| 0 | TRANSLATION AND SCREENING                           | BT0030 |
| 0 | TTP SUPPORT FOR 3X09 MTA                            | BC0890 |
| 0 | TWO PARTY ANI                                       | BR0102 |
| 0 | TWO PARTY FLAT RATE                                 | BT0046 |
| 0 | TYPE B LINE CARD MAINTENANCE                        | BC1155 |
| 0 | UTILITIES FOR 3X09 MTA                              | BC0884 |
| 0 | VOICE NUMBER VERIFICATION TRUNK                     | BT0062 |
| 0 | 0+ DA AND 0+ 800 PERMISSIVE DIALING                 | BR0751 |
| 0 | 010 SERVICE CODE                                    | BR0497 |
| 0 | 200 MS DISCONNECT TIMING                            | AG1854 |
| 0 | 3RD WIRE COIN CONTROL                               | BR0234 |
| 0 | 3X09BA MTA SWITCH                                   | BC1835 |
| 0 | 411 RECORDING ON MAGTAPE                            | BR0181 |
| 0 | 6X17AA LINE CARD FACILITY MAINTENANCE               | BV0948 |



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0 958 990 660 SERVICE CODES - N.Y. TELAG0487  
BR0442

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0 NTXZ03AA01 STATUS RTM TARGET SUPERNODE  
0 ACD SUPPORT SOFTWARE 4 (EQ912)

|                                                    |        |
|----------------------------------------------------|--------|
| 0 (NSG) DMS250 T104 CALL PROCESSING                | BC0903 |
| 0 CALL HOLD ON MALICIOUS CALL TRACE - POTS LINES   | BR0032 |
| 0 CALL ROUTED TO RECORDING AND THEN OPERATOR (411) | BR0091 |
| 0 CALLING LINE IDENTIFICATION                      | BT0072 |
| 0 COINLESS PAY PHONE WITH INFO DIGIT 7             | BR0284 |
| 0 COMBINED MF TRUNK GROUP (1+ 0+ 0- CN NCN)        | BR0220 |
| 0 COMBINED VERIFICATION AND TOLL COMPLETING TRUNK  | BR0144 |
| 0 GROUP                                            |        |
| 0 DDD THROUGH TOPS ANI 4 PARTY                     | BR0169 |
| 0 DMS100 TOPS INTERFACE                            | BR0041 |
| 0 ENHANCED ESSENTIAL SERVICE PROTECTION            | AG1261 |
| 0 ESSENTIAL SERVICE PROTECTION (ESP)               | BR0538 |
| 0 INC TTSTL 104                                    | BT0144 |
| 0 INC/OUT TTSTL 104                                | BT0340 |
| 0 LINE LOAD CONTROL                                | BV0031 |
| 0 LINE LOAD CONTROL (LLC)                          | BR0238 |
| 0 LOCAL TANDEM                                     | BT0031 |
| 0 LTSTL - 104 (LOC) (O/G)                          | BT0093 |
| 0 MALICIOUS CALL TRACE AND HOLD -REA STANDARD      | BR0115 |
| 0 MASS CALLING                                     | BC0235 |
| 0                                                  | BR0228 |
| 0                                                  | BV0080 |
| 0 NAILED UP CONNECTIONS                            | BR0259 |
| 0 O/G TTSTL 104                                    | BT0149 |
| 0 OM-COMMON (MANAGEMENT)                           | BT0345 |
| 0 OVERLAP OUTPULSING LINE TO TRUNK                 | BC0241 |
| 0                                                  | BR0068 |
| 0 PEG COUNT ON TANDEM CALLS                        | BR0270 |
| 0 ROUTE TRANSFER                                   | BR0240 |
| 0                                                  | BV0033 |
| 0 SLEEVE LEAD CONTROL ORIGINATING AND              | BR0264 |
| 0 TERMINATING                                      |        |
| 0 SLEEVE LEADS FOR PUBLIC FIRE REPORTING SYSTEM    | BR0044 |
| 0 TANDEM SWITCHING                                 | BV0419 |

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|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | TANDEM SWITCHING - NO DIGITS INCOMING              | BR0164 |
| 0 | TANDEM SWITCHING- NO DIGITS INCOMING (2WAY TRUNKS) | BR0191 |
| 0 | TOLL NETWORK PROTECTION                            | BV0030 |
| 0 | TSPS INTERFACE                                     | BR0111 |
| 0 | TWO WAY OPERATOR OFFICE TRUNKS(BELL AND AMR-5)     | BC0384 |
| 0 |                                                    | BR0344 |
| 0 | T104 AGENCY REWORK TO TTLXMS                       | BC0048 |
| 0 | 0+ SERVICE TO TOPS                                 | BR0243 |
| 0 | 0+ SERVICE TO TOPS (CLG DP)                        | BV0272 |
| 0 | 0+ SERVICE TO TOPS (CLG MF)                        | BV0050 |
| 0 | 1+611 REPAIR TRANSLATED TO 7 DIGIT NUMBER AND      | BR0071 |
| 0 | OUTPULS                                            |        |
| 0 | 11X AND 410X SERVICE CODES                         | BR0251 |
| 0 | 4,5 AND 6 DIGIT LOCAL DIALLING                     | BR0252 |

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0 -----0 NTXZ07AA01 STATUS LTD TARGET SUPERNODE  
0 JAPAN ACD APPLICATION BASE

0 ACD FOR MCMS AG2162

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0 -----0 NTXZ09AA02 STATUS RTM TARGET SUPERNODE  
0 JAPAN TANDEM TRUNK SIGNALLING

0 SMS PHASE 1 FOLDBACK AG2198

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0 NTXZ10AA01 STATUS RTM TARGET SUPERNODE  
0 JAPANESE TTC CARRIER(UPG.BY  
0 NTXZ10AA)

0 JAPANESE SR SIGNALLING FOR 4W ANALOG AND TTC 2MBPS AG2199  
0 TRUNKS

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0 NTXZ11AA01 STATUS RTM TARGET SUPERNODE  
0 JAPANESE TONES

0 SMS PHASE 1 FOLDBACK AG2198

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0 NTX000AA19 STATUS RTM  
0 BILGE

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | FEATURE PACKAGE IN SOS                            | BC0988 |
| 0 | GENERALIZED MAP CAPABILITY                        | BC1302 |
| 0 | LEVEL 1 CAPACITY IMPROVEMENT AND MEMORY REDUCTION | BC0447 |
| 0 | MAP LEVEL FOR NOP                                 | BC1747 |
| 0 | MTCBASE PERFORMANCE ENHANCEMENTS                  | AG1239 |
| 0 | OPTIMIZE MTCCLASS TASKS                           | BC2300 |
| 0 | RELOAD RESTART IN RESTART PROGRESSION             | AL1274 |
| 0 | SANITY CHECK OUT                                  | BC0786 |
| 0 | SUPER CC SYNC AND LDMATE                          | AG0089 |
| 0 | 2.75 MW PROGRAM STORE                             | BC1321 |

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0 NTX001AA29 STATUS RTM  
0 COMMON BASIC

|                                                        |        |
|--------------------------------------------------------|--------|
| 0 (NSG) FAST ROUTINE TO GET TIME OF DAY IN CLOCKI      | BC0942 |
| 0 (NSG) RADR WITH DTMF                                 | BC0944 |
| 0 (NSG) ROUTE LIST CHAINING                            | BC0458 |
| 0 AE LTD INTERFACE                                     | BR0061 |
| 0 ALARMING ON DCM/RLM LINKS                            | BC0724 |
| 0 ALARMS                                               | BT0043 |
| 0 ALARMS - (LM + LINES)                                | BV0023 |
| 0 ALLOW CHANGES TO OFFICE CONFIGURATION TABLE          | BC0316 |
| 0 ALM - DEAD OFFICE (HOST)                             | BT0249 |
| 0 ALM - EXTERNAL                                       | BT0247 |
| 0 ALM - INTERNAL                                       | BT0246 |
| 0 AMA PRESERVATION OVER PERIPHERAL WARM SWACT          | BC1717 |
| 0 AMA REAL TIME ENHANCEMENTS (AT&T FORMAT)             | BC0985 |
| 0 AMBIGUOUS CODE (NPA USED AS NNX) WITH 1+ PERMISSIVE  | BC0470 |
| 0 DIALLING                                             |        |
| 0 ANNOUNCEMENTS                                        | BT0038 |
| 0 AUTO-APPLY ENHANCEMENTS                              | AF2816 |
| 0 AUTOMATIC BUSY OUT OF TRUNKS UPON INTEGRITY CHECK    | BR0588 |
| 0 FAILURE                                              |        |
| 0 AUTOMATIC DIRP DEATH RECOVERY                        | AF2705 |
| 0 AUTOMATIC INTERCEPT SERVICE (OUTPULSED CALLED        | BR0070 |
| 0 NUMBER)                                              |        |
| 0 BABBLING IDIOT ENHANCEMENTS                          | AL0047 |
| 0 BASIC OPERATIONAL MEASUREMENT-ANN.GRP USAGE PER CALL | BR0307 |
| 0 BASIS                                                |        |
| 0 BASIC OPERATIONAL MEASUREMENT-REVISED OM OUTPUT      | BR0157 |
| 0 FORMAT                                               |        |
| 0 BCSMON - ENHANCED MONITORING CAPABILITIES            | AG1927 |
| 0 BCSMON ENHANCEMENTS                                  | AG1249 |
| 0 BELL (U.S.) STANDARD ANNOUNCEMENTS VIA PROM          | BR0566 |
| 0 BERMUDA SPECIAL SERVICE CODES                        | BR0457 |
| 0 CALL PROCESSING ROBUSTNESS                           | BC1517 |
| 0 CALL TIMING OFFICE PARAMETER CLEANUP                 | BC1108 |
| 0 CAPACITY ENHANCEMENT: 40 MHZ CPU                     | BC1518 |
| 0 CARRIER ENHANCEMENTS                                 | BC1075 |
| 0 CARRIER MAINTENANCE ON MTCMAIN                       | BC2016 |
| 0 CC BOOT LOADER FIRMWARE ENHANCEMENT                  | BF0568 |
| 0 CC SUPPORT FOR DTU BUSY, RTS AND TEST                | AG0274 |
| 0 CC SUPPORT FOR DTU DOWNLOADING                       | AG0275 |
| 0 CC WARM SWACT ENHANCEMENTS                           | AJ0194 |
| 0 CC WARM SWACT MAN MACHINE INTERFACE ENHANCEMENTS     | AG1869 |
| 0 CC WARM SWACT MMI ENHANCEMENTS - PHASE II            | AG2277 |

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|---|------------------------------------------------------|--------|
| 0 | CC WARM SWACT MODULE CHECK PROGRAM                   | AG2255 |
| 0 | CC WARM SWACT RESTART OUTAGE REDUCTION - PHASE II    | AG2276 |
| 0 | CIRCUIT LOCATE UNIFORM TREATMENT                     | BR0247 |
| 0 | CLLI ENHANCEMENTS - BCS APPL SPEEDUP                 | BC1490 |
| 0 | CLLI TABLE EXPANSION TO 8K                           | AD2796 |
| 0 | CLOSE LOGS TO SCCS AFTER RESTARTS                    | AL0152 |
| 0 | CONFERENCE CIRCUIT(3/6 PORT) DIAGNOSTIC ENHANCEMENTS | AF1237 |
| 0 | CONF6PR AS 2 CONF3PR                                 | BC0982 |
| 0 | CORE SWACT EXEC OPTIMIZATION - PHASE I               | AG2150 |
| 0 | CORE SWACT RESTART OUTAGE REDUCTION - PHASE I        | AG2149 |
| 0 | COST REDUCED NETWORK                                 | BC0246 |
| 0 | CP LONG MESSAGING IMPLEMENTATION I                   | AG1818 |
| 0 | CPU DIAGNOSTIC IMPROVEMENTS                          | AL0043 |
| 0 | CRITICAL MESSAGE PRIORITIZATION                      | BR0536 |
| 0 | DATA RECORDING AND RECALL OPERATIONAL                | BC0280 |
| 0 | MEASUREMENTS                                         |        |
| 0 |                                                      | BC0421 |
| 0 | DEAD SYSTEM ALARM VERSION 2                          | BV0006 |
| 0 | DECOUPLE CC HARDWARE AND SOFTWARE SYSTEM             | AG0919 |
| 0 | INITIALIZATION I                                     |        |
| 0 | DEFAULT DATA                                         | BC1036 |
| 0 | DETECTION AND CORRECTION OF SLOW CP BABBLERS         | AG1082 |
| 0 | DEVICE INDEPENDENT SUPPORT FOR APPLICATION DATA      | AF0209 |
| 0 | TRANSMISSION                                         |        |
| 0 | DIAL-UP SERVICE ANALYSIS                             | BR0126 |
| 0 | DIALED LOOPBACKS ON TRUNKS                           | AC0285 |
| 0 | DIGITAL CARRIER MODULE FOR SMALL REMOTES (DCM-RR)    | BR0265 |
| 0 | DIGITAL RECORDED ANNOUNCEMENT                        | BC0325 |
| 0 |                                                      | BR0303 |
| 0 | DIRP CI ROBUSTNESS                                   | AF0149 |
| 0 | DIRP DISK ERASE FILE SECURITY ENHANCEMENT            | BC1719 |
| 0 | DIRP REALTIME ENHANCEMENTS                           | AF0150 |
| 0 | DIRP RECORDING SPACE USAGE ENHANCEMENTS              | AF1461 |
| 0 | DIRP SECURITY ENHANCEMENTS                           | BR0818 |
| 0 | DIRP SPACE ROTATION                                  | AF1780 |
| 0 | DMO COMMAND EDITING                                  | BV0073 |
| 0 | DMO COMMAND SCREENING                                | BV0018 |
| 0 | DRA RAM LOSS INDICATION                              | BR0467 |
| 0 | DS-1 CARD MAINTENANCE ENHANCEMENT                    | BF0383 |
| 0 | DTC - DP DIGIT RECEPTION/OUTPUTING                   | BF0170 |
| 0 | DTC MF OUTPUTING PRIMITIVES                          | BF0227 |
| 0 | DTC REVERTIVE PULSING FIRMWARE                       | BF0201 |
| 0 | DTMF OUTPUTING ON DTCS WITHOUT SENDERS               | BC1295 |
| 0 | DYNAMIC PM RECONFIGURATION                           | AG0696 |
| 0 | ECCB IMPROVEMENTS                                    | AL0195 |
| 0 | ECHO SUPPRESSOR CONTROL ANALOG                       | BV0248 |
| 0 | ELIMINATION OF OLD TABLE CONTROL PHASE I             | AG2108 |

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|---|---------------------------------------------------------|--------|
| 0 | ENABLE GAIN ON CLSI NETWORK                             | BC1729 |
| 0 | ENHANCED AMADUMP CAPABILITY                             | AF0916 |
| 0 | ENHANCED DIRP FILE CLEANUP                              | BC1384 |
| 0 | ENHANCED LCM OVERLOAD CONTROLS                          | AL0049 |
| 0 | ENHANCED PRIORITY TERMINAL                              | BC1273 |
| 0 | ENHANCED REAL TIME INDICATOR                            | BC0672 |
| 0 | ENHANCED REORDER TREATMENT                              | BR0710 |
| 0 | ENHANCED XPM/LCM ROBUSTNESS                             | BC1441 |
| 0 | EXTEND REROUTE TABLE TO 1023 ENTRIES                    | BR0685 |
| 0 | FILE SYSTEM                                             | BT0005 |
| 0 | FIXED NODE NO. INTO H/W ASSIGNMENT TABLES               | BR0260 |
| 0 | FIXED TRUNK GROUP NUMBERING                             | BC1711 |
| 0 | FIXED TRUNK GROUP NUMBERING - SMDR                      | AC0308 |
| 0 | FIXED TRUNK GROUP NUMBERING FOR THE OM SYSTEM           | AG0568 |
| 0 | FORCED SEQUENCE APPLICATION                             | AF2531 |
| 0 | FORMAT OM DIRP OUTPUT                                   | AG0239 |
| 0 | FREEZEONREINIT PROCEDURE                                | BR0715 |
| 0 | H/W-S/W INITIALIZATION COORDINATION - II                | AJ0191 |
| 0 | HARD CODED OM NAMES                                     | BR0314 |
| 0 | HIGH-WATER-MARK OMS FOR CP, EXT, FTRQ                   | AG0361 |
| 0 | HNPA ROUTE LIST CONNECTIVITY                            | BC0622 |
| 0 | HX IMMUNITY REGIONS FOR CI PROCESSES                    | AL0972 |
| 0 | I/F TO S-C ONI TURRET VISUAL INDICATORS.                | BR0125 |
| 0 | I/F TO S-C TSC SCAMA ..ONI/ANIF..                       | BR0124 |
| 0 | IDENTIFICATION OF ALARMS           OUTPULSE ANI DIGIT 8 | BR0066 |
| 0 | IDENTIFICATION OF INTERCEPT   OUTPULSE ANI DIGIT 9      | BC0248 |
| 0 | IMAGE TEST ENHANCEMENTS                                 | AG0336 |
| 0 | IMPROVE MEMORY PARITY DETECTION                         | AG1922 |
| 0 | IMPROVE SWITCH ROBUSTNESS AGAINST RAM ERRORS            | AL0077 |
| 0 | IMPROVED AMA TIMING COMPENSATION                        | BC1403 |
| 0 | INC SWBD TRUNK (V6)                                     | BT0350 |
| 0 | INC TTSTL 100                                           | BT0140 |
| 0 | INC TTSTL 101                                           | BT0141 |
| 0 | INC TTSTL 102                                           | BT0142 |
| 0 | INC TTSTL 103                                           | BT0143 |
| 0 | INC. TRUNK PULSING CONTROL - DELAY DIAL                 | BT0158 |
| 0 | INC. TRUNK PULSING CONTROL - IMMEDIATE DIAL             | BT0156 |
| 0 | INC. TRUNK PULSING CONTROL - WINK START                 | BT0157 |
| 0 | INC. TRUNK SIGNALLING - EM                              | BT0153 |
| 0 | INC. TRUNK SIGNALLING - RB                              | BT0152 |
| 0 | INC. TRUNK SIGNALLING - SF                              | BT0154 |
| 0 | INC. TRUNK SUPERVISION - HIT                            | BT0160 |
| 0 | INC. TRUNK SUPERVISION - INC.DISCONNECT                 | BT0161 |
| 0 | INC. TRUNK SUPERVISION - RING FORWARD                   | BT0162 |
| 0 | INC. TRUNK SUPERVISION -REVERSE MAKE BUSY               | BT0163 |
| 0 | INC/OUT EM/RB MF/DP                                     | BT0331 |
| 0 | INC/OUT RB/RB MF/DP                                     | BT0330 |

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|---|------------------------------------------------|-----------------------|
| 0 | INC/OUT RB/SF MF/DP                            | BT0328                |
| 0 | INC/OUT SF/RB MF/DP                            | BT0329                |
| 0 | INC/OUT TTSTL LOOP AROUND                      | BT0342                |
| 0 | INC/OUT TTSTL 100                              | BT0336                |
| 0 | INC/OUT TTSTL 101                              | BT0337                |
| 0 | INC/OUT TTSTL 102                              | BT0338                |
| 0 | INC/OUT TTSTL 103                              | BT0339                |
| 0 | INCOMING CAMA                                  | BT0300                |
| 0 | INCOMING MESSAGE OVERLOAD HANDLING FOR LINES   | AG0053                |
| 0 | INCOMING TRUNK FROM 3CL SWITCHBOARD (2X86)     | BR0046                |
| 0 | INCREASE THE NUMBER OF FILE SYSTEM DEVICES     | BC1521                |
| 0 | INCREASE THE NUMBER OF IO NODE TYPES           | BC2311                |
| 0 | INPUT COMMAND SCREENING                        | BV0040                |
| 0 | INPUT COMMAND SCREENING                        | AUTOMATIC LOG ON      |
| 0 | INPUT COMMAND SCREENING                        | I/O PORT RESTRICTIONS |
| 0 | INTERFACE TO                                   | CO-LOCATED NE/AE      |
| 0 | SWITCHBRD I/C                                  | BC0125                |
| 0 |                                                | BC0127                |
| 0 |                                                | BR0147                |
| 0 | INTERFACE TO                                   | CO-LOCATED NE/AE      |
| 0 | SWITCHBRD O/G                                  | BC0124                |
| 0 |                                                | BR0146                |
| 0 | INTERFACE TO                                   | SC XY FOR ANI/CAMA    |
| 0 | INTERFACE TO STROMBERG-CARLSON TURRET FOR ONI  | BR0113                |
| 0 | K&S DSM INTEGRATION                            | BR0010                |
| 0 | KP & ST ACCEPTANCE ON AN ONI CALL              | BC1169                |
| 0 | LCM DRAWER MAINTENANCE                         | BR0599                |
| 0 | LCM DRAWER MAINTENANCE - PHASE II              | BF0957                |
| 0 | LCM OVERLOAD CONTROL                           | AL0132                |
| 0 | LGC BACKWARD BCS COMPATABILITY                 | BF0956                |
| 0 | LGC MP RT IMPROVEMENTS - PHASE 2               | BF0374                |
| 0 | LGC 500/2500 CP                                | BF0389                |
| 0 | LGC 500/2500 ENHANCED CP                       | BF0366                |
| 0 | LICENCEE FOLDBACK                              | BF0369                |
| 0 | LINE & DN INVENTORY                            | BC1052                |
| 0 | LM TAKEOVER/TAKEBACK DIAGNOSTIC                | BT0066                |
| 0 | LMD OM GROUP OPTIMIZATIONS                     | BC1163                |
| 0 | LOAD ROUTE SELECTION ENHANCEMENTS.             | AG0637                |
| 0 | LOCAL AUDIBLE ALARM RETIREMENT                 | NC0130                |
| 0 | LOG SYSTEM INTERNAL CONTROL CLEANUP            | BR0692                |
| 0 | LOGICAL REFORMATING FOR OTC                    | BC2312                |
| 0 | LOOP MONITOR ELIMINATION ON 2X83.              | AG2323                |
| 0 | LOST MESSAGES REPORTING ENHANCEMENTS           | BC0981                |
| 0 | LOW VOLTAGE ALARM LOG MESSAGE                  | AL1052                |
| 0 | LTC - BCS CC APPLICATION SUPPORT (C0863,C0864) | BR0699                |
| 0 | LTC - SPEECH PATH DIAGNOSTIC                   | BF0285                |
| 0 | LTC - SWACT PERIPHERAL ENHANCEMENT             | BF0218                |
| 0 |                                                | BF0364                |

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|---------------------------------------------------|--------|
| 0 LTC DIGIT COLLECTION ENHANCEMENT                | BF0487 |
| 0 LTC NETWORK LINKS DIAGNOSTIC                    | BF0558 |
| 0 LTC SWACT - UNCONTROLLED                        | BF0363 |
| 0 LTP AND ASSOCIATED LEVEL                        | BT0095 |
| 0 LTSTL - 102 (LOC) (O/G)                         | BT0091 |
| 0 LTSTL - 103 (LOC) (O/G)                         | BT0092 |
| 0 MACHINE-INDEPENDANT SOS - PHASE 1               | BC1017 |
| 0 MAP SOFTWARE ENHANCEMENT                        | BC0668 |
| 0 MAP SUPPORT FOR CYBERNEX TERMINAL               | BR0202 |
| 0 MAP SUPPORT FOR VT100 TERMINALS                 | BR0162 |
| 0 MAP SUPPORT TOOLS                               | BC1392 |
| 0 MATCH COMMAND IMPROVEMENT                       | AL0045 |
| 0 MATCHING LINE DRAWER STATUS OVER CC WARM SWACT  | AG1824 |
| 0 MEMORY ADMINISTRATION - NEW OM                  | AF1452 |
| 0 MINOR POF ENHANCEMENT                           | BC1051 |
| 0 MMI RESPONSE MEASUREMENTS                       | BC2302 |
| 0 MODIFY TM TONE DIAGNOSTICS FOR NT2X59BA         | BC1064 |
| 0 MONITOR TALK                                    | BC0091 |
| 0 MPC ROM MAINTENANCE AND CC LOADER.              | BF0505 |
| 0 MTCBASE PERFORMANCE TOOLS                       | AG1296 |
| 0 MTCE - CORE                                     | BT0225 |
| 0 MTCE - TRUNK DIAGNOSTICS                        | BT0228 |
| 0 MTCE - TTP                                      | BT0229 |
| 0 MTCE UPDATES FOR CR TM                          | BC0628 |
| 0 NETWORK MANAGEMENT (PHI)                        | BT0251 |
| 0 NEW CARD AGENCY EXEC FOR REMOTE MAKE BUSY       | BC1546 |
| 0 NEW NETWORK                                     | BR0302 |
| 0 NEW OUTGOING IDLE SUPERVISION FOR TRUNKS        | BC0820 |
| 0 NO-CALL-PROCESSING ALARM                        | BC2246 |
| 0 NODE TYPE EXTENSION FOR NEW PERIPHERALS         | AL0130 |
| 0 NPE-REWORK OF PM MAP DISPLAYS                   | BC0485 |
| 0 NT-40 CMC RTS IMPROVEMENTS (DIAGNOSTICS)        | AG1925 |
| 0 NT-40 MISMATCH HANDLER REFINEMENTS              | AG1924 |
| 0 O/G MESSAGE FLOW CONTROL - FOLLOW-UP            | AG1262 |
| 0 O/G TRUNK PULSING CONTROL - DELAY DIAL          | BT0172 |
| 0 O/G TRUNK PULSING CONTROL - IMMEDIATE DIAL      | BT0170 |
| 0 O/G TRUNK PULSING CONTROL - WINK START          | BT0171 |
| 0 O/G TRUNK PULSING CONTROL STOP-GO OPERATION     | BT0174 |
| 0 O/G TRUNK PULSING CONTROL VAR.INTERDIGITAL TIME | BT0175 |
| 0 O/G TRUNK SIGNALLING - EM                       | BT0167 |
| 0 O/G TRUNK SIGNALLING - RB                       | BT0166 |
| 0 O/G TRUNK SIGNALLING - SF                       | BT0168 |
| 0 O/G TRUNK SUPERVISION - REVERSE MB              | BT0178 |
| 0 O/G TRUNK SUPERVISION - RING FORWARD            | BT0179 |
| 0 O/G TTSTL 100                                   | BT0145 |
| 0 O/G TTSTL 101                                   | BT0146 |
| 0 O/G TTSTL 102                                   | BT0147 |



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|---|-----------------------------------------------|--------|
| 0 | O/G TTSTL 103                                 | BT0148 |
| 0 | OBSOLETE PACKAGING                            | AF2532 |
| 0 | OFFICE ID IN TTY OUTPUT HEADER LABEL          | BR0365 |
| 0 | OFFICE ROUTES CAPACITY INCREASE               | AF2013 |
| 0 | OM - ACT. CALL DISP OFZ                       | BR0666 |
| 0 | OM - MANAGEMENT                               | BT0243 |
| 0 | OM - OUTSIDE PLANT MEASUREMENTS - PHASE I     | BC1241 |
| 0 | OM - SBU & MBU ON PER LINE PM BASIS           | BR0667 |
| 0 | OM CALL PROCESSING RESTART PEGS (XREF 0382)   | BC0506 |
| 0 | OM OUTPUT ROBUSTNESS                          | AG0355 |
| 0 | OM PRINT - SUPPRESSION OF ZERO DATA           | BC0938 |
| 0 | OM SELECTIVE HOLDING REGISTER CLASS           | BC0383 |
| 0 | OM TAPE - SUPPRESSION OF ZERO DATA            | BC0937 |
| 0 | OM XFER SPEEDUP                               | BC1735 |
| 0 | OM-COMMON (PEGs & USAGE)                      | BT0346 |
| 0 | OM'S IN ERLANGS                               | BC2060 |
| 0 | OMPRT OUTPUT BUFFERING                        | AL0205 |
| 0 | ONI TO NORTH ELECTRIC TSD                     | BR0005 |
| 0 | OPERATIONAL MEASUREMENTS (BASIC TOLL)         | BT0348 |
| 0 | OUTAGE FOOTPRINT - PHASE II                   | AL0044 |
| 0 | OUTAGE FOOTPRINT FACILITY                     | AL0046 |
| 0 | OUTGOING TRUNK SELECTION                      | BT0324 |
| 0 | OUTGOING TRUNK TO 3CL SWITCHBOARD (2X85)      | BR0045 |
| 0 | OUTPUT ROUTING AND REPORTING                  | BV0001 |
| 0 | PARMCALC - VERIFICATION OF OFFICE PARMS       | AG0821 |
| 0 | PARMCALC - VERIFY OFFICE PARAMETERS (PHASE 2) | AG0724 |
| 0 | PASSWORD COMMAND (SHOWPW)                     | BR0632 |
| 0 | PATCH DOWNLOADING                             | BC1823 |
| 0 | PER CALL CAPACITY ENHANCEMENT                 | BV1139 |
| 0 | PER CALL TESTING (TOLL)                       | BT0242 |
| 0 | PERIPHERAL STATUS CHECK REPORT BEFORE SWACT   | BC1501 |
| 0 | PM AUTOLOADING - PHASE I                      | BC0806 |
| 0 | PM AUTOLOADING - PHASE II                     | AL0131 |
| 0 | PM EXEC TABLE CONTROL RESTRICTIONS            | BC1821 |
| 0 | PM MAINTENANCE ENHANCEMENTS                   | BC1433 |
| 0 | PM MAP ENHANCEMENTS                           | AL0480 |
| 0 | PM TO FACILITY MAINTENANCE IMPROVEMENTS       | BC1422 |
| 0 | POLLING AMA DATA VIA DATAPAC - MANUAL         | BC0083 |
| 0 |                                               | BC0113 |
| 0 | POLLING FOR OM DATA(UDC INTERFACE)            | BR0141 |
| 0 | PRIORITY MAP TERMINAL                         | BC0667 |
| 0 | PROTECTION OF UNEXPIRED TAPES                 | BR0817 |
| 0 | PROVIDE CC WARM SWACT RESIDENCY IN ALL LOADS  | AG1868 |
| 0 | PROVIDE OPTIONALITY HOOKS ON DCMS             | BC1090 |
| 0 | PROVISION OF 1024 ROUTE REF INDICES IN ROUTE  | BR0325 |
| 0 | REF.TABLE                                     |        |
| 0 | PULSING CONTROL DD                            | BT0308 |

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|   |                                                        |        |
|---|--------------------------------------------------------|--------|
| 0 | PULSING CONTROL IM                                     | BT0306 |
| 0 | PULSING CONTROL STOP GO (SG)                           | BT0311 |
| 0 | PULSING CONTROL VIDT                                   | BT0313 |
| 0 | PULSING CONTROL WK                                     | BT0307 |
| 0 | PULSING CONTROL XDD (OUTGOING)                         | BT0309 |
| 0 | PULSING CONTROL XSG                                    | BT0312 |
| 0 | PULSING DP                                             | BT0305 |
| 0 | PULSING MF                                             | BT0304 |
| 0 | QUERY COMMAND ENHANCEMENTS                             | BC1925 |
| 0 | RCC/LCM LOADING ENHANCEMENTS I                         | AJ0192 |
| 0 | REAL TIME STUDY OF CURRENT DMSNOS I/F FOR LBR (PART I) | AG0329 |
| 0 | REALTIME INPUT OM                                      | AF1749 |
| 0 | RECORDING COMPLETING TRUNK (DIGITAL)                   | BT0037 |
| 0 | REMOTE FILE SYSTEM IMPROVEMENTS                        | AL0914 |
| 0 | REMOTE MAKE BUSY FOR 2X86                              | BR0085 |
| 0 | REMOTE MAKE BUSY ON 2 WAY TRUNKS                       | BR0396 |
| 0 | RETENTION TEST OF ALLOCATED MEMORY                     | BC1357 |
| 0 | REVERTIVE CALLS - SELECTIVE ANNOUNCEMENTS              | BR0394 |
| 0 | REVERTIVE PULSING FACILITY MAINTENANCE                 | BF0210 |
| 0 | RLM SP STORE SAVING                                    | BF0792 |
| 0 | ROBUSTIFICATION OF CC MAINTENANCE                      | BC2021 |
| 0 | ROBUSTIFICATION OF CMC MAINTENANCE                     | BC2020 |
| 0 | ROBUSTIFICATION OF LM/RLM MAINTENANCE                  | BC2015 |
| 0 | ROBUSTIFICATION OF NETWORK MAINTENANCE                 | BC2018 |
| 0 | ROBUSTIFY TM MTCE                                      | BC0637 |
| 0 | SCHEDULED CC/CM PATCH APPLICATION/IMAGE                | AG1007 |
| 0 | SCHEDULED XPM PATCH APPLICATION                        | AG1006 |
| 0 | SPECIAL APPLICATION PATCHING                           | AF2470 |
| 0 | SPEEDUP CI DIRECTORIES                                 | BC1486 |
| 0 | STANDARD PRETRANSLATION EXPANSION                      | NC0086 |
| 0 | STANDARD PRETRANSLATION EXPANSION - PHASE II.          | NC0196 |
| 0 | SUPERVISION ANSWER                                     | BT0316 |
| 0 | SUPERVISION DISCONNECT                                 | BT0315 |
| 0 | SUPERVISION GLARE                                      | BT0323 |
| 0 | SUPERVISION GUARD TIMING                               | BT0321 |
| 0 | SUPERVISION HIT                                        | BT0319 |
| 0 | SUPERVISION RING BACK                                  | BT0318 |
| 0 | SUPERVISION RING FORWARD                               | BT0317 |
| 0 | SUPERVISION RMB                                        | BT0320 |
| 0 | SUPPORT FOR A-LAW CARDS (TTT, TTU, RCVRMF & DRA)       | BC1060 |
| 0 | SUPPORT FOR EEPROM CARDS IN DRA                        | BC0980 |
| 0 | SYSTEM MONITOR DISPLAY                                 | BC0084 |
| 0 | SYSTEM SPEEDUP                                         | BC1219 |
| 0 | TABLE DMO                                              | BT0075 |
| 0 | TABLE EDITOR                                           | BC0131 |
| 0 |                                                        | BT0258 |

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|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | TABLE EDITOR -GROUP/MEMBER & COUNT COMMAND QUERIES | BC0077 |
| 0 | TABLE EXTENSION IMPROVEMENTS FOR DATA EXTENSIONS   | BC0551 |
| 0 | TABLE FOR DUMP/RESTORE OF LOGIN CONTROL DATA       | AG0114 |
| 0 | TERMINAL TYPES EXTENSION                           | BC1605 |
| 0 | TERMINALS - EVALUTION & STANDARDIZATION            | BR0608 |
| 0 | TERMINATING NPA IN AMA RECORDS                     | BC0991 |
| 0 | TEST ACCESS NETWORK                                | BT0040 |
| 0 | THRESHOLDING OF CRITICAL RESOURCES (MFR,DTR,LINES) | BV0022 |
| 0 | TOLL CONNECTING TRUNK (DP/MF) (A/D)                | BT0032 |
| 0 | TOLL TRANSLATION AND SCREENING                     | BT0183 |
| 0 | TONES                                              | BT0029 |
| 0 | TONES AND ANNOUNCEMENTS                            | BT0326 |
| 0 | TRAF SEP DESTINATION DATA                          | BC0393 |
| 0 | TRANSLATION AND SCREENING                          | BT0030 |
| 0 | TRAP & RESTART COUNTER MANAGEMENT                  | BC1446 |
| 0 | TRAPINFO ENHANCEMENT                               | AG0695 |
| 0 | TREATMENT OMS - SEPARATE CATEGORIES                | BR0660 |
| 0 | TRUNK DATA BASE QUERIES                            | BR0221 |
| 0 | TRUNK DATA INVENTORY QUERIES                       | BV0038 |
| 0 | TRUNK GROUP EXPANSION TO 8K                        | AD2997 |
| 0 | TRUNK I/F TO AE NO. 31 SWITCHBOARD                 | BR0135 |
| 0 | TRUNK IDLE PRIMITIVE FOR DTCEX LINE-UP             | AG0126 |
| 0 | TRUNK IRREGULARITIES                               | BT0334 |
| 0 | TRUNK OOS FOR DATA CHANGE                          | BR0377 |
| 0 | TRUNK RTS ENHANCEMENT                              | AL0479 |
| 0 | TRUNK RTS ENHANCEMENTS II                          | AJ0729 |
| 0 | TRUNK RTS SPEED UP-PHASE I                         | BF0938 |
| 0 | TRUNK RTS SPEED UP-PHASE II                        | BF0939 |
| 0 | TRUNK SIGNAL TIMING CHANGES                        | BC0821 |
| 0 | TRUNK SUPERVISION OVER DTC SWACT                   | AG0079 |
| 0 | TRUNK SUPERVISION OVER DTC SWACT - PREPATORY       | BC2330 |
| 0 | TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16     | BC0385 |
| 0 |                                                    | BC0386 |
| 0 |                                                    | BC0387 |
| 0 |                                                    | BC0388 |
| 0 |                                                    | BC0390 |
| 0 |                                                    | BC0391 |
| 0 |                                                    | BC0392 |
| 0 |                                                    | BC0398 |
| 0 |                                                    | BC0401 |
| 0 | TTL2 AGENCY REWORK TO TTLMWBL                      | BC0049 |
| 0 | T1 MAINTENANCE LEVEL                               | BC0050 |
| 0 | T101 AGENCY REWORK TO COMTRUNK                     | BC0046 |
| 0 | T103 AGENCY REWORK TO TTLSUPV                      | BC0047 |
| 0 | USER PASSWORDS SURVIVABILITY OVER BCS APPLICATION  | AL1149 |
| 0 | USER PROGRAMMABLE LTP LEVELS                       | AL1518 |
| 0 | VARIABLE TIMING - ANALOGUE DP TRUNK RECEPTION &    | BC1078 |

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|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | OUTPUTSING                                  |        |
| 0 | VDU & PRINTER LINK TERMINAL CAPABILITY      | BR0120 |
| 0 | WAKEUP ENHANCEMENTS                         | AL1051 |
| 0 | XPM IPML DATA DISTRIBUTION                  | AL0481 |
| 0 | XPM OUTGOING MESSAGE FLOW CONTROL           | AG0855 |
| 0 | XPM OVERLOAD CONTROL - 1                    | BF0611 |
| 0 | XPM PATCHER INTEGRATION PHASE 1             | AF2815 |
| 0 | XPM PSIDE DATA DISTRIBUTION                 | AL0482 |
| 0 | XPM PSIDE DATA DISTRIBUTION ENHANCEMENTS    | AJ0474 |
| 0 | XPM REAL TIME ENHANCEMENTS - BCS16          | BF0612 |
| 0 | 1+ PERMISSIVE AND NON PERMISSIVE DIALING    | BR0449 |
| 0 | 1X67 TERMINAL CONTROLLER IMPROVEMENTS       | BF0642 |
| 0 | 102 TEST LINE TERMINATION LEVEL (SEE H0271) | BF0380 |
| 0 | 115 REPAIR SERVICE REGENERATED TO 7 DIGITS  | BR0092 |
| 0 | 1200 BAUD DIAL UP DATA SET                  | BR0097 |
| 0 | 2 WAY (LOCAL) EAS TRUNK                     | BC0156 |
| 0 | 2 WAY E/M                                   | BT0327 |
| 0 | 2 WAY TRUNK GLARE RESOLUTION                | BT0181 |
| 0 | 2 WAY TRUNK GUARD TIMING                    | BT0182 |
| 0 | 256K MEMORY CARD                            | BC0465 |
| 0 | 256K WORD MEMORY SOFTWARE                   | BC0340 |
| 0 | 7 OR 10 DIGIT TOLL CALLS WITHOUT PREFIX 1   | BR0084 |

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0 NTX006AA04 STATUS RTM  
0 BUSINESS LINES

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | AUTOMATIC LINES                     | BT0026 |
| 0 | INWATS                              | BT0209 |
| 0 | INWATS COMPLETION FROM LOCAL SOURCE | BR0749 |
| 0 | INWATS FULL TIME                    | BT0256 |
| 0 | INWATS(MEASURED TIME)               | BV0035 |
| 0 | INWATTS - MEASURED TIME             | BR0239 |
| 0 | OUTWATS                             | BT0053 |
| 0 | OUTWATS TWO DIGIT ZONE SUPPORT      | BR0624 |
| 0 | OUTWATS USA                         | BR0214 |
| 0 | PEG COUNT ON INWATS LINES           | BR0082 |
| 0 | TWO WAY WATS LINE                   | BR0411 |
| 0 | TWX LINES                           | BT0051 |
| 0 | 6 DIGIT OUTWATS BAND SCREENING      | BR0438 |

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0 NTX007AA02 STATUS A+M  
0 PBX INTERFACE I (REP.BY  
0 NTX007AB)

|                                                 |        |
|-------------------------------------------------|--------|
| 0 BRIDGED NIGHT NUMBER                          | BT0070 |
| 0 FLASH IGNORE (PBX - 2 SEC DISC)               | BV0019 |
| 0 HOTEL/MOTEL (RB & 3RD WIRE)                   | BT0061 |
| 0 HUNTING (MLH,DLH,DNH)(LIN/DIST/CIRC)          | BT0042 |
| 0 HUNTING OPTIONS (SHU/RMB)                     | BT0067 |
| 0 OVERFLOW TREATMENT (LOD,LOR)                  | BT0065 |
| 0 TOLL DENIAL                                   | BT0055 |
| 0 TOLL DIVERT                                   | BT0056 |
| 0 2-WAY DIGITAL PBX TRUNKS (R0:459,483,430,502) | BC0747 |

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0 NTX007AB02 STATUS RTM  
0 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)

|                                                 |        |
|-------------------------------------------------|--------|
| 0 BRIDGED NIGHT NUMBER                          | BT0070 |
| 0 DNH WITH CWT AND PREFERENTIAL HUNT OPTIONS    | BR0752 |
| 0 FLASH IGNORE (PBX - 2 SEC DISC)               | BV0019 |
| 0 HOTEL/MOTEL (RB & 3RD WIRE)                   | BT0061 |
| 0 HUNT GROUP ENHANCEMENT                        | AL0054 |
| 0 HUNT GROUP SIZE EXPANSION                     | BR0750 |
| 0 HUNTING (MLH,DLH,DNH)(LIN/DIST/CIRC)          | BT0042 |
| 0 HUNTING OPTIONS (SHU/RMB)                     | BT0067 |
| 0 OVERFLOW TREATMENT (LOD,LOR)                  | BT0065 |
| 0 TOLL DENIAL                                   | BT0055 |
| 0 2-WAY DIGITAL PBX TRUNKS (R0:459,483,430,502) | BC0747 |

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0 NTX008AA01 STATUS A+M  
0 PBX INTERFACE II(UPG. BY  
0 NTX008AB)0 DID/DOD OVER 2-WAY PBX LOOP TRUNK BR0072  
0 PBX FLAT RATE (DID) BT0097

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0 NTX008AB02 STATUS RTM  
0 PBX INTERFACE II(UPG. OF  
0 NTX008AA)0 DID/DOD OVER 2-WAY PBX LOOP TRUNK BR0072  
0 DMO COMMAND FOR DID SERVICE BR0341  
0 PBX FLAT RATE (DID) BT0097  
0 2-WAY DIGITAL PBX TRUNKS (R0:459,483,430,502) BC0747

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0 NTX019AA02 STATUS RTM  
0 CIVIC SERVICES0 B911 AND 3WC INTERACTION AF1735  
0 CLG PARTY SWITCH HOOK STATUS DC SIGNALLING BR0295  
0 RING DOWN TRUNK FOR 911 SERVICE BC0123  
0 BC0169  
0 BV0079  
0 RINGBACK TIMED (FREQUENCY BR0330  
0 RINGING)

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|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | RINGDOWN TRUNK FOR 911 SERVICE                 | BR0136 |
| 0 | 911 CALL HOLD AND RINGBACK WITH ANI OUTPULSING | BR0056 |
| 0 | 911 FULL FEATURES                              | BR0108 |
| 0 | 911 INTERFACE TO SP-1 2W TANDEM                | BR0067 |
| 0 | 911 SERVICE (INCL. RINGBACK & ANI)             | BR0038 |

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|---|-----------------------------------------------|-------------------------------|--------|
| 0 | NTX020AA01 STATUS                             | A+M                           |        |
| 0 |                                               | VERTICAL SERVICES I (UPGRADED |        |
| 0 |                                               | BY NTX020AB)                  |        |
| 0 | CALL FORWARDING (SEE C0181)                   |                               | BR0232 |
| 0 | CALL FORWARDING (7/10 DIGITS)                 |                               | BC0181 |
| 0 |                                               |                               | BV0068 |
| 0 | CALL WAITING                                  |                               | BC0272 |
| 0 |                                               |                               | BV0065 |
| 0 | CALL WAITING (SEE C0272)                      |                               | BR0233 |
| 0 | FIXED CALL FORWARDING                         |                               | BR0255 |
| 0 | SPEED CALLING                                 | SHORT LIST                    | BC0273 |
| 0 |                                               |                               | BV0067 |
| 0 | SPEED CALLING (LONG & SHORT LIST) (SEE C0273) |                               | BR0230 |
| 0 | SUBSCRIBER TRANSFER APPLIQUE CIRCUIT          |                               | BR0215 |
| 0 | THREE WAY CALLING                             |                               | BC0180 |
| 0 |                                               |                               | BV0066 |
| 0 | THREE WAY CALLING (SEE C0181)                 |                               | BR0231 |

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|   |                               |                               |        |
|---|-------------------------------|-------------------------------|--------|
| 0 | NTX020AB03 STATUS             | A+M                           |        |
| 0 |                               | VERTICAL SERVICES I (UPGRADED |        |
| 0 |                               | BY NTX020AC)                  |        |
| 0 | CALL FORWARDING (SEE C0181)   |                               | BR0232 |
| 0 | CALL FORWARDING (7/10 DIGITS) |                               | BC0181 |
| 0 |                               |                               | BV0068 |
| 0 | CALL WAITING                  |                               | BC0272 |

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|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 |                                               | BV0065 |
| 0 | CALL WAITING (SEE C0272)                      | BR0233 |
| 0 | CUSTOM CALLING - 4 SECOND DELAY CANCELLATION  | BR0589 |
| 0 | EQUAL ACCESS-CALL FORWARDING ENHANCEMENT      | BC1381 |
| 0 | EXPANDED SPEED CALL CAPABILITIES              | BC1262 |
| 0 | FIXED CALL FORWARDING                         | BR0255 |
| 0 | SPEED CALLING SHORT LIST                      | BC0273 |
| 0 |                                               | BV0067 |
| 0 | SPEED CALLING (LONG & SHORT LIST) (SEE C0273) | BR0230 |
| 0 | SUBSCRIBER TRANSFER APPLIQUE CIRCUIT          | BR0215 |
| 0 | THREE WAY CALLING                             | BC0180 |
| 0 |                                               | BV0066 |
| 0 | THREE WAY CALLING (SEE C0181)                 | BR0231 |
| 0 | TOLL CALL FORWARDING ENHANCEMENTS             | BR0469 |

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0 -----0 NTX020AC01 STATUS RTM  
0 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | CALL FORWARDING (SEE C0181)                   | BR0232 |
| 0 | CALL FORWARDING (7/10 DIGITS)                 | BC0181 |
| 0 |                                               | BV0068 |
| 0 | CALL WAITING                                  | BC0272 |
| 0 |                                               | BV0065 |
| 0 | CALL WAITING (SEE C0272)                      | BR0233 |
| 0 | CUSTOM CALLING - 4 SECOND DELAY CANCELLATION  | BR0589 |
| 0 | EQUAL ACCESS-CALL FORWARDING ENHANCEMENT      | BC1381 |
| 0 | EXPANDED SPEED CALL CAPABILITIES              | BC1262 |
| 0 | FIXED CALL FORWARDING                         | BR0255 |
| 0 | OM - PC OF POTS FEATURE ACTIVATION            | BR0708 |
| 0 | SPEED CALLING SHORT LIST                      | BC0273 |
| 0 |                                               | BV0067 |
| 0 | SPEED CALLING (LONG & SHORT LIST) (SEE C0273) | BR0230 |
| 0 | SUBSCRIBER TRANSFER APPLIQUE CIRCUIT          | BR0215 |
| 0 | THREE WAY CALLING                             | BC0180 |
| 0 |                                               | BV0066 |
| 0 | THREE WAY CALLING (SEE C0181)                 | BR0231 |
| 0 | TOLL CALL FORWARDING ENHANCEMENTS             | BR0469 |

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0 NTX021AA04 STATUS RTM  
0 REMOTE CALL FORWARDING0 MESSAGE RATE REMOTE CALL FORWARDING BASE DN BR0815  
0 RCF ENHANCEMENTS BR0505  
0 REMOTE CALL FORWARDING - LAMA MODE BC0351  
0 BR0323  
0 SERVICE ORDER FOR REMOTE CFW BC0514

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0 NTX022AA03 STATUS A+M  
0 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG.BY  
0 NTX022AB)0 DYNAMICALLY CONTROLLED ROUTING BV1534  
0 HIGH PERFORMANCE ROUTING BC1989

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0 NTX022AB01 STATUS RTM  
0 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG. OF  
0 NTX022AA)0 DCR: DYNAMIC NETWORK MODIFICATIONS (ADD & DEL AG1974  
0 DESTINATIONS)  
0 DCR: MULTIPLE OUTPUTSING SCHEMES AG1630  
0 DYNAMICALLY CONTROLLED ROUTING BV1534

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0 93 12 030 HIGH PERFORMANCE ROUTING  
0 TIME OF DAY ROUTINGBC1989  
BV1136

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0 NTX022AC01 STATUS LTD  
0 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)0 DCR: DYNAMIC NETWORK MODIFICATIONS (ADD & DEL  
0 DESTINATIONS)  
0 DCR: MULTIPLE OUTPUTSING SCHEMES  
0 DYNAMICALLY CONTROLLED ROUTING  
0 HIGH PERFORMANCE ROUTING  
0 TIME OF DAY ROUTINGAG1974  
  
AG1630  
BV1534  
BC1989  
BV1136

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0 NTX023AB03 STATUS RTM  
0 REMOTE LINE MODULE (RLM)0 BADGER 612A INTERFACE AT THE RLM SITE  
0 BASIC TRANSLATION AND ROUTINGBR0218  
BV0200  
BV0201  
BV0202  
BV0229  
BV0233  
BV0234  
BV0238  
BV0207  
BV0212  
BV0214  
BR0198  
BV0206  
BV0237  
BV0388  
BV0223

0 DCM-R DIAGNOSTIC

0 LINE TESTING USING LTU  
0 NO.3 LTC I/F AT RLM)  
0 REMOTE LINES WITH

HOST OFFICE FEATURES

0 RLM - INTERFACE WITH

BADGER 612A

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|   |                                |        |
|---|--------------------------------|--------|
| 0 |                                | BV0224 |
| 0 | RLM MAINTENANCE                | BC0150 |
| 0 |                                | BC0151 |
| 0 |                                | BC0289 |
| 0 |                                | BV0208 |
| 0 |                                | BV0213 |
| 0 | VARIABLE QUANTITIES OF T1 LINE | BC0107 |
| 0 |                                | BC0108 |
| 0 |                                | BF0012 |

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|   |            |        |                   |
|---|------------|--------|-------------------|
| 0 | NTX024AA01 | STATUS | RTM               |
| 0 |            | RLM    | INTRA-RLM CALLING |

|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | INTRASWITCHING COMMISSIONING FIRMWARE | BZ0002 |
| 0 | RLM INTRASWITCHING FEATURE            | BV0547 |
| 0 | RLM-INTRA CALLING FOR POTS CALLS      | BC0171 |
| 0 |                                       | BC0172 |
| 0 |                                       | BC0173 |
| 0 |                                       | BC0174 |
| 0 |                                       | BC0175 |
| 0 |                                       | BC0176 |
| 0 |                                       | BF0029 |
| 0 |                                       | BF0030 |
| 0 |                                       | BF0031 |
| 0 |                                       | BF0032 |
| 0 | RLM: INTRA SWITCHING OPTIONAL FEATURE | BR0212 |

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|   |            |           |                       |
|---|------------|-----------|-----------------------|
| 0 | NTX025AA02 | STATUS    | RTM                   |
| 0 |            | RLM       | EMERGENCY STAND-ALONE |
| 0 |            | OPERATION |                       |

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | ABBREVIATED DIALING IN ESA MODE (XREF F0277) | BC0857 |
| 0 | EMERGENCY OPERATION                          | BC0328 |

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0 BF0034  
0 BF0035  
0 BF0036  
0 BF0037  
0 ESA ACTIVATE DATA BASE ENHANCEMENT (SEE F0050) BC0297  
0 RLM: EMERGENCY STANDALONE OPTIONAL FEATURE BR0213

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0 NTX028AA01 STATUS RTM  
0 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)

0 DIRECT DIAL OVERSEAS BV0049

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0 NTX029AA01 STATUS RTM  
0 DIRECT DIALLING OVERSEAS, TOLL  
0 (CANADA)

0 2-STAGE OUTPULSING TO GATEWAY (TOLL) BC0230

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0 NTX030BA03 STATUS RTM  
0 TOPS ACD FEATURES0 ASSIGNABLE GRADE OF SERVICE BR0286  
0 EXTENDED OPERATOR FEEDBACK DATA (BREAKDOWN BY CALL BV0185  
0 TYPE)  
0 MECHANIZED FORCE ADMINISTRATION DATA SYSTEM (MFADS) BR0333

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|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | MULTI-TRAFFIC OFFICE OPERATION               | BV0242 |
| 0 | OPERATOR NUMBER IDENTIFICATION (ONI) CALLS   | BV0152 |
| 0 | POSITION OCCUPANCY MEASUREMENT               | BR0328 |
| 0 | REMOTE TOPS MAINTENANCE                      | BV0190 |
| 0 | SINGLE TRAFFIC OFF. OPERATION BASIC OPERATOR | BV0382 |
| 0 | FEEDBACK                                     |        |
| 0 | TOPS BILINGUAL MMI FOR DEVICES               | AG0721 |
| 0 | TRAFFIC SAMPLING                             | BV0290 |
| 0 | 15 MINUTE REPORTS FOR MFADS                  | BR0812 |

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0 NTX030CC16 STATUS RTM  
0 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | AMA FAILURE ROUTING OPTIONS                  | BR0475 |
| 0 | AMA RECORD OF SPECIFIED UNANSWERED CALL TYPE | BR0413 |
| 0 | AUTOMATIC COLLECT                            | BV0309 |
| 0 | AUTOMATIC COLLECTION OF DEPOSIT ON RELEASE   | BV0348 |
| 0 | AUTOMATIC NO AMA                             | BV0324 |
| 0 | AUTOQUOTE PRINTERS                           | BV0331 |
| 0 | BELL SYSTEM STANDARD SIGNALLING FORMAT       | BR0224 |
| 0 |                                              | BV0168 |
| 0 |                                              | BV0279 |
| 0 |                                              | BV0338 |
| 0 |                                              | BV0344 |
| 0 | CAMA SUSPENSION                              | BV0317 |
| 0 |                                              | BV0588 |
| 0 | CC METERING CHANGEOVER CONTROL               | BV0277 |
| 0 | COIN CONTROL METHOD INBAND                   | BV0169 |
| 0 | COIN CONTROL METHOD LINE NUMBER              | BR0087 |
| 0 | COIN CONTROL METHOD MULTIWINK                | BR0195 |
| 0 | COIN FIRST-RETURN ON DISCONNECT              | AL0418 |
| 0 | COIN 1+, 0+, 0-                              | BV0340 |
| 0 | CREDIT REQUEST                               | BV0316 |
| 0 | DA AMA RECORD - NT FORM                      | AG0825 |
| 0 | DELAY CALL DENIAL                            | BR0405 |
| 0 | DIAL RATE                                    | BV0311 |
| 0 | DIRECT DIAL OVERSEAS (DDO)                   | BC0320 |
| 0 |                                              | BV0232 |
| 0 |                                              | BV0554 |

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|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | DIRECTORY ASSISTANCE HANDLING                      | BR0211 |
| 0 | DOMESTIC BILLING RESTRICTIONS                      | BR0335 |
| 0 | EXPANDED FXDNMAP                                   | AL0610 |
| 0 | EXPANDED OPERATOR DISPLAY                          | BR0338 |
| 0 | FLASH RECALL DURING INITIAL PERIOD                 | BV0306 |
| 0 | FLEXIBLE ANI ID=8,9 HANDLING                       | BR0456 |
| 0 | FRACTIONAL TAX                                     | BR0737 |
| 0 | HOTEL ADMINISTRATION SYSTEM (HADS)                 | BC0319 |
| 0 |                                                    | BV0181 |
| 0 | HOTEL 1+, 0+, 0-                                   | BV0339 |
| 0 | IDENTIFICATION OF TRUNK CLASS SENT-PAID RESTRICTED | BR0132 |
| 0 | CALLS                                              |        |
| 0 | IDENTIFICATION OF: ALARMS,ANI ID 8                 | BR0171 |
| 0 | IDENTIFICATION OF: INTERCEPT,ANI ID 9              | BR0173 |
| 0 | IDENTIFICATION OF: ORIGINATING CLASS -             | BR0289 |
| 0 | ANI MATCH                                          |        |
| 0 | IDENTIFICATION OF: TRK CLASS HOTEL/MOTEL           | BR0142 |
| 0 | CALLS                                              |        |
| 0 |                                                    | BV0345 |
| 0 | INDEPENDANT COIN RECALL PERIOD                     | BR0422 |
| 0 | INSTRUCTIONAL DISPLAY                              | BV0244 |
| 0 | INTERPOSITION TRANSFER                             | BV0245 |
| 0 | MASS DMO TEST PROGRAM                              | BC0336 |
| 0 | MERCURY DMS-250 TOPS SERVICE INTERCEPTION          | AE0261 |
| 0 | MINIMUM CHARGE                                     | BR0336 |
| 0 | MOBILE HANDLING ITMS ROAMER                        | BR0203 |
| 0 | NEW MODEM POOL                                     | AF0144 |
| 0 | NON-COIN 0+, 0-                                    | BV0153 |
| 0 |                                                    | BV0341 |
| 0 | NORTH ELECTRIC FORMAT                              | BR0298 |
| 0 | NOTIFY                                             | BV0156 |
| 0 |                                                    | BV0308 |
| 0 | NPA ON 0+ SEVEN DIGIT LOCAL CALLS                  | AF0171 |
| 0 | 0+ LOCAL CALLS ON DMS-200 TOPS                     | BR0776 |
| 0 | OPERATOR NUMBER IDENTIFICATION (ONI) CALLS         | BV0152 |
| 0 |                                                    | BV0278 |
| 0 | OPP BASE TOPS CHANGES                              | AF3191 |
| 0 | OVERSEAS RATING                                    | BV0179 |
| 0 | PERSON TO PERSON                                   | BV0363 |
| 0 | PERSON TO PERSON CALL BACK                         | BV0310 |
| 0 | POINT TO POINT RATING                              | BR0133 |
| 0 | PREFIX DIGIT                                       | BV0165 |
| 0 | PSEUDO HOTEL NXX TABLES                            | BR0700 |
| 0 | QUEUE SELECTION ON TRUNK GROUP BASE                | BR0775 |
| 0 | RATE PERIOD SPECIFIC BILLING                       | BR0373 |
| 0 | RATING MASS DMO                                    | BV0178 |
| 0 | SA LOGON                                           | AF2372 |

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|   |                                                         |                      |        |
|---|---------------------------------------------------------|----------------------|--------|
| 0 | SELECTIVE CALL SCREENING                                | ANI ID-7             | BR0348 |
| 0 | SEMI AUTOMATIC ZENITH                                   | TOPS                 | BR0332 |
| 0 | SERVICE CODE                                            | 1150                 | BV0327 |
| 0 | SERVICE CODE                                            | 1155                 | BV0328 |
| 0 | SERVICE CODE                                            | 1156                 | BV0329 |
| 0 | SERVICE CODE                                            | 1158                 | BV0407 |
| 0 | SERVICE CODE                                            | 1159                 | BV0408 |
| 0 | SERVICE CODE                                            | 121(INWARD)          | BV0158 |
| 0 |                                                         |                      | BV0325 |
| 0 | SERVICE CODE                                            | 181                  | BV0326 |
| 0 | STATION TO STATION                                      |                      | BV0291 |
| 0 | TIME AND CHARGES                                        | AUTO PRT. ON T&C TTY | BV0163 |
| 0 |                                                         |                      | BV0297 |
| 0 |                                                         |                      | BV0335 |
| 0 | TIME AND CHARGES                                        | RECALL TO OPERATOR   | BR0334 |
| 0 | TOLL FREE CALLS                                         |                      | BV0553 |
| 0 | TOPS - ADMINISTRATION - 1200 BAUD PRINTERS              |                      | AJ0388 |
| 0 | TOPS - AMA RECORDS OF VERIFICATION                      |                      | BV1345 |
| 0 | TOPS - COLLECT ONLY ORIGINATING CLASS                   |                      | BR0527 |
| 0 | TOPS - EXPANDED INBAND COIN CONTROL                     |                      | BC1147 |
| 0 | TOPS - KEY FUNCTION CHANGES TO MINIMIZE MISBILLED CALLS |                      | BV1343 |
| 0 | TOPS - VERIFICATION SCRAMBLING & TONE OPTIONS           |                      | BV1347 |
| 0 | TOPS BASE CHANGES                                       |                      | AF1784 |
| 0 | TOPS BASE MMI CHANGES                                   |                      | AF1076 |
| 0 | TOPS BASE MMI MODIFICATIONS                             |                      | AF1427 |
| 0 | TOPS CC CALLP TMS INTERFACE                             |                      | AF1785 |
| 0 | TOPS COIN TIMING                                        |                      | AF0073 |
| 0 | TOPS CROSSBAR SIGNALLING                                |                      | AF0720 |
| 0 | TOPS DATA AND VOICE LINK UTILITIES                      |                      | AF1527 |
| 0 | TOPS OC SETUP PROCESSOR CHANGES                         |                      | BC0565 |
| 0 | TOPS OM ENHANCEMENTS-PHASE II                           |                      | AF0145 |
| 0 | TOPS OPERATIONAL MEASUREMENTS ENHANCEMENTS              |                      | AF0075 |
| 0 | TOPS REALTIME ENHANCEMENTS                              |                      | AF0146 |
| 0 | TOPS_MP FOLDBACK:DA QUEUEING                            |                      | AF0476 |
| 0 | TOPS_MP FOLDBACK:FORCE MANAGEMENT                       |                      | AF0477 |
| 0 | TOPS_MP FOLDBACK:KEY FUNCTIONS AND SCREEN UPDATES       |                      | AF0482 |
| 0 | TOPS_MP FOLDBACK:OGT KEYS/XFR KEYS                      |                      | AF0479 |
| 0 | TOPS_MP FOLDBACK:TRUNKING                               |                      | AF0478 |
| 0 | V AND H LATA RATE ENHANCEMENT                           |                      | BR0627 |
| 0 | V-H CO-ORDINATES                                        | CHARGE CALCULATION   | BV0174 |
| 0 |                                                         |                      | BV0177 |
| 0 |                                                         |                      | BV0352 |
| 0 | VARIABLE LOCAL COIN CHARGE                              |                      | BR0337 |
| 0 | VERIFICATION                                            |                      | BV0314 |
| 0 | VOICE QUOTE OF CHARGES                                  | ON A CENTRAL TTY     | BV0332 |
| 0 | 4 - SECOND TIMEOUT ON 0+ CALLS                          |                      | BV0346 |

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0 NTX035AA03 STATUS RTM  
0 TOPS REMOTE CAMA0 REMOTE ONI VIA O.C. BR0602  
0 RONI /CKO FUNCTION BR0172

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0 NTX036AA01 STATUS RTM  
0 TOPS INWARD VALIDATION

0 INWARD VALIDATION BR0360

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0 NTX039AA01 STATUS RTM  
0 HOST OC DATA - LINK HANDLING

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | OC DATA LINK CALL PROCESSING ASPECT | BC0695 |
| 0 | OC DATA LINK MESSAGING UTILITY      | BV1125 |
| 0 | OC DATA LINK TABLE CONTROL          | BC0696 |
| 0 | OC DATA LINK UTILITY INTERFACE      | BC0694 |
| 0 | OC FEATURE CROSS PROCESSOR          | BV1126 |
| 0 | OC FEATURE STARTER                  | BV1129 |
| 0 | OC HOOKS FOR ASSISTANCE POSITIONS   | BC0700 |
| 0 | OC MESSAGE DEFINITION INTERFACE     | BC0699 |
| 0 | OC OFFICE TABLE CONTROL             | BC0743 |
| 0 | OC OPERATIONAL MEASUREMENTS         | BV1130 |
| 0 | OC SHORT THREADED FUNCTIONS         | BC0698 |



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|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | OC VOICE LINK TRUNK UTILITY           | BV1127 |
| 0 | OPERATOR CENTRALIZATION - HOST (ETOF) | BV0775 |
| 0 | TOPS OC CROSS PROCESSOR CHANGES       | BC0564 |
| 0 | TOPS OC SETUP PROCESSOR CHANGES       | BC0565 |

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|---|----------------------------|-----|
| 0 | NTX040AA03 STATUS          | RTM |
| 0 | COMMON CHANNEL INTEROFFICE |     |
| 0 | SIGNALLING - BASIC         |     |

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | CCIS DATA EXTRACTION/INSERTION             | BC0785 |
| 0 | CCIS INTERTOLL TRUNK TO/FROM TOPS POSITION | BV0827 |
| 0 | MSB6 NEW STI CARD SUPPORT                  | BC1506 |

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|   |                              |     |
|---|------------------------------|-----|
| 0 | NTX041AB09 STATUS            | LTD |
| 0 | CCS7 - MTP/SCCP(SEE NTXR72AA |     |
| 0 | FOR LPP APPLICATION)         |     |

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | CCITT #7 MTP (DMS-250)                           | AE0313 |
| 0 | CCITT#7 MTP AUSTRALIAN SCREENING                 | AL1344 |
| 0 | CCITT7 NATIONAL NETWORK POINT CODE MMI           | AL1474 |
| 0 | CCS7 - SIGNALING TERMINAL                        | BF0650 |
| 0 | CCS7 BASE                                        | BC1814 |
| 0 | CCS7 BCS INSERTION                               | BC2289 |
| 0 | CCS7 CC STORE REDUCTION FOR NT40                 | AL1499 |
| 0 | CCS7 LINK SET MGMT                               | BV2000 |
| 0 | CCS7 MSB COMMISSIONING LOAD                      | BF0551 |
| 0 | CCS7 MSB ST INTERFACE HANDLING                   | BF0526 |
| 0 | CCS7 MSB ST/STAI AUDITS                          | BF0529 |
| 0 | CCS7 ROUTE SET MGMT                              | BV2001 |
| 0 | CCS7 SCCP FOR SSP                                | BF0658 |
| 0 | CCS7 ST COMMISSIONING LOAD                       | BF0550 |
| 0 | CCS7 ST MP BUFFER RETRIEVAL                      | BF0457 |
| 0 | CCS7 ST MP PRO/CONGESTION CONTROL & FLOW CONTROL | BF0454 |

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|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | CCS7 STATIC DATA AUDITS                       | AL1249 |
| 0 | CCS7 TIMER ENHANCEMENTS                       | AC0361 |
| 0 | DATA MANAGER ROBUSTNESS                       | AC0443 |
| 0 | GENERALIZE XPM/MSB7 CHANNEL ALLOCATION        | BF1025 |
| 0 | LINKSET - BASIC LINK MANAGEMENT - MSB         | BC1807 |
| 0 | LINKSET - MAN MACHINE INTERFACE - CC          | BC1811 |
| 0 | LINKSET TABLE CONTROL - CC                    | BC1813 |
| 0 | MTP - CC RESTART HANDLING IMPROVEMENTS        | AC0228 |
| 0 | MTP - CC ROUTING CAPABILITY                   | AC0150 |
| 0 | MTP - CONGESTION HANDLING                     | BC2292 |
| 0 | MTP - CONGESTION/TIMER OPTION TABLE CONTROL   | BC2290 |
| 0 | MTP - COV, CBK, REROUTE ENHANCEMENTS          | AC0149 |
| 0 | MTP - DISTRIBUTED DATA AUDITS & OM COLLECTION | AC0225 |
| 0 | MTP - DISTRIBUTED MTP DATA                    | AC0226 |
| 0 | MTP - GENERIC DISTRIBUTED DATA MANAGER        | AC0148 |
| 0 | MTP - MESSAGE TRANSFER PART                   | AL0076 |
| 0 | MTP - MULTI-MSB CAPABILITY                    | AC0223 |
| 0 | MTP - MULTI-MSB MMI                           | AC0220 |
| 0 | MTP - POINT CODE ROUTING ALGORITHM            | BF1024 |
| 0 | MTP - QUASI ASSOCIATED SIGNALLING             | BC2291 |
| 0 | MTP - ROBUSTNESS IMPROVEMENTS                 | AC0411 |
| 0 |                                               | BF0989 |
| 0 | MTP - ST POOLS FOR CCS7 SIGNALLING LINKS      | BC2293 |
| 0 | MTP AUDITS FOR CCS7                           | BF0942 |
| 0 | Q791 MTP PERFORMANCE ENHANCEMENTS.            | AE0775 |
| 0 | REMOVAL OF CLLI FROM CCS7 RTESET AND LINKSET  | AL1496 |
| 0 | ROUTESET - BASIC ROUTING CONTROL - MSB        | BC1798 |
| 0 | ROUTESET - DISTRIBUTER - MSB                  | BC1800 |
| 0 | ROUTESET - MAN MACHINE INTERFACE - CC         | BC1803 |
| 0 | ROUTESET - ROUTER - MSB                       | BC1799 |
| 0 | ROUTESET - TABLE CONTROL - CC                 | BC1804 |
| 0 | ROUTESET-CHANGEOVER/CHANGEBACK-MSB            | BF0941 |
| 0 | SCCP - AUDITS AND ENHANCEMENTS                | AC0107 |
| 0 | SCCP - DATA DISTRIBUTION                      | AC0141 |
| 0 | SCCP - FOR DMS-SCP                            | AC0143 |
| 0 | SCCP - MANAGEMENT CHANGES                     | AC0142 |
| 0 | SCCP - MMI CHANGES                            | AC0144 |
| 0 | SCCP - MMI EVOLUTION FOR STP                  | AC0306 |
| 0 | SCCP - ROUTING CONTROL                        | AC0140 |
| 0 | SCCP MAN MACHINE INTERFACE                    | BC1749 |
| 0 | SCCP MANAGEMENT ROBUSTNESS                    | AC0431 |
| 0 | SCCP TABLE CONTROL                            | BC1750 |
| 0 | SCCP-CONNECTIONLESS CONTROL                   | BC2046 |
| 0 | SCCP-MANAGEMENT-PC MGMT                       | BC2047 |
| 0 | SCCP-MANAGEMENT-SUBSYSTEM                     | BC2048 |
| 0 | SCCP-ROUTING CONTROL                          | BC2045 |

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0 SIGNALLING LINK MARGINAL PERFORMANCE REPORT  
0 STP ROBUSTNESSAL1330  
AL1893

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0 NTX042AA04 STATUS RTM  
0 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)

|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | AMA - MANAGEMENT                      | BT0344 |
| 0 | AMA FAILURE ROUTING OPTIONS           | BR0475 |
| 0 | AMA UNCOMPLETED CALLS ON TAPE         | BT0190 |
| 0 | END OF AMA ALARM                      | BV0036 |
| 0 | END OF TAPE ALARM                     | BR0222 |
| 0 | FLEXIBLE LONG DURATION CALL REPORTING | BR0591 |
| 0 | MAGNETIC TAPE LOCAL INHIBIT           | BR0002 |
| 0 | ONI SERVICE FROM DMS-100 LAMA         | BR0216 |
| 0 | REMOTE ONI TO SP-1 TOPS               | BR0001 |
| 0 | REMOTE ONI TO WE TSPS                 | BR0008 |
| 0 | TOTAL CALLS SUMMARY ON AMA RECORD     | BR0080 |

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0 -----0 NTX043AA03 STATUS RTM  
0 LOCAL CALL DETAIL RECORDING

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | COMPATIBILITY OF LCDR OPTION ON CDF & CCF COIN LINES | BR0758 |
| 0 | DETAILED CALL RECORDING ON LOCAL CALLS (USP)         | BR0055 |
| 0 | LOCAL CALL DETAIL RECORDING                          | BC0303 |

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0 NTX044AA04 STATUS RTM  
0 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | AMA - MANAGEMENT                                 | BT0344 |
| 0 | AMA FAILURE ROUTING OPTIONS                      | BR0475 |
| 0 | AMA RECORD OF TANDEM SWITCH SEIZURE - ONLY CALLS | BC0224 |
| 0 |                                                  | BC0253 |
| 0 |                                                  | BC0274 |
| 0 |                                                  | BR0199 |
| 0 | AMA UNCOMPLETED CALLS ON TAPE                    | BT0190 |
| 0 | CAMA SUPERVISION - ANSWER TIMING                 | BT0176 |
| 0 | CAMA SUPERVISION - CLD DISCONNECT TIMING         | BT0177 |
| 0 | CAMA SUSPENSION                                  | BT0302 |
| 0 | END OF AMA ALARM                                 | BV0036 |
| 0 | END OF TAPE ALARM                                | BR0222 |
| 0 | FLEXIBLE LONG DURATION CALL REPORTING            | BR0591 |
| 0 | FRAUD PREVENTION                                 | BR0020 |
| 0 | INCOMING CAMA                                    | BT0300 |
| 0 | MAGNETIC TAPE LOCAL INHIBIT                      | BR0002 |
| 0 | ONI SERVICE FROM DMS-100 LAMA                    | BR0216 |
| 0 | PRINTOUT ON ANI FAILURE                          | BR0081 |
| 0 | REMOTE CALL FORWARDING - LAMA MODE               | BR0323 |
| 0 | REMOTE ONI TO SP-1 TOPS                          | BR0001 |
| 0 | REMOTE ONI TO WE TSPS                            | BR0008 |
| 0 | ROUTE TRANSFER RONI/CAMA POSITIONS               | BR0160 |
| 0 | TOTAL CALLS SUMMARY ON AMA RECORD                | BR0080 |

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0 -----0 NTX045AA01 STATUS RTM  
0 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)

|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | CALL FORWARDING - USAGE SENSITIVE PRICING (BELLCORE | BR0777 |
| 0 | FORMAT)                                             |        |
| 0 | LINE DENIAL OF USP VERTICAL PARTS                   | AL0426 |

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0 NTX048AA06 STATUS RTM  
0 SYNCHRONIZATION

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | ASYNCHRONOUS LINK MAINTENANCE S/W                | BC0114 |
| 0 | STRATUM-2 CLOCK (SLAVE OFFICE) SYNCHRONIZATION   | AL0422 |
| 0 | SYNCHRONISATION                                  | BR0013 |
| 0 | SYNCHRONISATION AND SYNCHRONISABLE CLOSE (SLAVE) | BR0012 |
| 0 | SYNCHRONIZABLE CLOCK MAINTENANCE                 | BC2296 |
| 0 | VECTRON OSCILLATOR FOR SYNC. CLOCK               | BR0310 |

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0 NTX048AB01 STATUS RTM  
0 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK

0 CESIUM MASTER CLOCK INTERFACE BR0194

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0 NTX048BA02 STATUS RTM  
0 SYNCHRONIZATION - STRATUM 3

0 STRATUM-3 CLOCK SYNCHRONIZATION AL0158

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0 NTX048CA02 STATUS RTM  
0 SYNCHRONIZATION - STRATUM 2

0 STRATUM II - DRIFT INDICATION BR0828  
0 SYNCHRONIZATION - STRATUM 2 BR0557  
0 SYNCHRONIZATION STRATUM 2 BC1221

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0 NTX049AC01 STATUS RTM  
0 CIRCLE DIGIT IDENTIFICATION

0 CIRCLE DIGIT IDENTIFICATION BR0048

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0 NTX049AD01 STATUS RTM  
0 SINGLE PARTY REVERTIVE CALLING

0 REA REVERTIVE CALLING BR0050  
0 REVERTIVE CALL ANNC. BR0100  
0 SINGLE PARTY REVERTIVE CALLING (INTERCOM) BR0033  
0 711 + 7D REVERTIVE CALLING BR0090

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0 NTX049AE01 STATUS RTM  
0 NORTH ELECTRIC ANI FORMAT  
0 GENERATION

0 CP IRREG - AMR5  
0 GENERATION OF NORTH ELECTRIC ANI FORMAT  
0 OUTGOING AMR5 (TRUNKS)  
0 TIME AND CHARGE SUBS LINE CLASS  
0 TIME AND CHARGES SUBSCRIBER LINE CLASS

BT0224  
BR0107  
BC0133  
BR0189  
BR0078

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0 NTX049AG01 STATUS RTM  
0 ITT ANI FORMAT (RECEIPT)

0 ITT ANI FORMAT (RECEIPT)

BR0009

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0 NTX049AH01 STATUS RTM  
0 COME AGAIN SIGNALLING

0 COME AGAIN SIGNALLING

BR0059

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0 NTX049AJ01 STATUS A+M  
0 TOLL TANDEM SERVICES(REP BY  
0 NTX192AA AND/OR NTX193AA)0 DIRECTORY ASSISTANCE TO NXID VIA DMS200(ANI NOT BR0145  
0 FORWARDED)  
0 REPEAT OF INBAND COIN CTRL SIGNALS FROM TSPS TO BR0027  
0 TRIBS  
0 0+ TANDEMED TO TSPS BR0026  
0 0+-TRAFFIC TANDEMED TO NXID BR0006  
0 1 + COIN TANDEMED TO NXID FOR BILLING BR0004

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0 NTX049AL01 STATUS RTM  
0 TIME AND TEMPERATURE  
0 ANNOUNCEMENT0 844 SERVICE CODE FOR TIME AND TEMPERATURE BR0262  
0 ANNOUNCEMENT

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0 NTX049AM01 STATUS RTM  
0 PUERTO RICO DIALING PLAN -  
0 LOCAL

0 SECOND DIAL TONE ON DDD/IDDD CALLS BR0149

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0 NTX049AP01 STATUS RTM  
0 PUERTO RICO DIALLING PLAN -  
0 TOLL

0 ATTENDED PAY STATION BR0326  
0 SECOND DIAL TONE ON DDD/IDDD CALLS BR0149  
0 SERVICE CODES 112/123 BR0322

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0 NTX051AA02 STATUS RTM  
0 AUTOMATIC TRUNK TESTING

0 ATT AUTO TRUNK TESTING BT0241  
0 AUTOMATIC TRUNK TEST (VOICE TRUNK) BV1690

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0 NTX052AB02 STATUS RTM  
0 REMOTE OFFICE TEST LINE (ROTL)

0 INTERFACE TO CENTRALIZED ATT SYSTEMS VIA APC ROTL V BC0128  
0 REMOTE OFFICE TEST LINE (ROTL) BR0069  
0 ROTL TRUNK NUMBER TABLE BC1146

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0 NTX053AA05 STATUS RTM  
0 MAINTENANCE ASSISTANCE PACKAGE

|   |                                                 |                      |        |
|---|-------------------------------------------------|----------------------|--------|
| 0 | ALARM                                           | SENDING AND CHECKING | BR0049 |
| 0 |                                                 |                      | BV0395 |
| 0 | ALARM SENDING AND CHECKING - ADEMCO NO.669      |                      | BR0110 |
| 0 | BASIC OPERATIONAL MEASUREMENT-ACH CCH REGISTERS |                      | BR0159 |
| 0 | CIRCUIT LOCATE FOR PERIPHERAL MODULES           |                      | BC0024 |
| 0 | CIRCUIT LOCATE(LINE)                            |                      | BV0081 |
| 0 | CIRCUIT LOCATE(TRUNK)                           |                      | BV0008 |
| 0 | FLEXIBLE ALARM SENDING                          |                      | BR0521 |
| 0 | IDENTIFICATION OF ALARMS                        | OUTPULSE ANI DIGIT 8 | BR0066 |
| 0 | IDENTIFICATION OF KILLER TRKS                   |                      | BR0017 |
| 0 | KILLER TRUNK REDESIGN                           |                      | AF0093 |
| 0 | KT INSTRUMENTATION AND SCHEDULING               |                      | AF0531 |
| 0 | KT USAGE SCANNING AND REPORT GENERATION         |                      | AF0532 |
| 0 | LOGUTIL                                         |                      | BT0003 |
| 0 | LTP AND ASSOCIATED LEVEL                        |                      | BT0095 |
| 0 | NETWORK INTEGRITY ANALYSIS PACKAGE              |                      | BC0426 |
| 0 | PERIODIC REPORTING ON TRUNKS                    |                      | BV0037 |
| 0 | SILENT SWITCHMAN                                |                      | BR0210 |
| 0 | THRESHOLDING & EXCEPTION REPORTING (15MIN)      |                      | BC0104 |
| 0 | THRESHOLDING AND EXCEPTION REPORTING            |                      | BV0002 |
| 0 | TRUNK IRREGULARITIES                            |                      | BT0334 |

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0 NTX054AA05 STATUS RTM  
0 LINE TEST POSITION (LTP)

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | AUTO RETEST OF ALT FAILURES                    | BC0829 |
| 0 | LINE CUTOVER STATE                             | BR0043 |
| 0 | LINE TRANSMISSION TESTS - MW,QTERM             | BV0024 |
| 0 | LTP - DIGITONE TESTING                         | BV0062 |
| 0 | LTP - INSERTION LOSS, TONE GENERATION          | BV0025 |
| 0 | LTP - MONITOR,TALK,BALANCE OFFHOOK TESTS       | BV0061 |
| 0 | LTP - SEND FUNCTIONS(COIN & RINGING FUNCTIONS) | BV0063 |
| 0 | LTP AND ASSOCIATED LEVEL                       | BT0095 |
| 0 | LTP ROBUSTNESS                                 | BC2324 |

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0 NTX055AA03 STATUS RTM  
0 TRUNK TEST POSITION (TTP)

|                                      |        |
|--------------------------------------|--------|
| 0 DOWN LOAD METALLIC TEST UNIT.      | BC1259 |
| 0 MONITOR TALK                       | BC0091 |
| 0                                    | BV0042 |
| 0 MTCE TTP TRUNK MONITOR             | BT0233 |
| 0 STUCK SENDER CALL TRACING          | BV0039 |
| 0 TRUNK MONITOR (CONFERENCE CIRCUIT) | BR0245 |
| 0 TTP CALL TRANSFER                  | BV0041 |
| 0 TTP CALL TRANSFER (LOCAL)          | BR0196 |
| 0 TTP DETACHED USER                  | AG1240 |
| 0 TTP ENHANCEMENTS                   | BR0021 |

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0 NTX055AB03 STATUS RTM  
0 TTP-DIGIT VERIFICATION

|                                                        |        |
|--------------------------------------------------------|--------|
| 0 (NSG) TRANS. VERIF. DMS-250 IMT. DAL & ONAL TRK GRPS | BC0495 |
| 0 TYPES                                                |        |
| 0 (NSG) TRANSLATION VERIF. FOR PARTIT. 6-DIGIT TRANSL. | BC0490 |
| 0 CIRCUIT MONITOR                                      | BR0176 |
| 0 STS CONVERSION                                       | BC0858 |
| 0 TRANSLATION VERIFICATION                             | BV0724 |
| 0                                                      | BV1191 |
| 0 TRANSLATION VERIFICATION - TRUNKS                    | BR0223 |
| 0 TRANSLATION VERIFICATION FOR USTS                    | BV1215 |
| 0 TRAVER ENHANCEMENT                                   | BC0693 |

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0 NTX055AC02 STATUS RTM  
0 TTP-TRANSMISSION MEASUREMENT

|   |                             |        |
|---|-----------------------------|--------|
| 0 | DIGITAL PAD ADJUSTMENT      | BC0158 |
| 0 | ECHO RETURN LOSS (ERL) TEST | BR0201 |
| 0 | SINGING POINT TEST          | BR0200 |

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0 NTX055BA01 STATUS RTM  
0 RONI TRUNK TESTING

|   |                    |        |
|---|--------------------|--------|
| 0 | RONI TRUNK TESTING | BR0431 |
|---|--------------------|--------|

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0 NTX056AA05 STATUS RTM  
0 ENHANCED ADMINISTRATION

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | BULK DATA MODIFICATION                            | BR0241 |
| 0 | BULK MODIFICATION                                 | BV0027 |
| 0 | DATA DISTRIBUTOR                                  | AG0377 |
| 0 | DM SYSTEM: JOURNAL FILE                           | BV0005 |
| 0 | DM SYSTEM: PENDING ORDER FILE                     | BV0004 |
| 0 | DMO - PENDING ORDER FILE (SERVICE ORDERS)         | BR0246 |
| 0 | DMO PRETESTING - TRUNK AND                        | BR0022 |
| 0 | TRANSLATION                                       |        |
| 0 | DMO: JOURNAL FILE                                 | BR0237 |
| 0 | JFFREEZE - DMO ENFORCEMENT FOR JOURNAL FILE       | AG1524 |
| 0 | JOURNAL FILE OPTION WITH DMOPRO                   | BC1543 |
| 0 | JOURNAL FILE RESTART IMPROVEMENTS                 | BC0078 |
| 0 | LOCAL SLAVE TTY TO A REMOTE MASTER FOR DMS        | BR0101 |
| 0 | OPERATION                                         |        |
| 0 | OPTIONAL PARAMETER FOR DMOPRO TO SUPPRESS SUMMARY | BC1488 |
| 0 | MESSAGE                                           |        |

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|   |                                             |                        |        |
|---|---------------------------------------------|------------------------|--------|
| 0 | PENDING ORDER FILE                          | DUE DATE SPECIFICATION | BC0162 |
| 0 | PENDING ORDER FILE                          | RETRIEVAL BY SERVICE   | BV0195 |
| 0 | ORDER NO.                                   |                        |        |
| 0 | SERVICE ORDER ECHOING OF DMO-S (CABLE PAIR) |                        | BR0065 |

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|---|------------|----------------------------|-----|
| 0 | NTX057AB05 | STATUS                     | RTM |
| 0 |            | CUTOVER ASSISTANCE II (NON |     |
| 0 |            | RESIDENT)                  |     |

|   |                                                 |        |
|---|-------------------------------------------------|--------|
| 0 | NEW PERIPHERAL POTS LINE BOARD TO BOARD TESTING | BC0896 |
|---|-------------------------------------------------|--------|

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|---|------------|--------------------------------|-----|
| 0 | NTX057AC03 | STATUS                         | A+M |
| 0 |            | CUTOVER ASSISTANCE I (NON      |     |
| 0 |            | RESIDENT) UPGRADED BY NTX057DA |     |

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | CUTOVER OF WORKING T1 LINES USING NAILED UP | BR0023 |
| 0 | CONNECTIONS                                 |        |
| 0 | NEW PERIPHERAL POTS LINE CUTOVER SUPPORT    | BC0895 |

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|---|------------|-----------------------------|-----|
| 0 | NTX057BA01 | STATUS                      | RTM |
| 0 |            | CUTOVER ASSISTANCE III (NON |     |
| 0 |            | RESIDENT)                   |     |

|   |                                 |        |
|---|---------------------------------|--------|
| 0 | BOARD TO BOARD TESTING SPEED-UP | BR0510 |
|---|---------------------------------|--------|

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0 NTX057DA01 STATUS A+M  
0 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)0 CUTOVER OF WORKING T1 LINES USING NAILED UP BR0023  
0 CONNECTIONS  
0 DTC CUTOVER FEATURE BR0573  
0 NEW PERIPHERAL POTS LINE CUTOVER SUPPORT BC0895

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0 NTX057EA04 STATUS RTM  
0 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)0 CUTOVER OF LCM LINES BY DN AF0017  
0 CUTOVER OF WORKING T1 LINES USING NAILED UP BR0023  
0 CONNECTIONS  
0 DTC CUTOVER FEATURE BR0573  
0 ENET RETROFIT AL1618  
0 NEW PERIPHERAL POTS LINE CUTOVER SUPPORT BC0895  
0 NT-40 MEMORY HANDLING IMPROVEMENTS AG1923

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0 NTX058AD02 STATUS A+M  
0 POLLING OMS DATA VIA DATAPAC  
0 (REP. BY NTX059AB FROM BCS20)

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|   |                           |                      |        |
|---|---------------------------|----------------------|--------|
| 0 | AUTOMATIC POLLING OM DATA | VIA DATAPAC          | BC0129 |
| 0 | DPACSUB REWRITE           |                      | BC1376 |
| 0 | POLLING AMA DATA          | VIA DATAPAC - MANUAL | BC0083 |
| 0 |                           |                      | BC0113 |
| 0 |                           |                      | BR0016 |

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|---|-------------------|-------------------------------|--|
| 0 | NTX059AB04 STATUS | RTM                           |  |
| 0 |                   | POLLING OM & AUT.MSG          |  |
| 0 |                   | ACCTG.DATA VIA DATAPAC(UPG.OF |  |
| 0 |                   | NTX058AD                      |  |

|   |                                  |                      |        |
|---|----------------------------------|----------------------|--------|
| 0 | AUTOMATIC POLLING OM DATA        | VIA DATAPAC          | BC0129 |
| 0 | DATAPAC-TELECOM CANADA 1980 LAPB |                      | BC1696 |
| 0 | DPACSUB REWRITE                  |                      | BC1376 |
| 0 | DUPLICATED LAMA BILLING          |                      | BR0099 |
| 0 | POLLING AMA DATA                 | VIA DATAPAC -        | BR0263 |
| 0 | AUTOMATIC                        |                      |        |
| 0 | POLLING AMA DATA                 | VIA DATAPAC - MANUAL | BC0083 |
| 0 |                                  |                      | BC0113 |
| 0 |                                  |                      | BR0016 |
| 0 | POLLING OF AMA TAPE              |                      | BR0051 |
| 0 | XFER SIMULTANEOUS POLLING        |                      | BC1691 |

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|---|-------------------|-------------------------------|--|
| 0 | NTX060AA02 STATUS | A+M                           |  |
| 0 |                   | NETWORK MANAGEMENT - ENHANCED |  |
| 0 |                   | (REP. BY NTX060BA)            |  |

|   |                                                  |  |        |
|---|--------------------------------------------------|--|--------|
| 0 | HTR PEGGING AND MARKING                          |  | BC0023 |
| 0 | NETWORK MANAGEMENT (PHI)                         |  | BT0251 |
| 0 | NTWK MGNT - SELECT TRK RESERVATION/ALT OUT OF CH |  | BR0018 |
| 0 | RTNG                                             |  |        |

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0 NTX060AB11 STATUS RTM  
0 NETWORK MANAGEMENT

|                                                      |        |
|------------------------------------------------------|--------|
| 0 (NSG) ENHANCED NETWORK MANAGEMENT (CODE CONTROLS)  | BC0739 |
| 0 CANCEL AND SKIP CONTROLS                           | AF0154 |
| 0 COUNTRY CODE BLOCKING                              | BC0623 |
| 0 DIRECTIONAL RESERVATION EQUIPMENT (DRE)            | BR0250 |
| 0 ENHANCED CODE CONTROLS                             | AF0166 |
| 0 MACHINE CONGESTIONS (MC) ENHANCEMENT               | AF0181 |
| 0 MASS CALLING                                       | BC0235 |
| 0                                                    | BV0080 |
| 0 NETWORK MANAGEMENT                                 | BV0007 |
| 0 NETWORK MANAGEMENT (CODE BLOCKING)                 | BC0070 |
| 0 NETWORK MANAGEMENT (PHI)                           | BT0251 |
| 0 NETWORK MANAGEMENT SHORT CLLI SIMPLIFICATION       | BC1718 |
| 0 NETWORK MANAGEMENT TRUNK GROUP CONTROLS INTERFACE  | AF0056 |
| 0 REORG.                                             |        |
| 0 NETWORK MANAGEMENT TRUNK GROUP DATA REORGANIZATION | BC1722 |
| 0 NWMSD TABLE REWRITE                                | AF2087 |
| 0 PREFIX CODE CONTROLS                               | AF0582 |

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0 NTX060AE03 STATUS A+M  
0 NETWORK MANAGEMENT -  
0 ENHANCED(UPGRADED BY NTX060BA)

|                                                      |        |
|------------------------------------------------------|--------|
| 0 EA:ACCESS TANDEM - SELECTIVE INCOMING LOAD CONTROL | BC1033 |
| 0 HTR PEGGING AND MARKING                            | BC0023 |
| 0 NETWORK MANAGEMENT (PHI)                           | BT0251 |
| 0 NTKW MGNT - SELECT TRK RESERVATION/ALT OUT OF CH   | BR0018 |
| 0 RTNG                                               |        |
| 0 SELECTIVE DYNAMIC OVERLOAD CONTROL (SDOC) TRANSMIT | BR0379 |
| 0 MC3                                                |        |

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0 NTX060BA02 STATUS A+M  
0 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)

|                                                      |        |
|------------------------------------------------------|--------|
| 0 EA: END OFFICE - CODE CONTROLS                     | BC1128 |
| 0 EA:ACCESS TANDEM - SELECTIVE INCOMING LOAD CONTROL | BC1033 |
| 0 HTR PEGGING AND MARKING                            | BC0023 |
| 0 NETWORK MANAGEMENT (PHI)                           | BT0251 |
| 0 NTKW MGNT - SELECT TRK RESERVATION/ALT OUT OF CH   | BR0018 |
| 0 RTNG                                               |        |
| 0 REDUCED SILC GAPPING INTERVAL                      | BC1398 |
| 0 SELECTIVE DYNAMIC OVERLOAD CONTROL (SDOC) TRANSMIT | BR0379 |
| 0 MC3                                                |        |
| 0 SILC DATABASE ROBUSTNESS                           | AF0081 |

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0 NTX060BB01 STATUS RTM  
0 NETWORK MANAGEMENT - ENHANCED

|                                                      |        |
|------------------------------------------------------|--------|
| 0 EA: END OFFICE - CODE CONTROLS                     | BC1128 |
| 0 EA:ACCESS TANDEM - SELECTIVE INCOMING LOAD CONTROL | BC1033 |
| 0 FLEXIBLE REROUTES(FRR)                             | AF0096 |
| 0 HTR PEGGING AND MARKING                            | BC0023 |
| 0 NETWORK MANAGEMENT (PHI)                           | BT0251 |
| 0 NTKW MGNT - SELECT TRK RESERVATION/ALT OUT OF CH   | BR0018 |
| 0 RTNG                                               |        |
| 0 REDUCED SILC GAPPING INTERVAL                      | BC1398 |
| 0 SELECTIVE DYNAMIC OVERLOAD CONTROL (SDOC) TRANSMIT | BR0379 |
| 0 MC3                                                |        |
| 0 SILC DATABASE ROBUSTNESS                           | AF0081 |

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0 NTX061AA01 STATUS RTM  
0 CIRCUIT SWITCHED DIGITAL DATA  
0 SERVICE I

|   |                                 |        |
|---|---------------------------------|--------|
| 0 | CLOSED USER GROUP               | BC0264 |
| 0 | CLOSED USER GROUP - CSDDS       | BR0351 |
| 0 | DIGITAL DATA (CSDDS)            | BR0137 |
| 0 | DIGITAL DATA (CSDDS) LINE       | BV0389 |
| 0 |                                 | BV0390 |
| 0 |                                 | BV0391 |
| 0 |                                 | BV0392 |
| 0 |                                 | BV0393 |
| 0 |                                 | BV0394 |
| 0 |                                 | BV0544 |
| 0 |                                 | BV0545 |
| 0 | LAMA (CSDDS)                    | BC0265 |
| 0 | LAMA - CSDDS                    | BR0353 |
| 0 | POST BY LINE CLASS CODE (CSDDS) | BC0263 |
| 0 | POST BY LINE CLASS CODE - CSDDS | BR0352 |

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0 -----0 NTX063AA02 STATUS RTM  
0 ECHO SUPPRESSOR

|   |                                                            |        |
|---|------------------------------------------------------------|--------|
| 0 | DIGITAL ECHO SUPPRESSORS                                   | BR0014 |
| 0 | DIGITAL ECHO SUPPRESSORS                                   | BC0237 |
| 0 | DIGITAL ECHO SUPPRESSORS UTILITY                           | BC0052 |
| 0 | ECHO SUPPRESSOR CIRCUITS - EXTENDED TO 5000                | BR0403 |
| 0 | INTERFACE WITH 108 TEST LINE                               | BR0015 |
| 0 | 4 WIRE E TRUNK WITH ECHO SUPPRESSOR CONTROL(2X72AB/<br>AC) | BC0182 |

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0 NTX065AA12 STATUS RTM  
0 SERVICE ANALYSIS

|   |                                         |        |
|---|-----------------------------------------|--------|
| 0 | AOSS SERVICE ANALYSIS                   | BV1350 |
| 0 | DMS-300 SERVICE ANALYSIS ENHANCEMENTS   | AE0669 |
| 0 | DMS300 - SERVICE ANALYSIS               | BC0833 |
| 0 | MONITOR TALK                            | BC0091 |
| 0 | S.A. INCREASED SAMPLE RATE              | BR0579 |
| 0 | SA DIALBACK ON ATC TRUNKS               | AF2310 |
| 0 | SA SELECTION PER RFF248                 | BC0304 |
| 0 | SERVICE ANALYSIS                        | BV0009 |
| 0 | SERVICE ANALYSIS                        | BV0070 |
| 0 | SERVICE ANALYSIS                        | BC0309 |
| 0 |                                         | BC0345 |
| 0 |                                         | BC0346 |
| 0 |                                         | BC0347 |
| 0 |                                         | BV0231 |
| 0 | SERVICE ANALYSIS                        | BV0075 |
| 0 | SERVICE ANALYSIS - LOCAL                | BR0248 |
| 0 | SERVICE ANALYSIS FOR ATC TRUNKS         | AF1253 |
| 0 | SERVICE ANALYSIS MONITOR LINK DIAL-BACK | BR0309 |
| 0 | TOPS SERVICE ANALYSIS ENHANCEMENTS      | NC0052 |

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0 -----0 NTX066AA02 STATUS A+M  
0 BILINGUAL INTERFACE(UPG BY.  
0 NTX066AB)

0 (KS) BNR CHANGES FOR GERMAN BMMI BC1260

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0 NTX066AB01 STATUS RTM  
0 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)0 (KS) BNR CHANGES FOR GERMAN BMMI BC1260  
0 BILINGUAL INTERFACE BR0253  
0 BMMI ENHANCEMENTS NC0102

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0 -----0 NTX070AB02 STATUS RTM  
0 AUTOVON - ASSISTANCE OPERATOR  
0 SYSTEM0 DIAL SERVICE ASSIST POSN. SYS.ADMINISTRATION SYSTEM BR0275  
0 DIAL SERVICE ASSIST POSN. SYS.CALL DETAIL RECORDING BR0277  
0 DIAL SERVICE ASSIST POSN. SYS.CONFERENCE CONTROL BR0276  
0 DIAL SERVICE ASSIST POSN. SYS.GENERAL REQUIREMENTS BC0418  
0 BR0274  
0 BV0573  
0 BV0574  
0 BV0576  
0 BV0577  
0 BV0578  
0 BV0579  
0 DSA POS. PRIORITY QUEUEING BR0561

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0 NTX070AD01 STATUS RTM  
0 AUTOVON - AUTOMATIC SERVICE  
0 OBSERVING0 AUTOMATIC SERVICE OBSERVING CALL INFORMATION ON BV0264  
0 MAG TAPE  
0 BV0400  
0 AUTOMATIC SERVICE OBSERVING TTY OUTPUT BR0296

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0 -----0 NTX070AE01 STATUS RTM  
0 AUTOVON - TRAFFIC SURVEILLANCE0 STATUS ASSEMBLY SYSTEM (SAS) CONUS BV0109  
0 BV0401

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0 -----0 NTX072AA01 STATUS RTM  
0 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)0 DIRECT DIAL OVERSEAS (DDO) BV0232  
0 2-STAGE OUTPULSING TO GATEWAY (U.S) BR0053

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0 NTX074AA09 STATUS RTM  
0 DISK DATA STORAGE SYSTEM

|                                             |                   |        |
|---------------------------------------------|-------------------|--------|
| 0 DATA RECORDING AND RECALL                 | AUTOMATIC MESSAGE | BC0313 |
| 0 ACCOUNTING                                |                   |        |
| 0 DATA RECORDING AND RECALL                 | JOURNAL FILE      | BC0330 |
| 0 DATA RECORDING AND RECALL                 | OPERATIONAL       | BC0280 |
| 0 MEASUREMENTS                              |                   |        |
| 0                                           |                   | BC0421 |
| 0 DDU ROBUSTNESS - I                        |                   | AL1885 |
| 0 DISK PHYSICAL FILE SYSTEM REWRITE         |                   | BR0792 |
| 0 DISK SOFTWARE REWRITE - PHASE 2           |                   | AL0928 |
| 0 DISK STORAGE OF PERIPHERAL LOADS          |                   | BC0420 |
| 0 ENHANCED DISK MNTCE                       |                   | BC0435 |
| 0 LOADING/UNLOADING OF OFFICE IMAGE NON-RES |                   | BC0112 |
| 0 LOG RETRIEVE FACILITY FOR E1 INCIDENTS    |                   | AG1004 |
| 0 PENDING ORDER FILE ON DISK                |                   | BR0219 |
| 0 PRESCHEDULED IMAGE TAKING FOR IOC DISKS   |                   | AG1043 |
| 0 SEMI-AUTOMATIC DIRP DISK TO TAPE COPY     |                   | BC1123 |
| 0 14 INCH WINCHESTER DISK DRIVE             |                   | BC0284 |
| 0                                           |                   | BR0279 |
| 0 150 M BYTE DISK SUPPORT                   |                   | BC0765 |

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0 -----0 NTX076AA01 STATUS RTM  
0 AMA - ENHANCED

0 TRUNK IDENTIFIER IN AMA/SMDR RECORD BR0156

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0 NTX077AA01 STATUS RTM  
0 ONLINE PERIPHERAL SOFTWARE

0 PM LOADS IN MAIN MEMORY BR0331

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0 NTX080AA02 STATUS RTM  
0 LAMA ENHANCED

0 INDIVIDUAL LINE BILLING ON INWATS CALLS BR0500  
0 INWATS RECORD ON AMA TAPE BR0258

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0 NTX080BA01 STATUS RTM  
0 TERMINATING CALL BILLING(NT  
0 FORMAT)

0 BILLING ON TERMINATING CALLS TO A LINE BR0520

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0 NTX080CA01 STATUS A+M  
0 TERMINATING CALL BILLING(ATT  
0 FORMAT) (REP.BY NTX083AA)

0 BILLING ON TERMINATING CALLS TO A LINE BR0520

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0 Software Features  
0 Appendix S

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0 NTX082AA01 STATUS RTM  
0 SUBSCRIBER LINE MEASUREMENTS

0 OM - DMO SELECTIVE SLU SCAN INTERVAL BR0361  
0 SUBSCRIBER LINE PEG COUNT MEASUREMENT BR0268  
0 SUBSCRIBER LINE USAGE REGISTERS BV0064

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0 NTX082AB01 STATUS A+M  
0 SUBSCRIBER LINE USAGE

0 SUBSCRIBER LINE USAGE REGISTERS BV0064

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0 NTX083AA01 STATUS RTM  
0 FEATURE GROUP A

0 BILLING ON TERMINATING CALLS TO A LINE BR0520  
0 FGA TERMINATING RECORD BR0768

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0 NTX085AA05 STATUS RTM  
0 TRAFFIC SEPARATION PEG COUNT

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | EA: END OFFICE - OPERATIONAL MEASUREMENTS      | BC1127 |
| 0 | EA: END OFFICE - TSMS                          | BC1132 |
| 0 | TRAF SEP DESTINATION DATA                      | BC0393 |
| 0 | TSMS PDAB/PDIO PEG COUNT                       | BR0484 |
| 0 | TSMS PEG COUNT ON IBN                          | BR0464 |
| 0 | TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16 | BC0385 |
| 0 |                                                | BC0386 |
| 0 |                                                | BC0387 |
| 0 |                                                | BC0388 |
| 0 |                                                | BC0390 |
| 0 |                                                | BC0391 |
| 0 |                                                | BC0392 |
| 0 |                                                | BC0398 |
| 0 |                                                | BC0401 |

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0 NTX087AA04 STATUS RTM  
0 TRAFFIC SEPARATION USAGE

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | EA: END OFFICE - TSMS                       | BC1132 |
| 0 | TSMS PDAB/PDIO USAGE                        | BR0485 |
| 0 | TSMS USAGE ON IBN                           | BR0465 |
| 0 | TSMS USAGE SOURCE AND DISPOSITION UP TO 128 | BC0394 |
| 0 |                                             | BC0395 |
| 0 |                                             | BC0396 |
| 0 |                                             | BC0397 |

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0 NTX088AA04 STATUS RTM  
0 TRAFFIC SEPARATION REPORT

|   |                                      |        |
|---|--------------------------------------|--------|
| 0 | EA: END OFFICE - TSMS                | BC1132 |
| 0 | TSMS REPORT SUMMARIZED               | BC0399 |
| 0 | TSMS REPORT SUMMARIZED FOR PDAB/PDTL | BR0486 |
| 0 | TSMS REPORT SUMMARIZED ON IBN        | BR0466 |

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0 NTX089AA01 STATUS RTM  
0 ENHANCED COIN SERVICES

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | IMPROVED COIN SERVICE - REVENUE ALLOCATION | AF1400 |
|---|--------------------------------------------|--------|

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0 NTX090AA01 STATUS RTM  
0 COIN SERVICES

|   |                              |        |
|---|------------------------------|--------|
| 0 | LOCAL COIN OVERTIME CHARGING | BR0372 |
|---|------------------------------|--------|

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0 NTX093AA01 STATUS RTM  
0 REMOTE/TOLL CALL FORWARDING-  
0 TOPS OFFICE

|   |                        |             |        |
|---|------------------------|-------------|--------|
| 0 | REMOTE CALL FORWARDING | - LAMA MODE | BR0323 |
|---|------------------------|-------------|--------|

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0 Software Features  
0 Appendix S

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0 NTX094AA01 STATUS RTM  
0 DIGITAL SUBSCRIBER SERVICES

0 2-WAY DIGITAL PBX TRUNKS (R0:459,483,430,502) BC0747

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0 -----0 NTX096AA01 STATUS RTM  
0 TOPS NOTIS FORMAT

0 NOTIS FORMAT FOR TROUBLE REPORT BR0374

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0 -----0 NTX098AA07 STATUS RTM  
0 BELLCORE CAMA FORMAT0 AMA TEST CALL ENHANCEMENTS AF1981  
0 AT & T FORMAT FOR AMA RECORDS AND AMATAPE (XREF BC0505  
0 R0378)  
0 AT CAMA FORMAT BR0378  
0 BC AMA INTERLATA WATS(CCI 111) BC1698  
0 CALL CODES 009,033,121 ASSIGNMENT VIA TRANSLATION BR0759  
0 DATAPATH AMA FORMAT-CALL CODES 072 AND 117 BR0793  
0 INCREASE FLEXIBILITY OF AMA SOFTWARE PLATFORM AF2755  
0 VFG AMA SUPPORT FOR FX AND ETS CALLS AF1093

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0 NTX099AA01 STATUS RTM  
0 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS

0 OM TRANSFER PERIODAND HISTORY CLASS EHANCEMENTS BR0382

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0 NTX100AA27 STATUS RTM  
0 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | AC-EXTENDED CALLS TO CFB/CFD                 | AC0038 |
| 0 | ACCESS TO CCSA                               | BC0204 |
| 0 |                                              | BV0420 |
| 0 |                                              | BV0488 |
| 0 | ACCESS TO CO FROM PBX                        | BV0480 |
| 0 |                                              | BV0485 |
| 0 | ACCESS TO ETN                                | BV0585 |
| 0 | ATTENDANT - AUTO DIAL                        | BC0964 |
| 0 | ATTENDANT CALL PARK RECALL TIMER             | BR0525 |
| 0 | ATTENDANT CALL SELECTION                     | BV0489 |
| 0 | ATTENDANT CAMP-ON                            | BV0446 |
| 0 | ATTENDANT CONFERENCE (MAXIMUM SIX CONFEREES) | BV0437 |
| 0 | ATTENDANT CONSOLE CALL HOLD RECALL           | AD2488 |
| 0 | ATTENDANT CONSOLE DATA (SEE V0432)           | BZ0013 |
| 0 | ATTENDANT CONSOLE DISPLAY                    | BV0592 |
| 0 | ATTENDANT CONSOLE DISPLAY (ENHANCE 1)        | BV0608 |
| 0 | ATTENDANT CONSOLE DISPLAY (ENHANCE 2)        | BV0891 |
| 0 | ATTENDANT CONTROL OF TRUNK GROUP ACCESS      | BV0490 |
| 0 |                                              | BV0557 |
| 0 | ATTENDANT LOCKED LOOP OPERATION              | BV0438 |
| 0 | ATTENDANT RELEASE UPON COMPLETION OF DIALING | BV1134 |
| 0 | ATTENDANT SERVICE LOCAL CONSOLE              | BC0205 |
| 0 |                                              | BC0206 |

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|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 |                                                | BC0207 |
| 0 |                                                | BC0208 |
| 0 |                                                | BV0548 |
| 0 |                                                | BV0549 |
| 0 |                                                | BV0550 |
| 0 |                                                | BV0551 |
| 0 |                                                | BV0556 |
| 0 | ATTENDANT SPEED CALLING                        | BV0584 |
| 0 | ATTENDANT TRANSFER                             | BV0436 |
| 0 | AUDIO TABLE EXPANSION                          | AD0822 |
| 0 | AUTOMATIC RECALL                               | BV0443 |
| 0 |                                                | BV0457 |
| 0 | BLIND TRANSFER RECALL                          | AD0905 |
| 0 | BLIND TRANSFER RECALL INDENTIFICATION          | AD0990 |
| 0 | BUSY VERIFICATION - STATIONS                   | BV0440 |
| 0 | BUSY VERIFICATION -TRUNKS                      | BV0441 |
| 0 | CALL FORWARD ALL CALLS                         | BV0451 |
| 0 | CALL FORWARD BUSY                              | BV0453 |
| 0 | CALL FORWARD NO ANSWER                         | BV0452 |
| 0 | CALL FORWARD DON'T ANSWER INTERACTION WITH 3WC | AG1541 |
| 0 | CALL PARK                                      | BV0534 |
| 0 | CALL PICKUP                                    | BV0455 |
| 0 | CALL WAITING                                   | BV0456 |
| 0 | CCSA AMA RECORDING                             | BC1263 |
| 0 | CFD FROM HUNT GROUP STATION                    | AD0906 |
| 0 | CFGDA FOR HUNT GROUPS                          | AD1164 |
| 0 | CLASS OF SERVICE RESTRICTIONS FULLY RESTRICTED | BV0415 |
| 0 | SERVICE                                        |        |
| 0 |                                                | BV0416 |
| 0 | CODE CALL ACCESS                               | BV0501 |
| 0 | CODE RESTRICTION                               | BV0421 |
| 0 | CONSULTATION HOLD                              | BV0418 |
| 0 | CPU DATAFILL ENHANCEMENTS                      | BC1453 |
| 0 | CUSTOMER DATA (SEE V0412)                      | BZ0009 |
| 0 | CUSTOMER GROUP TRANSPARENCY                    | BR0682 |
| 0 | DATA CALL PROTECTION                           | BV0442 |
| 0 | DIAL PULSE CONVERSION DP TO DTMF               | BV0422 |
| 0 |                                                | BV0423 |
| 0 |                                                | BV0486 |
| 0 | DIAL TONE UPON TRUNK SEIZURE                   | BV0908 |
| 0 | DICTATION ACCESS AND CONTROL (DTMF ONLY)       | BV0504 |
| 0 | DIRECT INWARD DIALLING (DID)                   | BV0413 |
| 0 | DIRECT OUTWARD DIALLING (DOD)                  | BV0414 |
| 0 | DIRECTED CALL PARK                             | BV1535 |
| 0 | DISTINCTIVE RINGING ENHANCEMENTS               | AF2303 |
| 0 | EARTH-CALLING POST DIAL DELAY REDUCTION        | AE0401 |
| 0 | END TO END SIGNALLING VIA SPEED CALL           | NC0001 |

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|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | ENHANCED SERIAL CALLING                              | AD2068 |
| 0 | ESN - TONE DETECTION                                 | BV0787 |
| 0 | FLEXIBLE INTERCEPT                                   | BV0427 |
| 0 | FLEXIBLE STATION CONTROLLED CONFERENCE (500/2500     | BV0913 |
| 0 | SETS)                                                |        |
| 0 | GOC - 990 NXX CODE                                   | BC0810 |
| 0 | IBN ATTENDANT CONSOLE - DMODEM ROBUSTNESS            | AG1489 |
| 0 | IBN CALL FORWARD VALIDATION                          | BR0549 |
| 0 | IBN CONSOLE INTERFACE (SEE V0432)                    | BZ0023 |
| 0 | IBN EXPANDED SPEED CALL LISTS                        | AC0265 |
| 0 | IBN EXPANSION - FTRQ FACILITY AND EXT BLOCKS         | AC0312 |
| 0 | IBN FEATURE ACTIVATION OM'S I                        | BC1753 |
| 0 | IBN LCC COMPATIBILITY WITH FRO LINE OPTION           | AF1936 |
| 0 | IBN LINE DATA (SEE V0412)                            | BZ0010 |
| 0 | IBN QUANTITY CONTROL (100 LINES)                     | BR0526 |
| 0 | IBN TRUNK DATA (SEE V0412)                           | BZ0011 |
| 0 | IBNRTE TABLE CAPACITY INCREASE                       | AF2012 |
| 0 | INCREASE IN NUMBER OF IBN CUSTOMER GROUPS            | BC0811 |
| 0 | INCREASE NUMBER OF EQUIVALENT DN APPEARANCES FOR IBN | BC1482 |
| 0 | INTERPOSITION CALLS AND TRANSFERS                    | BV0591 |
| 0 | LOCKOUT                                              | BV0448 |
| 0 | LOUD SPEAKER & RADIO PAGING ACCESS                   | BV0502 |
| 0 |                                                      | BV0503 |
| 0 | MAP DISPLAY FOR ATTENDANT OM                         | BV0838 |
| 0 | MEET-ME CONFERENCE                                   | BV0477 |
| 0 | MULTIPLE CONSOLE OPERATION                           | BV0435 |
| 0 | MULTIPLE LISTED DIRECTORY NUMBERS                    | BV0434 |
| 0 | NIGHT SERVICE TRUNK ANSWER FROM ANY                  | BV0445 |
| 0 | STATION                                              |        |
| 0 |                                                      | BV0505 |
| 0 | NIGHT SERVICE - FLEXIBLE                             | BV0688 |
| 0 | NSS PROPAGATE ANSWER BACK VIA ATDS                   | AD3492 |
| 0 | OFFHOOK QUEUING WITH NEW PROMPT TONE                 | BV1214 |
| 0 | OPERATIONAL MEASUREMENTS - IBN                       | BC0203 |
| 0 |                                                      | BV0460 |
| 0 |                                                      | BV0461 |
| 0 | OPTIONAL ANSWER SUPERVISION FROM ATTENDANT QUEUE     | AL0213 |
| 0 | OVERRIDE ACR FOR CFU                                 | AD2810 |
| 0 | PERMANENT HOLD (500/2500 SETS)                       | BV0944 |
| 0 | POSITION BUSY                                        | BV0560 |
| 0 | QUERY FUNCTIONAL STATION GROUPINGS                   | BR0795 |
| 0 | RING AGAIN                                           | BV0533 |
| 0 | RING AGAIN CANCELLATION TIMER                        | AD2851 |
| 0 | SECREC                                               | BV0449 |
| 0 | SEMI-RESTRICTED INCOMING LINES CALL INTERCEPT        | NC0083 |
| 0 | SERVICE ORDER SYSTEM                                 | BV0462 |
| 0 | SIMPLIFIED DIALING                                   | BV0509 |

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|---|---------------------------------------------------|--------|
| 0 | SPECIAL INTERCEPT THROUGH SERVICE ORDERS          | BR0461 |
| 0 | SPEED CALLING                                     | BV0459 |
| 0 | SPEED CALLING                                     | BV0458 |
| 0 | STATION TO STATION CALLING                        | BV0412 |
| 0 | STORING OF 24 DIALED DIGITS                       | BC1027 |
| 0 | STRAIGHTFORWARD OUTWARD COMPLETION                | BV0432 |
| 0 | TGB/TAC ACCESS THRU SPECIAL KEY                   | BC0510 |
| 0 | THROUGH DIALLING                                  | BV0491 |
| 0 | TRANSFER CALLS TO RESTRICTED STATION              | AF1935 |
| 0 | TRUNK BUSY VERIFY TONE                            | BC1246 |
| 0 | TWO-WAY SPLITTING                                 | BV0450 |
| 0 | UNIFORM CALL DISTRIBUTION FROM QUEUE              | BV0433 |
| 0 | UNIFORM NUMBERING PLAN CAPABILITY                 | BV0417 |
| 0 | VARIABLE LENGTH/SAME LEADING DIGIT(S) TRANSLATION | BR0740 |
| 0 | WILD CARD KEY                                     | BC0500 |
| 0 | 2-WAY DIGITAL FX TRUNK - BUSINESS SERVICES        | BR0369 |
| 0 | 2-WAY FX SERVICE WITH DCM TERMINATION             | BV0482 |
| 0 | 3-WAY CONFERENCE/TRANSFER                         | BV0454 |
| 0 | 3WC DIAL 0 FOR 608 CORD BOARD                     | BC1477 |
| 0 | 3WC/CXR TO 2500 SET CALL WAITING INTERACTIONS     | AL0664 |
| 0 | 6 PORT CONFERENCE CIRCUIT USE CONTROL             | BV1122 |

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0 NTX101AA14 STATUS RTM  
0 IBN - ENHANCED BUSINESS  
0 SERVICES

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | ATTENDANT ANSWER TIME BY PRECEDENCE            | BV1932 |
| 0 | ATTENDANT CONSOLE END-TO-END SIGNALLING        | BR0791 |
| 0 | ATTENDANT DISPLAY OF QUEUED CALLS BY ICI KEY   | BV1920 |
| 0 | ATTENDANT TO UCD                               | BC1937 |
| 0 | AUDIO INPUT ON INCOMING CALLS IN QUEUE         | BV0602 |
| 0 | AUDIO INTERLUDE                                | BC0946 |
| 0 | DISTINCTIVE AND RING AGAIN RINGING - FREQUENCY | BR0531 |
| 0 | RINGING                                        |        |
| 0 | DISTINCTIVE RINGING                            | BV0586 |
| 0 | DTMF OUTPULSING ON A LINE                      | BV1124 |
| 0 | EXECUTIVE RIGHT OF WAY                         | BV0597 |
| 0 | FLEXIBLE CONSOLE ALERTING.                     | BV1132 |
| 0 | GENERALIZED DISTINCTIVE RINGING                | AD0011 |
| 0 | LAST NUMBER REDIAL (LNR)                       | BC1204 |

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|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | OUTPULSING VERIFICATION USING DMIS               | BC0689 |
| 0 | SECOND AND THIRD DELAY ANNOUNCEMENTS.            | AD1128 |
| 0 | UCD QUEUE STATUS LAMP.                           | AD0236 |
| 0 | UNIFORM CALL DISTRIBUTION (TO 500/2500 TELEPHONE | BV0601 |
| 0 | SETS)                                            |        |
| 0 | VARIABLE TYPES OF OUTPULSING ON SAME CALL        | BV0971 |
| 0 | 3WC/CALL TRANSFER FOR UCD                        | AF1277 |

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0 NTX102AA05 STATUS RTM  
0 IBN - STATION MESSAGE DETAIL  
0 RECORDING

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | AMA FAILURE ROUTING OPTIONS         | BR0475 |
| 0 | ANI INFORMATION IN SMDR OUTPUT      | AF1454 |
| 0 | ESN - ANSWER SUPERVISION GENERATION | BV0788 |
| 0 | STATION MESSAGE DETAIL RECORDING    | BV0463 |
| 0 | TRUNK IDENTIFIER IN AMA/SMDR RECORD | BR0156 |

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0 NTX103AA12 STATUS RTM  
0 IBN - SMDR ENHANCED

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | ACCOUNT CODES                                      | BV0493 |
| 0 | ATTENDANT CALL DETAIL ENTRY                        | BV0495 |
| 0 | AUTH CODE ERROR CORRECTION                         | BV1536 |
| 0 | AUTHORIZATION CODES                                | BV0494 |
| 0 | DISA                                               | BV0508 |
| 0 | DISA - REMOVE AUTH CODE TIMEOUT                    | BV1543 |
| 0 | DISA : INVALID AUTHCODE TREATMENT OPTION           | AD2964 |
| 0 | DISA DEFINABLE TIMEOUT DESTINATION                 | AD0729 |
| 0 | DISA ENHANCEMENTS                                  | AD0907 |
| 0 | DSN ACCESS RESTRICTION                             | AD2085 |
| 0 | ESN - AUTHORIZATION CODES                          | BV0783 |
| 0 | IBN AUTH CODES FOR ALTERNATE ROUTE SELECTION (ARS) | BR0822 |



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0 INCREASE AUTH CODES PER CUSTOMER GROUP BC1252  
0 REMOVE TIMEOUT BETWEEN AUTHCODE AND SECONDARY DIAL BR0524  
0 TONE  
0 SEPARATE OUTPUT FILE FOR DEX/SMDR DATA BR0368  
0 SEPARATE SMDR OUTPUT FILES BY CUST GROUP BR0399

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0 NTX103BA02 STATUS RTM  
0 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES

0 STATION SPECIFIC AUTH CODES BR0725  
0 STATION SPECIFIC AUTHCODE - CDC ENHANCEMENT AD0938

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0 NTX105AA03 STATUS RTM  
0 TRUNK QUEUING

0 ARS - (BASIC) BV0506  
0 CALL BACK QUEUING (BASIC) BV0542  
0 ERWT FOR LINES, TRUNKS FOR ARS, CALL BACK QUEUE BV0698  
0 FEATURES  
0 ESN - CALL-BACK QUEUING BV0785  
0 ESN - OFF-HOOK QUEUING BV0784  
0 OFF-HOOK QUEUING BV0507  
0 QUEUEING OM'S PER ROUTE BR0735

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0 NTX106AA10 STATUS RTM  
0 IBN - PROPRIETARY BUSINESS SET

|   |                                                 |        |
|---|-------------------------------------------------|--------|
| 0 | AUTOMATIC LINE AND MADN                         | BR0805 |
| 0 | BUSINESS SET - 36 BUTTON ADD ON SUPPORT         | AL0128 |
| 0 | BUSINESS SET CALL WAITING ORIGINATE             | AD1515 |
| 0 | BUSINESS SET DIAL CALL WAITING                  | AD1516 |
| 0 | DMS-100 SUPPORT FOR M5212                       | AG2302 |
| 0 | END TO END SIGNALLING IN PLGC                   | AE0457 |
| 0 | KEY ADDRESSING FOR REPACKAGE PPHONE             | BV2059 |
| 0 | MADN SERVICE ODERS                              | BC1025 |
| 0 | MDC CIRCUIT TEST ENHANCEMENT                    | AG0979 |
| 0 | M518 SUPPORT AND INTRODUCTION                   | AG0978 |
| 0 | P-PHONE ADD ON MODULE SOFTWARE                  | BV0993 |
| 0 | P-PHONE AUTO ANSWER BACK                        | BV0934 |
| 0 | P-PHONE AUTOMATIC DIAL                          | BV0834 |
| 0 | P-PHONE BUSY OVERRIDE                           | BV0949 |
| 0 | P-PHONE CALL FORWARD ALL CALLS FEATURE KEY S/W  | BV0820 |
| 0 | P-PHONE CALL PARK                               | BV0938 |
| 0 | P-PHONE CALL PICKUP FEATURE KEY S/W             | BV0821 |
| 0 | P-PHONE CALL WAITING                            | BV0939 |
| 0 | P-PHONE END TO END SIGNALLING                   | BV0940 |
| 0 | P-PHONE HELD CALLS                              | BV0818 |
| 0 | P-PHONE INDIVIDUAL BUSINESS LINE                | BV0819 |
| 0 | P-PHONE INTERCOM                                | BV0937 |
| 0 | P-PHONE LINECARD                                | AE0226 |
| 0 | P-PHONE LISTEN ON HOLD                          | BV0950 |
| 0 | P-PHONE MADN MCA (ACROSS SWITCH)                | BV0956 |
| 0 | P-PHONE MADN SCA (ACROSS SWITCH)                | BV0954 |
| 0 | P-PHONE MAKE SET BUSY                           | BV0936 |
| 0 | P-PHONE MALICIOUS CALL HOLD                     | BV0836 |
| 0 | P-PHONE ONHOOK DIALING                          | BV0957 |
| 0 | P-PHONE PRIVACY RELEASE (ACROSS SWITCH)         | BV0952 |
| 0 | P-PHONE RING-AGAIN FEATURE KEY S/W              | BV0813 |
| 0 | P-PHONE SERVICE ORDER SYSTEM                    | BV0823 |
| 0 | P-PHONE SPEED CALLING FEATURE KEY S/W           | BV0817 |
| 0 | P-PHONE 3W CALLING/XFER                         | BV0941 |
| 0 | P-PHONE 30-PORT CONFERENCE                      | BV0935 |
| 0 | P_PHONE - IBN BASIC CALL                        | BV0968 |
| 0 | P_PHONE - POTS BASIC CALL                       | BV0970 |
| 0 | P_PHONE ADDONS & EXTENSION FACILITY MAINTENANCE | BC1172 |
| 0 | P_PHONE AUTOMATIC LINE                          | BC0932 |
| 0 | P_PHONE CALL BACK QUEUING                       | BC0931 |
| 0 | P_PHONE EXTENSION SETS                          | BF0371 |
| 0 | P_PHONE GROUP INTERCOM.                         | BC0930 |

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|   |                                   |        |
|---|-----------------------------------|--------|
| 0 | P_PHONE TERMINATING LINE FEATURES | BC0933 |
| 0 | SERVORD CLEANUP FOR PPHONE        | BC2041 |
| 0 | SHORT HUNT ON P_PHONE             | BR0720 |

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|---|------------------------|-----|
| 0 | NTX108AA05 STATUS      | RTM |
| 0 | IBN - DISPLAY FEATURES |     |

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | CALL FORWARD REASON DISPLAY         | AD0414 |
| 0 | CALL FORWARD/AUTOMATIC DIAL DISPLAY | AL0026 |
| 0 | ENHANCED EBS REASON DISPLAY         | AG0858 |
| 0 | M5209 INTRODUCTION                  | AC0309 |
| 0 | P-PHONE DISPLAY CALLED NUMBER       | BV0987 |
| 0 | P-PHONE DISPLAY CALLING NUMBER      | BV0989 |
| 0 | P-PHONE QUERY TIME KEY              | BV0991 |
| 0 | P_PHONE FEATURE DISPLAY             | BC1021 |

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|---|-------------------|-----|
| 0 | NTX110AA01 STATUS | RTM |
| 0 | IBN - HOSPITAL    |     |

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|---|----------------|--------|
| 0 | DO NOT DISTURB | BV0587 |
|---|----------------|--------|

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|---|------------------------|-----|
| 0 | NTX111AA03 STATUS      | RTM |
| 0 | IBN - LARGE CONFERENCE |     |

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | ATTENDANT SET UP CONFERENCE:10 OR MORE CONFEREES | BV0912 |
| 0 | FLEXIBLE STATION CONTROLLED CONFERENCE (500/2500 | BV0913 |

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0 SETS)  
0 MEET ME CONFERENCE FEATURE EXPANSION

BV0958

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0 NTX112AA01 STATUS A+M  
0 IBN-VIRTUAL FACILITY.GRP. FOR  
0 INWATS/OUTWATS(UPG. BY  
0 NTX112AB

0 IBN CLASS 5 INWATS  
0 IBN CLASS 5 PSEUDO OUTWATS  
0 INWATS TO CENTREX CUSTOMER GROUP (BUS SERV)

BV0687  
BV0686  
BR0354

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0 NTX112AB03 STATUS RTM  
0 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)

0 ATTENDANT CONTROL OF VFG  
0 IBN CLASS 5 INWATS  
0 IBN CLASS 5 PSEUDO OUTWATS  
0 INWATS TO CENTREX CUSTOMER GROUP (BUS SERV)  
0 OHQ, CBQ FOR OUTWATS VFG  
0 VFG INWATS OVFL TOTALS TO AMA TAPE - IBN  
0 VFG TGB ON A/C  
0 VFG USAGE DATA

BV1411  
BV0687  
BV0686  
BR0354  
BV0967  
AL0603  
BV1409  
BC1182

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0 NTX113AA01 STATUS RTM  
0 IBN - AUTOVON INTERFACE

0 PRECEDENCE DEFLECTION TO A ROUTE BV1102

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0 -----0 NTX114AA01 STATUS RTM  
0 IBN - GOVERNMENT OF CANADA  
0 FEATURES (REPLACED BY  
0 NTX410AA)

0 DYNAMIC MEASUREMENTS BV1135

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0 -----0 NTX119AA05 STATUS RTM  
0 IBN-MESSAGE SERVICE

|                                                       |        |
|-------------------------------------------------------|--------|
| 0 ATTENDANT MESSAGE WAITING                           | BC0814 |
| 0 CALL REQUEST CALL PROCESSING ENHANCEMENTS           | AG1626 |
| 0 CALL REQUEST RETRIEVAL/CALL FORWARDING INTERACTION  | AM0169 |
| 0 CALL REQUEST RETRIEVE/KEYSET SHORT HUNT INTERACTION | AG1997 |
| 0 CONTROL                                             |        |
| 0 KEY ACCESS FOR MESSAGE WAITING INDICATION           | AJ0432 |
| 0 MESSAGE WAITING LAMP UPDATE - LINK PHONE            | BC0979 |
| 0 MESSAGE WAITING LINE CARD FACILITY MAINTENANCE      | BC0898 |
| 0 P-PHONE MESSAGE WAITING                             | BC0816 |
| 0 STATION MESSAGE WAITING                             | BC0815 |
| 0 STUTTERED DIAL TONE FOR MESSAGE WAITING             | BC0953 |

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0 NTX120AA01 STATUS RTM  
0 OFFICE HARDWARE INVENTORY  
0 PACKAGE0 H/W OFFICE RELEASE RECORDS IN DMS MEMORY  
0 OFFICE HARDWARE INVENTORY TABLEBR0350  
BC0276

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0 NTX121AA01 STATUS RTM  
0 OVERLAP OUTPUTSING (TRK TO  
0 TRK)

0 OVERLAP OUTPUTSING (TRUNK TO TRUNK)

BR0319

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0 NTX122AA02 STATUS RTM  
0 OM - CALL ATTEMPTS SUMMARY0 BASIC OM -INEFFECTIVE MACHINE ATTEMPTS  
0 BASIC OPERATIONAL MEASUREMENT - CALL DISPOSITION  
0 SUMMARYBR0446  
BR0345

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0 NTX127AA01 STATUS RTM  
0 WARM LINE

0 WARM LINE BR0400

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0 NTX128AA01 STATUS A+M  
0 ENHANCED ADMINISTRATION  
0 II(REPKGED TO NTX901AA AND  
0 NTX074AA

0 PENDING ORDER FILE ON DISK BR0219

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0 NTX129AA02 STATUS RTM  
0 TWO WAY OPERATOR OFFICE TRUNK

0 SWITCHED ACCESS TWO-WAY OPERATOR OFFICE TRKS BR0207  
0 (TWOOT)(PHIII)

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0 NTX131AA01 STATUS RTM  
0 AUXILIARY OPERATOR SERVICES  
0 SYSTEM

0 AOSS AMA FORMATOR BC0977  
0 AOSS CALL TRANSFER BV1356

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|---|---------------------------------------------------|--------|
| 0 | AOSS CONTROLLED TRAFFIC                           | BV1351 |
| 0 | AOSS FORCE MANAGEMENT SYSTEM                      | BC0976 |
| 0 | AOSS IN CHARGE POSITION & ASSISTANCE CAPABILITIES | BC0975 |
| 0 | AOSS INCHARGE POSITION                            | BV1419 |
| 0 | AOSS INTERCEPT CALLS                              | BC0974 |
| 0 | AOSS INTERTOLL TRUNKS                             | BC0972 |
| 0 | AOSS MFADS INTERFACE                              | BV1349 |
| 0 | AOSS OPERATIONAL MEASUREMENTS                     | BC0978 |
| 0 | AOSS OPTIONAL AMA TAPE ENTRIES                    | BV1355 |
| 0 | AOSS QUEUE OVERRIDE                               | BV1354 |
| 0 | AOSS TRACE REPORTS TO TADS                        | BV1352 |
| 0 | AOSS 411/555-1212/131 CALLS                       | BC0973 |
| 0 | COMBINED AOSS/TOPS TRUNK GROUPS                   | BV1357 |
| 0 | DEDICATED AOSS TRUNKS                             | BC0971 |
| 0 | TOPS AUXILIARY OPERATOR SERVICES SYSTEM (AOSS)    | BV1131 |

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|---|--------------------------------|-----|
| 0 | NTX134BA02 STATUS              | RTM |
| 0 | REMOTE OPERATOR CENTRALIZATION |     |
| 0 | DATA LINK HANDLING             |     |

|   |                                         |        |
|---|-----------------------------------------|--------|
| 0 | OC DATA LINK CALL PROCESSING ASPECT     | BC0695 |
| 0 | OC DATA LINK TABLE CONTROL              | BC0696 |
| 0 | OC DATA LINK UTILITY INTERFACE          | BC0694 |
| 0 | OC MESSAGE DEFINITION INTERFACE         | BC0699 |
| 0 | OC REMOTE TOPS TERMINATOR               | BV1128 |
| 0 | OPERATOR CENTRALIZATION - REMOTE (ETOF) | BV0776 |
| 0 | REMOTE ONI VIA O.C.                     | BR0602 |
| 0 | TOPS OC CROSS PROCESSOR CHANGES         | BC0564 |
| 0 | TOPS OC SETUP PROCESSOR CHANGES         | BC0565 |

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0 NTX136AA03 STATUS RTM  
0 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM

0 AUTOMATIC TRUNK MAINTENANCE SYSTEM (ATMS) BC0326  
0 ERL AND SRL CAPABILITY TO ATMS BC1157  
0 105 TESTLINE ERLSRL BF0547

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0 NTX139AA01 STATUS RTM  
0 REVERTIVE PULSING ON DIGITAL  
0 LINES

0 REVERTIVE PULSING SIGNALLING ON DTC (REF: F0201) BR0420

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0 NTX140AA02 STATUS RTM  
0 TOPS DIAL UP AUTOQUOTE

0 CC SUPPORT FOR THE DUAQ MODEMS BC1407  
0 DIAL-UP AUTOQUOTE BR0428  
0 DIALUP AUTOQUOTE AT 1200 BPS BC2138

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PRACTICE 297-1001-450

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0 NTX141AA01 STATUS RTM  
0 TOPS CITY ZONE RATING

0 CITY ZONE RATING BR0429

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0 NTX142AA02 STATUS RTM  
0 DS-1 64 KBPS CLEAR

0 CC DATA SUPPORT FOR 6X50AB BC2093  
0 CLEAR 64KBPS ON 6X50AB AL1717

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0 NTX143AA02 STATUS RTM  
0 DS-1 - ESF

0 CC DATA SUPPORT FOR 6X50AB BC2093  
0 ESF SUPPORT ON 6X50AB AL1565

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0 NTX145AA06 STATUS RTM  
0 REMOTE SWITCHING CENTER

0 BASIC MTCE FOR 3000 LINE REMOTE BV0973  
0 BASIC RMM SUPPORT FOR RCC BC0716  
0 CALL PROCESSING FOR LINES BC1484  
0 LINE CALL PROCESSING USING UTRS BF0664

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|---|------------------------------------------------|--------|
| 0 | OMS FOR 3000 LINE REMOTE                       | BV1108 |
| 0 | RCC C-SIDE NON-CONSECUTIVE LINKS               | AF0566 |
| 0 | RCC CSIDE LINK DIAGNOSTIC                      | AL0096 |
| 0 | RCC MISCELLANEOUS DOCUMENTATION                | AG0319 |
| 0 | RSC - LTC - LINE CALL PROCESSING               | BF0242 |
| 0 | RSC - RCC - BASIC MTC                          | BF0247 |
| 0 | RSC - RCC - DS1 MTC                            | BF0246 |
| 0 | RSC - RCC - 6X72 FORMATTER DIAGNOSTIC          | BF0249 |
| 0 | RSC ALT                                        | BC0894 |
| 0 | RSC CSM INTERFACE                              | BF0244 |
| 0 | RSC TRUNK WARM SWACT                           | BF0963 |
| 0 | SP DIGIT HANDLER AND MAINTENANCE TASK FOR UTRS | BF0663 |

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0 NTX146AA03 STATUS RTM  
0 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)

|   |                                         |        |
|---|-----------------------------------------|--------|
| 0 | BASIC RMM SUPPORT FOR RLCM              | BC0717 |
| 0 | LTU-LESS FACILITY MTCE                  | BC1019 |
| 0 | MTCE SUPPORT FOR RLCM                   | BC0720 |
| 0 | RLCM - LCM - TONES                      | BF0269 |
| 0 | RLCM - LCM - T1 SUPPORT                 | BF0270 |
| 0 | RLCM - LTC - PM MTC                     | BF0267 |
| 0 | RLCM - LTC - RMM CONTROL                | BF0259 |
| 0 | RLCM - LTC - SPCH PATH DIAG ENHANCEMENT | BF0427 |
| 0 | RMM BOOSTRAP MONITOR & LOADER           | BF0231 |
| 0 | RMM DATA TERMINAL PROCESSING            | BF0237 |
| 0 | RMM DP DIGIT COLLECTION                 | BF0238 |
| 0 | RMM DP OUTPULSING                       | BF0240 |
| 0 | RMM DT/MF DIGIT COLLECTION (SEE BF0254) | BF0239 |
| 0 | RMM MAINTENANCE & DIAGNOSTICS           | BF0235 |
| 0 | RMM SCAN MONITORING                     | BF0236 |

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0 NTX147AA01 STATUS A+M  
0 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPG. BY NTX147AB)

0 BASIC OPM CC MTCE SOFTWARE BC1440

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0 NTX147AB01 STATUS RTM  
0 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)0 BASIC OPM CC MTCE SOFTWARE BC1440  
0 OPM BATTERY MAINTENANCE AUDITS BR0811

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0 NTX149AA03 STATUS RTM  
0 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES0 DISTINCTIVE TONE BURST FOR EMERGENCY OPERATION. AD2665  
0 ESA-PREFIX TRANSLATION TABLE CONTROL BC2087  
0 RLCM/RCC ESA CHANNEL CAPACITY INCREASE AG0344  
0 RSC - ESA - PM MAINTENANCE BF0266  
0 RSC EMER. STAND ALONE OPERATION-POTS SUBSCRIB. BASIC BF0254  
0 SERVICE  
0 RSC ESA - AUTO UPDATE OF SUBSCRIBER/TRANSLATION DATA BV0975  
0 VIA DOW  
0 RSC-ESA ENTRY & EXIT BF0616  
0 RSC-ESA-STATIC DATA HANDLING BF0615  
0 RSC-ESA-STATIC DATA HANDLING IN XPM BF0940  
0 RSC-ESA-TRANSLATION BF0614

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0 NTX149AB03 STATUS RTM  
0 RSC ESA OPERATION - LINE AND  
0 TRUNK

|   |                                                              |        |
|---|--------------------------------------------------------------|--------|
| 0 | DISTINCTIVE TONE BURST FOR EMERGENCY OPERATION.              | AD2665 |
| 0 | ESA-PREFIX TRANSLATION TABLE CONTROL                         | BC2087 |
| 0 | RLCM/RCC ESA CHANNEL CAPACITY INCREASE                       | AG0344 |
| 0 | RSC - ESA - PM MAINTENANCE                                   | BF0266 |
| 0 | RSC - ESA TRANSLATION VERIFICATION DOCUMENTATION             | AG0374 |
| 0 | RSC - ESA TRUNK STATIC DATA HANDLING                         | AC0055 |
| 0 | RSC - ESA TRUNK TRANSLATIONS                                 | AC0057 |
| 0 | RSC - RCC - ESA TRUNK CALL PROCESSING                        | BF0532 |
| 0 | RSC - TRUNK INTEGRATION                                      | AC0056 |
| 0 | RSC EMER. STAND ALONE OPERATION-POTS SUBSCRIB. BASIC SERVICE | BF0254 |
| 0 | RSC ESA - AUTO UPDATE OF SUBSCRIBER/TRANSLATION DATA VIA DOW | BV0975 |
| 0 | RSC-ESA ENTRY & EXIT                                         | BF0616 |
| 0 | RSC-ESA-STATIC DATA HANDLING                                 | BF0615 |
| 0 | RSC-ESA-STATIC DATA HANDLING IN XPM                          | BF0940 |
| 0 | RSC-ESA-TRANSLATION                                          | BF0614 |

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0 NTX150AA04 STATUS RTM  
0 RSC - INTRA RSC CALLING

|   |                                         |        |
|---|-----------------------------------------|--------|
| 0 | INTRASWITCHED CMR ON RSC                | AG1159 |
| 0 | INTRASWITCHING - PHASE 1                | BF0367 |
| 0 | RCC LINE INTRASWITCHING PADS            | AG0318 |
| 0 | REMOTE INTRASWITCHING OM'S              | BC1154 |
| 0 | RSC - RCC - LINE INTRASWITCHING         | BF0256 |
| 0 | RSC INTRASWITCHED END TO END SIGNALLING | AG0068 |
| 0 | RSC INTRASWITCHING OM'S                 | BC1794 |

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0 NTX152AA02 STATUS A+M  
0 RSC TRUNKING (UPG. BY  
0 NTX152AB)0 RSC - ROUTING CONTROL BC1279  
0 RSC-RCC-TRUNK CALL PROCESSING BF0482

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0 NTX152AB01 STATUS RTM  
0 RSC TRUNKING (UPG. OF  
0 NTX152AA)0 RCC TRUNK PATHEND SUPPORT BC1363  
0 RCC TRUNKS - DYNAMIC CHANNELS AND INTRASWITCHING BC1281  
0 RSC - ROUTING CONTROL BC1279  
0 RSC-RCC-TRUNK CALL PROCESSING BF0482

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0 NTX154AA03 STATUS RTM  
0 RLCM - EMERGENCY STAND ALONE  
0 OPERATION0 CC MAINTENANCE SUPPORT FOR RLCM ESA CALL PROCESSING AL0071  
0 ESA EXIT SUPPORT FOR RLCM AL0070  
0 RLCM - ESA - MESSAGING BF0262  
0 RLCM - ESA - SINGLE PROCESSOR CONFIGURATIONS BF0265  
0 RLCM - ESA SUPPORT BC0990  
0 RLCM - LCM - ESA TRANSITIONS BF0271

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|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | RLCM ESA - CALL CONTROL                | BF0493 |
| 0 | RLCM ESA ENTRY/EXIT                    | BF0497 |
| 0 | RLCM ESA MESSAGING AND CHANNEL CONTROL | BT1081 |
| 0 | RLCM ESA SYNC                          | BF1028 |
| 0 | RLCM ESA TONE AND CHANNEL CONTROL      | BF0496 |
| 0 | RLCM ESA TRANSLATION                   | BF0494 |
| 0 | RLCM-ESA-NT6X75 DIAGNOSTIC             | BF0546 |
| 0 | RLCM-ESA-STATIC DATA HANDLING          | BF0495 |
| 0 | RLCM/RCC ESA CHANNEL CAPACITY INCREASE | AG0344 |

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|---|--------------------|-----|
| 0 | NTX156AA02 STATUS  | RTM |
| 0 | INTRA RLCM CALLING |     |

|   |                                          |        |
|---|------------------------------------------|--------|
| 0 | INTRASWITCHING - PHASE 1                 | BF0367 |
| 0 | REMOTE INTRASWITCHING OM'S               | BC1154 |
| 0 | RLCM FEATURE INTRASWITCHING              | BF0914 |
| 0 | RLCM INTRASWITCHED END TO END SIGNALLING | AG0067 |

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| 0 | NTX157AA01 STATUS | RTM |
| 0 | CCIS - INWATS OSO |     |

|   |                   |        |
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| 0 | CCIS - INWATS OSO | BR0435 |
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0 NTX159AA12 STATUS RTM  
0 BELLCORE LAMA FORMAT

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | A T & T - LAMA FORMAT                             | BR0439 |
| 0 | A T & T LOCAL AMA (CONTINUED)                     | BC0683 |
| 0 | AMA TEST CALL CAPABILITY                          | AF1462 |
| 0 | AMA TEST CALL ENHANCEMENTS                        | AF1981 |
| 0 | AT & T FORMAT FOR AMA RECORDS AND AMATAPE (XREF   | BC0505 |
| 0 | R0378)                                            |        |
| 0 | AT CAMA FORMAT                                    | BR0378 |
| 0 | BC AMA INTERLATA WATS(CCI 111)                    | BC1698 |
| 0 | CALL CODES 009,033,121 ASSIGNMENT VIA TRANSLATION | BR0759 |
| 0 | DATAPATH AMA FORMAT-CALL CODES 072 AND 117        | BR0793 |
| 0 | IBN COMPATIBILITY WITH ATT AMA FORMAT AND MUMR    | BR0512 |
| 0 | INCREASE FLEXIBILITY OF AMA SOFTWARE PLATFORM     | AF2755 |
| 0 | PREP FOR BELLCORE AMA FOR ISDN CIRCUIT-MODE CALLS | AF3268 |
| 0 | RENAME ATT AMA TO BC AMA                          | BC1393 |
| 0 | UMCD INDICATOR IN AMA RECORD                      | AF1665 |
| 0 | VFG AMA SUPPORT FOR FX AND ETS CALLS              | AF1093 |

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0 NTX160AA06 STATUS RTM  
0 MULTIUNIT MESSAGE RATE  
0 SERVICES

0 MULTIUNIT MESSAGE RATE SERVICES BR0440

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0 NTX165AA06 STATUS RTM  
0 BELLCORE - IBN/ESN DETAIL  
0 RECORDING

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0 Software Features  
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|   |                                         |        |
|---|-----------------------------------------|--------|
| 0 | BC AMA CALL CODES 085 AND 011           | BC1678 |
| 0 | BELLCORE AMA-ENHANCED ARS TRANSLATIONS  | AF1234 |
| 0 | BOC AMA CALL CODE 032                   | BC1386 |
| 0 | CCSA LINE OPTION                        | BR0746 |
| 0 | CCSA VFG OPTION                         | BR0747 |
| 0 | CUSTOMER DIALED ACCOUNT RECORDING(CDAR) | BC1699 |
| 0 | NEW AMA CALL CODES - ATT FORMAT         | BR0615 |

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0 NTX167AB11 STATUS RTM  
0 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)

|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | ATTENDANT CONSOLE AND ISUP TRUNK CALL PROCESSING -  | AD0342 |
| 0 | PHASE I                                             |        |
| 0 | ATTENDANT CONSOLE AND ISUP TRUNKS CALL PROCESSING - | AD0343 |
| 0 | PHASE 11                                            |        |
| 0 | BTUP,TUP+ MAINTENANCE ENHANCEMENT AND BASIC TUPE    | AE0747 |
| 0 | MAINTENANCE                                         |        |
| 0 | CCS7 ISDN USER PART                                 | BV1998 |
| 0 | CCS7 ISDN USER PART INTERLOCAL                      | BF0654 |
| 0 | CIRCUIT GROUP BLOCKING                              | AJ1040 |
| 0 | DMS300 - CCITT#7 SERVICE ANALYSIS ENHANCEMENTS      | AJ1179 |
| 0 | ISUP - FPE ENHANCEMENT TO HANDLE ISUP               | AC0112 |
| 0 | ISUP - INTERWORKING TO TOPS                         | BC2321 |
| 0 | ISUP ACCESS TO CONSOLE VIA LOOP BACK TRUNKS         | AC0248 |
| 0 | ISUP CONTINUITY TEST                                | AC0046 |
| 0 | ISUP GROUP MESSAGE HANDLING                         | BC2319 |
| 0 | ISUP IBN FEATURE ACCESS VIA LOOPAROUND TRUNKS       | AC0186 |
| 0 | ISUP MAINTENANCE SYSTEM                             | BC2108 |
| 0 | ISUP OPERATIONAL MEASUREMENTS                       | AG0922 |
| 0 | ISUP PROTOCOL VERSION CONTROL                       | AG0921 |
| 0 | ISUP REL CAUSE TO TREATMENT MAPPING                 | AG1538 |
| 0 | ISUP SUPERVISION CLEAN UP                           | AC0080 |
| 0 | ISUP TABLE OPERATIONS                               | BC2109 |
| 0 | ISUP TANDEM CALL                                    | BC2322 |
| 0 | ISUP TEST LINES - TL100, TL102                      | BC2323 |
| 0 | ISUP TESTLINE ENHANCEMENTS                          | AC0120 |
| 0 | ISUP TOLL SIGNALLING                                | BC2320 |
| 0 | ISUP TRUNK MAINTENANCE ENHANCEMENT                  | AE0543 |
| 0 | ISUP TRUNKS & ATTENDANT CONSOLE INTERWORKING-BSY    | AD0359 |

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0 VERIFY LINE  
0 ISUP TRUNKS TO ATTENDANT CONSOLE INTERWORKING 5 AD0363  
0 ISUP TRUNKS TO ATTENDANT CONSOLE INTERWORKING 6 AD0362  
0 ISUP TRUNKS TO ATTENDANT CONSOLE INTERWORKING 7 AD1157  
0 ISUP TRUNKS TO ATTENDANT CONSOLE INTERWORKING-8 AD1156  
0 ISUP TTP ENHANCEMENTS BC2318  
0 ISUP 105 TESTLINE AC0199  
0 ISUP/AC INTERWORK CAMP-ON AG0511  
0 ISUP/IBN FEATURE INTERACTION III (3WC, EBO, DCPU) AC0251  
0 ISUP/IBN FEATURE INTERACTIONS I (DISA, MEETME, ACD) AC0250  
0 ISUP/IBN FEATURE INTERACTIONS II (CPK, MADN, AC0249  
0 CNF6...)  
0 ISUP/PBX TRUNK INTERWORKING AG0705  
0 ISUP/POTS LINES INTERWORKING AC0121  
0 LOOPBACK REDUCTION FOR ISUP/AC AG0704  
0 LOOPBACK TRUNK ACCESS FOR ISUP TO POTS LINE AC0078  
0 PRA VERSION CONTROL FOR INTEREXCHANGE CARRIER AD1800  
0 INTERWORKING

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0 NTX169BA01 STATUS RTM  
0 800 PLUS SOUTHBOUND

0 800+ SOUTH BOUND ENHANCEMENTS AG1247

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0 NTX170AA01 STATUS RTM  
0 CALLING CARD VALIDATION/  
0 OPERATOR ASSISTED

0 MCCS - OPERATOR ASSISTED MANUAL INWARD VALIDATION BV1121  
0 MCCS - OPERATOR ASSISTED CCV BV1112

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0 NTX174AA03 STATUS RTM  
0 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)

|                                          |        |
|------------------------------------------|--------|
| 0 AIOD (AUTO IDENTIFIED OUTWARD DIALING) | BR0454 |
| 0 AIOD CALL PROCESSING                   | BC1151 |
| 0 AIOD DATA STRUCTURES/TABLE CONTROL     | BC1148 |
| 0 AIOD FOR TIE TRUNKS                    | BR0780 |
| 0 AIOD MAINTENANCE UTILITIES             | BC1149 |
| 0 AIOD OPERATIONAL MEASUREMENTS          | BC1152 |
| 0 AIOD: LOGS & ALARMS                    | BC1153 |
| 0 AIOD: PBX TRUNK & LINE OPTIONS         | BC1150 |

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0 NTX175AA01 STATUS RTM  
0 IBN - MULTI BILINGUAL CONSOLE

0 FLEXIBLE DISPLAY LANGUAGE BR0455

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0 NTX176AA05 STATUS RTM  
0 NON RESIDENT ADMINISTRATIVE  
0 AIDS

|                                                  |        |
|--------------------------------------------------|--------|
| 0 AMADUMP - DMS250 AMA ENTRIES                   | BC0824 |
| 0 BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE) | BC0377 |
| 0 DATA DICTIONARY DUMP                           | BC0179 |
| 0 DATABASE DUMP                                  | BC0163 |

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|   |                                                                  |        |
|---|------------------------------------------------------------------|--------|
| 0 | ENHANCED TRUNK INVENTORY AND SPARES TESTING                      | BR0327 |
| 0 | ISC TRUNKS RECOVERY FROM BLOCKING                                | AE0339 |
| 0 | JOURNAL FILE DUMP FACILITY                                       | BC0809 |
| 0 | JOURNAL FILE PRINT UTILITY                                       | BC0409 |
| 0 | MECHANIZED LINE CARD ASSIGNMENT                                  | BR0311 |
| 0 | METERING DATAFILL VERIFICATION TOOL                              | BC2327 |
| 0 | OFFICE RECORD REPORT OF WORKING SPARE TRUNK/LINES/<br>LINE CARDS | BC0275 |

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|---|--------------------------------|-----|
| 0 | NTX177AA01 STATUS              | RTM |
| 0 | NON RESIDENT GENERAL UTILITIES |     |

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | TAPE DIRECTORY PRESERVATION UTILITY | BC0233 |
|---|-------------------------------------|--------|

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|---|--------------------------------------|-----|
| 0 | NTX178AA01 STATUS                    | RTM |
| 0 | NON RESIDENT DIAGNOSTIC<br>UTILITIES |     |

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE) | BC0282 |
| 0 |                                                | BC0377 |
| 0 | LOG ANALYSIS PROGRAM                           | BC0354 |

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0 NTX181AA12 STATUS LTD  
0 NON RES NT SUPPORT SOFTWARE  
0 (ORDERABLE BY TIA CUST. ONLY)

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | AMADUMP - DMS250 AMA ENTRIES                   | BC0824 |
| 0 | BCS - EXEC UTILITIES                           | BC0327 |
| 0 | BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE) | BC0282 |
| 0 |                                                | BC0377 |
| 0 | CALLTRAK FOR FIELD USAGE                       | AG1996 |
| 0 | DATABASE DUMP                                  | BC0163 |
| 0 | DELETION OF C-SIDE LINKS TO A GIVEN NODE       | BC0245 |
| 0 | EDITION CODE CIBINCOMS                         | BC0076 |
| 0 | ENHANCED BCS APPLICATION                       | BV1179 |
| 0 | FLOPPY DISK MAINTENANCE S/W                    | BC0111 |
| 0 | I/O SYSTEM STRAY NODE REMOVAL TOOL             | BC0258 |
| 0 | INTERNATIONAL BCS APPLICATION DOCUMENTATION    | AL0006 |
| 0 | JOURNAL FILE DUMP FACILITY                     | BC0809 |
| 0 | LM CHANNEL USAGE DISPLAY (NON RES)             | BC0374 |
| 0 | MMI FOR WARM SWACT                             | BC1022 |

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0 -----0 NTX182AA06 STATUS LTD  
0 NON RESIDENT NT COMMISSIONING  
0 SOFTWARE

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | AMADUMP - DMS250 AMA ENTRIES                      | BC0824 |
| 0 | BCS22 COMMISSIONING NONRES S/W UPDATES (PACKAGE   | AL0640 |
| 0 | NTX182AA)                                         |        |
| 0 | BCS24 COMMISSIONING NONRES S/W UPDATES (NTX182AA) | AL0781 |
| 0 | BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE)    | BC0282 |
| 0 |                                                   | BC0377 |
| 0 | COMMISSIONING LINE DIAGNOSTIC                     | BC0389 |
| 0 | DATABASE DUMP                                     | BC0163 |
| 0 | JOURNAL FILE DUMP FACILITY                        | BC0809 |

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0 NTX183AA05 STATUS RTM  
0 DMS-250 NON RESIDENT  
0 RESTRICTED S/W LAB USE ONLY

|                                 |        |
|---------------------------------|--------|
| 0 DATA DUMP AND RESTORE         | BC0425 |
| 0 DATABASE DUMP                 | BC0163 |
| 0 JOURNAL FILE DUMP FACILITY    | BC0809 |
| 0 LOG GENERATION NWM TEST TOOLS | AD2615 |
| 0 LOGICAL DUMP AND RESTORE      | BC0494 |
| 0 TEXT EDITOR FOR SOS           | BS0007 |

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0 NTX184AA11 STATUS LTD  
0 NONRES.RESTRICTED S/W LAB USE  
0 ONLY(REP BY NTX184AB & 180AA)

|                                                     |        |
|-----------------------------------------------------|--------|
| 0 AMADUMP - DMS250 AMA ENTRIES                      | BC0824 |
| 0 DUMP & RESTORE ROBUSTNESS                         | AG0080 |
| 0 ENHANCE TCALLCT FOR POSSIBLE FIELD USE            | BC1774 |
| 0 I/O SYSTEM STRAY NODE REMOVAL TOOL                | BC0258 |
| 0 IO FLOW CONTROL MODIFICATIONS                     | BC0306 |
| 0 LEVEL 1 CAPACITY IMPROVEMENT AND MEMORY REDUCTION | BC0447 |
| 0 LOG/REPORT EDITING UTILITY                        | BC0170 |
| 0 OLD TABLE CONTROL ENHANCEMENTS                    | AF0788 |
| 0 PM MAP BASED UTILITY (SEE F0052 AND F0053)        | BC0300 |
| 0 POWER PROJECT TEST TOOL SIMULATOR PHASE II        | AD3261 |
| 0 PROGRAM STORE-OPTIMIZED OPCODES                   | BC0333 |
| 0 S/W PROTECTION FOR NON-RES TAPES                  | BR0423 |
| 0 SYSTEM AUDIT PACKAGE - VERSION 1                  | BC0075 |
| 0 TATS CRTSIM                                       | BC0187 |
| 0 TATS TRAFSIM                                      | BC0188 |

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0 NTX184AB02 STATUS LTD  
0 NONRES.RESTRICTED S/W LAB USE  
0 ONLY(REP NTX184AA)

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | AMADUMP - DMS250 AMA ENTRIES                      | BC0824 |
| 0 | DUMP & RESTORE ROBUSTNESS                         | AG0080 |
| 0 | ENHANCE TCALLCT FOR POSSIBLE FIELD USE            | BC1774 |
| 0 | I/O SYSTEM STRAY NODE REMOVAL TOOL                | BC0258 |
| 0 | IO FLOW CONTROL MODIFICATIONS                     | BC0306 |
| 0 | LEVEL 1 CAPACITY IMPROVEMENT AND MEMORY REDUCTION | BC0447 |
| 0 | LOG/REPORT EDITING UTILITY                        | BC0170 |
| 0 | OLD TABLE CONTROL ENHANCEMENTS                    | AF0788 |
| 0 | PM MAP BASED UTILITY (SEE F0052 AND F0053)        | BC0300 |
| 0 | PROGRAM STORE-OPTIMIZED OPCODES                   | BC0333 |
| 0 | S/W PROTECTION FOR NON-RES TAPES                  | BR0423 |
| 0 | SYSTEM AUDIT PACKAGE - VERSION 1                  | BC0075 |
| 0 | TATS CRTSIM                                       | BC0187 |
| 0 | TATS TRAFSIM                                      | BC0188 |

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0 NTX186AA08 STATUS A+M  
0 EQUAL ACCESS END OFFICE(UPG BY  
0 NTX186AB)

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | CIRCLE DIGIT EQUAL ACCESS COMPATIBILITY              | BC1709 |
| 0 | CORRIDOR CALL ROUTING AND BILLING                    | BC1390 |
| 0 | EA-00 MINUS DIALING ROUTED VIA PIC                   | BC1389 |
| 0 | EA: END OFFICE - ABBREVIATED DIALING                 | BC1131 |
| 0 | EA: END OFFICE - LOGS                                | BC1130 |
| 0 | EA: END OFFICE - NEW TREATMENTS                      | BC1129 |
| 0 | EA: END OFFICE - ORIGINATING AND TERMINATING BILLING | BC1126 |
| 0 | EA: END OFFICE - TRANSLATION & CARRIER SCREENING     | BC1124 |
| 0 | EA: END OFFICE - TRUNK TO AT & IC                    | BC1125 |
| 0 | EA: OPTIONAL SAC CODES                               | BC1723 |

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|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | EAE0: P2(PX) TRUNK COMPATIBILITY      | BC1791 |
| 0 | EAE0:IC/INC EVENT STATUS ENHANCEMENT  | BC1681 |
| 0 | EQUAL ACCESS ON IBN/DATAPATH          | BC1368 |
| 0 | EQUAL ACCESS-CC REAL TIME IMPROVEMENT | BC1380 |
| 0 | EQUAL ACCESS-EXPANDED TOLL DENIAL     | BC1379 |
| 0 | FEATURE GROUPS C&D COMPATIBILITY      | BC1364 |
| 0 | FGB ON ATC TRUNKS                     | AF1778 |
| 0 | OMS-PIC AND NON-PIC CALLS PER IC/INC  | BC1395 |
| 0 | OVERLAP CARRIER SELECTION             | BC1367 |

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0 NTX186AB02 STATUS RTM  
0 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | CIRCLE DIGIT EQUAL ACCESS COMPATIBILITY              | BC1709 |
| 0 | CORRIDOR CALL ROUTING AND BILLING                    | BC1390 |
| 0 | EA-00 MINUS DIALING ROUTED VIA PIC                   | BC1389 |
| 0 | EA: END OFFICE - ABBREVIATED DIALING                 | BC1131 |
| 0 | EA: END OFFICE - LOGS                                | BC1130 |
| 0 | EA: END OFFICE - NEW TREATMENTS                      | BC1129 |
| 0 | EA: END OFFICE - ORIGINATING AND TERMINATING BILLING | BC1126 |
| 0 | EA: END OFFICE - TRANSLATION & CARRIER SCREENING     | BC1124 |
| 0 | EA: END OFFICE - TRUNK TO AT & IC                    | BC1125 |
| 0 | EA: OPTIONAL SAC CODES                               | BC1723 |
| 0 | EAE0: P2(PX) TRUNK COMPATIBILITY                     | BC1791 |
| 0 | EAE0:IC/INC EVENT STATUS ENHANCEMENT                 | BC1681 |
| 0 | EQUAL ACCESS ON IBN/DATAPATH                         | BC1368 |
| 0 | EQUAL ACCESS-CC REAL TIME IMPROVEMENT                | BC1380 |
| 0 | EQUAL ACCESS-EXPANDED TOLL DENIAL                    | BC1379 |
| 0 | FEATURE GROUPS C&D COMPATIBILITY                     | BC1364 |
| 0 | FGB ON ATC TRUNKS                                    | AF1778 |
| 0 | OMS-PIC AND NON-PIC CALLS PER IC/INC                 | BC1395 |
| 0 | OVERLAP CARRIER SELECTION                            | BC1367 |

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0 NTX187AA03 STATUS RTM  
0 TOPS - EQUAL ACCESS

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | ANI FORWARDING ON 0-CALLS                      | BR0620 |
| 0 | ANI SIGNALLING COMPATIBILITY                   | BR0621 |
| 0 | CARRIER CODE ON AMA FOR TERMINATING TOPS CALLS | AF0968 |
| 0 | OPERATOR FLEXIBLE ROUTING                      | BR0619 |
| 0 | TOPS EA 4X OPERATION                           | BR0635 |
| 0 | TOPS FGB CALL CODE 134                         | AF1100 |

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0 NTX188AA02 STATUS RTM  
0 TOPS - BCR AMA FORMAT

|   |                                      |        |
|---|--------------------------------------|--------|
| 0 | AMA FOR TOPSMP DA CALLS              | AF1152 |
| 0 | BELL (U.S.) AMA FORMAT COMPATIBILITY | BR0634 |
| 0 | TOPS CALL CODE 009 FOR DA            | AL0420 |

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0 NTX189AA01 STATUS RTM  
0 SL-100 EQUAL ACCESS ENHANCED

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | EA-00 MINUS DIALING ROUTED VIA PIC                   | BC1389 |
| 0 | EA: END OFFICE - ABBREVIATED DIALING                 | BC1131 |
| 0 | EA: END OFFICE - LOGS                                | BC1130 |
| 0 | EA: END OFFICE - NEW TREATMENTS                      | BC1129 |
| 0 | EA: END OFFICE - ORIGINATING AND TERMINATING BILLING | BC1126 |
| 0 | EA: END OFFICE - TRANSLATION & CARRIER SCREENING     | BC1124 |
| 0 | EA: END OFFICE - TRUNK TO AT & IC                    | BC1125 |
| 0 | EAE0: P2(PX) TRUNK COMPATIBILITY                     | BC1791 |
| 0 | EQUAL ACCESS ON IBN/DATAPATH                         | BC1368 |
| 0 | EQUAL ACCESS-CC REAL TIME IMPROVEMENT                | BC1380 |
| 0 | EQUAL ACCESS-EXPANDED TOLL DENIAL                    | BC1379 |

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0 93 12 030 FEATURE GROUPS C&D COMPATIBILITY  
0 OVERLAP CARRIER SELECTIONBC1364  
BC1367

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0 NTX190AA01 STATUS RTM  
0 FEAT GRP B AMA - TANDEM (NT  
0 FORMAT)

0 ACCESS CHARGE RECORDING - TANDEM (NT FORMAT)

BR0610

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0 -----0 NTX192AA01 STATUS RTM  
0 4X OPERATION - BELL FORMAT ANI0 INBAND COIN CONTROL ON SCAMA SUPER GROUPS  
0 REGENERATIVE ANI BELL FORMATBR0395  
BR0139

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0 -----0 NTX193AA01 STATUS RTM  
0 4X OPERATION - AMR 5 FORMAT  
0 ANI0 CP IRREG - AMR5  
0 INBAND COIN CONTROL ON SCAMA SUPER GROUPS  
0 NORTH ELECTRIC ANI (RECEIPT AND REGENERATION)  
0 OUTGOING AMR5 (TRUNKS)BT0224  
BR0395  
BR0003  
BC0133

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0 NTX195AA05 STATUS RTM  
0 MECHANIZED LOOP TESTER (MLT)  
0 I/F0 CC LINE CARD DIAGNOSTIC RESULTS FOR MLT BC1373  
0 INCOMING TEST TRUNK(2X90AD) ENHANCEMENTS(CC) BC1693  
0 MLT - PHASE II BR0499  
0 MLT PHASE I BR0441  
0 SCM LINE MONITOR ACCESS AF0529

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0 -----0 NTX196AA02 STATUS RTM  
0 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)0 CALLING NUMBER ANNOUNCEMENT (CNA) BR0468  
0 CNA ENHANCEMENTS BR0688

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0 -----0 NTX197AA01 STATUS RTM  
0 CCIS DIRECT SIGNALLING

0 CCIS DIRECT SIGNALLING (DS) CAPABILITY BV0800

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0 NTX202AA01 STATUS RTM  
0 DMS-250 OPERATIONAL  
0 MEASUREMENTS ON TAPE

0 OM-COMMON (MANAGEMENT)

BT0345

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0 NTX203AA01 STATUS RTM  
0 DMS-250 104 TESTLINES

|                                     |        |
|-------------------------------------|--------|
| 0 (NSG) DMS250 T104 CALL PROCESSING | BC0903 |
| 0 INC TTSTL 104                     | BT0144 |
| 0 INC/OUT TTSTL 104                 | BT0340 |
| 0 LTSTL - 104 (LOC) (O/G)           | BT0093 |
| 0 O/G TTSTL 104                     | BT0149 |
| 0 T104 AGENCY REWORK TO TTLXMS      | BC0048 |

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0 NTX204AA02 STATUS RTM  
0 CCIS BANDED SIGNALLING

|                                   |        |
|-----------------------------------|--------|
| 0 BASIC CCIS MAP LEVELS           | BC0568 |
| 0 CCIS - CALL PROCESSING BASE     | BC0575 |
| 0 CCIS - CP HOOKS (PART 2)        | BC0692 |
| 0 CCIS - DOWNLOADNG DATA TO MSB   | BC0571 |
| 0 CCIS - LINK ERROR RECOVERY (CC) | BC0574 |
| 0 CCIS - LINK MTCE                | BC0570 |
| 0 CCIS - ROUTE MANAGEMENT STATUS  | BC0573 |

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|---|-------------------------------------------------|--------|
| 0 | CCIS - SIGNALLING LINK ACTIVATION               | BC0569 |
| 0 | CCIS - SIGNALLING LINK DEFINITION               | BC0566 |
| 0 | CCIS - TRK TTP SUBLEVEL                         | BC0578 |
| 0 | CCIS - TRUNK HANDLING DURING SIGNALLING FAILURE | BC0577 |
| 0 | CCIS - VOICE TRUNK AGENCY                       | BC0576 |
| 0 | CCIS BANDED SIGNALLING (BS) ON INTERTOLL TRUNKS | BV0801 |
| 0 | CCIS INTERTOLL TRUNK TO/FROM LINE               | BV0828 |
| 0 | CCIS IT TRUNK FOR DDO                           | BC0587 |
| 0 | CCIS IT TRUNK FROM LINE CP                      | BC0591 |
| 0 | CCIS IT TRUNK FROM OTHER PTS TRUNKS CP          | BC0586 |
| 0 | CCIS IT TRUNK FROM PTS IT TRUNK CP              | BC0583 |
| 0 | CCIS IT TRUNK FROM TOPS POSITION CP             | BC0588 |
| 0 | CCIS IT TRUNK TO CCIS IT TRUNK CALL PROCESSING  | BC0584 |
| 0 | CCIS IT TRUNK TO LINE CP                        | BC0590 |
| 0 | CCIS IT TRUNK TO OTHER PTS TRUNKS CP            | BC0585 |
| 0 | CCIS IT TRUNK TO PTS IT TRUNK CP                | BC0581 |
| 0 | CCIS IT TRUNK TO TOPS POSITIONS CP              | BC0589 |
| 0 | CCIS IT TRUNK TO TREATMENT CP                   | BC0582 |
| 0 | CCIS MESSAGE TRANSFER PART BASE                 | BC0599 |
| 0 | CCIS PASS_ALONG ROUTING INFORMATION             | BC0745 |
| 0 | CCIS TRUNK EXECS                                | BC0592 |
| 0 | CCIS TRUNK NETWORK MANAGEMENT                   | BC0580 |
| 0 | CCIS 100/102 TESTLINE                           | BC0601 |
| 0 | CCIS 101 TESTLINE                               | BC0602 |
| 0 | CCIS 104 TESTLINE                               | BC0603 |
| 0 | CCIS 105 TESTLINE                               | BC0605 |
| 0 | CCIS 108 TESTLINE                               | BC0604 |
| 0 | CCS - BASIC MAP LEVEL                           | BC0567 |
| 0 | STC ENHANCED MTCE                               | BC0678 |
| 0 | STC LOADER                                      | BC0679 |

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0 NTX206AA02 STATUS RTM  
0 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION

0 UNAUTHORIZED DIGITONE SERVICE DETECTION BR0482

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0 NTX208AA02 STATUS A+M  
0 AUTOMATIC COIN TOLL  
0 SERVICE(ACTS)(UPG. BY  
0 NTX208AB)0 ACTS - PHASE II  
0 ACTS STANDARD PROM ANNOUNCEMENTS  
0 ACTS-PHASE IBR0489  
BF0692  
BC1377

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0 NTX208AB01 STATUS RTM  
0 AUTOMATIC COIN TOLL SERVICE  
0 (ACTS) (UPG OF NTX208AA)0 ACTS - PHASE II  
0 ACTS COIN TONE GENERATION TEST  
0 ACTS STANDARD PROM ANNOUNCEMENTS  
0 ACTS-PHASE IBR0489  
AL0011  
BF0692  
BC1377

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0 NTX209AA03 STATUS A+M  
0 FEATURE GRP B AMA - END  
0 OFFICE(ATT FORMAT) UPG.BY  
0 NTX209AB)0 ACCESS CHARGE RECORDING - END OFFICE (ATT FORMAT)  
0 FGB CALLS FROM LAMA EO TO IC VIA AT  
0 FGB-AMA ENHANCEMENTSBR0494  
BC2136  
BC1680

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0 NTX209AB01 STATUS RTM  
0 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)0 ACCESS CHARGE RECORDING - END OFFICE (ATT FORMAT) BR0494  
0 CARRIER ACCESS CODE EXPANSION (FGB). NC0202  
0 FGB CALLS FROM LAMA EO TO IC VIA AT BC2136  
0 FGB-AMA ENHANCEMENTS BC1680

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0 NTX210AA03 STATUS RTM  
0 NO. 2 SCC INTERFACE0 NO. 2 SCC INTERFACE BR0495  
0 NO.2 SCC CRITICAL INDICATOR ENHANCEMENT BR0693  
0 REMOTE MAINTENANCE AND CONTROL BR0513

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0 -----0 NTX211AB01 STATUS RTM  
0 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)0 ACCESS CHARGE RECORDING - TANDEM BR0496  
0 CARRIER ACCESS CODE EXPANSION (FGB). NC0202  
0 FGB-AMA ENHANCEMENTS BC1680

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0 NTX213AC01 STATUS RTM  
0 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)

|                                                       |        |
|-------------------------------------------------------|--------|
| 0 (RTP) T1 MTCE FOR REMOTE LINKS                      | BC0956 |
| 0 CC & PP TRAFFIC MEASUREMENTS                        | BC0772 |
| 0 CC ALARMS                                           | BC0771 |
| 0 CC LINE INVENTORY                                   | BV1173 |
| 0 CC LOGS                                             | BC0773 |
| 0 CC PROTECTION SWITCHING FOR SMR                     | BC0776 |
| 0 CC RCT INVENTORY TABLE                              | BC0760 |
| 0 CC RCT LINES MAINTENANCE PHASE II                   | BC1133 |
| 0 CC RCT MAINTENANCE                                  | BC0764 |
| 0 CC SCM INVENTORY TABLE                              | BC0759 |
| 0 CC SCM MAINTENANCE                                  | BC0762 |
| 0 CC TYPE/DATA EXTENSION                              | BC0758 |
| 0 LTA ON RCTS(CC)                                     | BC1679 |
| 0 LTA ON RCTS(PP)                                     | BR0695 |
| 0 MAP LINE MAINTENANCE                                | BV1175 |
| 0 NT6X81 FIRMWARE ROBUSTNESS                          | AF2341 |
| 0 OPERATOR VERIFICATION FOR SMR                       | BV1171 |
| 0 PP A BIT FACILITY                                   | BC0763 |
| 0 PP ABIT/BWORD FUNCTIONAL DIAGNOSTIC                 | BC0755 |
| 0 PP B WORD FACILITY                                  | BC0753 |
| 0 PP COIN FUNCTIONS                                   | BV1177 |
| 0 PP DIGITAL TEST HEAD                                | BC0761 |
| 0 PP PAD/RING DIAGNOSTIC                              | BC0756 |
| 0 PP POTS CALL PROCESSING                             | BC0779 |
| 0 PP PROTECTION SWITCHING                             | BC1114 |
| 0 PP PSIDE CHANNEL ALLOCATION                         | BC0777 |
| 0 PP RCT CONTROL CIRCUIT MAINTENANCE                  | BV1178 |
| 0 PP RINGING                                          | BC0778 |
| 0 PP SMR WARM SWACT                                   | BF0572 |
| 0 PP 2 PYT ANI                                        | BV1176 |
| 0 RCT SUBSCRIBER LOOP TEST DIGITAL (SLTD) ROBUSTNESS. | AF2345 |
| 0 REMOTE SERVICE BUREAU LINE MAINTENANCE              | BV1172 |
| 0 SMR A-BIT FACILITY ROBUSTNESS.                      | AF2348 |
| 0 SMR AUDIT ROBUSTNESS.                               | AF2344 |
| 0 SMR B-WORD FACILITY ROBUSTNESS.                     | AF2342 |
| 0 SMR CALL PROCESSING ROBUSTNESS.                     | AF2347 |



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|---|----------------------------------|--------|
| 0 | SMR DYNAMIC CHANNEL REASSIGNMENT | AF0089 |
| 0 | SMR MAINTENANCE ROBUSTNESS.      | AF2343 |
| 0 | SMR OVERLOAD CONTROL             | BF0580 |
| 0 | SMR PM MTC - PHASE II            | BF0552 |
| 0 | SMR PP OMS AND DTSR              | BF0485 |

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0 -----0 NTX215AA02 STATUS RTM  
0 SES NO.2 - INTERFACE

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | DLSE CALL CLASSIFICATION AND SELECTION      | AF0097 |
| 0 | ITSE CALL CLASSIFICATION AND SELECTION      | AF0098 |
| 0 | SEI SUPERVISOR                              | AF0100 |
| 0 | SEI VOICE LINK MAINTENANCE                  | AF0076 |
| 0 | SES CALL DETAILS                            | AF0099 |
| 0 | SES FEATURE GROUP B EVALUATION              | AF1257 |
| 0 | SES TRAFFIC DATA COLLECTION                 | AF0092 |
| 0 | SES VOICE LINK BRIDGING AND RELEASE - CALL  | AF0077 |
| 0 | PROCESSING                                  |        |
| 0 | TABLE CONTROL FOR SES SYSTEM TABLE SEILINKS | AF0078 |

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0 -----0 NTX218AA03 STATUS RTM  
0 1A/1B EADAS INTERFACE

|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | EADAS DATA FORMAT ROBUSTNESS           | AF0019 |
| 0 | EADAS DATAFILL SEQUENCE SIMPLIFICATION | BC1721 |
| 0 | EADAS ENHANCED OM TRANSFER PERIOD      | BC1382 |
| 0 | EADAS MAN-MACHINE INTERFACE            | BC1366 |
| 0 | EADAS-OM INTERFACE                     | BC1365 |
| 0 | OM USAGE SAMPLES TO EADAS (CC)         | BC1370 |
| 0 | 1A EADAS - BX.25 INTERFACE             | BR0555 |

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0 NTX219AB03 STATUS RTM  
0 TEEN SERVICE0 TEEN SERVICE - SELECTIVE CFW AF0815  
0 TEEN SERVICE ENHANCEMENT AF1256  
0 TEEN SERVICE(ENHANCED RINGING) BR0547

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0 NTX220AA13 STATUS RTM  
0 DMS-250 BASE PACKAGE (TYPE I)0 (NSG) OM FOR INVALID AUTH CODE BY TRK GROUP (NSG- BC0562  
0 V0731)  
0 ACCOUNT CODE DATABASE FOR CNI BV1199  
0 ACCOUNT CODE VALIDATION BV1228  
0 ACCT CODE SCREENING BY AUTH OR ANI BV1885  
0 AUDIBLE ALARMS FOR OCC BILLING FAILURES BC1014  
0 AUDIO TONE DETECTOR BV0733  
0 AUTHCODE DATABASE EXTENSION TO 7 DIGITS. BV1887  
0 AUTHCODES FOR SBS RELEASE 3 BV1008  
0 BASIC NETWORK MANAGEMENT BT0416  
0 BLUE BOX DSP MICROCODE AD1013  
0 BUSINESS CLASS FOR RESTRICTED USAGE BV1167  
0 CADENCE BASED ATD EXECS BV1009  
0 CALL DETAIL RECORDING SPEEDUP BC1015  
0 CALL PROCESSING DATABASE ACCESS SPEED UP BC1013  
0 CALL PROCESSING FOR STR BBF AD1193  
0 CALL PROCESSING PRIORITY SCREENING BV1217  
0 CARRIER MILLIWATT TEST TERMINATION BV1198  
0 CC MTC FOR STR IN DTC BV1644  
0 CDR CAPTURE ROUTINE SPEEDUP AD0508  
0 CDR EXTENSION BLOCK ACCESS CONVERSION BV1299  
0 CDR FOR USTS BV1012  
0 CDR FOR USTS REL 3 (SEQUENCE NUMBER) BV1249

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|---------------------------------------------------|--------|
| 0 CDR ONLINE SEARCH FOR USTS                      | BV1156 |
| 0 CDR SEARCH                                      | BT0425 |
| 0 CDR SEARCH (BUFFER)                             | BT0431 |
| 0 CDR SEARCH FOR WUTCO                            | BV1181 |
| 0 CDR SEARCH ON DISK                              | BV0861 |
| 0                                                 | BV1204 |
| 0 CDR SEARCH SPEED UP                             | BV1404 |
| 0 CDR SPEED-UP VIA CLLI TABLE                     | BV1876 |
| 0 CELLULAR OM                                     | BV1166 |
| 0 CITYCODE IN AUTHCODE DATABASE                   | BV1379 |
| 0 CITYCODE SCREENING                              | BV1358 |
| 0 CLASS OF SERVICE SCREENING                      | BV0627 |
| 0 CNI CALL PROCESSING                             | BV1189 |
| 0 CNI SPEED NUMBER DIALING                        | BV1227 |
| 0 CONFERENCE CALLING                              | BV0768 |
| 0 CP AND TRKGRP TABLE CONTROL ENHANCEMENTS        | BV1399 |
| 0 CP HOOKS FOR MULTI-CUSTOMER CDR                 | BV1395 |
| 0 CP OPTIMIZATION OF AUTHCODE PROCESSING          | BV1590 |
| 0 CSC (PHASE 1) MOBILE CP TASKS                   | BF0304 |
| 0 CSC (PHASE 1) MONITOR                           | BF0303 |
| 0 CSC (PHASE 1) MTCE TASK                         | BF0306 |
| 0 CSC (PHASE 2) MTX MESSAGE HANDLER               | BF0301 |
| 0 CSC ADAPTOR DIAGNOSTICS                         | BF0317 |
| 0 CSC CONTROLLER DIAGNOSTICS                      | BF0316 |
| 0 CSC DATA OVERVIEW                               | BF0333 |
| 0 CSC DYNAMIC SYSTEM PARAMETER UPDATE             | BF0323 |
| 0 CSC HANDOFF ENHANCEMENT                         | BF0315 |
| 0 CSC HDLC CONTROLLER DIAGNOSTICS                 | BF0322 |
| 0 CSC HDLC CONTROLLER FIRMWARE                    | BF0307 |
| 0 CSC HDLC CONTROLLER TASK SCHEDULER              | BF0300 |
| 0 CSC HDLC MONITOR                                | BF0311 |
| 0 CSC LOAD BALANCING                              | BF0310 |
| 0 CSC MOBILE CP TASK (PHASE 2)                    | BF0314 |
| 0 CSC MTCE (PHASE 1)                              | BV1148 |
| 0 CSC OPERATIONAL MEASUREMENTS                    | BF0305 |
| 0 CSC/ADAPTOR DMSX MESSAGE HANDLER                | BF0302 |
| 0 DAL TRUNK SIGNALLING/TRUNKGRP                   | BV0736 |
| 0 DATABASE FOR PRIORITY SCREENING                 | BV1302 |
| 0 DATABASE PORTABILITY FOR ECORE                  | AD0697 |
| 0 DATAPATH ON DMS250 PHASE 1                      | BV1688 |
| 0 DCM CHANNEL UNIT CROSS REFERENCE                | BV0725 |
| 0 DIGITAL SIGNAL PROCESSING F/W IN STR            | BF0824 |
| 0 DIGITONE T101                                   | BV1184 |
| 0 DIRECT ACCESS TO TOPS VIA DALTIE, FGB, AND FGD. | AD1139 |
| 0 DMS TO MV6000 X.25 TESTING                      | BV1231 |
| 0 DMS-250 DTC WARM SWACT                          | AD0462 |
| 0 DMS-250 DTMF UTR DELIVERABLES FOR BCS23         | AD0607 |

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|---|----------------------------------------------------------|--------|
| 0 | DMS-250 OM VERIFICATION TESTING AND DOCUMENTATION        | BT0436 |
| 0 | DMS-250 SUPERSET CALL PROCESSING                         | BV1160 |
| 0 | DMS-250 TRUNK EXEC REPACKAGING                           | AD0093 |
| 0 | DMS250 CALL PROCESSING SPEEDUP                           | BC1016 |
| 0 | DMS250 CDR IMPLEMENTATION CLEAN-UP (MULTI-CUST)          | BV1298 |
| 0 | DMS250 CDR TAPE DUMP                                     | BV1289 |
| 0 | DMS250 TRAFFIC SEPARATION                                | BV1287 |
| 0 | DMS250 TRANSLATION VERIFICATION - PHASE II               | BV1294 |
| 0 | DOCUMENT CONVERSION TO IBN TOD ROUTING                   | BT0457 |
| 0 | DTC WARM SWACT FOR AB250 TRUNKS                          | AD0463 |
| 0 | DTMF UTR CALL PROCESSING                                 | AD0198 |
| 0 | DTMF UTR MCCS CP/PP-CC SUPPORT FOR UTR'S.                | AD0504 |
| 0 | ECORE CALL PROCESSING PORTABILITY                        | AD0683 |
| 0 | ENHANCE TRUNK GROUP TABLE CONTROL                        | AD0032 |
| 0 | ENHANCE 6X91/90 DIAGNOSTICS                              | BF0320 |
| 0 | ENHANCED HDLC FIRMWARE                                   | BF0328 |
| 0 | ENHANCED REORIGINATION USING STR                         | BV1647 |
| 0 | EXTEND COS TO 30X30 MATRIX                               | BV1307 |
| 0 | EXTERNAL ECHO SUPPRESSOR CONTROL                         | BT0437 |
| 0 | FILE COMPARISON COMMANDS                                 | BV1295 |
| 0 | GENERIC QUERY RESPONSE INTERFACE FOR CALL<br>PROCESSING. | AD0352 |
| 0 | GLARE DETECTION2-WAY ONALS                               | BV0748 |
| 0 | HANDOFF ENHANCEMENT                                      | BV1235 |
| 0 | HANDOFF OPERATIONAL MEASUREMENT                          | BV1223 |
| 0 | HIDE AUTHCODE FIELD FOR ONLINE CDR SEARCH                | BV1306 |
| 0 | HOTLINE BY AUTHCODE                                      | BT0439 |
| 0 | H0569 SPECIALIZED TONE RECEIVER - DTC                    | AD0033 |
| 0 | H0925 SPECIALIZED TONE RECEIVER - DTC DAUGHTER           | AD0034 |
| 0 | I/O SYSTEM S/W FOR (PHASE 1)                             | BV1027 |
| 0 | INCREASE STORE EFFICIENCY OF AUTHCODES                   | BV1704 |
| 0 | INTERIM AUTHCODE HOTLINES REL 1                          | BV0879 |
| 0 | INTERIM CELLULAR SUBSCRIBER DATABASE                     | BV1026 |
| 0 | INTERNATIONAL DIALING                                    | BV1264 |
| 0 | INVALID AUTHCODE OM BY TRUNK GROUP                       | BT0433 |
| 0 | INVALID AUTHCODE OM BY TRUNK GROUP <REF C0562>           | BV0731 |
| 0 | JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX<br>FEATURES | BV0884 |
| 0 | KILLER TRUNKS                                            | BV0770 |
| 0 | LOOP-AROUND TEST FOR STR                                 | AD0237 |
| 0 | MTM PRIMITIVE REMOVAL TO INCREASE EXEC STORE             | BF0347 |
| 0 | MTX HDLC CONTROLLER DIAGNOSTICS                          | BF0321 |
| 0 | MTX HDLC CONTROLLER FIRMWARE                             | BF0308 |
| 0 | MTX HDLC MONITOR                                         | BF0312 |
| 0 | NETWORK MANAGEMENT                                       | BT0435 |
| 0 |                                                          | BV0728 |
| 0 | NEW PTM PM TYPE REQUIRED FOR PACKAGED SWITCHES           | BC1514 |

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|---|-----------------------------------------------------|--------|
| 0 | NSGDBDEV TESTPLAN                                   | BT0446 |
| 0 | OFF-HOOK QUEUEING                                   | BT0430 |
| 0 | OFFICE PARMS FOR CONTROL OF ANSWER ON ATD RESULTS   | BV1334 |
| 0 | OM FOR ATB PER NPA                                  | BV0885 |
| 0 | ON-NET DIALING DATABASE (INTERIM)                   | BV0870 |
| 0 | ONAL/DAL TABLE CONTROL                              | BV1194 |
| 0 | ONAT TABLE CONTROL                                  | BV1195 |
| 0 | ORIGINATING ATMS TESTING                            | BT0449 |
| 0 | OUTPULSE MORE THAN 15 DIGITS (SEE C0368)            | BV0679 |
| 0 | OVERHEAD MESSAGE AND A/B STREAM GENERATION          | BF0324 |
| 0 | PARTITIONED TRANSLATION SYSTEM                      | BV0610 |
| 0 | PARTITIONED 6D CONVERSION TO BCS9                   | BV0869 |
| 0 | PARTRANS FOR MCI AND USTS                           | BV0889 |
| 0 | PARTRANS UPGRADE                                    | BV0886 |
| 0 | PHASE I CELLULAR CALL PROCESSING                    | BV1021 |
| 0 | PHASE I CELLULAR TRANSLATIONS                       | BV1023 |
| 0 | PHASE I TESTPLAN DEBUGGED WITH PHASE I S/W          | BT0419 |
| 0 | PHASE II TEST PLAN                                  | BT0420 |
| 0 | PHASE 1 CELLSITE DATABASE                           | BV1029 |
| 0 | PM EXEC FOR GLARE RESOLUTION                        | BV0752 |
| 0 | PM EXEC FOR STOP/GO SIGNALING                       | BV1006 |
| 0 | PM EXEC FOR USTS DIALING FEATURES (PHASE 1)         | BV0890 |
| 0 | PM EXECS FOR CONFERENCE CALLING                     | BV0769 |
| 0 | PM EXECS FOR LOOP START ONALS                       | BV0753 |
| 0 | PM EXECS FOR RECALL D/T & CALL SEQUENCING (REL2)    | BV0763 |
| 0 | PM EXECS FOR RESET DIGIT                            | BV0749 |
| 0 | PM EXECS FOR TERMINATING DAL                        | BV0766 |
| 0 | PM EXECS TO SUPPORT UTR ON DMS-250                  | AD0287 |
| 0 | PM TEMPLATES AND EXECS FOR FAST INTERDIGITAL TIMING | BV1013 |
| 0 | PRETRANSLATOR DRIVEN DIALING PLAN ON IMTS           | BV1330 |
| 0 | PRETRANSLATOR DRIVEN DIALING PLAN ON ONALS, DALs,   | BV1329 |
| 0 | ONATS                                               |        |
| 0 | PRETRANSLATOR DRIVEN DIALING PLANS                  | BV1197 |
| 0 | PRETRANSLATOR SELECTOR FOR CONFERENCE CALLING       | BV1305 |
| 0 | PROGRAMMABLE CP FILTER AND QUEUING TIMERS           | BC1561 |
| 0 | PUBLIC SPEED NUMBERS                                | BT0407 |
| 0 | PUBLIC SPEEDS, PRIVATE SPEEDS, INCOMING EXCLUSION   | BV1188 |
| 0 | RECALL D/T & SEQUENCING FOR USTS                    | BT0458 |
| 0 | REGRESSION OF 24MB MEMORY CARDS                     | AD1218 |
| 0 | RESET CHARACTER                                     | BV1262 |
| 0 | RESTRICTED USAGE BY DATE & TIME                     | BT0410 |
| 0 | SEIZE PROTOCOL - USTS                               | BV1152 |
| 0 | SERVICE ANALYSIS                                    | BT0432 |
| 0 |                                                     | BV0727 |
| 0 | SP MONITOR FOR STR                                  | BF0822 |
| 0 | STARNET COS OVERRIDE BY AUTHCODE                    | BV1254 |
| 0 | STR CALL PROCESSING IN DTC                          | BF0826 |

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|------------------------------------------------------|--------|
| 0 STR DIAGNOSTIC FIRMWARE                            | BF0823 |
| 0 STR DSP MICROCODE                                  | BF0830 |
| 0 STR LP FIRMWARE FOR LOOPAROUND DIAGNOSTICS         | AD0331 |
| 0 STR STATIC DATA AND MTC IN DTC                     | BF0827 |
| 0 STR SWACT CONTROL IN DTC                           | BF0829 |
| 0 TERMINATING CALL PROCESSING SUPERVISION CLEANUP    | AD0501 |
| 0 TERMINATING DAL CALL PROCESSING                    | BV0764 |
| 0 TERMINATING LOOP START ONAL                        | BV0765 |
| 0 TESTING POF WITH TABLE AUTHCODE                    | BT0404 |
| 0 TRANSIENT ROAMERS                                  | BV1187 |
| 0 TRUNK GROUP PROGRAMMABLE TIMERS - GENERAL          | AD0083 |
| 0 TRUNK GRP DATA BASE                                | BV1281 |
| 0 TRUNK SELECTION IN DMS250 SA                       | BV1153 |
| 0 TRUNK TEST CALL (LOOP RF)                          | BV1234 |
| 0 TTP CKTMON TESTING                                 | BT0448 |
| 0 T104 CALL PROCESSING                               | BV1151 |
| 0 URT DIGIT COLLECTION OF MF DMS-250 TRUNKS          | BC1560 |
| 0 USTS PHASE I AUTHCODES                             | BV0887 |
| 0 UTR ENHANCEMENT'S                                  | AD0686 |
| 0 VACANT SPEED NUMBER TREATMENT                      | BV1256 |
| 0 VALIDATED 3 DIGIT ACCT CODE BY TRK GRP             | BV1260 |
| 0 WATS USAGE ENHANCEMENT                             | BV1630 |
| 0 WUTCO DIALING PLAN ON ONATS (ENFIA B & C)          | BT0447 |
| 0 WUTCO REL. 1 IMT CALL PROCESSING AND TABLE CONTROL | BV1150 |
| 0 WUTCO REL. 1 ONAL/DAL CP AND TABLE CONTROL         | BV1149 |
| 0 X.25 DATAPAC FOR TRANSMISSION OF BILLING DATA      | BT0426 |
| 0                                                    | BT0434 |
| 0 1000 PARTITIONS, 3 & 6 DIGIT TRANSLATIONS          | BT0409 |
| 0 3-DIGIT ACCOUNT CODE SCREENING                     | BV1221 |
| 0 3/6 DIGIT PARTITIONED TRANSLATIONS ( 1000 )        | BV0647 |

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0 NTX220BA06 STATUS RTM  
0 DMS-250 BASE PACKAGE (TYPE II)

|                                           |        |
|-------------------------------------------|--------|
| 0 AUDIBLE ALARMS FOR OCC BILLING FAILURES | BC1014 |
| 0 AUDIO TONE DETECTOR                     | BV0733 |
| 0 BASIC NETWORK MANAGEMENT                | BT0416 |
| 0 BLUE BOX DSP MICROCODE                  | AD1013 |
| 0 BUSINESS CLASS FOR RESTRICTED USAGE     | BV1167 |
| 0 CADENCE BASED ATD EXECs                 | BV1009 |

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|---|-------------------------------------------------|--------|
| 0 | CALL DETAIL RECORDING SPEEDUP                   | BC1015 |
| 0 | CALL PROCESSING DATABASE ACCESS SPEED UP        | BC1013 |
| 0 | CALL PROCESSING FOR STR BBF                     | AD1193 |
| 0 | CALL PROCESSING PRIORITY SCREENING              | BV1217 |
| 0 | CARRIER MILLIWATT TEST TERMINATION              | BV1198 |
| 0 | CC MTC FOR STR IN DTC                           | BV1644 |
| 0 | CDR CAPTURE ROUTINE SPEEDUP                     | AD0508 |
| 0 | CDR EXTENSION BLOCK ACCESS CONVERSION           | BV1299 |
| 0 | CDR FOR USTS                                    | BV1012 |
| 0 | CDR FOR USTS REL 3 (SEQUENCE NUMBER)            | BV1249 |
| 0 | CDR ONLINE SEARCH FOR USTS                      | BV1156 |
| 0 | CDR SEARCH                                      | BT0425 |
| 0 | CDR SEARCH (BUFFER)                             | BT0431 |
| 0 | CDR SEARCH FOR WUTCO                            | BV1181 |
| 0 | CDR SEARCH ON DISK                              | BV0861 |
| 0 |                                                 | BV1204 |
| 0 | CDR SEARCH SPEED UP                             | BV1404 |
| 0 | CDR SPEED-UP VIA CLLI TABLE                     | BV1876 |
| 0 | CELLULAR OM                                     | BV1166 |
| 0 | CLASS OF SERVICE SCREENING                      | BV0627 |
| 0 | CP AND TRKGRP TABLE CONTROL ENHANCEMENTS        | BV1399 |
| 0 | CP HOOKS FOR MULTI-CUSTOMER CDR                 | BV1395 |
| 0 | CP OPTIMIZATION OF AUTHCODE PROCESSING          | BV1590 |
| 0 | CSC (PHASE 1) MOBILE CP TASKS                   | BF0304 |
| 0 | CSC (PHASE 1) MONITOR                           | BF0303 |
| 0 | CSC (PHASE 1) MTCE TASK                         | BF0306 |
| 0 | CSC (PHASE 2) MTX MESSAGE HANDLER               | BF0301 |
| 0 | CSC ADAPTOR DIAGNOSTICS                         | BF0317 |
| 0 | CSC CONTROLLER DIAGNOSTICS                      | BF0316 |
| 0 | CSC DATA OVERVIEW                               | BF0333 |
| 0 | CSC DYNAMIC SYSTEM PARAMETER UPDATE             | BF0323 |
| 0 | CSC HANDOFF ENHANCEMENT                         | BF0315 |
| 0 | CSC HDLC CONTROLLER DIAGNOSTICS                 | BF0322 |
| 0 | CSC HDLC CONTROLLER FIRMWARE                    | BF0307 |
| 0 | CSC HDLC CONTROLLER TASK SCHEDULER              | BF0300 |
| 0 | CSC HDLC MONITOR                                | BF0311 |
| 0 | CSC LOAD BALANCING                              | BF0310 |
| 0 | CSC MOBILE CP TASK (PHASE 2)                    | BF0314 |
| 0 | CSC MTCE (PHASE 1)                              | BV1148 |
| 0 | CSC OPERATIONAL MEASUREMENTS                    | BF0305 |
| 0 | CSC/ADAPTOR DMSX MESSAGE HANDLER                | BF0302 |
| 0 | DAL TRUNK SIGNALLING/TRUNKGRP                   | BV0736 |
| 0 | DATABASE FOR PRIORITY SCREENING                 | BV1302 |
| 0 | DATABASE PORTABILITY FOR E CORE                 | AD0697 |
| 0 | DIGITAL SIGNAL PROCESSING F/W IN STR            | BF0824 |
| 0 | DIGITONE T101                                   | BV1184 |
| 0 | DIRECT ACCESS TO TOPS VIA DALTIE, FGB, AND FGD. | AD1139 |

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|-----------------------------------------------------|--------|
| 0 DMS DISK THRU-PUT ENHANCEMENT - PHASE I           | AD1970 |
| 0 DMS TO MV6000 X.25 TESTING                        | BV1231 |
| 0 DMS-250 CABINET SOFTWARE HOOKS                    | AD1219 |
| 0 DMS-250 DTC WARM SWACT                            | AD0462 |
| 0 DMS-250 DTMF UTR DELIVERABLES FOR BCS23           | AD0607 |
| 0 DMS-250 OM VERIFICATION TESTING AND DOCUMENTATION | BT0436 |
| 0 DMS-250 SOFTWARE REDUCTION                        | AM0206 |
| 0 DMS-250 SUPERSET CALL PROCESSING                  | BV1160 |
| 0 DMS-250 TRUNK EXEC REPACKAGING                    | AD0093 |
| 0 DMS250 CALL PROCESSING SPEEDUP                    | BC1016 |
| 0 DMS250 CDR IMPLEMENTATION CLEAN-UP (MULTI-CUST)   | BV1298 |
| 0 DMS250 CDR TAPE DUMP                              | BV1289 |
| 0 DMS250 PERFORMANCE ENHANCEMENTS                   | AD2959 |
| 0 DMS250 TRAFFIC SEPARATION                         | BV1287 |
| 0 DOCUMENT CONVERSION TO IBN TOD ROUTING            | BT0457 |
| 0 DTC WARM SWACT FOR AB250 TRUNKS                   | AD0463 |
| 0 DTMF UTR CALL PROCESSING                          | AD0198 |
| 0 DTMF UTR MCCS CP/PP-CC SUPPORT FOR UTR'S.         | AD0504 |
| 0 ECORE CALL PROCESSING PORTABILITY                 | AD0683 |
| 0 ENHANCE TRUNK GROUP TABLE CONTROL                 | AD0032 |
| 0 ENHANCE 6X91/90 DIAGNOSTICS                       | BF0320 |
| 0 ENHANCED HDLC FIRMWARE                            | BF0328 |
| 0 ENHANCED NETWORK IN DMS250 SUPERNODE              | AD2463 |
| 0 ENHANCED REORIGINATION USING STR                  | BV1647 |
| 0 EXTEND COS TO 30X30 MATRIX                        | BV1307 |
| 0 EXTEND RANGE OF MAX_NUM_OF_RINGS                  | AD1162 |
| 0 EXTERNAL ECHO SUPPRESSOR CONTROL                  | BT0437 |
| 0 FILE COMPARISON COMMANDS                          | BV1295 |
| 0 GENERIC QUERY RESPONSE INTERFACE FOR CALL         | AD0352 |
| 0 PROCESSING.                                       |        |
| 0 GLARE DETECTION2-WAY ONALS                        | BV0748 |
| 0 HANDOFF ENHANCEMENT                               | BV1235 |
| 0 HANDOFF OPERATIONAL MEASUREMENT                   | BV1223 |
| 0 HIDE AUTHCODE FIELD FOR ONLINE CDR SEARCH         | BV1306 |
| 0 HOTLINE BY AUTHCODE                               | BT0439 |
| 0 H0569 SPECIALIZED TONE RECEIVER - DTC             | AD0033 |
| 0 H0925 SPECIALIZED TONE RECEIVER - DTC DAUGHTER    | AD0034 |
| 0 I/O SYSTEM S/W FOR (PHASE 1)                      | BV1027 |
| 0 INCREASE (VIRTUAL) EXTENSION BLOCKS FOR DMS-250   | AD2140 |
| 0 INCREASE STORE EFFICIENCY OF AUTHCODES            | BV1704 |
| 0 INTERIM CELLULAR SUBSCRIBER DATABASE              | BV1026 |
| 0 INTERNATIONAL DIALING                             | BV1264 |
| 0 INVALID AUTHCODE OM BY TRUNK GROUP                | BT0433 |
| 0 INVALID AUTHCODE OM BY TRUNK GROUP <REF C0562>    | BV0731 |
| 0 JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX      | BV0884 |
| 0 FEATURES                                          |        |
| 0 KILLER TRUNKS                                     | BV0770 |



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|---|-----------------------------------------------------|--------|
| 0 | LOOP-AROUND TEST FOR STR                            | AD0237 |
| 0 | LP BLUE BOX FIRMWARE                                | AD1014 |
| 0 | MTM PRIMITIVE REMOVAL TO INCREASE EXEC STORE        | BF0347 |
| 0 | MTX HDLC CONTROLLER DIAGNOSTICS                     | BF0321 |
| 0 | MTX HDLC CONTROLLER FIRMWARE                        | BF0308 |
| 0 | MTX HDLC MONITOR                                    | BF0312 |
| 0 | NETWORK MANAGEMENT                                  | BT0435 |
| 0 |                                                     | BV0728 |
| 0 | NEW PTM PM TYPE REQUIRED FOR PACKAGED SWITCHES      | BC1514 |
| 0 | NSGDBDEV TESTPLAN                                   | BT0446 |
| 0 | O.M. ENHANCEMENTS                                   | AD0954 |
| 0 | OFF-HOOK QUEUEING                                   | BT0430 |
| 0 | OFFICE PARMS FOR CONTROL OF ANSWER ON ATD RESULTS   | BV1334 |
| 0 | ON-NET DIALING DATABASE (INTERIM)                   | BV0870 |
| 0 | ONAL/DAL TABLE CONTROL                              | BV1194 |
| 0 | ONAT TABLE CONTROL                                  | BV1195 |
| 0 | ORIGINATING ATMS TESTING                            | BT0449 |
| 0 | OUTPULSE MORE THAN 15 DIGITS (SEE C0368)            | BV0679 |
| 0 | OVERHEAD MESSAGE AND A/B STREAM GENERATION          | BF0324 |
| 0 | PARTITIONED 6D CONVERSION TO BCS9                   | BV0869 |
| 0 | PARTRANS FOR MCI AND USTS                           | BV0889 |
| 0 | PARTRANS UPGRADE                                    | BV0886 |
| 0 | PHASE I CELLULAR CALL PROCESSING                    | BV1021 |
| 0 | PHASE I CELLULAR TRANSLATIONS                       | BV1023 |
| 0 | PHASE I TESTPLAN DEBUGGED WITH PHASE I S/W          | BT0419 |
| 0 | PHASE II TEST PLAN                                  | BT0420 |
| 0 | PHASE 1 CELLSITE DATABASE                           | BV1029 |
| 0 | PM EXEC FOR GLARE RESOLUTION                        | BV0752 |
| 0 | PM EXEC FOR STOP/GO SIGNALING                       | BV1006 |
| 0 | PM EXEC FOR USTS DIALING FEATURES (PHASE 1)         | BV0890 |
| 0 | PM EXECS FOR LOOP START ONALS                       | BV0753 |
| 0 | PM EXECS FOR TERMINATING DAL                        | BV0766 |
| 0 | PM EXECS TO SUPPORT UTR ON DMS-250                  | AD0287 |
| 0 | PM TEMPLATES AND EXECS FOR FAST INTERDIGITAL TIMING | BV1013 |
| 0 | PRETRANSLATOR DRIVEN DIALING PLAN ON IMTS           | BV1330 |
| 0 | PRETRANSLATOR DRIVEN DIALING PLAN ON ONALS, DALs,   | BV1329 |
| 0 | ONATS                                               |        |
| 0 | PRETRANSLATOR DRIVEN DIALING PLANS                  | BV1197 |
| 0 | PRETRANSLATOR SELECTOR FOR CONFERENCE CALLING       | BV1305 |
| 0 | PROGRAMMABLE CP FILTER AND QUEUING TIMERS           | BC1561 |
| 0 | PUBLIC SPEED NUMBERS                                | BT0407 |
| 0 | RECALL D/T & SEQUENCING FOR USTS                    | BT0458 |
| 0 | REGRESSION OF 24MB MEMORY CARDS                     | AD1218 |
| 0 | RESET CHARACTER                                     | BV1262 |
| 0 | RESTRICTED USAGE BY DATE & TIME                     | BT0410 |
| 0 | SEIZE PROTOCOL - USTS                               | BV1152 |
| 0 | SERVICE ANALYSIS                                    | BT0432 |

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|---|----------------------------------------------------|--------|
| 0 | SOC FOR DMS-250 PTS TRUNKS                         | AD2137 |
| 0 | SP MONITOR FOR STR                                 | BF0822 |
| 0 | STARNET COS OVERRIDE BY AUTHCODE                   | BV1254 |
| 0 | STR CALL PROCESSING IN DTC                         | BF0826 |
| 0 | STR DIAGNOSTIC FIRMWARE                            | BF0823 |
| 0 | STR DSP MICROCODE                                  | BF0830 |
| 0 | STR LP FIRMWARE FOR LOOPAROUND DIAGNOSTICS         | AD0331 |
| 0 | STR STATIC DATA AND MTC IN DTC                     | BF0827 |
| 0 | STR SWACT CONTROL IN DTC                           | BF0829 |
| 0 | TERMINATING CALL PROCESSING SUPERVISION CLEANUP    | AD0501 |
| 0 | TERMINATING DAL CALL PROCESSING                    | BV0764 |
| 0 | TERMINATING LOOP START ONAL                        | BV0765 |
| 0 | TESTING POF WITH TABLE AUTHCODE                    | BT0404 |
| 0 | TRANSIENT ROAMERS                                  | BV1187 |
| 0 | TRUNK GROUP PROGRAMMABLE TIMERS - GENERAL          | AD0083 |
| 0 | TRUNK GRP DATA BASE                                | BV1281 |
| 0 | TRUNK TEST CALL (LOOP RF)                          | BV1234 |
| 0 | TTP CKTMON TESTING                                 | BT0448 |
| 0 | T104 CALL PROCESSING                               | BV1151 |
| 0 | URT DIGIT COLLECTION OF MF DMS-250 TRUNKS          | BC1560 |
| 0 | USTS PHASE I AUTHCODES                             | BV0887 |
| 0 | UTR ENHANCEMENT'S                                  | AD0686 |
| 0 | VACANT SPEED NUMBER TREATMENT                      | BV1256 |
| 0 | VALIDATED 3 DIGIT ACCT CODE BY TRK GRP             | BV1260 |
| 0 | WATS USAGE ENHANCEMENT                             | BV1630 |
| 0 | WUTCO DIALING PLAN ON ONATS (ENFIA B & C)          | BT0447 |
| 0 | WUTCO REL. 1 IMT CALL PROCESSING AND TABLE CONTROL | BV1150 |
| 0 | X.25 DATAPAC FOR TRANSMISSION OF BILLING DATA      | BT0426 |
| 0 |                                                    | BT0434 |
| 0 | XPM MTCE AND CP FOR STR BBF                        | AD1000 |
| 0 | 1000 PARTITIONS, 3 & 6 DIGIT TRANSLATIONS          | BT0409 |
| 0 | 3/6 DIGIT PARTITIONED TRANSLATIONS ( 1000 )        | BV0647 |
| 0 | 68030 AT 40MHZ IN DMS250 SUPERNODE                 | AD2469 |

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|---|-------------------|----------------------------|
| 0 | NTX220CA08 STATUS | RTM                        |
| 0 |                   | DMS-250 BASE PACKAGE (TYPE |
| 0 |                   | III)                       |

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|---|-----------------------------------------|--------|
| 0 | AUDIBLE ALARMS FOR OCC BILLING FAILURES | BC1014 |
| 0 | AUDIO TONE DETECTOR                     | BV0733 |

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|---|------------------------------------------|--------|
| 0 | BASIC NETWORK MANAGEMENT                 | BT0416 |
| 0 | BLUE BOX DSP MICROCODE                   | AD1013 |
| 0 | BUSINESS CLASS FOR RESTRICTED USAGE      | BV1167 |
| 0 | CADENCE BASED ATD EXECS                  | BV1009 |
| 0 | CALL DETAIL RECORDING SPEEDUP            | BC1015 |
| 0 | CALL PROCESSING DATABASE ACCESS SPEED UP | BC1013 |
| 0 | CALL PROCESSING FOR STR BBF              | AD1193 |
| 0 | CALL PROCESSING PRIORITY SCREENING       | BV1217 |
| 0 | CARRIER MILLIWATT TEST TERMINATION       | BV1198 |
| 0 | CC MTC FOR STR IN DTC                    | BV1644 |
| 0 | CDR CAPTURE ROUTINE SPEEDUP              | AD0508 |
| 0 | CDR EXTENSION BLOCK ACCESS CONVERSION    | BV1299 |
| 0 | CDR FOR USTS                             | BV1012 |
| 0 | CDR FOR USTS REL 3 (SEQUENCE NUMBER)     | BV1249 |
| 0 | CDR ONLINE SEARCH FOR USTS               | BV1156 |
| 0 | CDR SEARCH                               | BT0425 |
| 0 | CDR SEARCH (BUFFER)                      | BT0431 |
| 0 | CDR SEARCH FOR WUTCO                     | BV1181 |
| 0 | CDR SEARCH ON DISK                       | BV0861 |
| 0 |                                          | BV1204 |
| 0 | CDR SEARCH SPEED UP                      | BV1404 |
| 0 | CDR SPEED-UP VIA CLLI TABLE              | BV1876 |
| 0 | CELLULAR OM                              | BV1166 |
| 0 | CLASS OF SERVICE SCREENING               | BV0627 |
| 0 | CP AND TRKGRP TABLE CONTROL ENHANCEMENTS | BV1399 |
| 0 | CP HOOKS FOR MULTI-CUSTOMER CDR          | BV1395 |
| 0 | CP OPTIMIZATION OF AUTHCODE PROCESSING   | BV1590 |
| 0 | CSC (PHASE 1) MOBILE CP TASKS            | BF0304 |
| 0 | CSC (PHASE 1) MONITOR                    | BF0303 |
| 0 | CSC (PHASE 1) MTCE TASK                  | BF0306 |
| 0 | CSC (PHASE 2) MTX MESSAGE HANDLER        | BF0301 |
| 0 | CSC ADAPTOR DIAGNOSTICS                  | BF0317 |
| 0 | CSC CONTROLLER DIAGNOSTICS               | BF0316 |
| 0 | CSC DATA OVERVIEW                        | BF0333 |
| 0 | CSC DYNAMIC SYSTEM PARAMETER UPDATE      | BF0323 |
| 0 | CSC HANDOFF ENHANCEMENT                  | BF0315 |
| 0 | CSC HDLC CONTROLLER DIAGNOSTICS          | BF0322 |
| 0 | CSC HDLC CONTROLLER FIRMWARE             | BF0307 |
| 0 | CSC HDLC CONTROLLER TASK SCHEDULER       | BF0300 |
| 0 | CSC HDLC MONITOR                         | BF0311 |
| 0 | CSC LOAD BALANCING                       | BF0310 |
| 0 | CSC MOBILE CP TASK (PHASE 2)             | BF0314 |
| 0 | CSC MTCE (PHASE 1)                       | BV1148 |
| 0 | CSC OPERATIONAL MEASUREMENTS             | BF0305 |
| 0 | CSC/ADAPTOR DMSX MESSAGE HANDLER         | BF0302 |
| 0 | DAL TRUNK SIGNALLING/TRUNKGRP            | BV0736 |
| 0 | DATABASE FOR PRIORITY SCREENING          | BV1302 |

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|---|---------------------------------------------------|--------|
| 0 | DATABASE PORTABILITY FOR Ecore                    | AD0697 |
| 0 | DIGITAL SIGNAL PROCESSING F/W IN STR              | BF0824 |
| 0 | DIGITONE T101                                     | BV1184 |
| 0 | DIRECT ACCESS TO TOPS VIA DALTIE, FGB, AND FGD.   | AD1139 |
| 0 | DMS DISK THRU-PUT ENHANCEMENT - PHASE I           | AD1970 |
| 0 | DMS TO MV6000 X.25 TESTING                        | BV1231 |
| 0 | DMS-250 CABINET SOFTWARE HOOKS                    | AD1219 |
| 0 | DMS-250 DTC WARM SWACT                            | AD0462 |
| 0 | DMS-250 DTMF UTR DELIVERABLES FOR BCS23           | AD0607 |
| 0 | DMS-250 OM VERIFICATION TESTING AND DOCUMENTATION | BT0436 |
| 0 | DMS-250 SOFTWARE REDUCTION                        | AM0206 |
| 0 | DMS-250 SUPERSET CALL PROCESSING                  | BV1160 |
| 0 | DMS-250 TRUNK EXEC REPACKAGING                    | AD0093 |
| 0 | DMS250 CALL PROCESSING SPEEDUP                    | BC1016 |
| 0 | DMS250 CDR IMPLEMENTATION CLEAN-UP (MULTI-CUST)   | BV1298 |
| 0 | DMS250 CDR TAPE DUMP                              | BV1289 |
| 0 | DMS250 PERFORMANCE ENHANCEMENTS                   | AD2959 |
| 0 | DMS250 TRAFFIC SEPARATION                         | BV1287 |
| 0 | DOCUMENT CONVERSION TO IBN TOD ROUTING            | BT0457 |
| 0 | DTC WARM SWACT FOR AB250 TRUNKS                   | AD0463 |
| 0 | DTMF UTR CALL PROCESSING                          | AD0198 |
| 0 | DTMF UTR MCCS CP/PP-CC SUPPORT FOR UTR'S.         | AD0504 |
| 0 | ECORE CALL PROCESSING PORTABILITY                 | AD0683 |
| 0 | ENHANCE TRUNK GROUP TABLE CONTROL                 | AD0032 |
| 0 | ENHANCE 6X91/90 DIAGNOSTICS                       | BF0320 |
| 0 | ENHANCED HDLC FIRMWARE                            | BF0328 |
| 0 | ENHANCED NETWORK IN DMS250 SUPERNODE              | AD2463 |
| 0 | ENHANCED REORIGINATION USING STR                  | BV1647 |
| 0 | EXTEND COS TO 30X30 MATRIX                        | BV1307 |
| 0 | EXTEND RANGE OF MAX_NUM_OF_RINGS                  | AD1162 |
| 0 | EXTERNAL ECHO SUPPRESSOR CONTROL                  | BT0437 |
| 0 | FILE COMPARISON COMMANDS                          | BV1295 |
| 0 | GENERIC QUERY RESPONSE INTERFACE FOR CALL         | AD0352 |
| 0 | PROCESSING.                                       |        |
| 0 | GLARE DETECTION2-WAY ONALS                        | BV0748 |
| 0 | HANDOFF ENHANCEMENT                               | BV1235 |
| 0 | HANDOFF OPERATIONAL MEASUREMENT                   | BV1223 |
| 0 | HIDE AUTHCODE FIELD FOR ONLINE CDR SEARCH         | BV1306 |
| 0 | HOTLINE BY AUTHCODE                               | BT0439 |
| 0 | H0569 SPECIALIZED TONE RECEIVER - DTC             | AD0033 |
| 0 | H0925 SPECIALIZED TONE RECEIVER - DTC DAUGHTER    | AD0034 |
| 0 | I/O SYSTEM S/W FOR (PHASE 1)                      | BV1027 |
| 0 | INCREASE (VIRTUAL) EXTENSION BLOCKS FOR DMS-250   | AD2140 |
| 0 | INCREASE STORE EFFICIENCY OF AUTHCODES            | BV1704 |
| 0 | INTERIM CELLULAR SUBSCRIBER DATABASE              | BV1026 |
| 0 | INTERNATIONAL DIALING                             | BV1264 |
| 0 | INVALID AUTHCODE OM BY TRUNK GROUP                | BT0433 |

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|---|-----------------------------------------------------|--------|
| 0 | INVALID AUTHCODE OM BY TRUNK GROUP <REF C0562>      | BV0731 |
| 0 | JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX        | BV0884 |
| 0 | FEATURES                                            |        |
| 0 | KILLER TRUNKS                                       | BV0770 |
| 0 | LOOP-AROUND TEST FOR STR                            | AD0237 |
| 0 | LP BLUE BOX FIRMWARE                                | AD1014 |
| 0 | MTM PRIMITIVE REMOVAL TO INCREASE EXEC STORE        | BF0347 |
| 0 | MTX HDLC CONTROLLER DIAGNOSTICS                     | BF0321 |
| 0 | MTX HDLC CONTROLLER FIRMWARE                        | BF0308 |
| 0 | MTX HDLC MONITOR                                    | BF0312 |
| 0 | NETWORK MANAGEMENT                                  | BT0435 |
| 0 |                                                     | BV0728 |
| 0 | NEW PTM PM TYPE REQUIRED FOR PACKAGED SWITCHES      | BC1514 |
| 0 | NSGDBDEV TESTPLAN                                   | BT0446 |
| 0 | O.M. ENHANCEMENTS                                   | AD0954 |
| 0 | OFF-HOOK QUEUEING                                   | BT0430 |
| 0 | OFFICE PARMS FOR CONTROL OF ANSWER ON ATD RESULTS   | BV1334 |
| 0 | ON-NET DIALING DATABASE (INTERIM)                   | BV0870 |
| 0 | ONAL/DAL TABLE CONTROL                              | BV1194 |
| 0 | ONAT TABLE CONTROL                                  | BV1195 |
| 0 | ORIGINATING ATMS TESTING                            | BT0449 |
| 0 | OUTPULSE MORE THAN 15 DIGITS (SEE C0368)            | BV0679 |
| 0 | OVERHEAD MESSAGE AND A/B STREAM GENERATION          | BF0324 |
| 0 | PARTITIONED 6D CONVERSION TO BCS9                   | BV0869 |
| 0 | PARTRANS FOR MCI AND USTS                           | BV0889 |
| 0 | PARTRANS UPGRADE                                    | BV0886 |
| 0 | PHASE I CELLULAR CALL PROCESSING                    | BV1021 |
| 0 | PHASE I CELLULAR TRANSLATIONS                       | BV1023 |
| 0 | PHASE I TESTPLAN DEBUGGED WITH PHASE I S/W          | BT0419 |
| 0 | PHASE II TEST PLAN                                  | BT0420 |
| 0 | PHASE 1 CELLSITE DATABASE                           | BV1029 |
| 0 | PM EXEC FOR GLARE RESOLUTION                        | BV0752 |
| 0 | PM EXEC FOR STOP/GO SIGNALING                       | BV1006 |
| 0 | PM EXEC FOR USTS DIALING FEATURES (PHASE 1)         | BV0890 |
| 0 | PM EXECS FOR LOOP START ONALS                       | BV0753 |
| 0 | PM EXECS FOR TERMINATING DAL                        | BV0766 |
| 0 | PM EXECS TO SUPPORT UTR ON DMS-250                  | AD0287 |
| 0 | PM TEMPLATES AND EXECS FOR FAST INTERDIGITAL TIMING | BV1013 |
| 0 | PRETRANSLATOR DRIVEN DIALING PLAN ON IMTS           | BV1330 |
| 0 | PRETRANSLATOR DRIVEN DIALING PLAN ON ONALS, DALS,   | BV1329 |
| 0 | ONATS                                               |        |
| 0 | PRETRANSLATOR DRIVEN DIALING PLANS                  | BV1197 |
| 0 | PRETRANSLATOR SELECTOR FOR CONFERENCE CALLING       | BV1305 |
| 0 | PROGRAMMABLE CP FILTER AND QUEUEING TIMERS          | BC1561 |
| 0 | PUBLIC SPEED NUMBERS                                | BT0407 |
| 0 | RECALL D/T & SEQUENCING FOR USTS                    | BT0458 |
| 0 | REGRESSION OF 24MB MEMORY CARDS                     | AD1218 |

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|---|----------------------------------------------------|--------|
| 0 | RESET CHARACTER                                    | BV1262 |
| 0 | RESTRICTED USAGE BY DATE & TIME                    | BT0410 |
| 0 | SEIZE PROTOCOL - USTS                              | BV1152 |
| 0 | SERVICE ANALYSIS                                   | BT0432 |
| 0 | SOC FOR DMS-250 PTS TRUNKS                         | AD2137 |
| 0 | SP MONITOR FOR STR                                 | BF0822 |
| 0 | STARNET COS OVERRIDE BY AUTHCODE                   | BV1254 |
| 0 | STR AFFECT ON BILLING FOR MCI                      | AD1381 |
| 0 | STR CALL PROCESSING IN DTC                         | BF0826 |
| 0 | STR DIAGNOSTIC FIRMWARE                            | BF0823 |
| 0 | STR DSP MICROCODE                                  | BF0830 |
| 0 | STR LP FIRMWARE FOR LOOPAROUND DIAGNOSTICS         | AD0331 |
| 0 | STR STATIC DATA AND MTC IN DTC                     | BF0827 |
| 0 | STR SWACT CONTROL IN DTC                           | BF0829 |
| 0 | TERMINATING CALL PROCESSING SUPERVISION CLEANUP    | AD0501 |
| 0 | TERMINATING DAL CALL PROCESSING                    | BV0764 |
| 0 | TERMINATING LOOP START ONAL                        | BV0765 |
| 0 | TESTING POF WITH TABLE AUTHCODE                    | BT0404 |
| 0 | TRANSIENT ROAMERS                                  | BV1187 |
| 0 | TRUNK GROUP PROGRAMMABLE TIMERS - GENERAL          | AD0083 |
| 0 | TRUNK GRP DATA BASE                                | BV1281 |
| 0 | TRUNK TEST CALL (LOOP RF)                          | BV1234 |
| 0 | TTP CKTMON TESTING                                 | BT0448 |
| 0 | T104 CALL PROCESSING                               | BV1151 |
| 0 | URT DIGIT COLLECTION OF MF DMS-250 TRUNKS          | BC1560 |
| 0 | USTS PHASE I AUTHCODES                             | BV0887 |
| 0 | UTR ENHANCEMENT'S                                  | AD0686 |
| 0 | VACANT SPEED NUMBER TREATMENT                      | BV1256 |
| 0 | VALIDATED 3 DIGIT ACCT CODE BY TRK GRP             | BV1260 |
| 0 | WATS USAGE ENHANCEMENT                             | BV1630 |
| 0 | WUTCO DIALING PLAN ON ONATS (ENFIA B & C)          | BT0447 |
| 0 | WUTCO REL. 1 IMT CALL PROCESSING AND TABLE CONTROL | BV1150 |
| 0 | X.25 DATAPAC FOR TRANSMISSION OF BILLING DATA      | BT0426 |
| 0 |                                                    | BT0434 |
| 0 | XPM MTCE AND CP FOR STR BBF                        | AD1000 |
| 0 | 1000 PARTITIONS, 3 & 6 DIGIT TRANSLATIONS          | BT0409 |
| 0 | 3/6 DIGIT PARTITIONED TRANSLATIONS ( 1000 )        | BV0647 |
| 0 | 68030 AT 40MHZ IN DMS250 SUPERNODE                 | AD2469 |

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0 NTX221AB04 STATUS RTM  
0 DMS-250 CALL DETAIL RECORDING  
0 TYPE II

|                                                 |        |
|-------------------------------------------------|--------|
| 0 CDR ENHANCEMENTS FOR US SPRINT REL. 2.1       | AD0852 |
| 0 CDR FOR USTS                                  | BV1012 |
| 0 CDR FOR 800 SERVICES                          | AD0127 |
| 0 CDR ON DISK FOR USTS (NTX074AA02, NTX221AD01) | BV1222 |
| 0 ROTL ON DMS250                                | BV1889 |
| 0 US TELECOM CDR HOOKS AND FORMATTER            | BV2048 |
| 0 US TELECOM CDR SEARCH ON DISK                 | BV2047 |
| 0 USSPRINT CDR FOR 1.3                          | AD0500 |

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0 NTX221BA08 STATUS RTM  
0 DMS-250 CALL DETAIL RECORDING  
0 (TYPE II)

|                                           |        |
|-------------------------------------------|--------|
| 0 BCS33 CDR CHANGES                       | AD3416 |
| 0 CDR ENHANCEMENTS                        | AM0061 |
| 0 CDR ENHANCEMENTS FOR BCS29              | AD2583 |
| 0 CDR ENHANCEMENTS FOR RELEASE 2.3        | AD1376 |
| 0 CDR ENHANCEMENTS FOR US SPRINT REL. 2.1 | AD0852 |
| 0 CDR FOR 800 SERVICES                    | AD0127 |
| 0 DMS-250 RECORDING UNIT CLEAN-UP         | AD2666 |
| 0 FACILITY CODE DIGITS IN THE CDR         | AD3256 |
| 0 ISDN PRA MESSAGE BILLING                | AD2604 |
| 0 PART 2 - BCS32 USSPRINT CDR CHANGES     | AM0182 |
| 0 US TELECOM CDR HOOKS AND FORMATTER      | BV2048 |
| 0 US TELECOM CDR SEARCH ON DISK           | BV2047 |
| 0 USSPRINT CDR ENHANCEMENTS FOR BCS32     | AM0179 |
| 0 USSPRINT CDR FOR 1.3                    | AD0500 |

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0 NTX221CA05 STATUS RTM  
0 DMS-250 CALL DETAIL RECORDING  
0 (TYPE III)

|                                                  |        |
|--------------------------------------------------|--------|
| 0 BCS32 BILLING COMPLIANCE FOR MCI-CDR, PNR, SER | AD3134 |
| 0 BCS32 BILLING COMPLIANCE FOR MCI-CP            | AD3133 |
| 0 CDR AND SER ENHANCEMENTS FOR MCCS AND CAMA     | BV1703 |
| 0 CDR FOR MCI CALLING CARD VIA CAC               | AD0163 |
| 0 CDR ON DISK FOR USTS (NTX074AA02, NTX221AD01)  | BV1222 |
| 0 CDR SEARCH                                     | BV0726 |
| 0 CDR SEQUENCE NUMBER AT DISCONNECT              | BV1643 |
| 0 CDR/PNR ENHANCEMENTS FOR REL.18 TO MCI         | AD2022 |
| 0 CLLI LOOK-UP TABLE FOR 32 WORD CDR             | BV1873 |
| 0 CP HOOKS FOR 32-WORD CDR                       | BV1403 |
| 0 DMS-250 RECORDING UNIT CLEAN-UP                | AD2666 |
| 0 HOURLY CDR GENERATION                          | BV1291 |
| 0 IMT CDR THROTTLING                             | AD1001 |
| 0 MCI CALL DETAIL RECORDING                      | BV0669 |
| 0 MCI CDR AND PNR ENHANCEMENTS                   | AD0153 |
| 0 MCI CDR AND PNR FORMATTER REWRITE              | AD0968 |
| 0 MCI 32 WORD CDR SEARCH ON DISK                 | BV1678 |
| 0 MCI 32 WORD SRB CDR                            | BV1397 |
| 0 MCI 32-WORD CDR ENHANCEMENTS                   | BR3234 |
| 0 PHASE II MCI 32 WORD SRB CDR                   | BV1642 |
| 0 RELEASE 18 MCI OSR ENHANCEMENTS                | AD2652 |
| 0 SBS/MCI CDR ENHANCEMENTS                       | BV2028 |

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0 NTX222AB04 STATUS RTM  
0 DMS-250 CALL PROCESSING TYPE  
0 II

|                                            |        |
|--------------------------------------------|--------|
| 0 ACCT CODE SCREENING BY AUTH OR ANI       | BV1885 |
| 0 AUTHCODE DATABASE EXTENSION TO 7 DIGITS. | BV1887 |
| 0 BILLING APPLICATION SPEEDUPS, USSPRINT   | AD0510 |
| 0 CALL PROCESSING DATABASE ACCESS SPEED UP | BC1013 |
| 0 CALL PROCESSING ENHANCEMENTS FOR REL 2.2 | AD1314 |
| 0 CALL PROCESSING FOR US SPRINT CCS7 IMTS  | AD0431 |
| 0 CITYCODE IN AUTHCODE DATABASE            | BV1379 |



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|---|------------------------------------------------------|--------|
| 0 | CITYCODE SCREENING                                   | BV1358 |
| 0 | CLASS OF SERVICE SCREENING                           | AD0815 |
| 0 | CP 800 INWATS AND UNIVERSAL ACCESS SERVICE           | AD0128 |
| 0 | DAL & IMT SWITCHED 56 KB DATA & MULTIPLE PINS PER    | AD0499 |
| 0 | AUTH CP                                              |        |
| 0 | ENHANCED IMT CALL PROCESSING FOR DIALING PLAN (REL   | BV0759 |
| 0 | 2)                                                   |        |
| 0 | ENHANCED MCI ONAL/DAL/ONAT CP & TABLE CONTROL (REL2) | BV0757 |
| 0 | ENHANCED RECALL DIALTONE CAPABILITY                  | BV1890 |
| 0 | ENHANCED TRKGRP TABLE CONTROL FOR NT FEATURE PKG     | AD0398 |
| 0 | NTX222AB                                             |        |
| 0 | ETN NODAL EMULATION                                  | AD0438 |
| 0 | ETN NODE COMPATIBILTY ENHANCEMENTS                   | AD0764 |
| 0 | FAST AUTHCODE & ANI DATABASE UPDATES                 | AD0057 |
| 0 | HOOKS IN TRANSFER FOR CURRENT VS RECOVERY            | AD0224 |
| 0 | IMPLEMENT CURRENT VS RECOVERY FOR CHIPS ON DMS       | AD0185 |
| 0 | IMT CALL PROCESSING                                  | BV2045 |
| 0 | INCOMING FGB CALL PROCESSING AND ANI SCREENING       | BV2050 |
| 0 | INTERIM AUTHCODE HOTLINES REL 1                      | BV0879 |
| 0 | MCI ONAL/DAL CALL PROCESSING (REL 1)                 | BV0746 |
| 0 | MCI ONAL/DAL DATA BASE & TABLE CONTROL (REL1)        | BV0745 |
| 0 | MULTIPLE AUTHCODES PER TRUNK GROUP.                  | AD0130 |
| 0 | MULTIPLE VALIDATED PINS PER AUTHCODE                 | AD0521 |
| 0 | NEW TRUNK GROUP PARAMETERS FOR US SPRINT REL 2.1     | AD0836 |
| 0 | NT APPLICATION CHANGES FOR CURRENT VS RECOVERY       | AD0223 |
| 0 | NTX222AB CALL PROCESSING ENHANCEMENTS                | AD0812 |
| 0 | NXX-XXXX DATABASE FOR INWATS                         | AD0132 |
| 0 | OPART EXPANSION                                      | AD0765 |
| 0 | OPT. SW ANS. DIALTONE PROCEED TO SEND ON IMTS        | BV2054 |
| 0 | PARTITION TO/FROM STS DATABASES FOR US TELECOM       | BV2043 |
| 0 | PARTRAN DATABASE ENHANCEMENTS FOR INTERWORKING       | AD0063 |
| 0 | PM EXECS FOR AUTHCODE OVERRIDE                       | BV0750 |
| 0 | PM EXECS FOR RECALL D/T & CALL SEQUENCING (REL2)     | BV0763 |
| 0 | PM EXECS FOR RESET DIGIT                             | BV0749 |
| 0 | POOLED ECHO CANCELLORS                               | AD0140 |
| 0 | PUBLIC SPEED NUMBERS                                 | BV1361 |
| 0 | RECOVERY/NORMAL MODE NEGOTIATION FOR CHIPS           | AD0184 |
| 0 | SOFTWARE ANSWER DISTINCTION ACROSS PTS IMTS          | AD0137 |
| 0 | SPECIAL FEATURE HOTLINE DIALING & EXECS              | BV2046 |
| 0 | SUBSCRIBER DIALING PLAN FOR FGA,FGD AND DAL TRUNKS   | BV2049 |
| 0 | TCN ON FGD/FGC UNIVERSAL ACCESS                      | AD0133 |
| 0 | TONE TO PULSE CONVERTER DISABLE FOR UNIVERSAL ACCESS | AD0129 |
| 0 | TREATMENT AFTER ATD DEFAULT TIMING EXPIRES           | BV2062 |
| 0 | TREATMENT ENHANCEMENTS FOR THE DMS-250               | AD0309 |
| 0 | US SPRINT PTS IMT CALL PROCESSING                    | AD0097 |
| 0 | US SPRINT REL 1.3 ENHANCED ORIG CP                   | AD0470 |
| 0 | US SPRINT REL 1.3 RESTRICTED USAGE DB & CP.          | AD0368 |

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0 93 12 030 US SPRINT REL1.3 FAST AUTH & ANI UPGRADE AD0435  
0 00Y TO NPA TRANSLATIONS DATABASE AD0131  
0 800 SERVICE PRETRANSLATOR AD0126

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0 NTX222AM05 STATUS RTM  
0 DMS-250 CALL PROCESSING TYPE  
0 XIII0 AUTHCODE DATABASE TYPE XIII BV1934  
0 CC MAINTENANCE FOR PCM30 ENHANCEMENTS AE0085  
0 CSH TIMER HANDLING AE0076  
0 ENHANCED EMERGENCY CALLING TO 3J AE0078  
0 EXEC DEVELOPMENT FOR DC5 AND AC15 SIGNALLING BF0814  
0 FAST TRANSLATION NAME LOOKUP TABLE BV1933  
0 INTRA-NODAL BLOCKAGE DATABASE TYPE XIII BV1937  
0 MEL DC5 DELAY DIAL AE0077  
0 MEL SIGNALLING AND CSH TIME HANDLING AE0079  
0 MERCURY MIMT TO T250 TRUNK INTERCONNECTION AE0263  
0 ORIG 3J/3L MEL CP AND TRKGRP TC BC1912  
0 ORIG. 3J/3L/MEL CALL PROCESSING AND TRKGRP TC BV1941  
0 PCM30 BIT ERROR RATE RECOVERY AE0081  
0 PCM30 IDLE CHANNEL BIT PATTERN AE0084  
0 PM EXECS FOR AUDIO TONE DETECTION ON 3L. BV1949  
0 PM EXECS FOR EGRESS 3L LOOP CALLING TRUNKS BF0638  
0 PM EXECS FOR INGRESS 3L EARTH CALLING TRUNKS BV1945  
0 PM EXECS FOR 3J LOOP DISCONNECT CALLING BF0639  
0 RECEIVER DIAGNOSTIC FOR A-LAW ATD BV2008  
0 SEPARATE MEL EARTH AND LOOP SIGNALLING AE0075  
0 T 101 CALL PROCESSING AND TABLE CONTROL BV2015  
0 TERM. MEL CALL PROCESSING BV1944  
0 TERM. 3J CALL PROCESSING BV1942  
0 TERM. 3L CALL PROCESSING BV1943  
0 TRANSLATION NAME TO AND FROM PARTITION DATABASE BV1936  
0 TRAVER ENHANCEMENTS TYPE XIII BV1957  
0 TYPE XIII CDR AND CDR SEARCH BV1939  
0 TYPE XIII CONFERENCE CALLING ENHANCEMENTS BV1938  
0 TYPE XIII IMT CALL PROCESSING AND TRKGRP TC BV1940  
0 TYPE XIII TRANSLATIONS AND ROUTING ENHANCEMENTS BV1935  
0 UNANSWERED CALL DURATION TIMING AE01130  
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0 NTX222BA07 STATUS RTM  
0 DMS-250 CALL PROCESSING (TYPE  
0 II)

|                                                     |        |
|-----------------------------------------------------|--------|
| 0 (FI) AUTHCODE STUTTER PROMPT TONE                 | AD2136 |
| 0 (FI) FG-D SNC CP ENHANCEMENTS                     | AM0049 |
| 0 BCS33 TRKGRP ENHANCEMENTS                         | AD3411 |
| 0 BILLING APPLICATION SPEEDUPS, USSPRINT            | AD0510 |
| 0 CALL PROCESSING ENHANCEMENTS FOR BCS32            | AD3254 |
| 0 CALL PROCESSING ENHANCEMENTS FOR REL 2.2          | AD1314 |
| 0 CALL PROCESSING FOR US SPRINT CCS7 IMTS           | AD0431 |
| 0 CALL PROCESSING MODIFICATIONS FOR THE CDR         | AD1440 |
| 0 CLASS OF SERVICE SCREENING                        | AD0815 |
| 0 CP 800 INWATS AND UNIVERSAL ACCESS SERVICE        | AD0128 |
| 0 DAL & IMT SWITCHED 56 KB DATA & MULTIPLE PINS PER | AD0499 |
| 0 AUTH CP                                           |        |
| 0 DEDICATED VPN IMTS                                | AM0029 |
| 0 DIGIT BLOCK EXPANSION FOR HNPACODE                | AD2135 |
| 0 DISA                                              | AD0439 |
| 0 ECCB ON EVERY CALL                                | AM0064 |
| 0 ENET IN DMS250 FOR USSPRINT                       | AD3059 |
| 0 ENHANCED II ON PANI                               | AD2487 |
| 0 ENHANCED RECALL DIALTONE CAPABILITY               | BV1890 |
| 0 ENHANCED TRKGRP TABLE CONTROL FOR NT FEATURE PKG  | AD0398 |
| 0 NTX222AB                                          |        |
| 0 ENHANCED TRUNK USAGE OM'S                         | AD2355 |
| 0 EOPS PSLIEDO ANI CALL PROCESSING                  | AD1565 |
| 0 EOPS PSLIEDO ANI DATABASE                         | AD1563 |
| 0 ETN NODAL EMULATION                               | AD0438 |
| 0 ETN NODE COMPATIBILITY ENHANCEMENTS               | AD0764 |
| 0 FAST AUTHCODE & ANI DATABASE UPDATES              | AD0057 |
| 0 FG-D CUT-THROUGH MODIFICATIONS                    | AD1945 |
| 0 FG-D INFORMATION DIGIT PROCESSING                 | AD1177 |
| 0 HOOKS IN TRANSFER FOR CURRENT VS RECOVERY         | AD0224 |
| 0 IMPLEMENT CURRENT VS RECOVERY FOR CHIPS ON DMS    | AD0185 |
| 0 IMT CALL PROCESSING                               | BV2045 |
| 0 INCOMING FGB CALL PROCESSING AND ANI SCREENING    | BV2050 |
| 0 INCREASE RANGE OF EXTNUM FIELD IN CLLICDR         | AD1464 |
| 0 MULTIPLE AUTHCODES PER TRUNK GROUP.               | AD0130 |
| 0 MULTIPLE VALIDATED PINS PER AUTHCODE              | AD0521 |

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|---|------------------------------------------------------|--------|
| 0 | NEW TRUNK GROUP PARAMETERS FOR US SPRINT REL 2.1     | AD0836 |
| 0 | NT APPLICATION CHANGES FOR CURRENT VS RECOVERY       | AD0223 |
| 0 | NTX222AB CALL PROCESSING ENHANCEMENTS                | AD0812 |
| 0 | NXX DIALING                                          | AD2382 |
| 0 | NXX-XXXX DATABASE FOR INWATS                         | AD0132 |
| 0 | OPART EXPANSION                                      | AD0765 |
| 0 | OPART EXPANSION TO 1000                              | AD2673 |
| 0 | OPT. SW ANS. DIALTONE PROCEED TO SEND ON IMTS        | BV2054 |
| 0 | PARTITION TO/FROM STS DATABASES FOR US TELECOM       | BV2043 |
| 0 | PARTRAN DATABASE ENHANCEMENTS FOR INTERWORKING       | AD0063 |
| 0 | POOLED ECHO CANCELLORS                               | AD0140 |
| 0 | RECOVERY/NORMAL MODE NEGOTIATION FOR CHIPS           | AD0184 |
| 0 | RESTRICT REORIGINATION TO STRS                       | AD0141 |
| 0 | SOFTWARE ANSWER DISTINCTION ACROSS PTS IMTS          | AD0137 |
| 0 | SPECIAL FEATURE HOTLINE DIALING & EXECS              | BV2046 |
| 0 | STR AFFECT ON BILLING FOR US SPRINT                  | AD1382 |
| 0 | SUBSCRIBER DIALING PLAN FOR FGA,FGD AND DAL TRUNKS   | BV2049 |
| 0 | TANDEM PBX DIALING                                   | BV2051 |
| 0 | TCN ON FGD/FGC UNIVERSAL ACCESS                      | AD0133 |
| 0 | TONE TO PULSE CONVERTER DISABLE FOR UNIVERSAL ACCESS | AD0129 |
| 0 | TREATMENT AFTER ATD DEFAULT TIMING EXPIRES           | BV2062 |
| 0 | TREATMENT ENHANCEMENTS FOR THE DMS-250               | AD0309 |
| 0 | TRUNK AND CALLATTR TABLE ROBUSTNESS                  | AM0187 |
| 0 | US SPRINT PTS IMT CALL PROCESSING                    | AD0097 |
| 0 | US SPRINT REL 1.3 ENHANCED ORIG CP                   | AD0470 |
| 0 | US SPRINT REL 1.3 RESTRICTED USAGE DB & CP.          | AD0368 |
| 0 | US SPRINT REL1.3 FAST AUTH & ANI UPGRADE             | AD0435 |
| 0 | 00Y TO NPA TRANSLATIONS DATABASE                     | AD0131 |

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0 NTX222CA09 STATUS RTM  
0 DMS-250 CALL PROCESSING (TYPE  
0 III)

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | (FI) ENHANCED FG-D CAPABILITIES              | AD4010 |
| 0 | (FI) FG-D VNET CALLS TO OPERATOR             | AD2884 |
| 0 | (FI) LONG CALL DISCONNECT                    | AD2761 |
| 0 | (FI) MCI DAL OPERATOR ACCESS                 | AD3837 |
| 0 | (NSG) MCI VACANT COUNTRY CODE TREATMENT      | BC1913 |
| 0 | ADVANTAGE UNIT SWITCH INTERFACE (SPLASHBACK) | BV1192 |
| 0 | AUTHCODE TRAP                                | BV1364 |

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|---|------------------------------------------------------|--------|
| 0 |                                                      | BV1258 |
| 0 | BILLING APPLICATION SPEEDUPS, MCI                    | AD0628 |
| 0 | BUSY TONE FOR ATB DALS                               | AD1697 |
| 0 | CAC OM'S                                             | AD0078 |
| 0 | CALL TERMINATION TO DMS250/TOPS FROM DMS250          | BV1300 |
| 0 | CHARGING CUSTOMER AT CONNECT TIME                    | AD2611 |
| 0 | CITYCODE IN AUTHCODE DATABASE                        | BV1379 |
| 0 | CITYCODE SCREENING                                   | BV1358 |
| 0 | DATA CALLING INDICATOR IN PRETRANSLATOR              | BV1376 |
| 0 | DATABASE FOR AUTHCODE TRAP                           | BV1285 |
| 0 | DMS250/TOPS TO DMS250/TOPS INTERFACE                 | BT0453 |
| 0 | ECCB ON EVERY CALL                                   | AD2849 |
| 0 | ECORE PORTABILITY FOR MCI                            | AD0934 |
| 0 | END OF DIALING CHARACTER FOR VARIABLE LENGTH DIALING | BV1279 |
| 0 | (OPT)                                                |        |
| 0 | ENHANCE MAX_NUM_RINGS OFFICE PARAMETER               | AD0730 |
| 0 | ENHANCED ACCOUNT CODES ON DALS                       | AD2612 |
| 0 | ENHANCED IMT CALL PROCESSING FOR DIALING PLAN (REL   | BV0759 |
| 0 | 2)                                                   |        |
| 0 | ENHANCED IMT DIALING PLAN                            | BV1591 |
| 0 | ENHANCED IN-SWITCH 800 SERVICES                      | AD0761 |
| 0 | ENHANCED MCI ONAL/DAL/ONAT CP & TABLE CONTROL (REL2) | BV0757 |
| 0 | ENHANCED TRUNK GROUP TABLE CONTROL FOR MCI           | AD0395 |
| 0 | ENHANCED TRUNK USAGE OM'S                            | AD2639 |
| 0 | IDDD DIALING                                         | BV1257 |
| 0 | IMT ACCESS TO CALLING CARD                           | AD1690 |
| 0 | INBAND ANI DELIVERY                                  | AD2374 |
| 0 | INTERIM AUTHCODE HOTLINES REL 1                      | BV0879 |
| 0 | LOCATION CODE COMPLIANCE FOR MCI                     | AD3394 |
| 0 | LPP IN DMS250 FOR MCI                                | AD2465 |
| 0 | MAP CALLING PARTY TO CHARGE CLASS                    | AD2764 |
| 0 | MCI BOC DIRECT INWARD DIALING                        | AD3215 |
| 0 | MCI CAC I/F OVER NX25                                | AD0175 |
| 0 | MCI DIGITAL DATA CALLING                             | AJ1287 |
| 0 | MCI ENTREE SERVICE                                   | AD0451 |
| 0 | MCI ONAL/DAL CALL PROCESSING (REL 1)                 | BV0746 |
| 0 | MCI ONAL/DAL DATA BASE & TABLE CONTROL (REL1)        | BV0745 |
| 0 | MCI SERVICE ACCESS CODES CALL PROCESSING             | BR3233 |
| 0 | MCI STANDARD CCS7 IMT ENHANCEMENTS                   | AD0701 |
| 0 | MCI 32 WORD AUDIT                                    | AD1601 |
| 0 | MCI 800 CALL SCREENING                               | AD0971 |
| 0 | MCI'S 900 NCS BASED SERVICE                          | AD2362 |
| 0 | MCI'S 900 SERVICE IN-SWITCH                          | AD2360 |
| 0 | MULTIPLE TRUNK GROUP ASSIGNMENT PER SINGLE CLLI      | BR3224 |
| 0 | NIMS                                                 | AD1684 |
| 0 | OPTIONAL RINGBACK ON T1 DAL                          | AD0453 |
| 0 | PARTITIONED IDDD TRANSLATION                         | BV1896 |

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|---|------------------------------------------------------|--------|
| 0 | PM EXECS FOR AUTHCODE OVERRIDE                       | BV0750 |
| 0 | PM EXECS FOR RECALL D/T & CALL SEQUENCING (REL2)     | BV0763 |
| 0 | PM EXECS FOR RESET DIGIT                             | BV0749 |
| 0 | PRE-NCS 800 SERVICE                                  | AD0014 |
| 0 | PUBLIC SPEED NUMBERS                                 | BV1361 |
| 0 | REMOVAL OF UNIVSL OPTION OF THE ES SELECTOR          | AD0970 |
| 0 | REMOVE TABLE CLLICDR1 AND CP HOOKS                   | AD0543 |
| 0 | RESTRICTED USAGE CLASS IN AUTHCODE DATABASE          | BV1381 |
| 0 | RTT MMI ENHANCEMENTS                                 | BV2034 |
| 0 | SAC NETWORK MANAGEMENT & CODE CONTROLS               | AD2361 |
| 0 | SAC WITH NCS                                         | AD0144 |
| 0 | SATELLITE SCREENING FOR MCI TOPS                     | BV1386 |
| 0 | SBS/MCI CALL PROCESSING & TABLE CONTROL INTERGRATION | BV2027 |
| 0 | SOFTWARE ANSWER ON IMTS                              | AD0092 |
| 0 | STS DATA PEG-COUNTS                                  | AD1685 |
| 0 | STS OMS 3.0 FOR MCI                                  | AD2642 |
| 0 | STS TO COUNTRY CODE TANSLATOR NAME DATABASE          | BV1955 |
| 0 | TERM. DELIMITER SCREENING ON INCOMING IMTS           | BV1963 |
| 0 | TOPS/250 EQUAL ACCESS (PHASE 1)                      | BV1387 |
| 0 | TOPS/250 MULTI-TENANT TRUNK OMS                      | BV1400 |
| 0 | TRUNK GROUP TABLE ENHANCEMENTS AND CLEANUP FOR MCI   | AD2021 |
| 0 | TWO-WAY SEIZE PROTOCOL                               | BV1196 |
| 0 | TYPE I DIALING PLAN ENHANCEMENT                      | BV1981 |
| 0 | 0 + FG-D CALLING CARD                                | AD1687 |
| 0 | 1984 MLP ENHANCEMENTS                                | AD0146 |
| 0 | 800 CALL SCREENING DATABASE                          | AD0969 |
| 0 | 900 FG-C ACCESS SIGNALING                            | AD2385 |

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0 NTX223AA01 STATUS RTM  
0 DMS-250 ENHANCED KILLER TRUNKS

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | ENHANCED IMT CALL PROCESSING FOR DIALING PLAN (REL   | BV0759 |
| 0 | 2)                                                   |        |
| 0 | ENHANCED MCI ONAL/DAL/ONAT CP & TABLE CONTROL (REL2) | BV0757 |
| 0 | KILLER TRUNK ENHANCEMENT PHASE I                     | BV2033 |
| 0 | MCI ONAL/DAL CALL PROCESSING (REL 1)                 | BV0746 |
| 0 | MCI ONAL/DAL DATA BASE & TABLE CONTROL (REL1)        | BV0745 |
| 0 | MCI ONAT CALL PROCESSING & TABLE CONTROL (REL. 2)    | BV0846 |

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0 NTX223CA01 STATUS RTM  
0 DMS-250 ENHANCED KILLER TRUNKS

0 KILLER TRUNK ENHANCEMENT PHASE I BV2033

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0 NTX226AA01 STATUS RTM  
0 DMS-250 ATB BY NPA USING  
0 OPERATIONAL MEASUREMENTS

0 OM FOR ATB PER NPA BV0885

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0 NTX226BA01 STATUS RTM  
0 DMS-250 ATB BY NPA USING  
0 OPERATIONAL MEASUREMENTS

0 OM FOR ATB PER NPA BV0885

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0 NTX226CA01 STATUS RTM  
0 DMS-250 ATB BY NPA USING  
0 OPERATIONAL MEASUREMENTS

0 OM FOR ATB PER NPA BV0885

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0 NTX227AA01 STATUS RTM  
0 DMS-250 TIME OF DAY ROUTING

0 TIME OF DAY ( TOD ) ROUTING BV0644

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0 NTX227BA01 STATUS RTM  
0 DMS-250 TIME OF DAY ROUTING

0 TIME OF DAY ( TOD ) ROUTING BV0644

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0 NTX227CA01 STATUS RTM  
0 DMS-250 TIME OF DAY ROUTING

0 TIME OF DAY ( TOD ) ROUTING BV0644

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0 NTX228AA02 STATUS RTM  
0 DMS-250 DCM CHANNEL UNIT CROSS  
0 REFERENCE

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | DCM CHANNEL UNIT CROSS REFERENCE   | BV0725 |
| 0 | DCMXREF -- RETEST AND ENHANCEMENTS | BV1398 |
| 0 | NPA USAGE BY NPA AND EXCHANGE CODE | BV1011 |

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0 NTX228BA01 STATUS RTM  
0 DMS-250 DCM CHANNEL UNIT CROSS  
0 REFERENCE

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | DCM CHANNEL UNIT CROSS REFERENCE   | BV0725 |
| 0 | DCMXREF -- RETEST AND ENHANCEMENTS | BV1398 |

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0 NTX228CA01 STATUS RTM  
0 DMS-250 DCM CHANNEL UNIT CROSS  
0 REFERENCE

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | DCM CHANNEL UNIT CROSS REFERENCE   | BV0725 |
| 0 | DCMXREF -- RETEST AND ENHANCEMENTS | BV1398 |

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0 NTX229AA01 STATUS RTM  
0 DMS-250 PRIORITY SCREENING

0 SBS PRIORITY SCREENING BV0737

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0 NTX230AA03 STATUS RTM  
0 DMS-250 GENERIC SPEED NUMBERS

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | IDDD SPEED CALLING                           | AE0204 |
| 0 | JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX | BV0884 |
| 0 | FEATURES                                     |        |
| 0 | PM EXECS FOR SPEED LINE                      | BV0751 |
| 0 | PRIVATE SPEEDS DATABASE REWRITE              | BC1004 |
| 0 | PUBLIC SPEED DIALING DATABASE FOR MULTI CUST | BV1288 |
| 0 | PUBLIC SPEED NUMBERS                         | BV0723 |
| 0 | UNIVERSAL PUBLIC SPEEDS                      | BV0878 |

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0 NTX230BA01 STATUS RTM  
0 DMS-250 GENERIC SPEED NUMBERS

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | IDDD SPEED CALLING                           | AE0204 |
| 0 | JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX | BV0884 |
| 0 | FEATURES                                     |        |
| 0 | PM EXECS FOR SPEED LINE                      | BV0751 |
| 0 | PRIVATE SPEEDS DATABASE REWRITE              | BC1004 |
| 0 | PUBLIC SPEED DIALING DATABASE FOR MULTI CUST | BV1288 |

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0 PUBLIC SPEED NUMBERS  
0 UNIVERSAL PUBLIC SPEEDS

BV0723  
BV0878

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0 NTX230CA01 STATUS RTM  
0 DMS-250 GENERIC SPEED NUMBERS

0 IDDD SPEED CALLING  
0 JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX  
0 FEATURES  
0 PM EXECS FOR SPEED LINE  
0 PRIVATE SPEEDS DATABASE REWRITE  
0 PUBLIC SPEED DIALING DATABASE FOR MULTI CUST  
0 PUBLIC SPEED NUMBERS  
0 UNIVERSAL PUBLIC SPEEDS

AE0204  
BV0884  
  
BV0751  
BC1004  
BV1288  
BV0723  
BV0878

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0 NTX231AA01 STATUS RTM  
0 DMS-250 INCOMING EXCLUSION

0 INCOMING EXCLUSION  
0 INCOMING EXCLUSION DATAVASE EXPANSION

BV0858  
BV2044

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0 NTX231BA01 STATUS RTM  
0 DMS-250 INCOMING EXCLUSION

0 INCOMING EXCLUSION  
0 INCOMING EXCLUSION DATAVASE EXPANSION

BV0858  
BV2044

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0 NTX231CA01 STATUS RTM  
0 DMS-250 INCOMING EXCLUSION

0 INCOMING EXCLUSION BV0858  
0 INCOMING EXCLUSION DATAVASE EXPANSION BV2044

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0 NTX232AA01 STATUS RTM  
0 DMS-250 ATB BY NPA USING LOGS

0 NPA USAGE BY NPA AND EXCHANGE CODE BV1011

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0 NTX232BA01 STATUS RTM  
0 DMS-250 ATB BY NPA USING LOGS

0 NPA USAGE BY NPA AND EXCHANGE CODE BV1011

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0 NTX232CA01 STATUS RTM  
0 DMS-250 ATB BY NPA USING LOGS

0 NPA USAGE BY NPA AND EXCHANGE CODE BV1011

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0 NTX233AA01 STATUS RTM  
0 DMS-250 OFF HOOK QUEUING

0 LIMITED OFFHOOK QUEUING BV0845  
0 OFF-HOOK QUEUING(V-2) BV0730

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0 NTX233BA01 STATUS RTM  
0 DMS-250 OFF HOOK QUEUING

0 LIMITED OFFHOOK QUEUING BV0845  
0 OFF-HOOK QUEUING(V-2) BV0730

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0 NTX233CA01 STATUS RTM  
0 DMS-250 OFF HOOK QUEUING

0 LIMITED OFFHOOK QUEUING BV0845  
0 OFF-HOOK QUEUING(V-2) BV0730

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0 NTX234AB02 STATUS RTM  
0 DMS-250 AUTHCODES TYPE II

|                                                 |        |
|-------------------------------------------------|--------|
| 0 AUTHCODE DATABASE FOR US TELECOM              | BV2042 |
| 0 AUTHCODES FOR SBS RELEASE 3                   | BV1008 |
| 0 AUTHCODES TYPE III (VARIABLE DIGIT AUTHCODES) | BV0754 |
| 0 CP ACCESS TO DCP FOR AUTHCODE                 | AD0089 |
| 0 ENHANCED AUTHCODE DATA BASE                   | BV0758 |
| 0 JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX  | BV0884 |
| 0 FEATURES                                      |        |
| 0 MCI RELEASE 2 AUTHCODES                       | BV1007 |
| 0 SPLASHBACK BY AUTHCODE ENHANCEMENTS           | BV2053 |
| 0 USSPRINT REL 1.3 AUTHCODE DATABASE            | AD0086 |

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0 NTX234BA01 STATUS RTM  
0 DMS-250 AUTHCODES (TYPE II)

|                                       |        |
|---------------------------------------|--------|
| 0 AUTHCODE DATABASE FOR US TELECOM    | BV2042 |
| 0 CP ACCESS TO DCP FOR AUTHCODE       | AD0089 |
| 0 SPLASHBACK BY AUTHCODE ENHANCEMENTS | BV2053 |
| 0 USSPRINT REL 1.3 AUTHCODE DATABASE  | AD0086 |

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0 NTX234CA01 STATUS RTM  
0 DMS-250 AUTHCODES (TYPE III)  
0 (VARIABLE DIGIT)

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | ADDITION OF IDDD ALLOWED FIELD IN MCI AUTHCODE DB. | AD0168 |
| 0 | AUTHCODE DATABASE MERGES COMBINATION FOR TYPE III  | BV2024 |
| 0 | AUTHCODES TYPE III (VARIABLE DIGIT AUTHCODES)      | BV0754 |
| 0 | ENHANCED AUTHCODE DATA BASE                        | BV0758 |
| 0 | MCI RELEASE 2 AUTHCODES                            | BV1007 |

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0 NTX235AA02 STATUS RTM  
0 DMS-250 RESTRICTED USAGE BY  
0 DATE AND TIME

|   |                               |        |
|---|-------------------------------|--------|
| 0 | RESTRICTED USAGE BY DATE/TIME | BV0859 |
|---|-------------------------------|--------|

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0 NTX235BA02 STATUS RTM  
0 DMS-250 RESTRICTED USAGE BY  
0 DATE AND TIME

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | COMMERCIAL DAY OF YEAR RESTRICTION | AM0181 |
| 0 | RESTRICTED USAGE BY DATE/TIME      | BV0859 |

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0 NTX235CA01 STATUS RTM  
0 DMS-250 RESTRICTED USAGE BY  
0 DATE AND TIME

0 RESTRICTED USAGE BY DATE/TIME BV0859

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0 NTX236AA01 STATUS RTM  
0 DMS-250 ALTERNATE TRUNK GROUP  
0 TREATMENTS

0 CALL PROCESSING HOOKS FOR TOPS BV1396

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0 NTX236BA01 STATUS RTM  
0 DMS-250 ALTERNATE TRUNK GROUP  
0 TREATMENTS

0 CALL PROCESSING HOOKS FOR TOPS BV1396

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0 NTX236CA01 STATUS RTM  
0 DMS-250 ALTERNATE TRUNK GROUP  
0 TREATMENTS

0 CALL PROCESSING HOOKS FOR TOPS BV1396

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0 NTX237AA02 STATUS RTM  
0 DMS-250 NAILED UP CONNECTIONS

0 NAILED UP CONNECTIONS

BR0259

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0 -----0 NTX238AA01 STATUS RTM  
0 DMS-250 CONFERENCE CALLING0 CONFERENCE CALLING  
0 PM EXECS FOR CONFERENCE CALLINGBV0768  
BV0769

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0 -----0 NTX239AA02 STATUS RTM  
0 DMS-250 TRANSLATION  
0 VERIFICATION0 DMS250 TRANSLATION VERIFICATION - PHASE II  
0 MCI TRANSLATION VERIFICATION  
0 TRANSLATION VERIFICATION  
0  
0 TRANSLATION VERIFICATION ENHANCEMENT  
0 TRANSLATION VERIFICATION FOR USTSBV1294  
BV1017  
BV0724  
BV1191  
BV1303  
BV1215

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0 NTX239BA02 STATUS RTM  
0 DMS-250 TRANSLATION  
0 VERIFICATION

|                                              |        |
|----------------------------------------------|--------|
| 0 DMS250 TRANSLATION VERIFICATION - PHASE II | BV1294 |
| 0 MCI TRANSLATION VERIFICATION               | BV1017 |
| 0 TRANSLATION VERIFICATION                   | BV0724 |
| 0                                            | BV1191 |
| 0 TRANSLATION VERIFICATION ENHANCEMENT       | BV1303 |
| 0 TRANSLATION VERIFICATION FOR USTS          | BV1215 |
| 0 TRAVER ENHANCEMENTS - PHASE 1              | AD2353 |

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0 -----0 NTX239CA01 STATUS RTM  
0 DMS-250 TRANSLATION  
0 VERIFICATION

|                                              |        |
|----------------------------------------------|--------|
| 0 DMS250 TRANSLATION VERIFICATION - PHASE II | BV1294 |
| 0 MCI TRANSLATION VERIFICATION               | BV1017 |
| 0 TRANSLATION VERIFICATION                   | BV0724 |
| 0                                            | BV1191 |
| 0 TRANSLATION VERIFICATION ENHANCEMENT       | BV1303 |
| 0 TRANSLATION VERIFICATION FOR USTS          | BV1215 |

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0 NTX241AA01 STATUS RTM  
0 ANI ASSIST CAPABILITY

0 TOPS HANDLING 6000C ANI ASSIST CALLS BC1890

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0 NTX243AA07 STATUS RTM  
0 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)

0 AMATPS BR0514  
0 DISPLAY DPP THROUGH IOD LEVEL AF0151  
0 DPP AMATPS SOFTWARE(COOK) BF0595  
0 DPP ROBUSTNESS ENHANCEMENTS AF0210  
0 380 MBYTE DISK FOR DPP AF1406

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0 NTX244AA02 STATUS A+M  
0 SEQUENTIAL TRUNK  
0 SELECTION(REP.BY NTX244AB)

0 EXPANDED TRUNK GUARD TIMING AF1252  
0 SEQUENTIAL TRUNK SELECTION BR0515  
0 SEQUENTIAL TRUNK SELECTION REAL-TIME IMPROVEMENTS BC1438

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0 NTX244AB02 STATUS RTM  
0 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | CIRCULAR TRUNK HUNTING                            | AF0177 |
| 0 | EXPANDED TRUNK GUARD TIMING                       | AF1252 |
| 0 | SEQUENTIAL TRUNK SELECTION                        | BR0515 |
| 0 | SEQUENTIAL TRUNK SELECTION REAL-TIME IMPROVEMENTS | BC1438 |

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0 NTX245AA01 STATUS RTM  
0 PUERTO RICO LINE OPTION  
0 CONTROL

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | ELIMINATION OF SPB, FNT & FLAT RATE OPTIONS | BR0522 |
|---|---------------------------------------------|--------|

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0 NTX250AA15 STATUS RTM  
0 DATAPATH - BASIC

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | ASYNC LINE CARD                                  | BF0471 |
| 0 | ASYNC LINE CARD MAINTENANCE                      | BV1338 |
| 0 | CALL PROGRESS DISPLAY/USAGE                      | BF0691 |
| 0 | CALL PROGRESS SIGNALS TO DATA UNITS              | BC1597 |
| 0 | DATA CALL IDENTIFICATION FOR SMDR                | AC0427 |
| 0 | DATA LINE CARD (PRODUCTION)                      | BF0443 |
| 0 | DATA LINE CARD FACILITY MAINTENANCE              | BV0809 |
| 0 | DATAPATH AUTOMATIC LINE                          | BV0924 |
| 0 | DATAPATH BIT ERROR RATE TEST                     | BT1088 |
| 0 | DATAPATH CALL PATH RESTORATION                   | AC0565 |
| 0 | DATAPATH CALL PROCESSING                         | BV0921 |
| 0 | DATAPATH COAX ELIMINATION FOR IBM 3194 TERMINALS | AF1096 |
| 0 | DATAPATH CSDC INTERWORKING                       | AC0028 |

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|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | DATAPATH DIGITAL CONNECTIVITY                        | BV0926 |
| 0 | DATAPATH DISCONNECT TIMEOUT                          | BV1310 |
| 0 | DATAPATH DU PROFILE                                  | BV1309 |
| 0 | DATAPATH DU-DLC BPV COUNT                            | BC0732 |
| 0 | DATAPATH HUNT GROUPS                                 | BV0925 |
| 0 | DATAPATH KEYBOARD DIALING                            | BV0929 |
| 0 | DATAPATH MCD DATA TRANSMISSION DELAY                 | AC0027 |
| 0 | DATAPATH PROFILE ENHANCEMENTS                        | AC0198 |
| 0 | DATAPATH PROFILE ENHANCEMENTS II                     | AC0462 |
| 0 | DATAPATH RING AGAIN                                  | BV0943 |
| 0 | DATAPATH SERVICE ORDERS                              | BV0931 |
| 0 | DATAPATH SPEED CALLING                               | BV0923 |
| 0 | DATAPATH SPEED RESTRICTED CALLING                    | BV1317 |
| 0 | DATAPATH TCM SYNC LOSS IDENTIFICATION                | AC0460 |
| 0 | DATAPATH UK FIELD TRIAL                              | AE0301 |
| 0 | DENIED TERMINATION TO DU IN LOCAL TEST MODE          | AC0191 |
| 0 | DIALAN CUG AND MTC LOOPBACK S/W FOR CD6X76AC         | AC0545 |
| 0 | DU AUTOBAUD                                          | BF0465 |
| 0 | DU CO LOOPBACK                                       | BV0902 |
| 0 | DU MILLIWATT/QUIET TERMINATION                       | BV0900 |
| 0 | DU MONITOR                                           | BV0899 |
| 0 | DU SILENT SWITCHMAN                                  | BV0901 |
| 0 | FEATURE ENHANCED HIGH SPEED DU (AP) FIRMWARE VERSION | AC0033 |
| 0 | 4                                                    |        |
| 0 | FIRMWARE FOR AILC BASED I-BERT                       | BF0952 |
| 0 | HAYES KBD HIGH SPEED ENHANCEMENTS                    | AC0463 |
| 0 | HIGH SPEED DU (AE) FIRMWARE VERSION 3                | AC0035 |
| 0 | HIGH SPEED DU (PRODUCTION VERSION)                   | BF0444 |
| 0 | HIGH SPEED DU WITH ELASTOMER KEY PAD                 | BF0798 |
| 0 | IBERT SW ENHANCEMENTS                                | BC2051 |
| 0 | IBERT SW PHASE I                                     | BC2052 |
| 0 | IBERT: BIT ERROR RATE TESTING F/W ENHANCEMENTS       | AC0105 |
| 0 | IBM 3274 DATA UNIT                                   | BF0470 |
| 0 | IBM 3278 DATA UNIT                                   | BF0472 |
| 0 | INTEGRATED BERT PRODUCT SPEC                         | BZ0592 |
| 0 | LOW SPEED DU WITH ELASTOMER KEY PAD                  | BF0797 |
| 0 | METALLIC JACK                                        | AG0054 |
| 0 | PHASE 1 OF DU MAP                                    | BV0895 |
| 0 | PHASE 2 DU MAP                                       | BV0896 |
| 0 | PRINTER SUPPORT ON COAX ELIMINATOR                   | AC0546 |
| 0 | RACK MOUNT HIGH SPEED DU                             | BF0795 |
| 0 | RACK MOUNT LOW SPEED DU                              | BF0796 |
| 0 | RACKMOUNT HIGH SPEED DU (AV)                         | AC0030 |
| 0 | RACKMOUNT LOW SPEED DU (4X25CH) FIRMWARE             | AC0032 |
| 0 | S/W DEFINITION OF NEW 6X76AC AIM LINE CARDS          | AC0534 |
| 0 | SL1/SL100 INTERWORKING                               | BC1086 |
| 0 | TCM SYNC LOSS ROBUSTNESS                             | AC0617 |

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0 NTX251AA06 STATUS RTM  
0 DATAPATH - MODEM POOLING

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | DATAPATH AUTOMATIC MODEM INSERTION | AC0509 |
| 0 | DATAPATH INBOUND MODEM POOLS       | BV0928 |
| 0 | DATAPATH MODEM POOLING MAINTENANCE | AC0113 |
| 0 | DATAPATH OUTBOUND MODEM POOLS      | BV0927 |
| 0 | MODEM POOL DU (PRODUCTION)         | BF0446 |
| 0 | MODEM POOLING PHASE II             | BV1311 |
| 0 | NETWORK RESOURCE SELECTOR OVERRIDE | AC0194 |

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0 NTX255AA02 STATUS RTM  
0 DATAPATH PROVISIONING (CANADA)

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | DATAPATH FOR POTS & CENTREX         | BV1315 |
| 0 | DATAPATH PROVISIONING & ENGINEERING | BV1314 |

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0 NTX256AA04 STATUS RTM  
0 DATAPATH - LOOP EXTENSION

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | AUDIO TONE DETECTION FOR BELL DATALINK SERVICE     | AC0300 |
| 0 | DATAPATH LOOP EXTENSION                            | BT1022 |
| 0 | DATAPATH LOOP EXTENSION MAINTENANCE                | BV1342 |
| 0 | LOOP EXTENSION LOW SPEED DTU WITH ELASTOMER KEYPAD | BF0928 |
| 0 | LOOP EXTENSION LOW SPEED LIU                       | BF0467 |

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0 NTX257AA01 STATUS RTM  
0 DATAPATH - CLOSED USER  
0 GROUPS(CUG)

0 DATAPATH USER GROUP BV1318

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0 -----0 NTX259AA03 STATUS RTM  
0 DATAPATH EXTENSION - DPX0 DATAPATH D4 DPX FIRMWARE AC0099  
0 DATAPATH EXTENSION DPX FIRMWARE VERSION 2 AC0029  
0 DATAPATH EXTENSION UNIT DPX BF0859  
0 DPX MAINTENANCE BC2240  
0 D4 DPX HARDWARE (PEC: NT9L01AA) AC0125  
0 D4 DPX MAINTENANCE UPGRADE AC0195  
0 FW FOR IBERT COMPATIBILITY WITH DPX BF0726

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0 -----0 NTX260AA02 STATUS RTM  
0 IBN - PRESET CONFERENCE0 CONFERENCE CALL ANNOUNCEMENT BC0710  
0 PRESET CONFERENCE BC0708

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0 NTX262AA01 STATUS RTM  
0 IBN PRIORITY CONSOLE ALERTING

0 IMMEDIATE NOTIFICATION OF PRIORITY ENQUEUED CALLS. BR0528

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0 NTX268AA02 STATUS RTM  
0 FEAT GRP B AMA - END OFFICE  
0 (NT FORMAT)0 ACCESS CHARGE RECORDING - END OFFICE (NT FORMAT) BR0564  
0 FGB CALLS FROM LAMA EO TO IC VIA AT BC2136

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0 NTX269AA07 STATUS RTM  
0 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)0 A-LAW UTRS FOR IBN LINES AE0403  
0 A-LAW UTRS FOR IBN TRUNKS AE0302  
0 CALL PROCESSING FOR LINES BC1484  
0 CALL PROCESSING USING UTR FOR MF TRUNKS BF0665  
0 ENHANCED MTCE FOR UTR'S BC1766  
0 LINE CALL PROCESSING USING UTRS BF0664  
0 MF TRUNK CALL PROCESSING USING UTRS BC1483  
0 RADR FOR UTR BF0959  
0 SP DIGIT HANDLER AND MAINTENANCE TASK FOR UTRS BF0663  
0 UTR BASE ENHANCEMENTS AC0127



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|   |                              |        |
|---|------------------------------|--------|
| 0 | UTR HOOKS FOR SL-100         | AD0065 |
| 0 | UTR SENSITIVITY OPTIONALITY  | AE0288 |
| 0 | XPM DTMF FOR TRUNKS WITH UTR | BF0961 |

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|   |                            |     |
|---|----------------------------|-----|
| 0 | NTX270AA19 STATUS          | RTM |
| 0 | NEW PERIPHERAL MAINTENANCE |     |
| 0 | PACKAGE                    |     |

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | AUDIBLE ALARMS FOR REMOTE CSIDE LINK FAILURES      | AG0366 |
| 0 | BDTC DS1 INTERFACE FOR DMS-300                     | AE0082 |
| 0 | BETTER CC INTERPRETATION OF MESSAGING FAILURES     | AL0477 |
| 0 | CC DATA SUPPORT FOR 6X50AB                         | BC2093 |
| 0 | CC MAINTENANCE FOR PCM30 ENHANCEMENTS              | AE0085 |
| 0 | CC MANUAL SUPPORT FOR DEAD SYSTEM RECOVERY         | AG1241 |
| 0 | CC MTCE SUPPORT FOR IDTC - PCM30                   | BC1104 |
| 0 | CC SUPPORT OF TONE OPTIONALITY IN XPM              | AE0186 |
| 0 | COLD SWACT RECOVERY ON FAILURES OF PLANNED SWACTS  | AJ0965 |
| 0 | DECOUPLE CC RELOAD RESTART AND XPM STATIC DATA     | AL0608 |
| 0 | DIAGNOSTIC CHANNEL ALLOCATION IN IXPM              | AE0645 |
| 0 | DIAL TONE SPEED RECORDING FOR LCM                  | BV1103 |
| 0 | DS-1 EFF CARD - (NT6X50AB)                         | AC0151 |
| 0 | DTSR CAPACITY IMPROVEMENT                          | AF0155 |
| 0 | DTSR ON A PER PM BASIS                             | AL0495 |
| 0 | DTSR REALTIME ENHANCEMENTS                         | AL0227 |
| 0 | ENHANCED CC SUPPORT FOR 6X50AB ON HOST PERIPHERALS | AL0563 |
| 0 | ENHANCED FIELD FAILURE INFO                        | AF2987 |
| 0 | ENHANCED MSB MTC                                   | BC0626 |
| 0 | ENHANCED XPM DS1 MAINTENANCE                       | AL0174 |
| 0 | ENHANCED XPM SWACT MANAGEMENT                      | AJ0964 |
| 0 | EXPANDED P-SIDE PORTS ON LGCS                      | AE0745 |
| 0 | INCOMING START-TO-DIAL (ISDD) MEASUREMENT          | AL0169 |
| 0 | LCM ENHANCEMENTS                                   | BC0880 |
| 0 | LCM TAKEOVER/TAKEBACK ENHANCEMENT                  | AF1647 |
| 0 | LM SPEECH LINK DIAGNOSTICS                         | BC1217 |
| 0 | LOADER ENHANCEMENTS                                | BC0651 |
| 0 | MARKET_OF_OFFICE ENHANCEMENTS                      | AJ1088 |
| 0 | MSB - DTC NUC BASIC MTCE                           | BC0474 |
| 0 | NPE - BASIC PM LOADER (SEE F0095, F0089)           | BC0499 |
| 0 | NPE - BASIC T1 MTCE FOR DTC, LGC                   | BC0498 |
| 0 | NPE - LCM MTCE ENHANCEMENTS II                     | BC0669 |

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|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | NPE - LGC/DTC MTCE ENHANCEMENTS II               | BC0670 |
| 0 | NPE - LOADER FOR LGC                             | BC0671 |
| 0 | NPE - OMS FOR LGC/DTC                            | BV1111 |
| 0 | NPE - PM LOAD FILE PATCHER                       | BC0883 |
| 0 | NPE ENHANCED NPE LOADER                          | BC0712 |
| 0 | NPE-LCM BASIC MTCE - DEV S/W (SEE F0079, F0077)  | BC0476 |
| 0 | NPE-LCM MTCE ENCHANCEMENTS                       | BC0482 |
| 0 | NPE-LGC MTCE ENHANCEMENTS                        | BC0617 |
| 0 | NPE-LGC/DTC BASIC MTCE - DEV S/W                 | BC0477 |
| 0 | NPE-MSB BASIC MTCE - DEV S/W                     | BC0475 |
| 0 | PCM CONVERSION DIAGNOSTIC                        | AE0596 |
| 0 | PCM30 IDLE CHANNEL BIT PATTERN                   | AE0084 |
| 0 | PCM30 MAINTENANCE ENHANCEMENTS FOR CCS           | AE0159 |
| 0 | PM MAP/LOG ROBUSTNESS                            | BC1184 |
| 0 | PM180 CLEANUP                                    | NC0322 |
| 0 | SWACT OPERATION ROBUSTNESS                       | AJ1038 |
| 0 | TONES OPTIONALITY                                | AE0200 |
| 0 | TRUNK ACCESS MEASUREMENTS                        | AG0917 |
| 0 | XLCM DIAGNOSTIC ENH.                             | AF2988 |
| 0 | XLCM DIAGS PHASE II - 6X54 RELAY, SCAN CHIP      | AF3086 |
| 0 | XLCM REX RESULTS /FFI PH II                      | AF3234 |
| 0 | XPM BOOTSTRAP IMC/IPML MESSAGING ENHANCEMENT FOR | AG0310 |
| 0 | NT6X69                                           |        |
| 0 | XPM DATA MANAGEMENT ROBUSTNESS                   | AJ1039 |
| 0 | XPM DIAG DRIVER ENHANCEMENTS                     | BF0969 |
| 0 | XPM IPML MESSAGING FOR OFFICE RECOVERY           | AG0309 |
| 0 | XPM MTC FOR DMS-X PART 2                         | AL1460 |
| 0 | XPM PARITY AUDIT                                 | AJ0338 |
| 0 | XPM REALTIME ENHANCEMENTS                        | BF0954 |
| 0 | XPM REX RESULTS /FFI PH II                       | AF3200 |
| 0 | XPM REX/SWACT ROBUSTNESS                         | AF2989 |
| 0 | XPM ROM DIAGNOSTIC IMPROVEMENTS                  | AL0474 |
| 0 | XPM ROM DIAGNOSTIC MMI                           | AL0095 |
| 0 | XPM ROUTINE EXERCISE TEST                        | BF0955 |
| 0 | XPM RTS ENHANCEMENT                              | AL0335 |
| 0 | XPM RTS ENHANCEMENTS                             | AF2583 |
| 0 | XPM SYNC DIAGNOSTIC                              | AG0664 |
| 0 | XPM TONES OPTIONALITY                            | AE0223 |
| 0 | 6X50 LOOP DIAGNOSTIC                             | AG1046 |
| 0 | 6X50AB DIAGNOSTIC                                | AL0173 |

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0 NTX272AA02 STATUS RTM  
0 FOCUSSED MAINTENANCE

|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | NEW MAINTENANCE PROCESSING - CLLIMTCE | BV1572 |
| 0 | NEW MAINTENANCE PROCESSING - LINEMTCE | BV1573 |
| 0 | NMP - BUFFERING & ALARMS FOR LINES    | BC1289 |
| 0 | NMP - LINEMTCE TABLE CONTROL          | BC1288 |
| 0 | NMP - LSTAT                           | BC1290 |

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0 NTX273AA07 STATUS RTM  
0 MULTI - PROTOCOL CONTROLLER  
0 BX.25

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | APPLICATION SUPPORT - AMATPS, EADAS-DC             | BC1336 |
| 0 | MPC BX.25 LEVEL 2.                                 | BF0508 |
| 0 | MPC BX.25 LEVEL 3.                                 | BF0507 |
| 0 | MPC COMMAND INTERPRETER                            | BF0502 |
| 0 | MPC DATAPAC X.25 CC INTERFACE                      | AF0015 |
| 0 | MPC DATAPAC X.25 PP S/W                            | AF0016 |
| 0 | MPC IOC HANDLER                                    | BF0503 |
| 0 | MPC LEVEL ONE HANDLER                              | BF0504 |
| 0 | MPC LOGS FOR IOD MAINTENANCE                       | BC2132 |
| 0 | MPC OM CC INTERFACE TO PP AND PP DATA REGISTRATION | AF1129 |
| 0 | MPC OM COLLECTION(CC)                              | AF1128 |
| 0 | MPC OM GROUP DEFINITIONS                           | AF1127 |
| 0 | MPC OM PP INTERFACE TO CC                          | AF1131 |
| 0 | MPC OM PP LINK DATA COLLECTION                     | AF1130 |
| 0 | MPC OS                                             | BF0501 |
| 0 | MPC ROM MAINTENANCE AND CC LOADER.                 | BF0505 |
| 0 | PROTOCOL SUPPORT - BX.25                           | BC1334 |
| 0 | TABLES, MAINTENANCE, I/O, FILE SYSTEM              | BC1335 |

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0 NTX274AA04 STATUS RTM  
0 DTC 30 CARRIER MAINTENANCE

|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | CARRIER MAINTENANCE ENHANCEMENT       | AE0480 |
| 0 | DTC 30 CARRIER MAINTENANCE            | BC1076 |
| 0 | JAPANESE TONES FOR NEW MESSAGING PDTC | AE0488 |
| 0 | 6X27 INTERFACE CONTROL                | AE0777 |

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0 NTX277AA02 STATUS RTM  
0 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION

|   |                             |        |
|---|-----------------------------|--------|
| 0 | DIALABLE CABLE LOCATOR TONE | BR0569 |
| 0 | DIALABLE SHORT CIRCUIT      | BR0570 |

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0 NTX290AA01 STATUS RTM  
0 TANDEMING/SUPERVISION AND  
0 TREATMENT

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | TANDEMING/SUPERVISION & TREATMENT UPON ATB | BR0533 |
|---|--------------------------------------------|--------|

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0 NTX291AA04 STATUS RTM  
0 ENHANCED REAL TIME INDICATOR

|   |                                 |        |
|---|---------------------------------|--------|
| 0 | ENHANCE ACTIVITY                | AL0139 |
| 0 | ENHANCED CC REAL TIME INDICATOR | AL0506 |
| 0 | ENHANCED REAL TIME INDICATOR    | BC0672 |

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0 NTX292AA01 STATUS A+M  
0 ENHANCED SECURITY PACKAGE I

|   |                            |        |
|---|----------------------------|--------|
| 0 | ENHANCED COMMAND SCREENING | BC0904 |
| 0 | PASSWORD CONTROL           | BC0905 |

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0 NTX292AB04 STATUS RTM  
0 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION

|   |                                   |        |
|---|-----------------------------------|--------|
| 0 | ACCESS CONTROL                    | BC1042 |
| 0 | AUDIT TRAIL                       | BC1041 |
| 0 | AUTOMATIC LOGOUT OF DIAL-UP LINES | BC1044 |
| 0 | ENHANCED COMMAND SCREENING        | BC0904 |
| 0 | PASSWORD CONTROL                  | BC0905 |
| 0 | SECURITY TABLE ENHANCEMENT.       | BC1305 |
| 0 | SUPPRESSION OF USERNAME ON LOGIN  | AD2087 |

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0 NTX292BA03 STATUS RTM  
0 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION

|   |                                   |        |
|---|-----------------------------------|--------|
| 0 | ACCESS CONTROL                    | BC1042 |
| 0 | AUDIT TRAIL                       | BC1041 |
| 0 | AUTOMATIC LOGOUT OF DIAL-UP LINES | BC1044 |
| 0 | ENHANCED COMMAND SCREENING        | BC0904 |
| 0 | PASSWORD CONTROL                  | BC0905 |
| 0 | SUPPRESSION OF USERNAME ON LOGIN  | AD2087 |

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0 NTX293AA02 STATUS RTM  
0 ENHANCED SECURITY PACKAGE II

|   |                          |        |
|---|--------------------------|--------|
| 0 | AUTOMATIC DIAL BACK      | BC1043 |
| 0 | DIALBACK ON OTHER MODEMS | BC1451 |

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0 NTX297AA01 STATUS RTM  
0 BRIDGES SERVICES

|   |                      |        |
|---|----------------------|--------|
| 0 | MULTI-PARTY BRIDGING | AF0178 |
|---|----------------------|--------|

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0 NTX299AA02 STATUS A+M  
0 SPECIAL SERVICES - SCM(UPG BY  
0 NTX299AB)

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | DDS HAIRPIN                                 | AF0231 |
| 0 | DID PBX VIA HAIRPIN                         | AF0230 |
| 0 | MAINTENANCE FOR NAILED-UP SPECIALS ON SMS   | BC1374 |
| 0 | SMS SPECIAL SERVICES                        | BF0519 |
| 0 | TABLE CONTROL FOR NAILED-UP SPECIALS ON SMS | BC1409 |

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0 NTX299AB01 STATUS RTM  
0 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | DDS HAIRPIN                                 | AF0231 |
| 0 | DID PBX VIA HAIRPIN                         | AF0230 |
| 0 | INTEGRATED LOCAL SPECIALS/SPOTS             | AF0242 |
| 0 | MAINTENANCE FOR NAILED-UP SPECIALS ON SMS   | BC1374 |
| 0 | SMS SPECIAL SERVICES                        | BF0519 |
| 0 | TABLE CONTROL FOR NAILED-UP SPECIALS ON SMS | BC1409 |

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0 NTX304AA01 STATUS RTM  
0 NX64 KBIT/SEC SEMI-PERMANENT  
0 CONNECTIONS

|   |                            |        |
|---|----------------------------|--------|
| 0 | NX64 NAILED UP CONNECTIONS | AE0811 |
|---|----------------------------|--------|

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PRACTICE 297-1001-450

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0 NTX310AA01 STATUS RTM

0 DMS200/300 OPERATION

0 DMS200/300 MAINTENANCE UNIFICATION

BC1510

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0 NTX312AA01 STATUS RTM

0 DMS-300 ISDN BEARER SERVICES

0 TRANSPORT

0 DMS300 U/A LAW PER CALL CONVERSION

AJ1279

0

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0 NTX316AA01 STATUS RTM

0 DMS-300 INTERNATIONAL STP

0 (MSB7)

0 LIMITED STP FUNCTIONALITY ON MSB7

AE0733

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0 NTX320AA01 STATUS RTM  
0 DMS-250 SERVICE ANALYSIS

0 SERVICE ANALYSIS BV0727  
0 TRUNK SELECTION IN DMS250 SA BV1153

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0 NTX321AA01 STATUS RTM  
0 DMS-250 GENERIC OFF NET ACCESS  
0 TRUNKS

0 MCI ONAT CALL PROCESSING & TABLE CONTROL (REL. 2) BV0846

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0 NTX321BA01 STATUS RTM  
0 DMS-250 GENERIC OFF NET ACCESS  
0 TRUNKS

0 MCI ONAT CALL PROCESSING & TABLE CONTROL (REL. 2) BV0846

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0 NTX321CA01 STATUS RTM  
0 DMS-250 GENERIC OFF NET ACCESS  
0 TRUNKS

0 MCI ONAT CALL PROCESSING & TABLE CONTROL (REL. 2) BV0846

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0 Software Features  
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0 NTX322AA18 STATUS RTM  
0 MTX CALL PROCESSING

|                                             |        |
|---------------------------------------------|--------|
| 0 ACTIVE VCH SCANNING                       | AD0626 |
| 0 ALARMS                                    | BV1236 |
| 0 BACKUP CONTROL AND LOCATING RCU           | BV1634 |
| 0 CALL PROCESSING AUDIT                     | BV1663 |
| 0 CC SUPPORT FOR RCU STATE AUDIT            | AD1184 |
| 0 CDR SEARCH ON DISK                        | BV1325 |
| 0 CDR SEARCH ON DISK HOOKS                  | BV1580 |
| 0 CELLULAR DATABASE ENHANCEMENTS            | AD0752 |
| 0 CELLULAR KILLER TRUNK                     | BV1324 |
| 0 CELLULAR MTC TRUNK ASPECTS                | BV1635 |
| 0 CELLULAR OM                               | BV1166 |
| 0 CELLULAR SAT REPORTING                    | BV1725 |
| 0 CELLULAR SUBSCRIBER DATABASE (PHASE 2)    | BV1025 |
| 0 CSC (PHASE 1) MOBILE CP TASKS             | BF0304 |
| 0 CSC (PHASE 1) MONITOR                     | BF0303 |
| 0 CSC (PHASE 1) MTCE TASK                   | BF0306 |
| 0 CSC (PHASE 2) MTX MESSAGE HANDLER         | BF0301 |
| 0 CSC ACTIVITY SWITCH                       | BF0313 |
| 0 CSC ADAPTOR DIAGNOSTICS                   | BF0317 |
| 0 CSC AUDIT                                 | BF0318 |
| 0 CSC AUDIT ENHANCEMENTS                    | AD2219 |
| 0 CSC CONTROLLER DIAGNOSTICS                | BF0316 |
| 0 CSC DATA OVERVIEW                         | BF0333 |
| 0 CSC DYNAMIC SYSTEM PARAMETER UPDATE       | BF0323 |
| 0 CSC HANDOFF ENHANCEMENT                   | BF0315 |
| 0 CSC HANDOFF ENHANCEMENT AND SAT REPORTING | BF0350 |
| 0 CSC HDLC CONTROLLER DIAGNOSTICS           | BF0322 |
| 0 CSC HDLC CONTROLLER FIRMWARE              | BF0307 |
| 0 CSC HDLC CONTROLLER TASK SCHEDULER        | BF0300 |
| 0 CSC HDLC MONITOR                          | BF0311 |
| 0 CSC LOAD BALANCING                        | BF0310 |
| 0 CSC MAINTENANCE                           | BV1144 |
| 0 CSC MAINTENANCE FOLDBACK PHASE II         | AD1186 |
| 0 CSC MAINTENANCE ROBUSTNESS                | AD0755 |
| 0 CSC MESSAGE DIAGNOSTICS                   | BF0326 |
| 0 CSC MOBILE CP TASK (PHASE 2)              | BF0314 |
| 0 CSC MTCE (PHASE 1)                        | BV1148 |

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|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | CSC MTCE ROBUSTNESS                                  | AD0536 |
| 0 | CSC OM QUERY UTILITY                                 | BV1613 |
| 0 | CSC OPERATIONAL MEASUREMENTS                         | BF0305 |
| 0 | CSC SUPPORT FOR RCU STATE AUDIT                      | AD1182 |
| 0 | CSC/ADAPTOR DMSX MESSAGE HANDLER                     | BF0302 |
| 0 | DATAPAC POLLING                                      | BT0456 |
| 0 | DCM EXEC LINEUP FOR MTX                              | BV1147 |
| 0 | DIGITAL PAD SWITCHING FOR GAIN ON MTX                | AD0228 |
| 0 | DISCONTINUE SCREENING OF RESERVED SERIAL NUMBER BITS | BR0782 |
| 0 | DROPCALL OM ENHANCEMENT                              | AM0108 |
| 0 | ENHANCE CSC AUDIT                                    | BF0339 |
| 0 | ENHANCE 6X91/90 DIAGNOSTICS                          | BF0320 |
| 0 | ENHANCED HDLC FIRMWARE                               | BF0328 |
| 0 | ENHANCED LINK MANAGEMENT                             | BV1233 |
| 0 | ENHANCED LOAD BALANCING                              | BV1723 |
| 0 | ENHANCED RCU MAINTENANCE                             | BV1669 |
| 0 | ENHANCED TRUNK MAINTENANCE FOR TAU                   | BV1308 |
| 0 | EXPANDED CDR RECORD FORMAT                           | BT0465 |
| 0 | EXPANDED SYSTEM CAPACITY                             | AD0408 |
| 0 | E911 EMERGENCY SERVICES                              | BV1659 |
| 0 | HANDOFF ALGORITHM ENHANCEMENT                        | BV1658 |
| 0 | HANDOFF ENHANCEMENT                                  | BV1235 |
| 0 | HANDOFF OPERATIONAL MEASUREMENT                      | BV1223 |
| 0 | HDLC LEVEL 2 LAPB PROTOCOL FOR CSC LINK              | BF0346 |
| 0 | I/O SYSTEM S/W & HANDOFF FOR PHASE 2                 | BV1028 |
| 0 | I/O SYSTEM S/W FOR (PHASE 1)                         | BV1027 |
| 0 | INCREASED NUMBER OF CELLS                            | AD1188 |
| 0 | INTER MTX HANDOFF                                    | BV1863 |
| 0 | INTER MTX HANDOFF FIRMWARE                           | BF0832 |
| 0 | INTERIM CELLULAR SUBSCRIBER DATABASE                 | BV1026 |
| 0 | LCR FLOW CONTROL                                     | AD0405 |
| 0 | LCR OVERFLOW INDICATION                              | AD0749 |
| 0 | LCR/CCH RECEIVER SELECTIVITY                         | AD1185 |
| 0 | LDPMALL AND LOADPM ALL FOR CSC                       | AD2002 |
| 0 | LINK MANAGEMENT                                      | BV1165 |
| 0 | LINK MANAGEMENT ENHANCEMENTS                         | AD0562 |
| 0 | LOAD BALANCING ENHANCEMENT IN CSC                    | BF0349 |
| 0 | MAINTENANCE AUDIT ENHANCEMENTS                       | AD1180 |
| 0 | MAINTENANCE FOLDBACK                                 | AD0745 |
| 0 | MOBILE 10-DIGIT ANI                                  | BV1619 |
| 0 | MODEM ELIMINATION                                    | AD2557 |
| 0 | MTX AUDITS                                           | BV1237 |
| 0 | MTX CALL PROCESSING SUPPORT FOR SUPERNODE            | AD1446 |
| 0 | MTX FPE HANDOFF                                      | BV1581 |
| 0 | MTX HDLC CONTROLLER DIAGNOSTICS                      | BF0321 |
| 0 | MTX HDLC CONTROLLER FIRMWARE                         | BF0308 |
| 0 | MTX HDLC MONITOR                                     | BF0312 |

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|   |                                                 |        |
|---|-------------------------------------------------|--------|
| 0 | MTX MAINTENANCE SUPPORT FOR DMS SUPERNODE       | AD1443 |
| 0 | MTX NETWORKING MESSAGING                        | BV2066 |
| 0 | MTX PAGE TIMEOUT TREATMENT                      | BV1615 |
| 0 | MTX SERIAL NUMBER DISABLE OPTION                | BV1614 |
| 0 | MTX TOLL DENIED OPERATOR ASSIST OPTION          | BV1616 |
| 0 | MULTIPLE TREATMENT TABLES                       | BV2017 |
| 0 | NEGATIVE ROAMER FILE                            | BV1322 |
| 0 | NX25 LEVEL 3 (PACKET LAYER) ENHANCEMENTS        | BV2063 |
| 0 | OPTIMIZE TABLES CSCINV AND HDLC                 | AD1449 |
| 0 | OPTIMIZED MTC CLASS TASKS                       | AD0748 |
| 0 | OVERHEAD MESSAGE AND A/B STREAM GENERATION      | BF0324 |
| 0 | PHASE I CELLULAR CALL PROCESSING                | BV1021 |
| 0 | PHASE I CELLULAR TRANSLATIONS                   | BV1023 |
| 0 | PHASE I TESTPLAN DEBUGGED WITH PHASE I S/W      | BT0419 |
| 0 | PHASE II CELLULAR CALL PROCESSING               | BV1022 |
| 0 | PHASE II CELLULAR TRANSLATIONS                  | BV1024 |
| 0 | PHASE II TEST PLAN                              | BT0420 |
| 0 | PHASE 1 CELLSITE DATABASE                       | BV1029 |
| 0 | PHASE 1 NX25 CALL PROCESSING ACCESS             | BV2064 |
| 0 | PHASE 2 CDR                                     | BV1154 |
| 0 | PHASE 2 CELLSITE DATABASE                       | BV1146 |
| 0 | PHASE 2 INTERIM MESSAGE ROUTER                  | BV1155 |
| 0 | PMDEBUG TO INACTIVE UNIT OF CSC                 | AD1183 |
| 0 | RCU EXCEPTION REPORT HANDLING                   | BF0619 |
| 0 |                                                 | BV1724 |
| 0 | REGISTRATION CONTROL AND LOAD BALANCING         | BV1164 |
| 0 | SIMULATION CSC                                  | BF0319 |
| 0 | SPLIT TICKET BILLING                            | BV1726 |
| 0 | SUPERNODE STUDY AND SRAM ENHANCEMENTS           | AD2379 |
| 0 | TAU PHASE 2                                     | BV1861 |
| 0 | TAU PROCESSING (PHASE 2)                        | BF0618 |
| 0 | TAU PROCESSING FOR ALARMS, TEST CALLS AND TRUNK | BF0309 |
| 0 | TESTING                                         |        |
| 0 | TIME OF DAY ( TOD ) ROUTING                     | BV0644 |
| 0 | TRANSIENT ROAMERS                               | BV1187 |
| 0 | TRUNK ASPECT FOR DATA LINK                      | BV1727 |
| 0 | TRUNK TEST CALL (LOOP RF)                       | BV1234 |
| 0 | UNREGISTERD MOBILE HANDOFF                      | BV1617 |
| 0 | 68030 VERIFICATION TESTING                      | AD2553 |
| 0 | 911 CALLING CAPABILITY FOR UMOB                 | AD0018 |
| 0 | 9600 BAUD CSC HDLC LINK                         | BF0617 |

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0 NTX323AA03 STATUS RTM  
0 MTX DIRECT INWARD MOBILE  
0 ACCESS (DIMA)

|   |                             |        |
|---|-----------------------------|--------|
| 0 | DIMA ENHANCEMENT            | BR3219 |
| 0 | DIMA TOLL SCREENING         | AD2196 |
| 0 | DIRECT INWARD MOBILE ACCESS | BV1867 |

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0 NTX324AA02 STATUS RTM  
0 MTX NONRES UTILITIES

|   |                      |        |
|---|----------------------|--------|
| 0 | CSC MAINTENANCE      | BV1144 |
| 0 | CSC OM QUERY UTILITY | BV1613 |
| 0 | HLC OM QUERY UTILITY | BV1705 |
| 0 | MTX AUDITS           | BV1237 |

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0 NTX325AA03 STATUS RTM  
0 MTX VERTICAL FEATURES I

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | CELLULAR CALL FORWARDING            | BV1142 |
| 0 | CELLULAR CALL WAITING               | BV1244 |
| 0 | CELLULAR CONFERENCE CALLING         | BV1140 |
| 0 | CSC VERTICAL FEATURES               | BF0327 |
| 0 | MTX VERTICAL SERVICE HOLD DURATIONS | BV1582 |

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0 NTX340AA02 STATUS RTM  
0 DMS-250 ADAPTIVE ROUTING

0 ADAPTIVE ROUTING (DMS-250 RETRANSLATION)  
0 DIGMAN EXPANSION TO 32K

BV1251  
AD0811

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0 NTX340BA01 STATUS RTM  
0 DMS-250 ADAPTIVE ROUTING

0 ADAPTIVE ROUTING (DMS-250 RETRANSLATION)  
0 DIGMAN EXPANSION TO 32K

BV1251  
AD0811

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0 NTX340CA01 STATUS RTM  
0 DMS-250 ADAPTIVE ROUTING

0 ADAPTIVE ROUTING (DMS-250 RETRANSLATION)  
0 DIGMAN EXPANSION TO 32K

BV1251  
AD0811

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0 NTX341AA05 STATUS RTM  
0 DMS-250 TOPS

0 DMS250/TOPS AUTHCODE AS ANI  
0 DMS250/TOPS TO GATEWAY INTERFACE  
0 GATEWAY TO DMS250/TOPS TERMINATION

BV1301  
BT0452  
BT0454

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0 93 12 030 INHIBIT TIME & CHARGES MESSAGE BV1898  
0 IT250 TRUNK GROUP AGENCY BV1980  
0 MULTI-STREAM CDR FOR DMS250 BV1243

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0 -----0 NTX341AM02 STATUS RTM  
0 DMS-250 TOPS NATIONAL OPERATOR  
0 POSITION0 IT250 TRUNK GROUP AGENCY BV1980  
0 MERCURY F1 AMA RECORD BV2014  
0 TYPE XIII TOPS UNIVERSAL TRANSLATIONS BV1953  
0 3L COS INFORMATION ACROSS TOPS TRUNKS BV2012

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0 -----0 NTX341BA01 STATUS RTM  
0 DMS-250 OPERATOR SERVICES0 CALL PROMPTER INTERFACE AD0821  
0 CDRID TO CALLID DATABASE AND ACCESS ROUTINES AD0138  
0 END OFFICE CALL PROCESSING FOR OPERATOR SERVICES AD0158  
0 INCOMING OPERATOR SERVICES TRUNK CALL PROCESSING AD0136  
0 OPERATOR SERVICES - PHASE III AD0339  
0 OPERATOR SERVICES BILLING AND CDR HOOKS AD0135  
0 OPERATOR SERVICES BRIDGING AD0817  
0 OPERATOR SERVICES GATEWAY SWITCH SIMULATOR AD0159  
0 OUTGOING OPER. SERV. TRUNK CALL PROCESSING AND TABLE AD0139  
0 CONTROL  
0 US SPRINT OPERATOR SERVICES, PHASE 1. AD0220  
0 VPN/FTS OPERATOR SERVICES AD0819

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0 NTX341CA01 STATUS RTM  
0 DMS-250 TOPS

|                                      |        |
|--------------------------------------|--------|
| 0 DMS250/TOPS AUTHCODE AS ANI        | BV1301 |
| 0 DMS250/TOPS TO GATEWAY INTERFACE   | BT0452 |
| 0 GATEWAY TO DMS250/TOPS TERMINATION | BT0454 |
| 0 INHIBIT TIME & CHARGES MESSAGE     | BV1898 |
| 0 IT250 TRUNK GROUP AGENCY           | BV1980 |
| 0 MULTI-STREAM CDR FOR DMS250        | BV1243 |

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0 -----0 NTX342AA02 STATUS RTM  
0 DMS-250 EQUAL ACCESS BASE  
0 PACKAGE

|                                              |        |
|----------------------------------------------|--------|
| 0 ANI COLLECTION SCREENING BY TRKGRP         | BV1677 |
| 0 CDR FOR EQUAL ACCESS                       | BC1002 |
| 0 EAE0/AT FROM IC/INC CALL PROCESSING        | BC1000 |
| 0 EAE0/AT TO IC/INC CALL PROCESSING          | BC0999 |
| 0 EANT TRUNK GROUP TABLE CONTROL             | BC1001 |
| 0 EQUAL ACCESS PM EXECs & TEMPLATES          | BV1394 |
| 0 MULTI-CUSTOMER ANI VERIFICATION DATA BASES | BV1585 |

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0 NTX342BA01 STATUS RTM  
0 DMS-250 EQUAL ACCESS BASE  
0 PACKAGE

|                                              |        |
|----------------------------------------------|--------|
| 0 ANI COLLECTION SCREENING BY TRKGRP         | BV1677 |
| 0 CDR FOR EQUAL ACCESS                       | BC1002 |
| 0 EAE0/AT FROM IC/INC CALL PROCESSING        | BC1000 |
| 0 EAE0/AT TO IC/INC CALL PROCESSING          | BC0999 |
| 0 EANT TRUNK GROUP TABLE CONTROL             | BC1001 |
| 0 EQUAL ACCESS PM EXECS & TEMPLATES          | BV1394 |
| 0 MULTI-CUSTOMER ANI VERIFICATION DATA BASES | BV1585 |

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0 NTX342CA01 STATUS RTM  
0 DMS-250 EQUAL ACCESS BASE  
0 PACKAGE

|                                              |        |
|----------------------------------------------|--------|
| 0 ANI COLLECTION SCREENING BY TRKGRP         | BV1677 |
| 0 CDR FOR EQUAL ACCESS                       | BC1002 |
| 0 EAE0/AT FROM IC/INC CALL PROCESSING        | BC1000 |
| 0 EAE0/AT TO IC/INC CALL PROCESSING          | BC0999 |
| 0 EANT TRUNK GROUP TABLE CONTROL             | BC1001 |
| 0 EQUAL ACCESS PM EXECS & TEMPLATES          | BV1394 |
| 0 MULTI-CUSTOMER ANI VERIFICATION DATA BASES | BV1585 |

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0 NTX343AB03 STATUS RTM  
0 DMS-250 EQUAL ACCESS (TYPE II)

|                                      |        |
|--------------------------------------|--------|
| 0 ANI DATABASE DESIGN                | AD0062 |
| 0 ANI DATABASE FO US TELECOM         | BV2041 |
| 0 FGD ANI ENHANCEMENTS               | AD0820 |
| 0 US SPRINT REL 1.3 FGD ANI DATABASE | AD0404 |

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0 NTX343BA01 STATUS RTM  
0 DMS-250 EQUAL ACCESS (TYPE II)

|                                      |        |
|--------------------------------------|--------|
| 0 ANI DATABASE DESIGN                | AD0062 |
| 0 ANI DATABASE FO US TELECOM         | BV2041 |
| 0 FGD ANI ENHANCEMENTS               | AD0820 |
| 0 US SPRINT REL 1.3 FGD ANI DATABASE | AD0404 |

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0 NTX343CA02 STATUS RTM  
0 DMS-250 EQUAL ACCESS (TYPE  
0 III)

|                                                |        |
|------------------------------------------------|--------|
| 0 (INTERIM) MCI CUSTOM ANI DATA BASE           | BV1583 |
| 0 ANI BULK LOAD/DUMP FOR MCI                   | BV1680 |
| 0 ANI SCREENING (BY INDEX) TABLE               | BV1584 |
| 0 CARRIER ID BY TRKGRP FOR EANTS & ONATS       | BV1637 |
| 0 CARRIER ID NUMBER IN CDR                     | BV1620 |
| 0 CP FOR ACCT CODES BY ANI                     | BV1685 |
| 0 CP FOR IDDD SCREENING                        | BV1610 |
| 0 CP FOR TOD RESTRICTION BY ANI                | BV1608 |
| 0 DATABASE FOR EQUAL ACCESS ACCOUNT CODES      | BV1683 |
| 0 EXPANDED FG-D ACCOUNT CODE FOR MCI           | AD0308 |
| 0 EXPANSION OF ANI SCREENING INDEX             | BV1702 |
| 0 FG-D ACCESS SCREENING                        | AD1584 |
| 0 INCREASE STORE EFFICIENCY OF ANI INDEX TABLE | BV1893 |
| 0 PSEUDO ANI FOR 800 SERVICES                  | AD1686 |
| 0 SWATS                                        | AD0160 |

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0 NTX344CA06 STATUS RTM  
0 DMS-250 NEMAS

|                                                 |        |
|-------------------------------------------------|--------|
| 0 AFT ACS-SFO FILENAME                          | AM0100 |
| 0 ALARM STATUS MESSAGE                          | BV1905 |
| 0 AUTOMATIC FILE TRANSFER RESTRUCTURING         | AD1603 |
| 0 CI THROUGH NEMAS VIRTUAL CHANNEL              | BV1392 |
| 0 ENHANCED COMMUNICATION DIAGNOSTICS            | BV1595 |
| 0 FULL SCREEN MAP CAPABILITY FOR NEMAS          | BV1881 |
| 0 INCREASE NEMAS THROUGHPUT                     | AD0454 |
| 0 MULTI-X.25 SUPPORT FOR NEMAS AFT ON EIOC-MP   | AD2237 |
| 0 NEMAS APPLICATION ACCESS VIA EMPC             | AD2455 |
| 0 NEMAS MESSAGE TRANSFER PROTOCOL FILE TRANSFER | BV1390 |
| 0 NEMAS MMI                                     | BV1592 |
| 0 NEMAS ON ACD                                  | AD3141 |
| 0 PARTIAL FILE TRANSFER                         | BV1596 |
| 0 REAL TIME BILLING TRANSMISSION                | BV1594 |
| 0 STANDARDIZED TRAFFIC STATISTICS (STS)         | AD0460 |

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0 NTX345CA04 STATUS RTM  
0 DMS-250 MCCA (CALLING CARD)

|                                                     |        |
|-----------------------------------------------------|--------|
| 0 ABBR. DIALING & NEW RANGE RESTRICTIONS ON CALLING | AD1586 |
| 0 CARD                                              |        |
| 0 CALL PROCESSING FOR MCI CALLING CARD              | AD0148 |
| 0 CALLING CARD ENHANCEMENTS                         | AD0699 |
| 0 CALLING CARD WITH SUPPCODES                       | AD1693 |
| 0 MCI CALLING CARD CALL PROCESSING ENHANCEMENTS     | AD0154 |
| 0 MCI CALLING CARD REORIGINATION USING STR          | AD0142 |
| 0 MCI CALLING CARD SERVICE                          | BR3229 |
| 0 MCI CREDIT CARD CALLING                           | AJ1288 |

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0 NTX346BA01 STATUS RTM  
0 DMS-250 INTRA-LATA INTRA-STATE  
0 SCREENING

0 CP FOR INTRA-LATA AND INTRA-STATE SCREENING BV1609

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0 NTX346CA01 STATUS RTM  
0 DMS-250 INTRA-LATA INTRA-STATE  
0 SCREENING

0 CP FOR INTRA-LATA AND INTRA-STATE SCREENING BV1609

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0 NTX347AA06 STATUS RTM  
0 DMS BASE DATA COMMUNICATION CC  
0 SOFTWARE )

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | DEVELOPE DS-30 I/F THROUGH RASL               | AD0492 |
| 0 | HOOKS FOR X.25 FOR NETWORK MANAGEMENT         | AD0222 |
| 0 | LAPB 6X91 MAINTENANCE                         | BV1391 |
| 0 | MULTIPLE APPLICATIONS ON THE 6X91 FILE SYSTEM | BV1698 |
| 0 | NEMAS HDLC CONTROLLER FIRMWARE                | BF0337 |
| 0 | NEMAS MULTI LINK PROCEDURE (MLP)              | BV1597 |
| 0 | NEMAS RELEASE I OMS AND ALARMS                | BV1682 |
| 0 | NX25 REAL TIME ENHANCEMENTS AND NX25 CLEANUP  | AD0490 |
| 0 | NX25 TIMER ENHANCEMENTS                       | AD0721 |
| 0 | RASL ENHANCEMENTS FOR GENERIC SERVICES        | AD0664 |

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|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | RASL TO MPC MULTI-APPLICATION INTERFACE            | AD0589 |
| 0 | REAL TIME IMPROVEMENTS TO MLP AND NX25 MAINTENANCE | AD0489 |
| 0 | SMDR/MCDR POLLING VIA X.25                         | BV2035 |
| 0 | X.25 LEVEL 3 UTILITY IN CC                         | BV1389 |
| 0 | 6X91 FIRMWARE FOR NEMAS MLP AND NON X.25 FEATURES  | BF0345 |
| 0 | 6X91 FIRMWARE IMPROVEMENT FOR 19.2 AND THROUGHPUT. | AD0519 |

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|---|------------------------------|-----|
| 0 | NTX348AA01 STATUS            | RTM |
| 0 | DMS-250 VIRTUAL NETWORKING - |     |
| 0 | DATAPATH/MULTIFUNCTION       |     |

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | DATAPATH ON DMS250 PHASE 1                | BV1688 |
| 0 | MTM FIRMWARE SUPPORTING 32K RAM 0X70 CARD | BF0626 |

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|---|-------------------------------|-----|
| 0 | NTX349CA02 STATUS             | RTM |
| 0 | DMS-250 CAMA TRUNK GROUP CALL |     |
| 0 | PROCESSING                    |     |

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | CAMA ENHANCEMENTS                          | AD2363 |
| 0 | CAMA TRUNK GROUP CALL PROCESSING ON DMS250 | BV1625 |

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|---|-------------------------|-----|
| 0 | NTX351BA02 STATUS       | RTM |
| 0 | DMS-250 AUTOMATIC TRUNK |     |
| 0 | ROUTINING               |     |

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|---|-------------------------------------|--------|
| 0 | ATR TO CCS7 IMT INTERWORKING        | AD1209 |
| 0 | AUTOMATIC TRUNK ROUTINING INTERFACE | BV1671 |
| 0 | DMS-250 ATR ON T250 & IT250         | AD2371 |
| 0 | TEST TERMINATIONS FOR ATR           | BV1706 |

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|---|-------------------------|-----|
| 0 | NTX351CA02 STATUS       | RTM |
| 0 | DMS-250 AUTOMATIC TRUNK |     |
| 0 | ROUTINING               |     |

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | ATR TO CCS7 IMT INTERWORKING        | AD1209 |
| 0 | AUTOMATIC TRUNK ROUTINING INTERFACE | BV1671 |
| 0 | DMS-250 ATR ON T250 & IT250         | AD2371 |
| 0 | TEST TERMINATIONS FOR ATR           | BV1706 |

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|---|-------------------------|-----|
| 0 | NTX353AA04 STATUS       | RTM |
| 0 | DMS-250 VIRTUAL PRIVATE |     |
| 0 | NETWORK (VNET)          |     |

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | AUTHCODE ENHANCEMENT FOR VPN                         | BV1868 |
| 0 | CALL PROCESSING FOR VNET FG-D                        | AD0143 |
| 0 | CDR SEARCH FOR MCI PRIVATE NETWORK RECORDS           | BV1903 |
| 0 | CDR SEARCH UPGRADE FOR VER. 4.1 CDR                  | BV1880 |
| 0 | ENHANCE ACTION CODES FOR VNET & 800 SERVICES         | AD0966 |
| 0 | ENHANCED 800 SERVICES (SAC) VIA THE NCS              | AD0877 |
| 0 | EXECS FOR CALLING CARD AND VNET                      | AD0150 |
| 0 | IMT FOR VPN TANDEMING                                | BV1877 |
| 0 | MCI CDR AND PNR ENHANCEMENTS FOR VNET & 800 SVC.     | AD0977 |
| 0 | MCI CDR UPGRADE - VER. 4.1                           | BV1879 |
| 0 | MCI PRIVATE NETWORK RECORDS                          | BV1901 |
| 0 | MCI VNET PHASE 1                                     | BR3230 |
| 0 | MIXED SIGNALING ON VNET DAL                          | AD0458 |
| 0 | NCS FORMATTER ENHANCEMENTS FOR VNET AND 800 SERVICES | AD0975 |
| 0 | NCS MESSAGE FORMATTER ENHANCEMENTS                   | AD0149 |

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|---|------------------------------------------------------|--------|
| 0 | NX25 & L3 MTCE FOR VPN & NEMAS                       | BV1870 |
| 0 | OMS, LOGS, AND ALARMS FOR VPN TRANSACTION PROCESSING | BV1976 |
| 0 | ORIG AND TERM VPN CP & TC                            | BV1878 |
| 0 | TRANSLATIONS FOR MCI'S VIRTUAL PRIVATE NETWORK       | BV1869 |
| 0 | TRANSLATIONS FOR TERMINATING VPN CALLS               | BV1931 |
| 0 | VNET & 800 SVC. HOTLINE                              | AD0974 |
| 0 | VNET & 800 SVC. VARIABLE LENGTH SUPP. CODES          | AD0976 |
| 0 | VNET APPLICATION TIMERS                              | AD0079 |
| 0 | VNET CP UPGRADE OF DALs, FGA, & IMTS.                | AD0147 |
| 0 | VNET PHASE II                                        | AD0680 |
| 0 | VNET-10 DIGIT CALL PROCESSING                        | AD0151 |
| 0 | VPN F/W INTERFACE AND IMPLEMENTATION                 | BF0637 |
| 0 | VPN TRANSACTION PROCESSING                           | BV1872 |
| 0 | 800 SERVICES REMOTE ACCESS TO VNET                   | AD0973 |

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|---|-------------------|-------------------------|
| 0 | NTX353CA05 STATUS | RTM                     |
| 0 |                   | DMS-250 VIRTUAL PRIVATE |
| 0 |                   | NETWORK (VNET)          |

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | (FI) ADDITIONAL NCS LINKS                            | AD2667 |
| 0 | ACTION CODE TREATMENT TABLE FOR NCS ACTION CODES     | AD2948 |
| 0 | AUTHCODE ENHANCEMENT FOR VPN                         | BV1868 |
| 0 | CALL PROCESSING FOR VNET FG-D                        | AD0143 |
| 0 | CDR SEARCH FOR MCI PRIVATE NETWORK RECORDS           | BV1903 |
| 0 | CDR SEARCH UPGRADE FOR VER. 4.1 CDR                  | BV1880 |
| 0 | ENHANCE ACTION CODES FOR VNET & 800 SERVICES         | AD0966 |
| 0 | ENHANCED DTO AND NEW ACTION CODES FOR VNET & 800     | AD1335 |
| 0 | SVC.                                                 |        |
| 0 | ENHANCED 800 SERVICES (SAC) VIA THE NCS              | AD0877 |
| 0 | EXECS FOR CALLING CARD AND VNET                      | AD0150 |
| 0 | EXPAND TRUNK GROUP IN ADF                            | AD2359 |
| 0 | IMT FOR VPN TANDEMING                                | BV1877 |
| 0 | MCI CDR AND PNR ENHANCEMENTS FOR VNET & 800 SVC.     | AD0977 |
| 0 | MCI CDR UPGRADE - VER. 4.1                           | BV1879 |
| 0 | MCI PRIVATE NETWORK RECORDS                          | BV1901 |
| 0 | MCI VNET PHASE 1                                     | BR3230 |
| 0 | MIXED SIGNALING ON VNET DAL                          | AD0458 |
| 0 | NCS ENHANCEMENT                                      | AM0095 |
| 0 | NCS FOR EIOC                                         | AD1214 |
| 0 | NCS FORMATTER ENHANCEMENTS FOR VNET AND 800 SERVICES | AD0975 |

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|---|------------------------------------------------------|--------|
| 0 | NCS MESSAGE FORMATTER ENHANCEMENTS                   | AD0149 |
| 0 | NX25 & L3 MTCE FOR VPN & NEMAS                       | BV1870 |
| 0 | OMS, LOGS, AND ALARMS FOR VPN TRANSACTION PROCESSING | BV1976 |
| 0 | ORIG AND TERM VPN CP & TC                            | BV1878 |
| 0 | TRANSLATIONS FOR MCI'S VIRTUAL PRIVATE NETWORK       | BV1869 |
| 0 | TRANSLATIONS FOR TERMINATING VPN CALLS               | BV1931 |
| 0 | VNET & 800 SVC. ENHANCEMENTS FOR CONFLICT DIALING    | AD1334 |
| 0 | VNET & 800 SVC. HOTLINE                              | AD0974 |
| 0 | VNET & 800 SVC. VARIABLE LENGTH SUPP. CODES          | AD0976 |
| 0 | VNET APPLICATION TIMERS                              | AD0079 |
| 0 | VNET CAMA                                            | AD1575 |
| 0 | VNET CAMA ANI ENHANCEMENTS                           | AD3491 |
| 0 | VNET CAMA ENHANCEMENTS                               | AD1585 |
| 0 | VNET CP UPGRADE OF DALS, FGA, & IMTS.                | AD0147 |
| 0 | VNET PHASE II                                        | AD0680 |
| 0 | VNET-10 DIGIT CALL PROCESSING                        | AD0151 |
| 0 | VPN F/W INTERFACE AND IMPLEMENTATION                 | BF0637 |
| 0 | VPN TRANSACTION PROCESSING                           | BV1872 |
| 0 | 800 SERVICES REMOTE ACCESS TO VNET                   | AD0973 |

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|---|-------------------|----------------------------|
| 0 | NTX354BA01 STATUS | RTM                        |
| 0 |                   | DMS-250 (AIOD) AUTOMATIC   |
| 0 |                   | IDENTIFIED OUTWARD DIALING |

|   |                   |        |
|---|-------------------|--------|
| 0 | AIOD              | AD0816 |
| 0 | AIOD ENHANCEMENTS | AD1944 |

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|---|-------------------|-------------------------|
| 0 | NTX358BA03 STATUS | RTM                     |
| 0 |                   | DMS-250 CHIPS INTERFACE |

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | AUTOMATIC FILE TRANSFER RESTRUCTURING             | AD1603 |
| 0 | CHIPS TO RASL                                     | AD0895 |
| 0 | DATA TRANSFER FROM DMS TO DV-1-DESIGN AND DMS END | BV2021 |



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|---|------------------------------------------------|--------|
| 0 | DIRP LARGE FILE DOWNLOAD SAFESTORAGE FOR CHIPS | AD0338 |
| 0 | DMO PRO - PASS THRU                            | AD2662 |
| 0 | DV-1 LIU LAPB ENHANCEMENTS FOR CHIPS           | BV2018 |
| 0 | DVS LOGS/ALARMS INCOMING TO DMS                | AD0678 |
| 0 | DV1 TO DMS-250 ALARMS                          | AD0477 |
| 0 | EIOC_MP CHIPS VIA EMPC                         | AD2459 |
| 0 | SPRINT CHIPS I/F FROM DMS                      | AD0077 |
| 0 | X.25 PACKET LAYER PVC TO CONNECT TO CHIP SAC   | BV2019 |
| 0 | X.75 MULTILINK TO CONNECT TO DMS               | BV2020 |
| 0 | 6 PVC'S ACCESSED FROM TOOLKIT                  | AD0073 |

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0 NTX359CA01 STATUS RTM  
0 DMS-250 SPLASHBACK BY STS

0 SPLASHBACK BY STS DATABASE BV2023

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0 NTX360AA03 STATUS RTM  
0 DMS-250 TRAVEL CARD (IN SWITCH  
0 TCN DATABASE)

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | CALLING CARD ENHANCEMENTS                      | AD0699 |
| 0 | IN-SWITCH TCN DATABASE                         | BV2058 |
| 0 | TCN CALL PROCESSING AND EXECS                  | BV2060 |
| 0 | TRAVEL CARD REORIGINATION USING STR            | AD0061 |
| 0 | TRAVELCARD CALL PROCESSING UPGRADE FOR CAC I/F | AD0084 |

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0 NTX360BA02 STATUS RTM  
0 DMS-250 TRAVEL CARD (IN SWITCH  
0 TCN DATABASE)

|                                                  |        |
|--------------------------------------------------|--------|
| 0 (FI) VALIDATION FOR TRAVEL CARD REORIGINATION  | AD3112 |
| 0 CALLING CARD ENHANCEMENTS                      | AD0699 |
| 0 IN-SWITCH TCN DATABASE                         | BV2058 |
| 0 RESTORATION OF PROMPT TONE ON TCN CALLS        | AD1391 |
| 0 TCN CALL PROCESSING AND EXECs                  | BV2060 |
| 0 TRAVEL CARD REORIGINATION USING STR            | AD0061 |
| 0 TRAVELCARD CALL PROCESSING UPGRADE FOR CAC I/F | AD0084 |

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0 NTX361BA05 STATUS RTM  
0 DMS-250 CCS7 IMTS

|                                                |        |
|------------------------------------------------|--------|
| 0 CCS7 IMT TEST CALL ENHANCEMENTS              | AD1210 |
| 0 CCS7 IMT TO ANNOUNCEMENT INTERWORKING        | AD1212 |
| 0 CCS7 IMT TO TONE INTERWORKING                | AD1211 |
| 0 DMS-250 STANDARD CCS7 IMTS                   | AD0357 |
| 0 DMS250 ENHANCED ISUP MESSAGE TRANSPORT       | AD2174 |
| 0 ENHANCED ECHO CANCELLER CONTROL & ACM AFTER  | AD1532 |
| 0 OUTPULSING                                   |        |
| 0 IEC/IXC CORPORATE NETWORKING FOR CCS7        | AM0186 |
| 0 ISDN INFO TRANSPORT ACROSS TANDEM CCS7 IMT   | AD1221 |
| 0 CONNECTION-PHASE1                            |        |
| 0 MCCS ON ISUP IMT                             | AD2627 |
| 0 SIGNALLING UNIT ERROR LPP/MSB7 DOWNLOADING   | AM0183 |
| 0 STANDARD CCS7 IMT TRUNK MAINTENANCE, PHASE 1 | AD0424 |
| 0 USS EOPS TO TERMINATING SS7 IMTS             | AD1538 |
| 0 USS REAL-TIME CALLING NUMBER DELIVERY        | AD1537 |

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0 NTX361CA07 STATUS RTM  
0 DMS-250 CCS7 IMTS

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|---|----------------------------------------------|--------|
| 0 | CCS7 IMT TEST CALL ENHANCEMENTS              | AD1210 |
| 0 | CCS7 IMT TO ANNOUNCEMENT INTERWORKING        | AD1212 |
| 0 | CCS7 IMT TO TONE INTERWORKING                | AD1211 |
| 0 | DMS-250 STANDARD CCS7 IMTS                   | AD0357 |
| 0 | DMS250 ENHANCED ISUP MESSAGE TRANSPORT       | AD2174 |
| 0 | DMS250 NSF PARAMETER FOR MCI                 | AD2392 |
| 0 | ENHANCED DMS-250 ISUP IMT'S TO EOPS          | AD2450 |
| 0 | ENHANCED ECHO CANCELLER CONTROL & ACM AFTER  | AD1532 |
| 0 | OUTPULSING                                   |        |
| 0 | ISDN INFO TRANSPORT ACROSS TANDEM CCS7 IMT   | AD1221 |
| 0 | CONNECTION-PHASE1                            |        |
| 0 | ISUP IMT ENHANCEMENTS FOR RELEASE 18         | AD2626 |
| 0 | MCCS ON ISUP IMT                             | AD2627 |
| 0 | MCI BCSI ENHANCEMENT                         | AD3151 |
| 0 | MCI CALLING NUMBER TRANSPORT                 | AD1534 |
| 0 | MCI CCS7 ISUP TO RESELLER INTERWORKING       | AD3148 |
| 0 | MCI IAM ENHANCEMENTS                         | AD1533 |
| 0 | MCI SPECIAL BACKWARD CALL INDICATOR PARM     | AD1531 |
| 0 | MCI SS7 ENHANCEMENTS                         | AD2391 |
| 0 | STANDARD CCS7 IMT TRUNK MAINTENANCE, PHASE 1 | AD0424 |

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0 -----0 NTX362AA01 STATUS RTM  
0 DMS-250 INCOMING EXCLUSION FOR  
0 800 SERVICES

|   |                              |        |
|---|------------------------------|--------|
| 0 | NXX-XXXX DATABASE FOR INWATS | AD0132 |
| 0 | 800 SERVICE PRETRANSLATOR    | AD0126 |

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0 NTX362BA02 STATUS RTM  
0 DMS-250 INCOMING EXCLUSION FOR  
0 800 SERVICES

0 (FI) INWFEAT ENHANCEMENTS AM0189  
0 800 SERVICE PRETRANSLATOR AD0126

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0 NTX363BA01 STATUS RTM  
0 DMS-250 CAC INTERFACE

0 USSPRINT CAC CP I/F AND MESSAGING AD0076

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0 NTX363CA01 STATUS RTM  
0 DMS-250 CAC INTERFACE

0 USSPRINT CAC CP I/F AND MESSAGING AD0076

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0 NTX364BA02 STATUS RTM  
0 DMS-250 CCS7 TCAP BASED TCN  
0 SERVICE

0 CCS7 TCAP BASED TCN SERVICE AD0373  
0 GENERIC DMS-250 APPLICATIONS TO TCAP/SCCP INTERFACE AD0353  
0 RESTORATION OF PROMPT TONE ON TCN CALLS AD1391

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0 93 12 030 TRAVEL CARD ENHANCEMENTS FOR 2.3  
0 VPN ON FONCARDAD1174  
AD2352

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0 -----0 NTX365BA03 STATUS RTM  
0 DMS-250 CCS7 TCAP BASED N00  
0 SERVICE0 CCS7 TCAP BASED N00 SERVICE  
0 ENHANCEMENT TO N00 SERVICES VIA DCP  
0 GENERIC DMS-250 APPLICATIONS TO TCAP/SCCP INTERFACE  
0 US SPRINT 700 SERVICE  
0 10-DIGIT ANI TO THE SCPAD0374  
AD1390  
AD0353  
AD2602  
AD3511

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0 -----0 NTX366BA01 STATUS RTM  
0 DMS-250 CCS7 TCAP BASED ACCT  
0 CODE & PRIV SPEED VALIDATION0 ACCTCODE VALIDATION & PRIVATE SPEED TRANSLATION AT  
0 DCP  
0 CCS7 TCAP QUERY/RESPONSE & TESTSS FOR ACCT CODE &  
0 PRIV SPEEDAD0807  
AD0688

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0 NTX367BA01 STATUS RTM  
0 DMS-250 CCS7 TACAP BASED  
0 AUTHCODE VALIDATION

0 AUTHCODE TRANSLATION AT DCP  
0 TCAP QUERY/RESPONSE & TESTSS FOR AUTHCODE

AD0682  
AD0693

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0 NTX368BA01 STATUS RTM  
0 DMS-250 MULTIPLE AUTHCODE SETS

0 MULTIPLE AUTHCODE SETS

AD0818

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0 NTX369AA01 STATUS RTM  
0 DMS-250 NT40 SUPPORT SYSTEM

0 DMS LOGS/ALARMS INCOMING TO NT40  
0 NT40 SUPPORT SYSTEM - DELIVERABLE

AD0851  
AD0798

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0 NTX376AA05 STATUS RTM  
0 MTX NETWORK MESSAGING

0 INTER MTX HANDOFF  
0 INTER MTX HANDOFF FIRMWARE  
0 MTX NETWORK DISTRIBUTED DATABASES

BV1863  
BF0832  
AD2209

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|---|------------------------------------------|--------|
| 0 | MTX NETWORKING MESSAGING                 | BV2066 |
| 0 | MTX UNIVERSAL FEATURE USAGE              | AD2208 |
| 0 | NX25 LEVEL 3 (PACKET LAYER) ENHANCEMENTS | BV2063 |
| 0 | PHASE 1 NX25 CALL PROCESSING ACCESS      | BV2064 |
| 0 | VERTICAL FEATURE HANDOFF ENHANCEMENTS    | AD1447 |

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|---|----------------------|-----|
| 0 | NTX376AB01 STATUS    | RTM |
| 0 | MTX IS41+ NETWORKING |     |

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|---|---------------------------------------|--------|
| 0 | INTER MTX HANDOFF FIRMWARE            | BF0832 |
| 0 | MTX NETWORK DISTRIBUTED DATABASES     | AD2209 |
| 0 | MTX NETWORKING MESSAGING              | BV2066 |
| 0 | MTX UNIVERSAL FEATURE USAGE           | AD2208 |
| 0 | PHASE 1 NX25 CALL PROCESSING ACCESS   | BV2064 |
| 0 | VERTICAL FEATURE HANDOFF ENHANCEMENTS | AD1447 |

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|---|-------------------|-----|
| 0 | NTX380AA02 STATUS | RTM |
| 0 | DUAL RCC          |     |

|   |                                 |        |
|---|---------------------------------|--------|
| 0 | CC ESA STATIC DATA              | AF0951 |
| 0 | CC INTERSWITCHING               | AF0562 |
| 0 | DUAL ESA CALL CONTROL           | AF0565 |
| 0 | DUAL RCC ESA CALL PROCESSING II | AF1008 |
| 0 | DUAL RCC ESA FORCE DOWN OPTION  | AF1512 |
| 0 | DUAL RCC ESA IBN TRANSLATIONS   | AF1074 |
| 0 | DUAL RCC ESA MAINTENANCE        | AF1122 |
| 0 | DUAL RCC ESA SYNCHRONIZATION    | AF0950 |
| 0 | DUAL RSC PP WARM SWACT          | AF1011 |
| 0 | ESA CC OPERATIONAL MEASUREMENTS | AF0955 |
| 0 | ESA POTS INTERCALLING           | AF1013 |
| 0 | ESA PP OPERATIONAL MEASUREMENTS | AF0956 |
| 0 | ESA TRUNKING                    | AF0954 |
| 0 | INTERLINK MAINTENANCE           | AF0551 |

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|---|------------------------------------------|--------|
| 0 | INTERLINK MESSAGING                      | AF0563 |
| 0 | INTERLINK TABLE CONTROL AND STATIC DATA  | AF0932 |
| 0 | INTERSWITCH OPERATIONAL MEASUREMENTS     | AF0726 |
| 0 | PERIPHERAL LINE INTERSWITCH ENHANCEMENTS | AF0725 |
| 0 | PERIPHERAL TRUNK INTERSWITCH             | AF0727 |
| 0 | PP ESA MAINTENANCE                       | AF0952 |
| 0 | PP ESA MAINTENANCE ENTRY/EXIT            | AF0953 |
| 0 | PP LINE INTERSWITCH                      | AF0564 |

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| 0 | NTX381AA01 STATUS | RTM                       |  |
| 0 |                   | RSC - REMOTE - OFF REMOTE |  |

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|---|--------------|--------|
| 0 | RLCM OFF RCC | AG0327 |
|---|--------------|--------|

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|---|-------------------|----------------------------|--|
| 0 | NTX385AA01 STATUS | RTM                        |  |
| 0 |                   | OM THRESHOLDING AND ALARMS |  |

|   |                            |        |
|---|----------------------------|--------|
| 0 | OM THRESHOLDING & ALARMING | BR0576 |
|---|----------------------------|--------|

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|---|-------------------|-----------------------------|--|
| 0 | NTX386AA04 STATUS | RTM                         |  |
| 0 |                   | ACCESS TANDEM SWITCH(UPG BY |  |
| 0 |                   | NTX386AB)                   |  |

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | EA:ACCESS TANDEM - NEW LOGS               | BC1034 |
| 0 | EA:ACCESS TANDEM - NEW TREATMENTS         | BC1032 |
| 0 | EA:ACCESS TANDEM - OPERATION MEASUREMENTS | BC1035 |



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0 EA:ACCESS TANDEM - TERMINATING BILLING BC1031  
0 EA:ACCESS TANDEM - TRANSLATION AND CARRIER SCREENING BC1028  
0 EA:ACCESS TANDEM - TRUNK TO/FROM EAEO BC1029  
0 EA:ACCESS TANDEM - TRUNK TO/FROM INTEREXCHANGE BC1030  
0 CARRIER  
0 EQUAL ACCESS-CC REAL TIME IMPROVEMENT BC1380

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0 NTX386AB02 STATUS RTM  
0 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)

0 EA:ACCESS TANDEM - NEW LOGS BC1034  
0 EA:ACCESS TANDEM - NEW TREATMENTS BC1032  
0 EA:ACCESS TANDEM - OPERATION MEASUREMENTS BC1035  
0 EA:ACCESS TANDEM - TERMINATING BILLING BC1031  
0 EA:ACCESS TANDEM - TRANSLATION AND CARRIER SCREENING BC1028  
0 EA:ACCESS TANDEM - TRUNK TO/FROM EAEO BC1029  
0 EA:ACCESS TANDEM - TRUNK TO/FROM INTEREXCHANGE BC1030  
0 CARRIER  
0 EQUAL ACCESS-CC REAL TIME IMPROVEMENT BC1380

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0 NTX387AB04 STATUS A+M  
0 SMU - SUBSCRIBER MODULE URBAN  
0 ( REP NTX387AA)

0 AUTOMATIC SYSTEM TEST FOR RCU AF0829  
0 AUTOMATIC SYSTEM TEST FOR RCU(CC) AF0828  
0 DTSR/OMS FOR RCU BC2159  
0 FLOW CONTROLS FOR SMU AF1734  
0 INTEGRATED LINE TEST W/DRTU AF2983  
0 OPERATOR VERIFICATION FOR RCU LINES AF0055  
0 PP DMS-1U(RT) MSG PROC SOFTWARE BF0585  
0 PP FSR SUPPORT FOR SMU BF0593

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|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | PP SMU BASIC CALL PROCESSING           | BF0588 |
| 0 | PP SMU CHANNEL REASSIGNMENT            | BF0592 |
| 0 | PP SMU LOOP AND LINE-CARD TESTING      | BF0590 |
| 0 | PP SMU PM MAINTENANCE                  | BF0586 |
| 0 | PP SMU STATIC DATA(PM)                 | BF0587 |
| 0 | PROGRAMMABLE SPARE ALARMS FOR RCU      | AF0450 |
| 0 | RCU BASIC PM MAINTENANCE(CC)           | BC1685 |
| 0 | RCU CARRIER MAINTENANCE ENHANCEMENTS   | AF0232 |
| 0 | RCU INVENTORY BASIC TABLE CONTROL(CC)  | BC1724 |
| 0 | RCU LINE TEST PROCESSOR                | AF2672 |
| 0 | RCU LINES INVENTORY(CC)                | BC1726 |
| 0 | RCU LINES MAINTENANCE                  | BC2154 |
| 0 | RCU MAINTENANCE ENHANCEMENTS           | BC2156 |
| 0 | RCU MAP SUPPORT(CC)                    | BC1728 |
| 0 | RCU OFFICE PARAMETER                   | AF0530 |
| 0 | RCU SYSTEM AUDITS/24-HR SWITCHOVER     | BC2155 |
| 0 | RCU TABLE CONTROL ENHANCEMENTS         | BC2160 |
| 0 | RCU UNSOLICITED MESSAGE HANDLING       | BC2161 |
| 0 | SHARED METALLIC TEST ACCESS            | AF0148 |
| 0 | SMU (PP) AUDITS                        | BF0994 |
| 0 | SMU ALARMS PROCESSING                  | BF0610 |
| 0 | SMU ALARMS/CHANNEL REASSIGNMENT        | AF0086 |
| 0 | SMU AUTOMATIC BOARD-TO-BOARD TEST      | AF0156 |
| 0 | SMU BASIC RTS                          | AF0083 |
| 0 | SMU CALL PROCESSING/NODE AND LINE MNTC | AF0084 |
| 0 | SMU CC MMI                             | AF0082 |
| 0 | SMU COIN CAPABILITY(PP)                | BF0597 |
| 0 | SMU EXPANDED RCU CONNECTIONS(PP)       | AF0270 |
| 0 | SMU FORWARD DISCONNECT(PP)             | AF0269 |
| 0 | SMU IBN                                | AF0179 |
| 0 | SMU LINE MTCE - COIN,FXB(PP)           | AF0268 |
| 0 | SMU LINK MAINTENANCE                   | BF0995 |
| 0 | SMU MAINTENANCE AND OMS                | AF0085 |
| 0 | SMU MAINTENANCE(CC)                    | BC1686 |
| 0 | SMU MESSAGE CHANNEL MANAGEMENT         | BF0591 |
| 0 | SMU MESSAGING HOOKS                    | BF0599 |
| 0 | SMU NT6X44CA A/B BIT DIAGNOSTICS       | AF0147 |
| 0 | SMU OAM ENHANCEMENTS                   | AF0088 |
| 0 | SMU PP AST II                          | AF0915 |
| 0 | SMU STATIC DATA(CC)                    | BC1725 |
| 0 | SMU WARM SWACT(PP)                     | AF0233 |
| 0 | TASK NEEDS A TITLE                     | AF2255 |
| 0 |                                        | AF2251 |
| 0 |                                        | AF2254 |

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0 NTX387AC02 STATUS RTM  
0 SMU - SUBSCRIBER MODULE  
0 URBAN(UPG.FR NTX387AB)

|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | AUTOMATIC SYSTEM TEST FOR RCU          | AF0829 |
| 0 | AUTOMATIC SYSTEM TEST FOR RCU(CC)      | AF0828 |
| 0 | DTSR/OMS FOR RCU                       | BC2159 |
| 0 | FLOW CONTROLS FOR SMU                  | AF1734 |
| 0 | INTEGRATED LINE TEST W/DRTU            | AF2983 |
| 0 | OPERATOR VERIFICATION FOR RCU LINES    | AF0055 |
| 0 | PP DMS-1U(RT) MSG PROC SOFTWARE        | BF0585 |
| 0 | PP FSR SUPPORT FOR SMU                 | BF0593 |
| 0 | PP SMU BASIC CALL PROCESSING           | BF0588 |
| 0 | PP SMU CHANNEL REASSIGNMENT            | BF0592 |
| 0 | PP SMU LOOP AND LINE-CARD TESTING      | BF0590 |
| 0 | PP SMU PM MAINTENANCE                  | BF0586 |
| 0 | PP SMU STATIC DATA(PM)                 | BF0587 |
| 0 | PROGRAMMABLE SPARE ALARMS FOR RCU      | AF0450 |
| 0 | RCU BASIC PM MAINTENANCE(CC)           | BC1685 |
| 0 | RCU CARRIER MAINTENANCE ENHANCEMENTS   | AF0232 |
| 0 | RCU INVENTORY BASIC TABLE CONTROL(CC)  | BC1724 |
| 0 | RCU LINE TEST PROCESSOR                | AF2672 |
| 0 | RCU LINES INVENTORY(CC)                | BC1726 |
| 0 | RCU LINES MAINTENANCE                  | BC2154 |
| 0 | RCU MAINTENANCE ENHANCEMENTS           | BC2156 |
| 0 | RCU MAP SUPPORT(CC)                    | BC1728 |
| 0 | RCU OFFICE PARAMETER                   | AF0530 |
| 0 | RCU SYSTEM AUDITS/24-HR SWITCHOVER     | BC2155 |
| 0 | RCU TABLE CONTROL ENHANCEMENTS         | BC2160 |
| 0 | RCU UNSOLICITED MESSAGE HANDLING       | BC2161 |
| 0 | SHARED METALLIC TEST ACCESS            | AF0148 |
| 0 | SMU (PP) AUDITS                        | BF0994 |
| 0 | SMU ALARMS PROCESSING                  | BF0610 |
| 0 | SMU ALARMS/CHANNEL REASSIGNMENT        | AF0086 |
| 0 | SMU AUTOMATIC BOARD-TO-BOARD TEST      | AF0156 |
| 0 | SMU BASIC RTS                          | AF0083 |
| 0 | SMU CALL PROCESSING/NODE AND LINE MNTC | AF0084 |
| 0 | SMU CC MMI                             | AF0082 |
| 0 | SMU COIN CAPABILITY(PP)                | BF0597 |
| 0 | SMU EXPANDED RCU CONNECTIONS(PP)       | AF0270 |

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|   |                                  |        |
|---|----------------------------------|--------|
| 0 | SMU FORWARD DISCONNECT(PP)       | AF0269 |
| 0 | SMU IBN                          | AF0179 |
| 0 | SMU LINE MTCE - COIN,FXB(PP)     | AF0268 |
| 0 | SMU LINK MAINTENANCE             | BF0995 |
| 0 | SMU MAINTENANCE AND OMS          | AF0085 |
| 0 | SMU MAINTENANCE(CC)              | BC1686 |
| 0 | SMU MESSAGE CHANNEL MANAGEMENT   | BF0591 |
| 0 | SMU MESSAGING HOOKS              | BF0599 |
| 0 | SMU NT6X44CA A/B BIT DIAGNOSTICS | AF0147 |
| 0 | SMU OAM ENHANCEMENTS             | AF0088 |
| 0 | SMU PP AST II                    | AF0915 |
| 0 | SMU STATIC DATA(CC)              | BC1725 |
| 0 | SMU WARM SWACT(PP)               | AF0233 |
| 0 | TASK NEEDS A TITLE               | AF2255 |
| 0 |                                  | AF2251 |
| 0 |                                  | AF2254 |

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0 NTX387AD01 STATUS LTD TARGET SUPERNODE  
0 SMU AND ISDN/MBS SMU

|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | AUTOMATIC SYSTEM TEST FOR RCU         | AF0829 |
| 0 | AUTOMATIC SYSTEM TEST FOR RCU(CC)     | AF0828 |
| 0 | DTSR/OMS FOR RCU                      | BC2159 |
| 0 | FLOW CONTROLS FOR SMU                 | AF1734 |
| 0 | INTEGRATED LINE TEST W/DRTU           | AF2983 |
| 0 | OPERATOR VERIFICATION FOR RCU LINES   | AF0055 |
| 0 | PP DMS-1U(RT) MSG PROC SOFTWARE       | BF0585 |
| 0 | PP FSR SUPPORT FOR SMU                | BF0593 |
| 0 | PP SMU BASIC CALL PROCESSING          | BF0588 |
| 0 | PP SMU CHANNEL REASSIGNMENT           | BF0592 |
| 0 | PP SMU LOOP AND LINE-CARD TESTING     | BF0590 |
| 0 | PP SMU PM MAINTENANCE                 | BF0586 |
| 0 | PP SMU STATIC DATA(PM)                | BF0587 |
| 0 | PROGRAMMABLE SPARE ALARMS FOR RCU     | AF0450 |
| 0 | RCU BASIC PM MAINTENANCE(CC)          | BC1685 |
| 0 | RCU CARRIER MAINTENANCE ENHANCEMENTS  | AF0232 |
| 0 | RCU INVENTORY BASIC TABLE CONTROL(CC) | BC1724 |
| 0 | RCU LINE TEST PROCESSOR               | AF2672 |
| 0 | RCU LINES INVENTORY(CC)               | BC1726 |
| 0 | RCU LINES MAINTENANCE                 | BC2154 |

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|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | RCU MAINTENANCE ENHANCEMENTS           | BC2156 |
| 0 | RCU MAP SUPPORT(CC)                    | BC1728 |
| 0 | RCU OFFICE PARAMETER                   | AF0530 |
| 0 | RCU SYSTEM AUDITS/24-HR SWITCHOVER     | BC2155 |
| 0 | RCU TABLE CONTROL ENHANCEMENTS         | BC2160 |
| 0 | RCU UNSOLICITED MESSAGE HANDLING       | BC2161 |
| 0 | SHARED METALLIC TEST ACCESS            | AF0148 |
| 0 | SMU (PP) AUDITS                        | BF0994 |
| 0 | SMU ALARMS PROCESSING                  | BF0610 |
| 0 | SMU ALARMS/CHANNEL REASSIGNMENT        | AF0086 |
| 0 | SMU AUTOMATIC BOARD-TO-BOARD TEST      | AF0156 |
| 0 | SMU BASIC RTS                          | AF0083 |
| 0 | SMU CALL PROCESSING/NODE AND LINE MNTC | AF0084 |
| 0 | SMU CC MMI                             | AF0082 |
| 0 | SMU COIN CAPABILITY(PP)                | BF0597 |
| 0 | SMU EXPANDED RCU CONNECTIONS(PP)       | AF0270 |
| 0 | SMU FORWARD DISCONNECT(PP)             | AF0269 |
| 0 | SMU IBN                                | AF0179 |
| 0 | SMU LINE MTCE - COIN,FXB(PP)           | AF0268 |
| 0 | SMU LINK MAINTENANCE                   | BF0995 |
| 0 | SMU MAINTENANCE AND OMS                | AF0085 |
| 0 | SMU MAINTENANCE(CC)                    | BC1686 |
| 0 | SMU MESSAGE CHANNEL MANAGEMENT         | BF0591 |
| 0 | SMU MESSAGING HOOKS                    | BF0599 |
| 0 | SMU NT6X44CA A/B BIT DIAGNOSTICS       | AF0147 |
| 0 | SMU OAM ENHANCEMENTS                   | AF0088 |
| 0 | SMU PP AST II                          | AF0915 |
| 0 | SMU STATIC DATA(CC)                    | BC1725 |
| 0 | SMU WARM SWACT(PP)                     | AF0233 |
| 0 | TASK NEEDS A TITLE                     | AF2255 |
| 0 |                                        | AF2251 |
| 0 |                                        | AF2254 |

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0 NTX394AA01 STATUS RTM  
0 TOPS - CREDIT CARD DIGIT CHECK

0 TOPS - CREDIT CARD DIGIT CHECK BR0581

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0 NTX395AA01 STATUS RTM  
0 REMOTE MAKE BUZY VIA SCAN  
0 POINT

0 REMOTE MAKE BUSY VIA SCAN POINT BR0565

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0 NTX398AA12 STATUS RTM  
0 SCM - 100S

|   |                                         |        |
|---|-----------------------------------------|--------|
| 0 | ALARM ENHANCEMENTS FOR SMS              | AF0058 |
| 0 | BOARD TO BOARD SUPPORT FOR RCS          | BC1387 |
| 0 | BOARD TO BOARD SUPPORT FOR SMS          | BF0573 |
| 0 | CC CARRIER MTC FOR SMS                  | BC1426 |
| 0 | CC DTSR FOR SLC96                       | BC1139 |
| 0 | CC LINE DIAGNOSTIC ENHANCEMENTS FOR SMS | AF0157 |
| 0 | CC LINES MTC FOR SLC_96                 | BC1428 |
| 0 | CC MAINTENANCE FOR SMS                  | BC1136 |
| 0 | CC PM MAINTENANCE FOR SLC-96            | BC1140 |
| 0 | CC PROTECTION SWITCHING FOR SLC_96      | BC1427 |
| 0 | FLOW CONTROLS FOR SMS                   | AF1733 |
| 0 | INVENTORY TABLE FOR SLC96               | BC1135 |
| 0 | LINE DIAGNOSTIC ENHANCEMENTS FOR SMS    | AF0159 |
| 0 | LINES INVENTORY FOR SLC96               | BC1137 |
| 0 | MERIDIAN DIGITAL CENTREX ON SMS         | AF0237 |
| 0 | OPERATOR VERIFICATION FOR SMR           | BV1171 |
| 0 | PP LINE DIAGNOSTIC ENHANCEMENTS FOR SMS | AF0158 |
| 0 | PP SMS WARM SWACT                       | BF0574 |
| 0 | PROGRAMMABLE POWER/MISC ALARM           | AL0230 |
| 0 | RCT & RCS INVENTORY CLEANUP             | BC1138 |
| 0 | SCM-100S-FREQUENCY SELECTIVE RINGING    | AL0419 |
| 0 | SMS A/B BOARD DIAGNOSTICS               | BF0520 |
| 0 | SMS ALARMS                              | BF0514 |
| 0 | SMS ANI AND COIN FUNCTIONS.             | BF0517 |

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|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | SMS CALL CONTROL - MODE I, III              | BF0524 |
| 0 | SMS DERIVED DATA LINK HANDLER - MODE I, III | BF0516 |
| 0 | SMS DS-1 BOARD DIAGNOSTICS.                 | BF0522 |
| 0 | SMS MAINTENANCE-MODE II                     | BF0579 |
| 0 | SMS MESSAGING - MODE I, III                 | BF0515 |
| 0 | SMS NODE MAINTENANCE - MODE I, III          | BF0513 |
| 0 | SMS PROTECTION SWITCHING                    | BF0521 |
| 0 | SMS PROTECTION SWITCHING ROBUSTNESS:PHASE I | AF0059 |
| 0 | SMS PSIDE CHANNEL MANAGEMENT.               | BF0518 |
| 0 | SMS RINGING                                 | BF0510 |
| 0 | SMS SUBSCRIBER LINE TEST.                   | BF0511 |
| 0 | STATIC DATA FOR RCS(SLC-96)                 | BF0523 |
| 0 | TYPE AND DATA EXTENSIONS FOR SLC96          | BC1164 |

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|---|-----------------------|-----|
| 0 | NTX399AA01 STATUS     | RTM |
| 0 | IBN/ESB COMPATIBILITY |     |

|   |                         |        |
|---|-------------------------|--------|
| 0 | IBN & ESB COMPATIBILITY | BC0958 |
|---|-------------------------|--------|

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|   |                       |     |
|---|-----------------------|-----|
| 0 | NTX407AB01 STATUS     | RTM |
| 0 | ACD - CALL PROCESSING |     |
| 0 | (REP.NTX407AA)        |     |

|   |                                      |        |
|---|--------------------------------------|--------|
| 0 | ACD AGENT LOGIN ENHANCEMENT          | AD0620 |
| 0 | ACD BASE UTILITIES                   | BC1522 |
| 0 | ACD DATA STRUCTURE & TABLE CONTROL   | BC1116 |
| 0 | ACD INCALLS KEY FEATURE INTERACTIONS | BC1119 |
| 0 | ACD NOT READY KEY                    | BC1118 |
| 0 | ATTENDANT CONSOLE TO ACD             | BC1324 |
| 0 | AUDIO INTERLUDE                      | BC0946 |
| 0 | P-PHONE DISPLAY CALLING NUMBER       | BV0989 |
| 0 | 3WC CHAINING TO ACD INTERACTION      | AD0613 |
| 0 | 3WC/CALL TRANSFER TO ACD             | BC1569 |

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0 NTX410AA02 STATUS RTM  
0 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS0 ATTENDANT CONSOLE MONITOR DISPLAY  
0 DYNAMIC MEASUREMENTSAG0815  
BV1135

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0 NTX411AA01 STATUS RTM  
0 IBN - VOICE MESSAGING

0 VMX INTERFACE

BC1256

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0 NTX412AA01 STATUS A+M  
0 IBN - CUSTOMER STATION  
0 CHANGE(REP. BY NTX412CA IN  
0 BCS31)0 CUSTOMER SERVICE CHANGE (PHASE 1)  
0 CUSTOMER SERVICE CHANGE VIA SERVORDBV1421  
BC1202

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0 NTX412BA01 STATUS A+M  
0 IBN - CUSTOMER STATION  
0 CHANGE(REP. BY NTX412CA IN  
0 BCS31)

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | CUSTOMER NETWORK DATA CHANGES       | BV1552 |
| 0 | CUSTOMER SERVICE CHANGE (PHASE 1)   | BV1421 |
| 0 | CUSTOMER SERVICE CHANGE VIA SERVORD | BC1202 |

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0 NTX412CA04 STATUS A+M  
0 IBN - CUSTOMER DATA  
0 CHANGE(UPG. BY NTX412CB)

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | CDC ENHANCEMENTS FOR ISDN           | AJ0902 |
| 0 | CUSTOMER ADMINISTRATION OF DATA     | BC1254 |
| 0 | CUSTOMER NETWORK DATA CHANGES       | BV1552 |
| 0 | CUSTOMER SERVICE CHANGE (PHASE 1)   | BV1421 |
| 0 | CUSTOMER SERVICE CHANGE VIA SERVORD | BC1202 |
| 0 | PARTITIONED TABLE EDITOR            | BC1459 |

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0 NTX412CB01 STATUS RTM  
0 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)

|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | CDC ENHANCEMENTS FOR ISDN              | AJ0902 |
| 0 | CUSTOMER ADMINISTRATION OF DATA        | BC1254 |
| 0 | CUSTOMER NETWORK DATA CHANGES          | BV1552 |
| 0 | CUSTOMER SERVICE CHANGE (PHASE 1)      | BV1421 |
| 0 | CUSTOMER SERVICE CHANGE VIA SERVORD    | BC1202 |
| 0 | PARTITIONED TABLE EDITOR               | BC1459 |
| 0 | PENDING ORDER FILE (POF) ENHANCEMENTS. | NC0120 |

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0 NTX413AB01 STATUS RTM  
0 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)0 A/C ACTIVATE/DEACTIVATE OF CFU/CFI BC1250  
0 IBN CALL FORWARD ENHANCEMENTS BC1206  
0 IBN-OPTIONAL CALL FORWARD LINKS AL0655  
0 STATION ACTIVATION OF CFB/CFD AL0656

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0 NTX414AA01 STATUS RTM  
0 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET

0 DIRECTED CALL PARK BV1535

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0 NTX415AA07 STATUS RTM  
0 ACD BASIC0 ACD AGENT STATUS LAMPS BC1009  
0 ACD BASE UTILITIES BC1522  
0 ACD CALL AGENT KEY BC1533  
0 ACD DATA STRUCTURE & TABLE CONTROL BC1116  
0 ACD DISPLAY QUEUE STATUS KEY BC1008  
0 ACD FOR FOR ARIES SETS AD2541  
0 ACD HEADSET BZ0242

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|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | ACD NOT READY KEY                     | BC1118 |
| 0 | ACD OBSERVE AGENT KEY                 | BC1120 |
| 0 | ACD OBSERVE AGENT 3WC                 | AG1950 |
| 0 | ACD ON IVD DIGITAL SETS               | AD2318 |
| 0 | ACD-AGENT STATUS LAMP ENHANCEMENT     | AD1609 |
| 0 | ACD-OBSERVE AGENT ENHANCED            | AD1610 |
| 0 | ACDSHOW                               | BC1559 |
| 0 | DOCUMENTATION OF MINOR ENHANCEMENTS   | BZ0588 |
| 0 | FM GUIDE                              | AF1596 |
| 0 |                                       | AF1598 |
| 0 | LIMITED ACD - ENHANCED AGENT FEATURES | AD2239 |

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0 NTX416AC01 STATUS A+M  
0 ACD ENHANCED II(UPG.BY  
0 NTX416AC)

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | ACD AGENT AND SUPERVISOR POSITION ID NUMBERS      | BC1562 |
| 0 | ACD AGENT KEY                                     | BC1531 |
| 0 | ACD CALL FORCING                                  | BC1115 |
| 0 | ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY          | BC1121 |
| 0 | ACD EMERGENCY KEY                                 | BC1117 |
| 0 | ACD EMERGENCY KEY-ENHANCED                        | AD0845 |
| 0 | ACD EXTENDED AGENT OBSERVE                        | BC1007 |
| 0 | ACD OVERFLOW ENHANCEMENT                          | BC1006 |
| 0 | ACD QUEUE STATUS LAMP                             | BC1011 |
| 0 | ACD REAL TIME DISPLAY ENHANCEMENT                 | AD0179 |
| 0 | ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK) | BC1555 |
| 0 | ACD SHOW-ENHANCEMENT I                            | AD0181 |
| 0 | ACD SUPERVISOR CONTROL OF NIGHT SERVICE           | BC1010 |
| 0 | ACD SYSTEM INTEGRITY                              | BC1556 |
| 0 | ADC CALLED NAME/CALLED NUMBER DISPLAY             | AD1131 |
| 0 | MULTI-STAGE QUEUE STATUS                          | AD1129 |

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0 Software Features  
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0 NTX416AD01 STATUS A+M  
0 ACD ENHANCED II(UPG. BY  
0 NTX416AE)

|                                                     |        |
|-----------------------------------------------------|--------|
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS      | BC1562 |
| 0 ACD AGENT KEY                                     | BC1531 |
| 0 ACD CALL FORCING                                  | BC1115 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY          | BC1121 |
| 0 ACD EMERGENCY KEY                                 | BC1117 |
| 0 ACD EMERGENCY KEY-ENHANCED                        | AD0845 |
| 0 ACD EXTENDED AGENT OBSERVE                        | BC1007 |
| 0 ACD OVERFLOW ENHANCEMENT                          | BC1006 |
| 0 ACD QUEUE STATUS LAMP                             | BC1011 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                 | AD0179 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK) | BC1555 |
| 0 ACD SHOW-ENHANCEMENT I                            | AD0181 |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE           | BC1010 |
| 0 ACD SYSTEM INTEGRITY                              | BC1556 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY             | AD1131 |
| 0 MULTI-STAGE QUEUE STATUS                          | AD1129 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 |

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0 NTX416AE01 STATUS A+M  
0 ACD ENHANCED II(UPG. BY  
0 NTX416AF)

|                                                     |        |
|-----------------------------------------------------|--------|
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS      | BC1562 |
| 0 ACD AGENT KEY                                     | BC1531 |
| 0 ACD CALL FORCING                                  | BC1115 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY          | BC1121 |
| 0 ACD EMERGENCY KEY                                 | BC1117 |
| 0 ACD EMERGENCY KEY-ENHANCED                        | AD0845 |
| 0 ACD EXTENDED AGENT OBSERVE                        | BC1007 |
| 0 ACD OVERFLOW ENHANCEMENT                          | BC1006 |
| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION            | AD2130 |
| 0 ACD QUEUE STATUS LAMP                             | BC1011 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                 | AD0179 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK) | BC1555 |

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|   |                                         |        |
|---|-----------------------------------------|--------|
| 0 | ACD SHOW-ENHANCEMENT I                  | AD0181 |
| 0 | ACD SUPERVISOR CONTROL OF NIGHT SERVICE | BC1010 |
| 0 | ACD SYSTEM INTEGRITY                    | BC1556 |
| 0 | ADC CALLED NAME/CALLED NUMBER DISPLAY   | AD1131 |
| 0 | CONTROLLED INTERFLOW                    | AD1612 |
| 0 | MULTI-STAGE QUEUE STATUS                | AD1129 |
| 0 | VERIFICATION OF TIME DELAYED OVERFLOW   | AD2238 |

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0 NTX416AF01 STATUS A+M  
0 ACD ENHANCED II (UPG. BY  
0 NTX416AG)

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | ACD AGENT AND SUPERVISOR POSITION ID NUMBERS      | BC1562 |
| 0 | ACD AGENT KEY                                     | BC1531 |
| 0 | ACD CALL FORCING                                  | BC1115 |
| 0 | ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY          | BC1121 |
| 0 | ACD EMERGENCY KEY                                 | BC1117 |
| 0 | ACD EMERGENCY KEY-ENHANCED                        | AD0845 |
| 0 | ACD EXTENDED AGENT OBSERVE                        | BC1007 |
| 0 | ACD MSQS REFRESH                                  | AD2591 |
| 0 | ACD OVERFLOW ENHANCEMENT                          | BC1006 |
| 0 | ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION            | AD2130 |
| 0 | ACD QUEUE STATUS LAMP                             | BC1011 |
| 0 | ACD REAL TIME DISPLAY ENHANCEMENT                 | AD0179 |
| 0 | ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK) | BC1555 |
| 0 | ACD SHOW-ENHANCEMENT I                            | AD0181 |
| 0 | ACD SUPERVISOR CONTROL OF NIGHT SERVICE           | BC1010 |
| 0 | ACD SYSTEM INTEGRITY                              | BC1556 |
| 0 | ACD TRANSFER TO INCALLS KEY                       | AD2588 |
| 0 | ADC CALLED NAME/CALLED NUMBER DISPLAY             | AD1131 |
| 0 | CONTROLLED INTERFLOW                              | AD1612 |
| 0 | DISPLAY AGENTS SUMMARY KEY                        | AD2445 |
| 0 | MULTI-STAGE QUEUE STATUS                          | AD1129 |
| 0 | NIGHT SERVICE RECORDED ANNOUNCEMENT & FORWARD     | AD1607 |
| 0 | VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 |

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0 NTX416AG01 STATUS A+M  
0 ACD ENHANCED II(UPG. OF  
0 NTX416AF)

|                                                     |        |
|-----------------------------------------------------|--------|
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS      | BC1562 |
| 0 ACD AGENT KEY                                     | BC1531 |
| 0 ACD CALL FORCING                                  | BC1115 |
| 0 ACD CALL FORCING TONE TO HEADSET                  | AD2128 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY          | BC1121 |
| 0 ACD CALL TRANSFER WITH TIME                       | AD2895 |
| 0 ACD EMERGENCY KEY                                 | BC1117 |
| 0 ACD EMERGENCY KEY-ENHANCED                        | AD0845 |
| 0 ACD EXTENDED AGENT OBSERVE                        | BC1007 |
| 0 ACD FORCED AGENT AVAILABILITY                     | NC0014 |
| 0 ACD MSQS REFRESH                                  | AD2591 |
| 0 ACD OVERFLOW ENHANCEMENT                          | BC1006 |
| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION            | AD2130 |
| 0 ACD QUEUE STATUS LAMP                             | BC1011 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                 | AD0179 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK) | BC1555 |
| 0 ACD SHOW-ENHANCEMENT I                            | AD0181 |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE           | BC1010 |
| 0 ACD SYSTEM INTEGRITY                              | BC1556 |
| 0 ACD TRANSFER TO INCALLS KEY                       | AD2588 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY             | AD1131 |
| 0 CONTROLLED INTERFLOW                              | AD1612 |
| 0 DISPLAY AGENTS SUMMARY KEY                        | AD2445 |
| 0 MULTI-STAGE QUEUE STATUS                          | AD1129 |
| 0 NIGHT SERVICE RECORDED ANNOUNCEMENT & FORWARD     | AD1607 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 |

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0 NTX416AH01 STATUS A+M  
0 ACD ENHANCED II(UPG. OF  
0 NTX416AG IN BCS32)

|                                                     |        |
|-----------------------------------------------------|--------|
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS      | BC1562 |
| 0 ACD AGENT KEY                                     | BC1531 |
| 0 ACD CALL FORCING                                  | BC1115 |
| 0 ACD CALL FORCING TONE TO HEADSET                  | AD2128 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY          | BC1121 |
| 0 ACD CALL TRANSFER WITH TIME                       | AD2895 |
| 0 ACD EMERGENCY KEY                                 | BC1117 |
| 0 ACD EMERGENCY KEY BACK-UP                         | NC0094 |
| 0 ACD EMERGENCY KEY-ENHANCED                        | AD0845 |
| 0 ACD EXTENDED AGENT OBSERVE                        | BC1007 |
| 0 ACD FORCED AGENT AVAILABILITY                     | NC0014 |
| 0 ACD FORCED ANNCT. FOR NEW/OVERFLOWED CALLS        | NC0104 |
| 0 ACD MSQS REFRESH                                  | AD2591 |
| 0 ACD OVERFLOW ENHANCEMENT                          | BC1006 |
| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION            | AD2130 |
| 0 ACD QUEUE STATUS LAMP                             | BC1011 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                 | AD0179 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK) | BC1555 |
| 0 ACD SHOW-ENHANCEMENT I                            | AD0181 |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE           | BC1010 |
| 0 ACD SYSTEM INTEGRITY                              | BC1556 |
| 0 ACD TRANSFER TO INCALLS KEY                       | AD2588 |
| 0 ACD VARIABLE WRAP-UP TIME                         | NC0022 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY             | AD1131 |
| 0 CONTROLLED INTERFLOW                              | AD1612 |
| 0 DISPLAY AGENTS SUMMARY KEY                        | AD2445 |
| 0 MULTI-STAGE QUEUE STATUS                          | AD1129 |
| 0 NIGHT SERVICE RECORDED ANNOUNCEMENT & FORWARD     | AD1607 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 |

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0 NTX416AI01 STATUS A+M  
0 ACD ENHANCED II(UPG. OF  
0 NTX416AH)

|                                                     |        |
|-----------------------------------------------------|--------|
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS      | BC1562 |
| 0 ACD AGENT KEY                                     | BC1531 |
| 0 ACD AGENT STABILITY DURING SWITCH MAINTENANCE     | NC0269 |
| 0 ACD CALL FORCING                                  | BC1115 |
| 0 ACD CALL FORCING TONE TO HEADSET                  | AD2128 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY          | BC1121 |
| 0 ACD CALL TRANSFER WITH TIME                       | AD2895 |
| 0 ACD EMERGENCY KEY                                 | BC1117 |
| 0 ACD EMERGENCY KEY BACK-UP                         | NC0094 |
| 0 ACD EMERGENCY KEY-ENHANCED                        | AD0845 |
| 0 ACD EXTENDED AGENT OBSERVE                        | BC1007 |
| 0 ACD FORCED AGENT AVAILABILITY                     | NC0014 |
| 0 ACD FORCED ANNCT. FOR NEW/OVERFLOWED CALLS        | NC0104 |
| 0 ACD MSQS REFRESH                                  | AD2591 |
| 0 ACD OVERFLOW ENHANCEMENT                          | BC1006 |
| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION            | AD2130 |
| 0 ACD QUEUE STATUS LAMP                             | BC1011 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                 | AD0179 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK) | BC1555 |
| 0 ACD SHOW-ENHANCEMENT I                            | AD0181 |
| 0 ACD STATION MAINTENANCE AND CONFIGURATION         | NC0262 |
| 0 ENHANCEMENTS                                      |        |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE           | BC1010 |
| 0 ACD SYSTEM INTEGRITY                              | BC1556 |
| 0 ACD TRANSFER TO INCALLS KEY                       | AD2588 |
| 0 ACD VARIABLE WRAP-UP TIME                         | NC0022 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY             | AD1131 |
| 0 CALL PARK BY ACD AGENT                            | NC0288 |
| 0 CONTROLLED INTERFLOW                              | AD1612 |
| 0 DISPLAY AGENTS SUMMARY KEY                        | AD2445 |
| 0 MULTI-STAGE QUEUE STATUS                          | AD1129 |
| 0 NIGHT SERVICE RECORDED ANNOUNCEMENT & FORWARD     | AD1607 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 |

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0 NTX416AJ01 STATUS RTM  
0 ACD ENHANCED II (UPG. OF  
0 NTX416AI)

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|-----------------------------------------------------|--------|
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS      | BC1562 |
| 0 ACD AGENT KEY                                     | BC1531 |
| 0 ACD AGENT STABILITY DURING SWITCH MAINTENANCE     | NC0269 |
| 0 ACD CALL FORCING                                  | BC1115 |
| 0 ACD CALL FORCING TONE TO HEADSET                  | AD2128 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY          | BC1121 |
| 0 ACD CALL TRANSFER WITH TIME                       | AD2895 |
| 0 ACD EMERGENCY KEY                                 | BC1117 |
| 0 ACD EMERGENCY KEY BACK-UP                         | NC0094 |
| 0 ACD EMERGENCY KEY-ENHANCED                        | AD0845 |
| 0 ACD EXTENDED AGENT OBSERVE                        | BC1007 |
| 0 ACD FORCED AGENT AVAILABILITY                     | NC0014 |
| 0 ACD FORCED ANNCT. FOR NEW/OVERFLOWED CALLS        | NC0104 |
| 0 ACD MSQS REFRESH                                  | AD2591 |
| 0 ACD OVERFLOW ENHANCEMENT                          | BC1006 |
| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION            | AD2130 |
| 0 ACD QUEUE STATUS LAMP                             | BC1011 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                 | AD0179 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK) | BC1555 |
| 0 ACD SHOW-ENHANCEMENT I                            | AD0181 |
| 0 ACD STATION MAINTENANCE AND CONFIGURATION         | NC0262 |
| 0 ENHANCEMENTS                                      |        |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE           | BC1010 |
| 0 ACD SYSTEM INTEGRITY                              | BC1556 |
| 0 ACD TRANSFER TO INCALLS KEY                       | AD2588 |
| 0 ACD VARIABLE WRAP-UP TIME                         | NC0022 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY             | AD1131 |
| 0 CALL PARK BY ACD AGENT                            | NC0288 |
| 0 CONTROLLED INTERFLOW                              | AD1612 |
| 0 DISPLAY AGENTS SUMMARY KEY                        | AD2445 |
| 0 MULTI-STAGE QUEUE STATUS                          | AD1129 |
| 0 NIGHT SERVICE RECORDED ANNOUNCEMENT & FORWARD     | AD1607 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 |

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0 NTX417AA03 STATUS RTM  
0 ACD MANAGEMENT REPORT DATA  
0 STREAM

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | ACD LOGIN/LOGOUT                               | BC1572 |
| 0 | ACD MANAGEMENT REPORT INTERFACE                | BC1566 |
| 0 | ACD MANAGEMENT REPORT LOB CODE STORAGE         | BC1567 |
| 0 | ACD MANAGEMENT REPORTS APPLICATION LAYER       | BC1564 |
| 0 | ACD MANAGEMENT REPORTS INTERFACE SPECIFICATION | BZ0244 |
| 0 | ACD MANAGEMENT REPORTS MESSAGE DEFINITION      | AD0012 |
| 0 | SPECIFICATION                                  |        |
| 0 | ACD MANAGEMENT REPORTS OPTION                  | AD0010 |
| 0 | ACD MANAGEMENT REPORTS TEST TOOL               | AD0041 |
| 0 | AGENT POSITION DN DATA STREAM MESSAGES         | BC1565 |

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0 -----0 NTX418AA01 STATUS RTM  
0 IBN\_SERVICE ANALYSIS

0 SERVICE ANALYSIS FOR IBN BV1408

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0 -----0 NTX426AA02 STATUS RTM  
0 ASYNCHRONOUS INTERFACE LINE  
0 CARD

|   |                              |        |
|---|------------------------------|--------|
| 0 | ASYNCR LINE CARD             | BF0471 |
| 0 | ASYNCR LINE CARD MAINTENANCE | BV1338 |

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0 NTX427AA04 STATUS RTM  
0 END USER TESTING OF TRUNKS0 AUTOMATIC TRUNK TESTING REPORT BC1461  
0 CUSTOMER SCREENING AT THE TRUNK TEST POSITION BC1467  
0 KILLER TRUNK REPORT SEPARATION BC1460  
0 MAP ALARM LEVEL SCREENING BC1466  
0 NMP CUSTOMER SCREENING BC2054

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0 -----0 NTX430AA02 STATUS RTM  
0 ESN0 ESN - NETWORK AUTOMATIC ROUTE SELECTION (TEHO AND BV0782  
0 HEHO)  
0 ESN - NETWORK CLASS OF SERVICE BV0779  
0 ESN - NETWORK INFORMATION SIGNALS BV0789  
0 UK CENTREX REGRESSION TESTING AE0346

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0 -----0 NTX431AA03 STATUS RTM  
0 IBN - CUT THROUGH DIALING0 CUT THROUGH DIALLING BV0981  
0 CUT THRU DIALING FOR IBN LINES & A/C BV1412

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0 NTX432AA01 STATUS RTM  
0 NETWORK SPEED CALLING

0 ESN - NETWORK SPEED CALL BV0781

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0 NTX433AA01 STATUS RTM  
0 TIME OF DAY ROUTING

0 TIME OF DAY ROUTING BV1136

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0 NTX434AA01 STATUS RTM  
0 TIME OF DAY NCOS

0 TIME OF DAY NCOS BV0791

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0 NTX435AA03 STATUS RTM  
0 IBN SUPERSET

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | CALL HOLD                                          | BC0948 |
| 0 | CALL WAITING - ORIGINATING                         | BC0949 |
| 0 | DIAL - CALL WAITING                                | BC0947 |
| 0 | DIRECTED CALL PICKUP - BARGE IN                    | BC0950 |
| 0 | DIRECTED CALL PICKUP - NON BARGE IN                | BC0951 |
| 0 | DISTINCTIVE CALL WAITING TONES                     | BC1201 |
| 0 | STATION ACTIVATED DND WITH FEATURE ACTIVE REMINDER | BC1200 |

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0 NTX436AA01 STATUS RTM  
0 IBN ENHANCED DIAL PLAN

|   |               |        |
|---|---------------|--------|
| 0 | MVP DIAL PLAN | BC0954 |
|---|---------------|--------|

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0 NTX437AA01 STATUS RTM  
0 RANDOM CONDITIONAL ROUTING

|   |                            |        |
|---|----------------------------|--------|
| 0 | RANDOM CONDITIONAL ROUTING | BC1101 |
|---|----------------------------|--------|

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0 NTX445AA01 STATUS A+M  
0 O.M. SELECTIVE OUTPUT (UPGRADED  
0 BY NTX445AB)

0 OM SELECTIVE PRINTOUT BR0578

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0 NTX445AB01 STATUS RTM  
0 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)

0 OM - GROUP TOTALS (LMD, TRK, CARR, SLU) BR0664  
0 OM SELECTIVE PRINTOUT BR0578

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0 NTX447AA01 STATUS RTM  
0 E911 - TANDEM

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | DMS INTEGRATED E911 PSAP FUNCTIONALITY            | AF2147 |
| 0 | E911 CALL TRANSFER CP SUPPORT                     | AF1646 |
| 0 | E911 LDT MAINTENANCE                              | AF1977 |
| 0 | E911 LINE APPEARANCE BASIC MAINTENANCE            | AF1736 |
| 0 | E911 LINE APPEARANCE GENERAL MAINTENANCE FOR PM & | AF1737 |
| 0 | LTP LEVELS                                        |        |
| 0 | E911 LINE APPEARANCE PP CALL PROCESSING           | AF1668 |
| 0 | E911 LINE APPEARANCE PP MAINTENANCE               | AF1650 |
| 0 | E911 LINE APPEARANCE SP SIGNALING UTILITIES       | AF1651 |
| 0 | E911 LINE INTERFACE ON A DIGITAL TRUNK            | AF1387 |
| 0 | E911 ORIGINATION TABLE CONTROL                    | AF1336 |
| 0 | E911 PRODUCT DELIVERY                             | AF2001 |
| 0 | E911 PSAP CALL PROCESSING SUPPORT                 | AF1643 |
| 0 | E911 PSAP TABLE CONTROL                           | AF1644 |
| 0 | E911 TRANSLATIONS                                 | AF1338 |

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0 E911 TRUNK ORIGINATION AF1335  
0 E911 TRUNK ORIGINATION CALL PROCESSING SUPPORT AF1337

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0 NTX451AA02 STATUS RTM  
0 E-911 DATABASE

0 E911 SELECTIVE ROUTING DATABASE AF1375  
0 E911 SELECTIVE ROUTING DATABASE UPDATE AF1645

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0 NTX455AA01 STATUS A+M  
0 1A EADAS NETWORK  
0 MANAGEMENT(UPG. BY NTX455AB)

0 EADAS/NM INTERFACE-PHASE I BR0691  
0 EADAS/NM PHASE I-AUDIT AND COMMANDS BC1412  
0 EADAS/NM PHASE I-MMI BC1414  
0 EADAS/NM PHASE I-NEW OPERATIONAL MEASUREMENTS BC1411  
0 EADAS/NM PHASE I-30-SECOND DISCRETES BC1410  
0 EADAS/NM PHASE I-5-MINUTE DATA BC1413

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0 NTX455AB01 STATUS RTM  
0 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)

0 CHANGED TRUNK GROUP RECORDING ABILITY AF0194  
0 EADAS/NM INTERFACE-PHASE I BR0691

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|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | EADAS/NM PHASE I-AUDIT AND COMMANDS           | BC1412 |
| 0 | EADAS/NM PHASE I-MMI                          | BC1414 |
| 0 | EADAS/NM PHASE I-NEW OPERATIONAL MEASUREMENTS | BC1411 |
| 0 | EADAS/NM PHASE I-30-SECOND DISCRETES          | BC1410 |
| 0 | EADAS/NM PHASE I-5-MINUTE DATA                | BC1413 |
| 0 | NWM AUDIT INTERFACE                           | AF0183 |
| 0 | NWM COMMAND INTERFACE                         | AF0182 |
| 0 | TRUNK GROUP CONTROL IDENTIFIERS               | AF0180 |
| 0 | 30 SECOND DISCRETES ENHANCEMENT               | AF0153 |
| 0 | 5-MINUTE PACKET INTERFACE                     | AF0184 |

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|---|-------------------|------------------------------|
| 0 | NTX470AA13 STATUS | RTM                          |
| 0 |                   | INTERNATIONAL - COMMON BASIC |

|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | A-LAW NETWORK CROSSPOINTS (SEE H0147)               | BF0375 |
| 0 | A-LAW TTT (SEE H0134 & H0135)                       | BF0379 |
| 0 | A-LAW TTU (SEE H0138 & H0139)                       | BF0376 |
| 0 | ADD FIELDS INTO LOGICAL LEVEL OF MTR AND OPR TRUNKS | BC1920 |
| 0 | CALL PARTY CONTROL VIA TRANSLATIONS                 | AJ0580 |
| 0 | CC LINE SIGNALLING SUPPORT                          | BV1211 |
| 0 | CC REGISTER SIGNALLING SUPPORT                      | BV1212 |
| 0 | CONVERT AMBIGUOUS HEAD TABLE TO SEGSTOR             | BC1914 |
| 0 | CROSS-ARCHITECTURE FEATURE INTERACTIONS             | AJ1223 |
| 0 | C1 DID/DOD PBX TRUNKS                               | AJ0183 |
| 0 | DMS-100I P-SIDE AND C-SIDE CHANNEL AUDIT            | AJ0746 |
| 0 | DOWNLOADABLE TONE ENHANCEMENT                       | AE0554 |
| 0 | DYNAMIC CONFIGURATION DATA UPDATE IN IXPM           | AE0643 |
| 0 | DYNAMIC DATA UPDATE FOR INTERNATIONAL XPMS          | AE0652 |
| 0 | FLEXIBLE CALL PREANSWER SUPERVISION                 | AJ0187 |
| 0 | GENERAL INTERWORKING SYSTEM PART I                  | BC1301 |
| 0 | IDTC MFC TRUNK ROBUSTNESS                           | AJ0821 |
| 0 | ILCM CAPACITY ENHANCEMENT                           | AE0646 |
| 0 | INTERNATIONAL KILLER TRUNKS                         | AC0081 |
| 0 | INTERNATIONAL OM CONVERSION                         | BC2285 |
| 0 | INTERNATIONAL OM SUPPORT AND PACKAGING              | AC0304 |
| 0 | INTERNATIONAL OVERLOAD CONTROL ENHANCEMENTS         | AC0184 |
| 0 | INTERNATIONAL PERIPHERALS OVERLOAD CONTROL          | BC1927 |
| 0 |                                                     | BF0915 |
| 0 | INTERNATIONAL TRAVER                                | BC1185 |
| 0 | INTERNATIONAL TRUNK MAINTENANCE ASPECTS             | BC1338 |



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|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | INTERNATIONAL TRUNK TESTING                      | BC0962 |
| 0 | INTL TRUNK TO ANNOUNCEMENT (SPEEDUP)             | BF0805 |
| 0 | IXPM ENHANCED FLOW CONTROL                       | AG0719 |
| 0 | IXPM PERFORMANCE MONITORING                      | AG1031 |
| 0 | IXPM STATIC DATA AUDIT                           | AJ0171 |
| 0 | IXPM WARM SWACT                                  | BF0971 |
| 0 | K&S SERVICE CODE TRANSLATION HOOKS               | AJ1129 |
| 0 | LINE SIGNAL PROCESSORS                           | BF0395 |
| 0 | LTC EVENT RECORDERS/TRANSMITTERS                 | BF0393 |
| 0 | LTC WAVEFORM PROCESSORS                          | BF0394 |
| 0 | MARKET_OF_OFFICE ENHANCEMENTS                    | AJ1088 |
| 0 | MESSAGE TRANSPORT SYSTEM                         | BC1211 |
| 0 | MFC MONITOR TOOL                                 | AJ1027 |
| 0 | OM-COMMON (MANAGEMENT)                           | BT0345 |
| 0 | OUTPULSE 18 DIGITS (MF;DTMF)                     | BF0874 |
| 0 | PCM-30 ROBUSTNESS                                | AC0109 |
| 0 | QUIET TERMINATION TEST LINE                      | AJ0837 |
| 0 | REGISTER SIGNALLING PROCESSORS                   | BF0398 |
| 0 | SP/FP TRANSACTION PROCESSING PART I              | BF0436 |
| 0 | SP/FP TRANSACTION PROCESSING PART II             | BF0437 |
| 0 | SUPPORT FOR A-LAW CARDS (TTT, TTU, RCVRMF & DRA) | BC1060 |
| 0 | TERMINAL APPLICATION PROCESSORS                  | BF0399 |
| 0 | TRUNK DATA MODIFICATIONS                         | BC1190 |
| 0 | TRUNK MAINTENANCE                                | BF0560 |
| 0 | UNIVERSAL TRANSLATION VERIFICATION TOOL          | AJ1126 |
| 0 | XPM 3 PROCESSOR IPC                              | BF0474 |
| 0 | 6X69 I/F FOR MTS                                 | BF0917 |

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0 NTX471AA01 STATUS RTM  
0 A-LAW COMPANDING

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | A-LAW NETWORK CROSSPOINTS (SEE H0147)            | BF0375 |
| 0 | A-LAW TTT (SEE H0134 & H0135)                    | BF0379 |
| 0 | A-LAW TTU (SEE H0138 & H0139)                    | BF0376 |
| 0 | SUPPORT FOR A-LAW CARDS (TTT, TTU, RCVRMF & DRA) | BC1060 |

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0 NTX472AA03 STATUS A+M  
0 INTERNATIONAL - LOCAL  
0 BASIC(UPGRADED BY NTX472AB)

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | AMBIGUOUS CODE TRANSLATION FOR INTERNATIONAL | BC1450 |
| 0 | DENIED ORIG AND FREE NUMBER TERM (INTL)      | BF0801 |
| 0 | DIGIT ANALYSIS AND RSS TABLE                 | BC1793 |
| 0 | DIGIT TRANSLATIONS FOR TURKEY LOCAL          | BC1499 |
| 0 | INTERNATIONAL LINE TESTING                   | BC0963 |
| 0 | INTERNATIONAL LINE TO ANNOUNCEMENT           | BC1796 |
| 0 | INTERNATIONAL SERVICE ORDERS                 | BC1732 |
| 0 | LINE THREAD FOR TURKEY LOCAL LOCAL II        | BC1784 |
| 0 | LOCAL TRANSLATIONS FOR INTERNATIONAL         | BC1449 |
| 0 | NON METERED COIN LINE TRANSACTOR AND CP      | BF0675 |
| 0 | ORIGINATING LINE RESTRICTIONS                | BC2079 |
| 0 | TABLE OPERATIONS FOR ILGC AND ILTC           | BC1730 |
| 0 | TURKISH FEATURE DATA REQUIREMENTS            | BC1500 |
| 0 | VARIABLE-LENTGH DIRECTORY NUMBERS            | BC1504 |

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0 NTX472AB08 STATUS RTM  
0 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | ADAPT UNIVXLA FOR VDN USE                    | AJ1541 |
| 0 | ADDITIONAL INTERNATIONAL SERVICE ORDERS      | AC0305 |
| 0 | AMBIGUOUS CODE TRANSLATION FOR INTERNATIONAL | BC1450 |
| 0 | AUTO RETEST OF ALT FAILURES                  | BC0829 |
| 0 | BRIDGED NIGHT NUMBER                         | AE0246 |
| 0 | CC REAL TIME REDUCTION FOR FEATURES          | AG0718 |
| 0 | CONVERT SPM TO A LINE OPTION                 | AC0085 |
| 0 | DENIED ORIG AND FREE NUMBER TERM (INTL)      | BF0801 |
| 0 | DGTTST FOR INTERNATIONAL LINES               | AE0459 |
| 0 | DIAL TONE SPEED RECORDING FOR INTL           | AC0252 |

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|---|------------------------------------------------|--------|
| 0 | DIGIT ANALYSIS AND RSS TABLE                   | BC1793 |
| 0 | DIGIT TRANSLATIONS FOR TURKEY LOCAL            | BC1499 |
| 0 | GUARANTEED DIAL TONE FOR DMS-100 INTL          | AC0130 |
| 0 | HUNT GROUP ENHANCEMENT                         | AL0054 |
| 0 | HUNT GROUP SIZE EXPANSION                      | BR0750 |
| 0 | ILGC CAPACITY IMPROVEMENT                      | AJ0817 |
| 0 | ILGC/LGC COEXISTENCE I                         | AJ0818 |
| 0 | INTERNATIONAL LINE TESTING                     | BC0963 |
| 0 | INTERNATIONAL LINE TO ANNOUNCEMENT             | BC1796 |
| 0 | INTERNATIONAL SERVICE ORDERS                   | BC1732 |
| 0 | IRLCM RTS ENHANCEMENT                          | AE0538 |
| 0 | LINE CUTOVER STATE                             | BR0043 |
| 0 | LINE THREAD FOR TURKEY LOCAL LOCAL II          | BC1784 |
| 0 | LINE TRANSMISSION TESTS - MW,QTERM             | BV0024 |
| 0 | LOCAL TRANSLATIONS FOR INTERNATIONAL           | BC1449 |
| 0 | LTP - DIGITONE TESTING                         | BV0062 |
| 0 | LTP - INSERTION LOSS, TONE GENERATION          | BV0025 |
| 0 | LTP - MONITOR,TALK,BALANCE OFFHOOK TESTS       | BV0061 |
| 0 | LTP - SEND FUNCTIONS(COIN & RINGING FUNCTIONS) | BV0063 |
| 0 | LTP AND ASSOCIATED LEVEL                       | BT0095 |
| 0 | LTP ROBUSTNESS                                 | BC2324 |
| 0 | LTPLTA: DGTST                                  | AE0320 |
| 0 | NON METERED COIN LINE TRANSACTOR AND CP        | BF0675 |
| 0 | OM'S FOR INTL SUBSCRIBER FEATURES              | AC0137 |
| 0 | ORIGINATING LINE RESTRICTIONS                  | BC2079 |
| 0 | TABLE OPERATIONS FOR ILGC AND ILTC             | BC1730 |
| 0 | TTT ENHANCEMENT FOR TURKISH TONES              | AG0085 |
| 0 | TURKISH FEATURE DATA REQUIREMENTS              | BC1500 |
| 0 | VARIABLE-LENTGH DIRECTORY NUMBERS              | BC1504 |

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0 NTX474AA07 STATUS RTM  
0 INTERNATIONAL BASE METERING

|   |                                          |        |
|---|------------------------------------------|--------|
| 0 | APERIODIC METERING                       | AG1477 |
| 0 | APERIODIC METERING (PM)                  | AG1476 |
| 0 | CC - MAINTENANCE & MONITOR (PART II)     | BC1759 |
| 0 | CC - METERING CHANGEOVER CONTROL         | BC1760 |
| 0 | CC - METERING CHARGE RECORDING           | BC1058 |
| 0 | CC - METERING RATE DETERMINATION         | BV1207 |
| 0 | CC - METERING SYSTEM MAINTENANCE/MONITOR | BV1208 |

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|---|-------------------------------------------------|--------|
| 0 | CC - METERING TARIFF APPLICATION                | BC1758 |
| 0 | CC METERING FOR FEATURES                        | AC0054 |
| 0 | CC-INTERNAL CHANGEOVER FOR METERING             | BV1277 |
| 0 | HARDWARE METERING FOR TRUNKS TABLE CONTROL      | AJ0573 |
| 0 | HARDWARE PULSE GENERATION FOR TRUNKS            | AJ0570 |
| 0 | MAINTAIN DATA IN TARIFF TABLE AND TARIFF NUMBER | BC1905 |
| 0 | TABLE IN XPM                                    |        |
| 0 | METER COUNT PRINTOUT                            | AE0056 |
| 0 | METERING LINE CAPACITY ENHANCEMENTS             | AE0292 |
| 0 | OMS FOR METERING                                | AJ0866 |
| 0 | REMOVE TPS FROM TOD                             | AG1466 |
| 0 | SOFTWARE METERS FOR TRUNK CC II                 | AJ0571 |
| 0 | SOFTWARE METERS FOR TRUNKS (CC)                 | AG1479 |
| 0 | SOFTWARE METERS FOR TRUNKS (XPM)                | AG1478 |
| 0 | TRANSACTOR AND CALL PROCESSING FOR METERED COIN | BF0677 |
| 0 | LINES                                           |        |
| 0 | UTILITIES FOR INTL CC FEATURE METERING          | AC0053 |
| 0 | XPM - CHANGEOVER CONTROL FOR METERING           | BF0780 |
| 0 | XPM - MAINTENANCE FOR METERING DATA TABLES      | BF0711 |
| 0 | XPM SUPPORT FOR CC METERING                     | AL0218 |

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0 NTX475AA01 STATUS RTM  
0 TURKISH TRK TRANSMN TESTING

|   |                                 |        |
|---|---------------------------------|--------|
| 0 | ORIGINATING ARTER TRUNK TESTING | BC1193 |
| 0 | TERMINATING ARTER TRUNK TESTING | BC1192 |

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0 NTX476AA01 STATUS RTM  
0 WINK-1 LINE SIGNALLING

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | CC WINK-1 LINE SIGNALLING SYSTEM    | BC1188 |
| 0 | XPM - WINK-1 LINE SIGNALLING SYSTEM | BF0565 |

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0 NTX477AA04 STATUS RTM  
0 DELAY DIAL-1 SIGNALLING0 CC DELAY DIAL-1 LINE SIGNALLING SYSTEM BC1187  
0 XPM - DELAY DIAL-1 LINE SIGNALLING SYSTEM BF0564

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0 NTX478AA04 STATUS RTM  
0 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE0 CARRIER MAINTENANCE ENHANCEMENT AE0480  
0 DTC 30 CARRIER MAINTENANCE BC1076  
0 IDTC MAINTENANCE ENHANCEMENTS BC1340  
0 LTC - ABCD BIT CARD DIAGNOSTIC BF0432  
0 LTC - BIT SIGNALLING BF0392  
0 LTC PCM 30 I/F CARD MAINTENANCE BF0430  
0 PCM 30 I/F CARD DIAGNOSTIC BF0433  
0 PCM-30 REMOTE NETWORK SYNC BF0978  
0 6X27 INTERFACE CONTROL AE0777

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0 NTX479AA03 STATUS RTM  
0 INTL UNIV TONE RCVR SUPPORT0 ENHANCED MTCE FOR UTR'S BC1766  
0 LTC - UTR CARD DIAGNOSTIC BF0434  
0 LTC - UTR UTILITY BF0396

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0 NTX480AA02 STATUS RTM  
0 TURKISH TONE PLAN

0 TURKISH AUDIBLE TONES BC1186

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0 NTX481AA02 STATUS RTM  
0 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING

0 BA-1 SIGNALLING SYSTEM BC1339  
0 LOCAL TOLL TRUNKS WITH TBI (1 SYS) BF0679

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0 NTX482AB03 STATUS RTM  
0 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)

0 INTERNATIONAL TYPE "B" LINE DIAG (METERING) BF0684  
0 INTERNATIONAL TYPE B DIAGNOSTIC AG0095  
0 NT6X93 LINE CARD DIAG BC1337

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0 NTX482BA02 STATUS RTM  
0 CEP LINE CARD DIAGNOSTICS

0 NT6X94BB MAINTENANCE AE0278

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0 NTX482CA03 STATUS RTM  
0 CHINA LINE CARD DIAGNOSTICS

0 CHINA LINE CARD DIAGNOSTICS AG0827  
0 EXTENDED RANGE LINE CARD DIAGNOSTICS AJ1496

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0 NTX482DA02 STATUS RTM  
0 AUSTRALIA LINE CARD  
0 DIAGNOSTICS

0 AUSTRALIA LINE CARD DIAGNOSTICS AJ1029  
0 6X93CA LINE CARD FOR AUSTRALIA AJ0954

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0 NTX483AA03 STATUS A+M  
0 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)

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0 Software Features  
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0 INTERNATIONAL COMMUNICATION TEST LINE BC1191  
0 NEW TONES AND TEST LINE CIRCUITS FOR CEP AE0005  
0 ORIGINATING QUIET TERMINATION AND LOOPAROUND BC2078  
0 TESTLINES  
0 TERMINATING QUIET TERMINATION AND LOOP AROUND TEST BC2076  
0 LINES  
0 102 TEST LINE AE0250

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0 NTX483AB01 STATUS RTM  
0 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)

0 INTERNATIONAL COMMUNICATION TEST LINE BC1191  
0 NEW TONES AND TEST LINE CIRCUITS FOR CEP AE0005  
0 ORIGINATING QUIET TERMINATION AND LOOPAROUND BC2078  
0 TESTLINES  
0 TERMINATING QUIET TERMINATION AND LOOP AROUND TEST BC2076  
0 LINES  
0 T101 TESTLINES FOR DMS100/200I R2 TRUNKS AJ1031  
0 102 TEST LINE AE0250

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0 NTX484AA01 STATUS RTM  
0 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT

0 TRUNKS WITH MCT (1 SYSTEM) BC1496

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0 NTX485AA03 STATUS RTM  
0 INTL - CALL PROCESSING SYSTEM

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | GENERAL INTERWORKING SYSTEM PART I         | BC1301 |
| 0 | INTERNATIONAL PERIPHERALS OVERLOAD CONTROL | BC1927 |
| 0 |                                            | BF0915 |
| 0 | INTL TRUNK TO ANNOUNCEMENT (SPEEDUP)       | BF0805 |
| 0 | TERMINAL APPLICATION PROCESSORS            | BF0399 |

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0 NTX486AA01 STATUS RTM  
0 MF-3 REGISTER SIGNALLING

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | CC MF-3 REGISTER SIGNALLING SYSTEM  | BC1189 |
| 0 | XPM MF-3 REGISTER SIGNALLING SYSTEM | BF0567 |

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0 NTX487AA03 STATUS RTM  
0 MALICIOUS CALL TRACE - INTL  
0 LOCAL

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | MALICIOUS CALL IDENTIFICATION             | AG0709 |
| 0 | MALICIOUS CALL TRACE FOR SUBSCRIBER LINES | BF0674 |

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0 NTX488AA01 STATUS RTM  
0 INTERNATIONAL TIME OF DAY  
0 ROUTING

0 REPAIR SERVICE  
0 TIME OF DAY ROUTING  
0 TRANSLATION VERIFICATION FOR TOD ROUTES

BC1498  
BV1136  
BC1825

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0 NTX489AA01 STATUS RTM  
0 VISA SWITCHBOARD  
0 INTERFACE(TURKEY)

0 VISA INTERFACE SYSTEMS  
0 VISA SYSTEMS TABLE OPERATIONS

BF0680  
BC1520

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0 NTX492AA03 STATUS RTM  
0 OPERATOR TOLL BREAK-IN

0 TOLL BREAK IN - BACKGROUND TONE  
0 TOLL BREAK-IN MAP SIGNALLING COMMAND

AE0244  
AE0245

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0 NTX493AA01 STATUS RTM  
0 ADMINISTRATIVE CALL DIVERSION  
0 FEATURES

0 ABSENT SUBSCRIBER INTERCEPT BC2049

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0 NTX494AA03 STATUS RTM  
0 AUTOMATIC CALL RECORDING

0 ICR SUPPORT IMPLEMENTATION BC2074  
0 PM METERING ROBUSTNESS BF0976  
0 TOLL CALL RECORDING BC2050

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0 NTX495AA01 STATUS RTM  
0 TS16 SIGNALLING FOR LD

0 CC-SUPPORT FOR OUTGOING & INCOMING LD SIGNALLING BV1988  
0 XPM-INCOMING LOOP DISCONNECT SIGNALLING BF0881  
0 XPM-OUTGOING LD SIGNALLING BF0867  
0 XPM-SUPPORT FOR OUTGOING & INCOMING LD SIGNALLING BV1987

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0 NTX496AA03 STATUS RTM  
0 GATEWAY ACCESS

|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | GATEWAY FEATURES                      | AE0043 |
| 0 | LANGUAGE DIGIT INSERTION              | AE0059 |
| 0 | TRANSLATIONS FOR CEP                  | BC2059 |
| 0 | TRANSLATIONS FOR TWO STAGE OUTPULSING | BV1989 |
| 0 | XPM-TWO STAGE OUTPULSING              | BF0870 |

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0 NTX498AA01 STATUS A+M  
0 CEP CALL RECORDING(REP.BY  
0 NTX494AA)

|   |                            |        |
|---|----------------------------|--------|
| 0 | ICR SUPPORT IMPLEMENTATION | BC2074 |
|---|----------------------------|--------|

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0 NTX499AA10 STATUS RTM  
0 CEPT SUBSCRIBER SERVICES - I

|   |                                          |        |
|---|------------------------------------------|--------|
| 0 | ABBREVIATED DIALING                      | BC2053 |
| 0 | CALL TRANSFER CAPABILITY                 | AE0242 |
| 0 | CASUAL FEATURES OPTIONALITY              | AJ0563 |
| 0 | CEPT CALL DIVERSION                      | BC2260 |
| 0 | CEPT CALL WAITING                        | AC0058 |
| 0 |                                          | AC0082 |
| 0 | CEPT HOT/WARM LINE                       | BC2261 |
| 0 | CEPT THREE WAY CALLING                   | AC0059 |
| 0 |                                          | AC0083 |
| 0 | COMPLETION OF CALLS TO A BUSY SUBSCRIBER | AE0239 |
| 0 | CONVERSION OF INTL ADL                   | AC0086 |
| 0 | DP ACTIVATION FOR SUBSCRIBER SERVICES    | AG1540 |
| 0 | ESG ENHANCEMENTS                         | AJ1432 |

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|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | FAULTSMAN RINGBACK ENHANCEMENT             | AE0248 |
| 0 | FAULTSMAN'S RINGBACK                       | BC2077 |
| 0 | HOT LINE (ADMINISTRATION CONTROLLED)       | AE0101 |
| 0 | INTERNATIONAL CALL DIVERSION ENHANCEMENTS  | AC0136 |
| 0 | INTL NO DOUBLE CONNECT                     | AC0133 |
| 0 | INTL SUBSCRIBER FEATURES DENIED            | AC0135 |
| 0 | RAG FOLDBACK                               | AG0962 |
| 0 | SILENT SWITCHMAN                           | AE0249 |
| 0 | SUBSCRIBER ACTIVATED OUTGOING RESTRICTIONS | AC0134 |
| 0 | WAKE-UP CALL                               | AE0240 |

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0 NTX550AA02 STATUS RTM  
0 CCS7 - TRANSACTION SERVICE  
0 SUPPORT

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | CCS7 TRANSACTION CAPABILITY (TCAP) | BF0657 |
| 0 | TCAP CP UTILITIES                  | BC2284 |
| 0 | TCAP ID MANAGEMENT                 | BC2282 |

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0 NTX552AB03 STATUS A+M  
0 CUSTOM CHARGE  
0 CALLING(CCC)(UPG. BY NTX552AC)

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | ACCS ENHANCEMENTS FOR CANADIAN APPLICATION        | AC0153 |
| 0 | AUTOMATIC CALLING CARD SERVICE                    | AL0285 |
| 0 | LIMIT TO NUMBER OF SEQUENCE CALLS                 | BR0680 |
| 0 | MCCS - CUSTOMER DIALED ON LINES                   | BV1115 |
| 0 | MCCS - CUSTOMER DIALED ON TOPS TRUNKS             | BV1114 |
| 0 | MCCS - CUSTOMER DIALED SEQUENCE CALLS             | BV1116 |
| 0 | MCCS - OPERATOR ASSISTED MANUAL INWARD VALIDATION | BV1121 |
| 0 | MCCS - OPERATOR ASSITED CCV                       | BV1112 |
| 0 | MCCS - OPERATOR BNS                               | BV1113 |

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0 RELEASE 28.01  
0 93 12 030 TOPS ACCS ANNOUNCEMENT VOICEWARE  
0 TOPS: TERMINATING CODE SCREENINGAG0722  
NC0021

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0 NTX552AC02 STATUS A+M  
0 CUSTOM CHARGE  
0 CALLING(CCC)(UPG. FR NTX552AB)

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | ACCS ENHANCEMENTS                                 | AF0737 |
| 0 | ACCS ENHANCEMENTS FOR CANADIAN APPLICATION        | AC0153 |
| 0 | AUTOMATIC CALL GAPPING                            | AF1251 |
| 0 | AUTOMATIC CALLING CARD SERVICE                    | AL0285 |
| 0 | LIMIT TO NUMBER OF SEQUENCE CALLS                 | BR0680 |
| 0 | MCCS - CUSTOMER DIALED ON LINES                   | BV1115 |
| 0 | MCCS - CUSTOMER DIALED ON TOPS TRUNKS             | BV1114 |
| 0 | MCCS - CUSTOMER DIALED SEQUENCE CALLS             | BV1116 |
| 0 | MCCS - OPERATOR ASSISTED MANUAL INWARD VALIDATION | BV1121 |
| 0 | MCCS - OPERATOR ASSITED CCV                       | BV1112 |
| 0 | MCCS - OPERATOR BNS                               | BV1113 |
| 0 | TOPS ACCS ANNOUNCEMENT VOICEWARE                  | AG0722 |
| 0 | TOPS: TERMINATING CODE SCREENING                  | NC0021 |

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0 NTX552AD01 STATUS RTM  
0 CUSTOM CHARGE CALLING (UPGRADE  
0 OF NTX552AC

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | ACCS ENHANCEMENTS                          | AF0737 |
| 0 | ACCS ENHANCEMENTS FOR CANADIAN APPLICATION | AC0153 |
| 0 | AUTOMATIC CALL GAPPING                     | AF1251 |
| 0 | AUTOMATIC CALLING CARD SERVICE             | AL0285 |
| 0 | LIMIT TO NUMBER OF SEQUENCE CALLS          | BR0680 |
| 0 | MCCS - CUSTOMER DIALED ON LINES            | BV1115 |
| 0 | MCCS - CUSTOMER DIALED ON TOPS TRUNKS      | BV1114 |
| 0 | MCCS - CUSTOMER DIALED SEQUENCE CALLS      | BV1116 |

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|---|---------------------------------------------------|--------|
| 0 | MCCS - OPERATOR ASSISTED MANUAL INWARD VALIDATION | BV1121 |
| 0 | MCCS - OPERATOR ASSISTED CCV                      | BV1112 |
| 0 | MCCS - OPERATOR BNS                               | BV1113 |
| 0 | TOPS ACCS ANNOUNCEMENT VOICEMAIL                  | AG0722 |
| 0 | TOPS: TERMINATING CODE SCREENING                  | NC0021 |

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|---|-------------------|-----|
| 0 | NTX554AA02 STATUS | RTM |
| 0 | CCS7 - E800/SSP   |     |

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|---|-----------|--------|
| 0 | CCS7 E800 | BV1858 |
|---|-----------|--------|

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|---|-------------------|-----|
| 0 | NTX555AB01 STATUS | RTM |
| 0 | 800 PLUS          |     |

|   |                                      |        |
|---|--------------------------------------|--------|
| 0 | CCS7 E800                            | BV1858 |
| 0 | TOPS/SSP INTERWORKING FOR 800+ CALLS | AL0668 |
| 0 | 800+ CAPABILITY FOR BELL CANADA      | AL0249 |

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|---|------------------------|-----|
| 0 | NTX558AA01 STATUS      | RTM |
| 0 | CCC END OFFICE DP/DTMF |     |
| 0 | GENERATION             |     |

|   |                           |        |
|---|---------------------------|--------|
| 0 | SS7 SERVICES ENHANCEMENTS | AG0489 |
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0 NTX559AA01 STATUS RTM  
0 CCC SSP DP/DTMF SEPARATION

0 SS7 SERVICES ENHANCEMENTS

AG0489

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0 NTX560AB03 STATUS RTM  
0 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)0 CC GENERAL PURPOSE RO IMPLEMENTATION  
0 GENERIC RO SERVICE ENHANCEMENTS  
0 MAP LEVEL FOR NOP  
0 OPTIONAL USE OF MPC BY NOS RO SERVICE  
0 X.25 PACKAGING ENHANCEMENTS FOR NOPBC2128  
AG0110  
BC1747  
AG0055  
AG0306

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0 NTX562AA03 STATUS RTM  
0 NOS - DATA COLLECTION0 AUTOMATIC TRUNK TESTING REPORT  
0 CONVERSION OF NOS FILE TRANSFER TO GENERIC RO  
0 SERVICE  
0 FILE TRANSFER FROM DNC TO DMS VIA NOP/X.25  
0 FILE TRANSFER SERVER FOR BELL OF PA (CC)  
0 KILLER TRUNK REPORT SEPARATION  
0 XFER SUBSYSTEM TABLEBC1461  
AG0099  
AG0945  
BC1375  
BC1460  
AF1235

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0 NTX563AA05 STATUS RTM  
0 BNM - STATION ADMINISTRATION

|   |                                                 |        |
|---|-------------------------------------------------|--------|
| 0 | BNM CUSTOMER NAME AND GROUP TABLE               | AG1163 |
| 0 | DMS DATA COLLECTION ACTIVITY FOR NSR25          | AG0755 |
| 0 | ILLINOIS BELL - ISDN STATION ADMIN - DMS UPLOAD | AG1472 |
| 0 | ISDN - OAM NAME DISPLAY CONTROL - DMS CHANGES   | AJ0509 |
| 0 | QCUST UPLOAD ENHANCEMENTS FOR CDC               | AJ0901 |
| 0 | SERVORD INTERFACE FOR NOS                       | AC0023 |
| 0 | UPLOAD OF CUSTOMER LINE DATA TO DNC             | AG0092 |

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0 -----0 NTX571AA01 STATUS RTM  
0 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY

0 DIRECTED CALL PARK BV1535

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0 -----0 NTX573AA01 STATUS RTM  
0 IBN SECURITY CODE - 2500 ONLY

0 SECURITY CODES FOR STATION FEATURES BV2009

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0 NTX574AA01 STATUS RTM  
0 IBN SECURITY CODE - 2500 AND  
0 BUSINESS SETS

0 SECURITY CODES FOR STATION FEATURES BV2009

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0 NTX601BA06 STATUS RTM  
0 SCOPE-DIAL BASIC FEATURES

|   |                                                 |        |
|---|-------------------------------------------------|--------|
| 0 | AUTOVON I/F (DFS) PREC NETWORK OUTWARD DIALLING | BV0605 |
| 0 | AUTOVON INTERFACE - PBX STATIONS                | BV0589 |
| 0 | CONFERENCE CALL ANNOUNCEMENT                    | BC0710 |
| 0 | FTS INTERFACE                                   | BV0777 |
| 0 | MOBILE RADIO INTERFACE                          | BV0837 |
| 0 | PNID/PNOD ON P_PHONE                            | BC1180 |
| 0 | PRESET CONFERENCE (UP TO 26 PORTS)              | BV0596 |
| 0 | SCOPEDIAL TRAVER                                | BC2056 |
| 0 | SCOPEDIAL TRUNK USAGE DATA - KILLER TRUNKS      | BC1539 |
| 0 | TRUNK GROUP BUSY THRESHOLD INDICATORS           | BV1550 |
| 0 | TWO-WIRE 16-BUTTON DTMF KEY PAD                 | AD1961 |

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0 NTX601CA03 STATUS RTM  
0 SCOPE-DIAL INTERSWITCH - PBX

|   |                                 |        |
|---|---------------------------------|--------|
| 0 | ATTENDANT CONSOLE TRUNK QUEUING | AD0292 |
| 0 | AUTOVON CALL QUEUING            | BC0709 |

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|---|-----------------------------------------------|--------|
| 0 | AUTOVON I F (DFS) PREC NETWORK INWARD DIALING | BV0916 |
| 0 | AUTOVON I/F (DFS) - FEATURE INTERACTION       | BV0920 |
| 0 | AUTOVON I/F (DFS) ATT INCOMING PREC CALLS     | BV0918 |
| 0 | AUTOVON I/F (DFS) ATT OUTGOING PREC CALLS     | BV0917 |
| 0 | AUTOVON INTERFACE (DFS) - TRANSLATIONS        | BV0919 |
| 0 | AUTOVON INTERFACE - THROTTLING ALGORITHMS     | BV0607 |
| 0 | ROLM CBX INTERFACE                            | BV0778 |
| 0 | SCOPEDIAL NETWORK MANAGEMENT                  | BV0965 |

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0 NTX605AA01 STATUS RTM  
0 DUAL FUNCTION CAPABILITY

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | AUTOVON I/F (DFS) - ATT TO 4WSUB           | BV0962 |
| 0 | AUTOVON I/F (DFS) - FEATURE INTERACTIONS 2 | BV0964 |
| 0 | AUTOVON I/F (DFS) - IBN TO 4WSUB           | BV0961 |
| 0 | AUTOVON I/F (DFS) - 4WSUB TO IBN           | BV0960 |
| 0 | AUTOVON I/F (DFS) 4WSUB TO ATT             | BV0963 |

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0 NTX607AA04 STATUS RTM  
0 PBX ACCESS TO AUTOVON

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | AUTOVON OPTIONAL PACKAGING                         | BC0879 |
| 0 | DSN "0+" DIALING                                   | AD1286 |
| 0 | DSN INCOMING PREEMPTION ON PAL DIAL PULSE CIRCUITS | AD2007 |
| 0 | MILITARY PBX - AUTOVON NETWORK ACCESS              | BC0872 |
| 0 | MILITARY PBX - FEATURE INTERACTIONS                | BC0875 |
| 0 | MILITARY PBX - INCOMING TRANSLATION                | BC0874 |
| 0 | MILITARY PBX - PERIPHERAL EXECS FOR AUTOVON        | BC0878 |
| 0 | SUPERVISION                                        |        |
| 0 | MILITARY PBX - PNID CALL PROCESSING                | BC0869 |
| 0 | MILITARY PBX - PNOD CALL PROCESSING                | BC0870 |
| 0 | MILITARY PBX - PREEMPTION PROCESSING               | BC0873 |

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0 RELEASE 28.01  
0 93 12 030 MILITARY PBX - ROUTER BC0871  
0 MILITARY PBX - TRUNK GROUP DATA BC0876

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0 NTX610AA03 STATUS RTM  
0 SCOPEDIAL - OVERSEAS0 AUTOMATIC TRAFFIC CONTROL PLAN TRANSLATION BV1547  
0 MULTIPLE RETRIALS ON TRUNK GROUPS BV1551  
0 SUBSCRIBER CONTROL OF ATCP BV1602  
0 VARIABLE DP RECEPTION PARAMETERS ON TM'S BF0697

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0 NTX611AA07 STATUS RTM  
0 UK BUSINESS FEATURES0 A TO MU LAW CIRCUIT DIAGNOSTIC BF0695  
0 A TO MU LAW CIRCUIT INTEGRATION BF0694  
0 ATTENDANT INTRUSION TONE - UK AND SPAIN AL0084  
0 BRITISH TONE SUPPORT BF0696  
0 EARTH CALLING DIAL TONE DETECTION AE0065  
0 EARTH CALLING ROBUSTNESS AE0336  
0 EXECUTIVE BUSY OVERRIDE FOR UK BC2083  
0 LCM BREAK PULSE FILTERING AE0110  
0 MIL UK BT TRUNK AND LINE SIGNALLING I BC1625  
0 MIL UK BT TONES I BC1623  
0 P-PHONE EBO AND UK RESTRICTIONS AE0402  
0 PEC CODE IN CONF6PR TABLE AE0006  
0 ROUTING OF INCOMPLETE CALL TRANSFER AE0070  
0 UK - DDI TRUNK RESTRICTIONS BC1621  
0 UK - RETURN ANSWER ON DRAM BC1622  
0 UK BT TONES II BC1612  
0 UK BT TRUNK AND LINE MAINTENANCE BC1618  
0 UK BT TRUNK AND LINE MAINTENANCE II BC1613  
0 UK BT TRUNK SIGNALLING II BC1624

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|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | UK CUSTOMER GROUP DATA                        | AE0289 |
| 0 | UK LINE DIGIT COLLECTION OPTIMIZATION         | AE0539 |
| 0 | UK TRUNK CONNECTION PROHIBITIONS I            | BC1617 |
| 0 | UK TRUNK CONNECTION PROHIBITIONS II           | BC1616 |
| 0 | UK TRUNK DATA CHANGES                         | BC1615 |
| 0 | UK TRUNK RESTRICTIONS IN NEW 3WC              | AE0368 |
| 0 | VARIABLE DP RECEPTION PARAMETERS ON TM'S      | BF0697 |
| 0 | VARIABLE LCM PARMS AND EARTH CALLING FEATURE  | BC1626 |
| 0 | INTERACTIONS                                  |        |
| 0 | VARIABLE SIGNAL RECEPTION PARAMETERS ON LCM'S | BF0698 |

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0 NTX612AA04 STATUS RTM  
0 SCOPE DIAL - SPAIN

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | ATTENDANT INTRUSION TONE - SPAIN            | AL0135 |
| 0 | CAIA INTERFACE SPEC FOR SCOPEDIAL (SPAIN)   | AE0050 |
| 0 | CC - METERING CALL PROCESSING               | BC1627 |
| 0 | CC - SOCOTEL TABLE CONTROL                  | BC2061 |
| 0 | CC - SPANISH LINE SIGNALLING I              | BC1629 |
| 0 | CC - SPANISH SOCOTEL SIGNALLING I           | BC1628 |
| 0 | CC SUPPORT OF TONE OPTIONALITY IN XPM       | AE0186 |
| 0 | CC-SPANISH TYPE-P2 LINE SIGNALLING          | AE0196 |
| 0 | CONSOLE TO SOCOTEL TRUNK INTERFACE          | AE0049 |
| 0 | EXECUTIVE BUSY OVERRIDE FOR SPAIN           | AL0136 |
| 0 | EXTENDED OPCODE GROUP DECODER               | BF0872 |
| 0 | IBN LINE/TRUNK TO SOCOTEL TRUNK INTERFACE   | AE0048 |
| 0 | JUSMAG INTERFACE SPEC FOR SCOPEDIAL (SPAIN) | AE0051 |
| 0 | PDTC - METERING MAINTENANCE                 | BF0879 |
| 0 | PDTC - METERING PULSE RECEIVER              | BF0871 |
| 0 | PDTC - SPANISH SOCOTEL SIGNALLING I         | BF0866 |
| 0 | PDTC - SPANISH TONES MAINTENANCE            | BF0873 |
| 0 | PDTC - SPANISH TYPE-P2 LINE SIGNALLING      | AE0197 |
| 0 | PDTC-METERING CALL PROCESSING               | BF0865 |
| 0 | SCOPEDIAL (SPAIN) PRODUCT SPECIFICATION     | AE0052 |
| 0 | SCOPEDIAL TRAVER                            | BC2056 |
| 0 | SOCOTEL - PDTC COMPELLER                    | BF0876 |
| 0 | SOCOTEL - PDTC MAINTENANCE                  | BF0878 |
| 0 | SOCOTEL - PDTC PRIMITIVE AND CONTROL        | BF0877 |
| 0 | SOCOTEL - PDTC REGISTER CONTROLLER          | BF0875 |
| 0 | SOCOTEL CC MAINTENANCE (DID)                | BC2067 |

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|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | SOCOTEL CC MAINTENANCE (DOD)                   | AE0045 |
| 0 | SOCOTEL DIRECT INWARD DIAL                     | AE0035 |
| 0 | SOCOTEL DIRECT OUTWARD DIAL                    | AE0060 |
| 0 | SOCOTEL INTERNATIONAL SIGNALLING               | AD0206 |
| 0 | SOCOTEL SIGNALLING                             | AE0010 |
| 0 | SOCOTEL SIGNALLING UTR                         | AE0028 |
| 0 | SOCOTEL TRUNK EXECS (DID)                      | BC2066 |
| 0 | SOCOTEL TRUNK EXECS (DOD)                      | AE0047 |
| 0 | SOCOTEL TRUNK TO AUTOVON INTERFACE             | BC2062 |
| 0 | SOCOTEL TRUNK TO CONSOLE INTERFACE             | BC2063 |
| 0 | SOCOTEL TRUNK TO IBN LINE INTERFACE            | BC2064 |
| 0 | SOCOTEL TRUNK TO IBN TRUNK INTERFACE           | BC2065 |
| 0 | SPANISH CAIA TRUNK CALL PROCESSING             | BC2070 |
| 0 | SPANISH CAIA TRUNK MAINTENANCE                 | BC2071 |
| 0 | SPANISH JUSMAG TRUNK CALL PROCESSING           | BC2068 |
| 0 | SPANISH JUSMAG TRUNK MAINTENANCE               | BC2069 |
| 0 | SPANISH METERING RECEPTION                     | AE0044 |
| 0 | SPANISH SIGNALLING TABLE CONTROL               | AE0198 |
| 0 | SPANISH SOCOTEL FEATURE INTERACTIONS           | AE0170 |
| 0 | SPANISH SOCOTEL LINE SIGNALLING DEFINITION     | BZ0488 |
| 0 | SPANISH SOCOTEL REGISTER SIGNALLING DEFINITION | BZ0490 |
| 0 | SPANISH SOCOTEL SIGNALLING DEFINITIONS         | AE0040 |
| 0 | SPANISH SOCOTEL TRANSLATIONS (DOD)             | AE0046 |
| 0 | SPANISH TYPE-P2 LINE SIGNALLING                | AE0189 |
| 0 | TONES OPTIONALITY                              | AE0200 |
| 0 | XPM TONES OPTIONALITY                          | AE0223 |

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0 NTX621AB02 STATUS RTM  
0 SMU SPECIAL SERVICES(REP  
0 NTX621AA)

|   |                                  |        |
|---|----------------------------------|--------|
| 0 | DE4 DPX HAIRPIN TO DTC           | AF0239 |
| 0 | FXB HAIRPIN                      | AF0234 |
| 0 | INTEGRATED LOCAL SPECIALS        | AF0240 |
| 0 | SMU FXB HAIRPIN SPECIAL SERVICES | AF0265 |
| 0 | SMU FXB HAIRPIN SPECIALS(CC)     | AF0264 |
| 0 | SSM HAIRPIN                      | AF0238 |
| 0 | SSM HAIRPIN (CC)                 | AF0830 |
| 0 | SSM HAIRPIN (PP)                 | AF0938 |
| 0 | TASK NEEDS A TITLE               | AF2256 |

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0 NTX640AA06 STATUS A+M  
0 DIGITAL PHONE M2000-BASIC

|                                         |        |
|-----------------------------------------|--------|
| 0 CADA KBD                              | BF0818 |
| 0 DIGITAL SET DIAGNOSTICS               | BC1558 |
| 0 DLM MAINTENANCE ENHANCMENTS           | AD0069 |
| 0 DLM PM UPGRADE                        | AD0898 |
| 0 DLM SW FOR MERIDIAN DIGITAL SETS      | BF0808 |
| 0 DLM TAKEOVER                          | AD0068 |
| 0 DLM-PSTS FIRMWARE                     | BF0828 |
| 0 IVD BAD PORT ADMINISTRATION           | BV2056 |
| 0 IVD CALL PROCESSING                   | BC1524 |
| 0 IVD CALL PROCESSING AUDITS            | BC1536 |
| 0 IVD CP FEATURES                       | BC1548 |
| 0 IVD DATA CALL PROCESSING              | BC1537 |
| 0 IVD FACILITY MAINTENANCE ENHANCEMENTS | AD0070 |
| 0 IVD HOOKS                             | AD0026 |
| 0 IVD LGC CALL PROGRESS INDICATIONS     | AD0306 |
| 0 IVD LGC REQUIREMENTS                  | BF0625 |
| 0 IVD MADO HAYES PROTOCOL               | AD0067 |
| 0 IVD MADO TERMINAL TEST                | AD0333 |
| 0 IVD MAINTENANCE                       | BC1523 |
| 0 IVD MAINTENANCE WITH RELAY PORT CARD  | AD0303 |
| 0 IVD SERVICE ORDERS                    | BC1538 |
| 0 IVD TABLE CONTROL - PHASE I           | BC1525 |
| 0 MADO PROFILE                          | BC1535 |
| 0 MADO T-LINK F/W                       | BF0632 |
| 0 MADO USER SELF TEST                   | AD0251 |
| 0 MERIDIAN LGC MAINTENANCE              | BF0817 |
| 0 M3000 AND DELTA II SERVICE ORDERS     | AD0468 |
| 0 PM FOR REMOTE DLM/DLM MAINT CARD      | AD0305 |

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0 NTX640AB04 STATUS RTM  
0 DIGITAL PHONE M2000 - BASIC  
0 (UPG.OF NTX640AA)

|                                         |        |
|-----------------------------------------|--------|
| 0 ARIES FEATURE OPERATION AND DISPLAYS. | AD1785 |
| 0 ARIES SERVICE ORDERS                  | AD1782 |
| 0 ARIES TABLE CONTROL & CPI             | AD1288 |
| 0 CADA KBD                              | BF0818 |
| 0 DIGITAL SET DIAGNOSTICS               | BC1558 |
| 0 DLM MAINTENANCE ENHANCMENTS           | AD0069 |
| 0 DLM PM UPGRADE                        | AD0898 |
| 0 DLM SW FOR MERIDIAN DIGITAL SETS      | BF0808 |
| 0 DLM TAKEOVER                          | AD0068 |
| 0 DLM-PSTS FIRMWARE                     | BF0828 |
| 0 IVD BAD PORT ADMINISTRATION           | BV2056 |
| 0 IVD CALL PROCESSING                   | BC1524 |
| 0 IVD CALL PROCESSING AUDITS            | BC1536 |
| 0 IVD CP FEATURES                       | BC1548 |
| 0 IVD DATA CALL PROCESSING              | BC1537 |
| 0 IVD FACILITY MAINTENANCE ENHANCEMENTS | AD0070 |
| 0 IVD HOOKS                             | AD0026 |
| 0 IVD LGC CALL PROGRESS INDICATIONS     | AD0306 |
| 0 IVD LGC REQUIREMENTS                  | BF0625 |
| 0 IVD MADO HAYES PROTOCOL               | AD0067 |
| 0 IVD MADO TERMINAL TEST                | AD0333 |
| 0 IVD MAINTENANCE                       | BC1523 |
| 0 IVD MAINTENANCE WITH RELAY PORT CARD  | AD0303 |
| 0 IVD SERVICE ORDERS                    | BC1538 |
| 0 IVD TABLE CONTROL - PHASE I           | BC1525 |
| 0 MADO PROFILE                          | BC1535 |
| 0 MADO SUPPORT OF SMARTCOM III VI.0     | AD1979 |
| 0 MADO T-LINK F/W                       | BF0632 |
| 0 MADO USER SELF TEST                   | AD0251 |
| 0 MERIDIAN LGC MAINTENANCE              | BF0817 |
| 0 M2006 SINGLE-LINE DIGITAL SET SUPPORT | AM0117 |
| 0 M3000 AND DELTA II SERVICE ORDERS     | AD0468 |
| 0 PM FOR REMOTE DLM/DLM MAINT CARD      | AD0305 |

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0 NTX641AA01 STATUS RTM  
0 DIGITAL TELEPHONES M2000  
0 DISPLAY

0 M2317 UPDATES AND FEATURE INTERACTIONS.

AD0897

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0 NTX642AA03 STATUS RTM  
0 DIGITAL TELEPHONES M3000

0 M3000 CALL PROGRESS INDICATION II  
0 M3000 LINE DISPLAY (LGC) HOOKS  
0 M3000 SCREEN UPDATES AND FEAT. CALLING  
0 M3000 TABLE CONTROL

AD0465  
AD0340  
AD0732  
AD0307

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0 NTX645AA01 STATUS RTM  
0 TOPS - SERVICE BILLING

0 TOPS SERVICE BILLING

BR0622

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0 NTX650AA02 STATUS RTM  
0 TS16 SIGNALLING FOR R1

0 R1 AND R1 MODIFIED SIGNALLING FOR DMS100I

AE0034

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0 NTX652AA02 STATUS RTM  
0 INTRASWITCHING ON THE IRLCM0 INTRASWITCHING ON IRLCM FOR SUBSCRIBER FEATURES AE0178  
0 INTRASWITCHING ON THE IRLCM AE0108

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0 -----0 NTX653AA01 STATUS RTM  
0 IRLCM - EMERGENCY STAND ALONE  
0 (ESA)

0 ESA FOR IRLCM - BASIC AE0216

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0 -----0 NTX655AA01 STATUS RTM  
0 E & M SIGNALLING IN TS16

0 E &amp; M DECADIC SIGNALLING FOR DMS100I AE0025

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0 NTX656AA01 STATUS RTM  
0 CEP TONE PLAN

0 CARIBBEAN AUDIBLE TONES BF0869

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0 NTX657AA01 STATUS RTM  
0 INTERNATIONAL CAMA

0 INTERNATIONAL CAMA AE0147

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0 NTX658AA02 STATUS RTM  
0 MCL DMS-300 (A-LAW) SIGNALLING

0 CCITT NO.5 (ANALOGUE) A-LAW SIGNALLING AE0029  
0 CCITT NO.6 (DIGITAL) ON A-LAW PDTC AE0031  
0 CCITT R1 (DIGITAL) SIGNALLING WITH A-LAW AE0030  
0 DMS-300 PDTC WITH TURKISH TONES AE0180

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0 NTX660AA01 STATUS RTM  
0 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC

0 SUBSCRIBER ACTIVATION BC2286

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0 Software Features  
0 Appendix S

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0 NTX662AA01 STATUS RTM  
0 EMERGENCY CUT-OFF

0 EMERGENCY CUT-OFF BC2081

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0 NTX663AA03 STATUS A+M  
0 FAULTSMAN RINGBACK(ALL  
0 FEATURES MOVED TO NTX499AA)0 FAULTSMAN RINGBACK ENHANCEMENT AE0248  
0 FAULTSMAN'S RINGBACK BC2077  
0 SILENT SWITCHMAN AE0249

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0 NTX664AA02 STATUS RTM  
0 OMS IN ERLANGS0 OM'S IN ERLANGS BC2060  
0 OM'S IN ERLANGS - EXTENDED AE0033  
0 OMS ACTIVE IN ERLANGS AE0943

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0 NTX665AA02 STATUS RTM  
0 SEMI-PERMANENT CONNECTIONS -  
0 BASIC

0 SEMI PERMANENT CONNECTIONS AC0256  
0 SEMI-PERMANENT CONNECTIONS - LOCAL BC2080

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0 NTX666AA02 STATUS RTM  
0 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL

0 SEMI PERMANENT CONNECTIONS AC0256  
0 SEMI-PERMANENT CONNECTIONS - LOCAL BC2080

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0 NTX667AA01 STATUS RTM  
0 PRINTED METER CHECK

0 PRINTED METER CHECK AE0055

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0 NTX668AA01 STATUS RTM  
0 INSERT TONE ON COIN PHONE  
0 TERMINATION

0 INSERT TONE ON COIN PHONE TERMINATIONS AE0057

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0 NTX669AA01 STATUS RTM  
0 INTERNATIONAL NETWORK  
0 MANAGEMENT

0 INTERNATIONAL NETWORK MANAGEMENT AC0132

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0 NTX701BA08 STATUS RTM  
0 AUTOVON BASIC FEATURES

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | AUTOVON FEATURES ON NEW PERIPHERALS                  | BC1216 |
| 0 | AUTOVON OPTIONAL PACKAGING                           | BC0879 |
| 0 | DIGITAL ECHO SUPPRESSOR CONTROL                      | BR0266 |
| 0 | DSN FOUR-WIRE DIALING MODIFICATIONS                  | BV2037 |
| 0 | ENHANCED IBN TRANSLATION-ADDITIONS TO DN AND THOUGRP | BV2040 |
| 0 | MILITARY CDR - TABLE CONTROL                         | BC1177 |
| 0 | OFFICE COMMUNICATION SYSTEM                          | BV0106 |
| 0 | PREEMPT SEARCH METHOD C & D                          | BC1181 |
| 0 | PRESET CONFERENCE ADD-ON                             | BC1179 |
| 0 | PRESET CONFERENCE PREEMPTION                         | BC1178 |
| 0 | SELECTIVE SUPPRESSION OF SMDR/MCDR                   | AD2063 |
| 0 | TRUNK TESTING                                        | BV0107 |

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0 NTX701CA07 STATUS RTM  
0 AUTOVON INTERSWITCH PBX

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | ASSIGNABLE PAT (NCOS)                      | BC1244 |
| 0 | AUTOMATIC TRAFFIC CONTROL PLAN TRANSLATION | BV1547 |
| 0 | AUTOVON NETWORK MANAGEMENT                 | BV0108 |
| 0 | AUTOVON NUMBERING PLAN                     | BV0115 |
| 0 |                                            | BV0258 |
| 0 | AUTOVON ORIG. DESTINATION PEG COUNT        | BR0563 |
| 0 | AUTOVON PRESET CONFERENCE ADDON            | BV1681 |
| 0 | AUTOVON ROUTING ACCESS LINES               | BV0118 |
| 0 | AUTOVON ROUTING INTERSWITCH TRUNKS         | BV0102 |
| 0 | AUTOVON TRANSLATIONS INTERSWITCH TRUNKS    | BV0101 |
| 0 |                                            | BV0404 |
| 0 | CODE ROUTE SUBSTITUTION                    | BV1917 |
| 0 | COMMUNITY OF INTEREST                      | BV0252 |
| 0 | DIGITAL INTERSWITCH TRUNKS                 | BC0219 |
| 0 |                                            | BV0583 |
| 0 | DIGITAL INTERSWITCH TRUNKS (AUTOVON)       | BR0316 |
| 0 | DUAL FREQUENCY SIGNAL UNIT INTERFACE       | BC1242 |
| 0 | DUAL HOMING                                | BV0111 |
| 0 |                                            | BV0256 |
| 0 | ECHO SUPPRESSOR CONTROL ANALOG             | BV0248 |
| 0 | MILITARY CALL DETAIL RECORDING             | BC1174 |
| 0 | MILITARY CDR - CALL PROCESSING             | BC1175 |
| 0 | MILITARY CDR - SUPPORT UTILITIES           | BC1176 |
| 0 | MULTIPLE RETRIALS ON TRUNK GROUPS          | BV1551 |
| 0 | OPERATIONAL MEASUREMENTS ANA REPORTS       | BV0114 |
| 0 | PAT MATRIX OM ENHANCEMENTS                 | AD2067 |
| 0 | PRE-EMPTION ACCESS LINES                   | BF0056 |
| 0 | PRE-EMPTION INTERSWITCH TRUNKS             | BV0104 |
| 0 | PRECEDENCE INTERSWITCH TRUNKS              | BV0103 |
| 0 | PRESET CONFERENCING                        | BV0261 |
| 0 |                                            | BV0397 |
| 0 | RING FORWARD                               | BV0251 |
| 0 | SUBSCRIBER CONTROL OF ATCP                 | BV1602 |
| 0 | ZONE RESTRICTION                           | BV0253 |

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0 NTX701DA03 STATUS RTM  
0 AUTOVON 4-WIRE SUBSCRIBER AND  
0 ACCESS LINE INTERFACE

|   |                                         |                      |
|---|-----------------------------------------|----------------------|
| 0 | ABBREVIATED KEYING                      | BV0262               |
| 0 | ALTERNATE ADDRESS                       | BV0247               |
| 0 | AUTOVON TRANSLATIONS                    | BV0117               |
| 0 |                                         | BV0546               |
| 0 | CENTRALIZED PRECEDENCE ACCESS THRESHOLD | BC1243               |
| 0 | DIGITAL ACCESS LINES                    | BR0297               |
| 0 | FULL PREEMPTION FOR AUTOVON PBX TRUNKS  | AD0195               |
| 0 | LINE LOAD CONTROL                       | BV0250               |
| 0 | OFF-HOOK SUBSCRIBER                     | BV0249               |
| 0 | PBX ACCESS LINE INTERFACE               | WITH DTMF OUTPULSING |
| 0 |                                         | BV0263               |
| 0 |                                         | BV0398               |
| 0 | PRE-EMPTION                             | ACCESS LINES         |
| 0 |                                         | BF0056               |
| 0 |                                         | BV0120               |
| 0 |                                         | BV0399               |
| 0 | PRECEDENCE                              | ACCESS LINES         |
| 0 | 4 - WIRE SUBSCRIBER INTERFACE           | BV0119               |
| 0 |                                         | BV0254               |
| 0 |                                         | BV0271               |

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0 NTX705AA01 STATUS RTM  
0 AUTOVON OM SEPARATION

0 AUTOVON OM SEPARATION AM0168

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0 NTX707AA03 STATUS RTM  
0 AUTOVON CCS7 BASIC

|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | AUTOVON ISUP SUPERVISION ENHANCEMENT                | AD0590 |
| 0 | CCS7 AUTOVON CALL PROCESSING - PHASE 11             | AD0274 |
| 0 | CCS7 AUTOVON PREEMPTION - PHASE II                  | AD0270 |
| 0 | ISUP AUTOVON INTERSWITCH TRUNKS AND TEST LINES      | AD0271 |
| 0 | INTERWORKING                                        |        |
| 0 | ISUP AUTOVON INTERSWITCH TRUNKS TANDEM CALL         | AD0275 |
| 0 | PROCESSING                                          |        |
| 0 | ISUP AV INTERSWITCH TRUNK & 4-WIRE SUBSCR. SET      | AD0345 |
| 0 | INTERWORKING                                        |        |
| 0 | ISUP AV INTERSWITCH TRUNK AND TEST LINES            | AD0344 |
| 0 | INTERWORKING                                        |        |
| 0 | ISUP AV INTERSWITCH TRUNKS AND AV PBX TRUNKS        | AD0346 |
| 0 | INTERWORKING                                        |        |
| 0 | ISUP CONTINUITY TEST FOR AUTOVON INTERSWITCH TRUNKS | AD0734 |

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0 -----0 NTX710AA02 STATUS RTM  
0 LATA EQUAL ACCESS SYSTEM

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | DATABASE REPORTING                             | BC1706 |
| 0 | DATABASE SYSTEM ENHANCEMENTS                   | BC1705 |
| 0 | DNPIC BULK DMO TOOL                            | AF0305 |
| 0 | INCOMING TRUNK CALL PROCESSING                 | BC1701 |
| 0 | LEAS - SPECIAL DIRECTORY NUMBER IDENTIFICATION | AF1453 |
| 0 | ORIGINATING BILLING                            | BC1704 |
| 0 | SIGNALING CONVERSION                           | BC1703 |
| 0 | SUPERCAMA TRAVER HANDLING                      | AF0306 |
| 0 | TRANSLATION AND ROUTING                        | BC1702 |

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0 NTX710AB01 STATUS LTD TARGET SUPERNODE  
0 INTERCHANGEABLE NPAS FOR LEAS

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | DATABASE REPORTING                             | BC1706 |
| 0 | DATABASE SYSTEM ENHANCEMENTS                   | BC1705 |
| 0 | DNPIC BULK DMO TOOL                            | AF0305 |
| 0 | INCOMING TRUNK CALL PROCESSING                 | BC1701 |
| 0 | LEAS - SPECIAL DIRECTORY NUMBER IDENTIFICATION | AF1453 |
| 0 | ORIGINATING BILLING                            | BC1704 |
| 0 | SIGNALING CONVERSION                           | BC1703 |
| 0 | SUPERCAMA TRAVER HANDLING                      | AF0306 |
| 0 | TRANSLATION AND ROUTING                        | BC1702 |

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0 -----0 NTX711AB02 STATUS RTM  
0 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)

|   |                                             |        |
|---|---------------------------------------------|--------|
| 0 | EA PRESUBSCRIPTION REPORTS                  | BR0772 |
| 0 | EA PRESUBSCRIPTION REPORTS ON IBN           | AL0289 |
| 0 | EQUAL ACCESS MULTIPARTY LINE IDENTIFICATION | AF1099 |
| 0 | PRESUBSCRIPTION INDICATOR                   | AF0170 |

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0 -----0 NTX712AA01 STATUS RTM  
0 CCS7 DATA PORT

0 DS0-A DIAGNOSTIC AG1047

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0 NTX713AA01 STATUS RTM  
0 LATA-WIDE CENTREX BILLING

0 ENHANCED CALL CODE 032 AL0119

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0 NTX714AA01 STATUS RTM  
0 TOPS INTERLATA CARRIER SERVICE

0 TOPS INTERLATA CARRIER SERVICE AF0072

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0 NTX715AA02 STATUS A+M  
0 DSN 2-WIRE PREEMPTION(UPG. BY  
0 NTX715AB)

0 DSN 2-WIRE PREEMPTION WITH FEATURE INTERACTIONS. AD0194  
0 PCWT FOR EBS AD0932  
0 2-WIRE PREEMPTION AD0044

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0 NTX715AB01 STATUS RTM  
0 DSN 2-WIRE PREEMPTION(UPG. FR  
0 NTX715AA)

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | CALL FORWARDING OF PRECEDENCE CALLS              | AD2853 |
| 0 | DSN 2-WIRE PREEMPTION WITH FEATURE INTERACTIONS. | AD0194 |
| 0 | PCWT FOR EBS                                     | AD0932 |
| 0 | 2-WIRE PREEMPTION                                | AD0044 |

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0 NTX716AA05 STATUS RTM  
0 DSN NETWORK MANAGEMENT  
0 ENHANCEMENT

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | ANA VIA X.25                              | AD0298 |
| 0 | AUTOMATIC OUT OF CHAIN ROUTING            | AD0046 |
| 0 | CALL GAP                                  | AD0197 |
| 0 | CANCEL FROM                               | AD0295 |
| 0 | CANCEL TO                                 | AD0296 |
| 0 | DDN BASIC X.25 VIA NT1X89AA               | AD0618 |
| 0 | DSN NWM CONTROLS VIA X.25                 | AD0294 |
| 0 | DSN NWM ROUTE CONTROL RTE                 | AD0075 |
| 0 | DSN NWM TRUNK GROUP CONTROL ENHANCEMENTS  | AD2535 |
| 0 | DYNAMIC OVERLOAD CONTROL                  | AD0045 |
| 0 | FILE/FREQ VIA DDN BASIC X.25              | AD0777 |
| 0 | HARD TO REACH CODES                       | AD0300 |
| 0 | LINE LOAD CONTROL                         | AD0047 |
| 0 | NWM NOTIFICATION TO SRCF                  | AD0858 |
| 0 | RECEIVER ATTACHEMENT DELAY RECORDER       | AD0193 |
| 0 | REMOTE MAP VIA DDN BASIC X.25             | AD0776 |
| 0 | REMOTE MAP VIA DDN PROTOCOL SPECIFICATION | AD0778 |
| 0 | SAS VIA X.25                              | AD0299 |
| 0 | SELECTIVE TRUNK RESERVATION               | AD0288 |

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0 NTX717AA01 STATUS A+M  
0 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPG. BY  
0 NTX717AB)

0 TRUNK VERIFICATION FROM DESIGNATED STATION BR0727

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0 NTX717AB01 STATUS RTM  
0 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)

0 TRUNK VERIFICATION FROM DESIGNATED STATION BR0727  
0 TVDS - II AD0440

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0 NTX719AA01 STATUS RTM  
0 BUSINESS SET BUSY INDICATOR

0 BUSINESS SET BUSY INDICATOR AL0127

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0 NTX720AA01 STATUS RTM  
0 AOSS VR CALL HANDLING

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | AOSS VOICE RESPONSE AUTOMATIC INTERCEPT CALLS | AC0070 |
| 0 | AOSS VOICE RESPONSE BASIC CALL HANDLING       | AC0066 |
| 0 | AOSS VOICE RESPONSE DATA LINK UTILITY         | AC0060 |
| 0 | AOSS VOICE RESPONSE EXTENDED CALL HANDLING    | AC0074 |
| 0 | AOSS VOICE RESPONSE MANAGEMENT SYSTEM         | AC0073 |
| 0 | AOSS VOICE RESPONSE SERVICE ANALYSIS          | AC0069 |

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0 NTX721AA01 STATUS RTM  
0 INTERNAL ANNOUNCEMENT RESPONSE  
0 CAPABILITY

|   |                                  |        |
|---|----------------------------------|--------|
| 0 | AOSS VOICE RESPONSE DRAM UTILITY | AC0071 |
|---|----------------------------------|--------|

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0 NTX723AA01 STATUS RTM  
0 AOSS VOICE RESPONSE HANDLING  
0 OF IBM PROTOCOL

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | AOSS VOICE RESPONSE HANDLING OF IBM PROTOCOL | AC0072 |
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0 NTX724AA02 STATUS RTM  
0 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)

0 TOPS V INTERFACE-INCHARGE,ASSISTANT,FORCE MGNT BC2144

0 POSITIONS

0 TOPS V OPERATOR POSITION INTERFACE BC2143

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0 -----0 NTX725AA03 STATUS RTM  
0 REMOTE DLM WITH M2000

0 ESA REX TEST FOR RDLM AD0901

0 REMOTE DLM SOFTWARE AD0304

0 RMM FOR REMOTE DLM AD0469

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0 -----0 NTX726AA02 STATUS RTM  
0 RSC DLM MERIDIAN DIGITAL SETS

0 RSC-DLM BASIC AD0640

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0 NTX727AA02 STATUS A+M  
0 ACD LOAD MANAGEMENT(UPG BY  
0 NTX727AC)

0 ACD LOAD MANAGEMENT - BASIC COMMANDS AD0056  
0 ACD LOAD MANAGEMENT - ENHANCED COMMANDS AD0180

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0 NTX727AC01 STATUS A+M  
0 ACD LOAD MANAGEMENT(UPG BY  
0 NTX727AD)

0 ACD CONFIGURATION SECURITY AD0118  
0 ACD LOAD MANAGEMENT - BASIC COMMANDS AD0056

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0 NTX727AD01 STATUS RTM  
0 ACD - LOAD MANAGEMENT III

0 ACD CONFIGURATION SECURITY AD0118  
0 ACD CONFIGURATION SECURITY ENHANCEMENT AD0621  
0 ACD LOAD MANAGEMENT - BASIC COMMANDS AD0056  
0 ACD LOAD MANAGEMENT - ENHANCED COMMANDS AD0180

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0 NTX728AA02 STATUS RTM  
0 SMDR DATA ACCESS0 ACD MANAGEMENT REPORTS OPTION AD0010  
0 ASCII SMDR DATA ACCESS BR0724

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0 NTX730AA02 STATUS RTM  
0 MULTILINK ASCII DEVICE DRIVER

0 MULTI-LINK ASCII DEVICE DRIVER AD0366

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0 NTX731AA06 STATUS RTM  
0 TOPS MP - TERMINAL  
0 HANDLER(ORDER VIA MP NTX704)

|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | ENHANCED MAINTENANCE FOR TPC RACKMOUNT | AF0732 |
| 0 | OPERATOR LOGON PASSWORD FOR TOPS_MP    | AF1463 |
| 0 | REMOTE SONALERT FOR TOPS_MP            | AF1509 |
| 0 | TERMINAL HANDLING SOFTWARE FOR TOPS MP | BC2139 |
| 0 | TPC ADMINISTRATION                     | BC2158 |
| 0 | TPC DEBUG TERMINAL HANDLER             | BC2146 |
| 0 | TPC DIAGNOSTIC ENHANCEMENTS            | AF0744 |
| 0 | TPC DIAGNOSTICS                        | BC2141 |
| 0 | TPC DRIVERS                            | BC2142 |
| 0 | TPC HSDA MTC ENHANCEMENTS              | AF1998 |
| 0 | TPC HSLI SOFTWARE ENHANCEMENTS         | AF1426 |
| 0 | TPC INTEGRATED TAMI ENHANCEMENTS       | AF1974 |
| 0 | TPC MASS STORAGE SCSI SUPPORT          | AF1563 |
| 0 | TPC MP GREY SCALE ENHANCEMENTS         | AF2085 |
| 0 | TPC OPERATOR HANDOFF TO AABS           | AF2378 |
| 0 | TPC SA LOGON ENHANCEMENTS              | AF2374 |

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|---|-----------------------|--------|
| 0 | TPC SYSTEM SUPPORT    | BC2157 |
| 0 | TPC TAMI ENHANCEMENTS | AF1909 |
| 0 | TPC TUTOR INTERFACE   | BC2145 |

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|---|-------------------------|-----|
| 0 | NTX732AA06 STATUS       | RTM |
| 0 | SIMPLIFIED MESSAGE DESK |     |
| 0 | INTERFACE(SMDI)         |     |

|   |                                          |        |
|---|------------------------------------------|--------|
| 0 | CALL FORWARDING FOR SMDI                 | AD0370 |
| 0 | MESSAGE WAITING FOR SMDI                 | AD0367 |
| 0 | SIMPLIFIED MESSAGE DESK INTERFACE (SMDI) | AL0156 |
| 0 | SMDI - PORT EXPANSION                    | AD1778 |
| 0 | SMDI CALL RETRIEVAL BILLING.             | AL0524 |
| 0 | SMDI DATA LINK INTERFACE                 | AD0369 |
| 0 | SMDI ON HUNT GROUPS                      | AF2301 |
| 0 | SMDI ON RES                              | AL0532 |
| 0 | SMDI: CALLED DN OPTION AND KSH SUPPORT   | NC0009 |

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|---|------------------------------|-----|
| 0 | NTX733AA02 STATUS            | A+M |
| 0 | ENHANCED SERVICE ORDER( UPG. |     |
| 0 | BY NTX733AB)                 |     |

|   |                        |        |
|---|------------------------|--------|
| 0 | CLEN FOR EBS           | AC0202 |
| 0 | ENHANCED SERVICE ORDER | AC0111 |

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0 NTX733AB02 STATUS A+M  
0 ENHANCED SERVICE ORDER(UPG. BY  
0 NTX733AC)

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | CHANGE LINE CLASS CODES VIA SERVORD | AL0740 |
| 0 | CLEN FOR EBS                        | AC0202 |
| 0 | ENHANCED SERVICE ORDER              | AC0111 |
| 0 | ENHANCED SERVORD II                 | AL0439 |

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0 NTX733AC01 STATUS A+M  
0 ENHANCED SERVICE ORDER(UPG. OF  
0 NTX733AB IN BCS26)

|   |                                     |        |
|---|-------------------------------------|--------|
| 0 | CHANGE LINE CLASS CODES VIA SERVORD | AL0740 |
| 0 | CLEN FOR EBS                        | AC0202 |
| 0 | ENHANCED SERVICE ORDER              | AC0111 |
| 0 | ENHANCED SERVORD II                 | AL0439 |
| 0 | GROUP NUMBER FEATURE CONTROL        | AL0741 |

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0 NTX733AD01 STATUS A+M  
0 ENHANCED SERVICE ORDER(UPG. BY  
0 NTX733AE)

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | CHANGE EBS FEATURES DURING TALKING STATE      | AF1663 |
| 0 | CHANGE LINE CLASS CODES VIA SERVORD           | AL0740 |
| 0 | CLEN FOR EBS                                  | AC0202 |
| 0 | ENHANCED SERVICE ORDER                        | AC0111 |
| 0 | ENHANCED SERVORD II                           | AL0439 |
| 0 | GROUP NUMBER FEATURE CONTROL                  | AL0741 |
| 0 | SUSPEND AND RESTORE REMOTE CALL FORWARD LINES | AF1564 |

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0 NTX733AE01 STATUS RTM  
0 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | CHANGE EBS FEATURES DURING TALKING STATE      | AF1663 |
| 0 | CHANGE LINE CLASS CODES VIA SERVORD           | AL0740 |
| 0 | CHANGE SPEED CALL CONTROLLER                  | AF1565 |
| 0 | CLEN FOR EBS                                  | AC0202 |
| 0 | ENHANCED SERVICE ORDER                        | AC0111 |
| 0 | ENHANCED SERVORD II                           | AL0439 |
| 0 | GROUP NUMBER FEATURE CONTROL                  | AL0741 |
| 0 | SUSPEND AND RESTORE REMOTE CALL FORWARD LINES | AF1564 |

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0 NTX734AA01 STATUS RTM  
0 EAE0 - IBN PIC USING SERVORD

|   |                              |        |
|---|------------------------------|--------|
| 0 | EAE0 - IBN PIC USING SERVORD | AL0051 |
|---|------------------------------|--------|

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0 NTX735AA01 STATUS RTM  
0 FLEXIBLE ANI

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | FLEXIBLE ANI INFORMATION DIGIT ASSIGNMENT | BR0713 |
|---|-------------------------------------------|--------|

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0 NTX737AA02 STATUS A+M  
0 FLEXIBLE BELLCORE AMA(UPG.BY  
0 NTX737AB)

0 FLEXIBLE BC AMA CALL CODES AF0167

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0 NTX737AB02 STATUS RTM  
0 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)0 FLEXIBLE AMA EXPANSION AF0747  
0 FLEXIBLE BC AMA CALL CODES AF0167

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0 -----0 NTX738AB02 STATUS A+M  
0 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPGRADE OF NTX738AA)0 NETWORK BASED SPMS STUDY AG0353  
0 PACKAGING OF SPMS AS TELCO OPTIONAL FEATURE AG0346  
0 SPMS AUTO REPORT GENERATION AND OUTAGE INDEX AG1494  
0 SEPARATION  
0 SPMS ENHANCEMENT AG0469  
0 SWITCH PERFORMANCE MONITORING SYSTEM (SPMS) AG1495  
0 ENHANCEMENTS II

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0 NTX738AC02 STATUS RTM  
0 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)

|   |                                              |        |
|---|----------------------------------------------|--------|
| 0 | ENET - SPMS FOR ENET OMS                     | AL1719 |
| 0 | INCLUSION OF CCS7 INTO SPMS                  | AG1926 |
| 0 | NETWORK BASED SPMS STUDY                     | AG0353 |
| 0 | PACKAGING OF SPMS AS TELCO OPTIONAL FEATURE  | AG0346 |
| 0 | SPMS AUTO REPORT GENERATION AND OUTAGE INDEX | AG1494 |
| 0 | SEPARATION                                   |        |
| 0 | SPMS ENHANCEMENT                             | AG0469 |
| 0 | SWITCH PERFORMANCE MONITORING SYSTEM (SPMS)  | AG1495 |
| 0 | ENHANCEMENTS II                              |        |

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0 NTX750AC02 STATUS RTM  
0 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | ACD AGENT POSITION USING MFT                       | AJ0428 |
| 0 | BEARER CAPABILITY FOR ISDN                         | AC0094 |
| 0 | BERT FOR ISDN BASIC ACCESS LOOPS                   | AL0596 |
| 0 | BRA MERIDIAN FEATURE TRANSPARENCY: MTCE AND CP     | AJ0912 |
| 0 | INTEGRATION                                        |        |
| 0 | BRA MERIDIAN FEATURE TRANSPARENCY: XPM SUPPORT FOR | AJ0913 |
| 0 | MTCE & CP                                          |        |
| 0 | CC BCS SWACT SUPPORT FOR THE LTCI                  | AC0366 |
| 0 | CC LAYER 2/3 PROTOCOL MONITORING DEVELOPMENT       | AL1914 |
| 0 | CC SOFTWARE FOR XPM SPECIAL CONNECTIONS            | AC0095 |
| 0 | CC/XPM SUPPORT OF POTS ON LCMI                     | AC0519 |
| 0 | CSM SUPPORT FOR SPECCONN NETWORK CONNECTION        | AL1668 |
| 0 | D-CHANNEL LINK FAULT HANDLING                      | AC0530 |
| 0 | DCH ENHANCEMENTS FOR ISDN FUNCTIONAL SIGNALLING    | AC0266 |
| 0 | DCH OVERLOAD CONTROLS                              | AQ0672 |

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|---|----------------------------------------------------|--------|
| 0 | DCH PERFORMANCE OMS (CC)                           | AL2280 |
| 0 | DCH PERFORMANCE OMS (XPM)                          | AL2279 |
| 0 | DCH Q.921 FRAME ROUTING                            | AC0368 |
| 0 | DCH SPARING MAINTENANCE                            | AL0956 |
| 0 | DCH SPARING XPM SUPPORT                            | AC0531 |
| 0 | DYNAMIC PROTOCOL VERSION CONTROL                   | AJ0431 |
| 0 | ENHANCED DCH LOADER                                | AL1389 |
| 0 | IAC WARM SWACT FOR ISDN CALL PROCESSING            | BC2233 |
| 0 | IDENTIFICATION OF ISDN ISLC-1B IN DMS ARCHITECTURE | AL0382 |
| 0 | INCREASE MAXIMUM NUMBER FOR ISDN TERMINAL PROFILES | AC0356 |
| 0 | ISDN CALL PROGRESS INDICATION                      | AC0096 |
| 0 | ISDN D-CHANNEL HANDLER ROBUSTNESS ENHANCEMENT      | BF0943 |
| 0 | ISDN HDLC DEVICE R8071 INTERFACE                   | AC0302 |
| 0 | ISDN IAC SWACT FOR TRANSPORT SERVICES              | BC2096 |
| 0 | ISDN LCM CALL PROCESSING I                         | AC0214 |
| 0 | ISDN LCM CALL PROCESSING II                        | AC0295 |
| 0 | ISDN LCM CC MAINTENANCE II                         | AL0483 |
| 0 | ISDN LCM CC MAINTENANCE III                        | AC0294 |
| 0 | ISDN LCM LINE MAINTENANCE SUPPORT                  | AC0215 |
| 0 | ISDN LCM MAINTENANCE                               | AL0165 |
| 0 | ISDN LCM MAINTENANCE XPM SUPPORT                   | AC0216 |
| 0 | ISDN LOOP MAINTENANCE ENHANCEMENTS                 | AL0944 |
| 0 | ISDN LOOP MAINTENANCE I                            | AL0167 |
| 0 | ISDN LOOP MAINTENANCE II                           | AL0087 |
| 0 | ISDN LOOP MAINTENANCE ROBUSTNESS                   | AL0381 |
| 0 | ISDN LTC ISP LOADER                                | AC0289 |
| 0 | ISDN LTC ISP ROM BASE AND DIAGNOSTIC               | AC0290 |
| 0 | ISDN LTC MAINTENANCE                               | AL0164 |
| 0 | ISDN LTC MAINTENANCE HIGH LEVEL DESIGN             | AC0293 |
| 0 | ISDN LTC PM MAINTENANCE I                          | AC0292 |
| 0 | ISDN LTC/ISP COMMUNICATIONS                        | AC0301 |
| 0 | ISDN MULTIPLE TERMINALS CALL PROCESSING            | AC0139 |
| 0 | ISDN ST MAINTENANCE                                | AC0093 |
| 0 | ISDN SUPPORT ON LTC                                | AL1585 |
| 0 | ISDN SUPPORT ON LTC II                             | AL1666 |
| 0 | ISDN TERMINAL TEST AND CONFIGURATION               | AC0092 |
| 0 | ISDN XPM ROBUSTNESS AND MEMORY RECOVERY            | AQ0778 |
| 0 | ISDN-LCM (LCMI) SOFTWARE                           | AC0298 |
| 0 | ISDN-LCM BASE LOAD DEVELOPMENT                     | AC0180 |
| 0 | ISDN-LCM C-CHANNEL INTERFACE ENHANCEMENTS          | AC0296 |
| 0 | ISG PERFORMANCE MAP DISPLAY                        | AL1296 |
| 0 | ISG PERFORMANCE TOOLS                              | AL1322 |
| 0 | ISLM ENHANCEMENT                                   | BF0947 |
| 0 | ISP/DCH DIAGNOSTIC ENHANCEMENTS                    | AC0634 |
| 0 | ISP/DCH R8071 AUDIT                                | AC0574 |
| 0 | LAYER 2/3 PROTOCOL MONITORING DEVELOPMENT          | AQ0671 |
| 0 | LCME CONNECTION AND TDM CONTROL                    | AC0601 |

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|---|---------------------------------------------------|--------|
| 0 | LCME DIAGNOSTICS                                  | AC0569 |
| 0 | LCME DRAWER CONTROL TASK AND HARDWARE INTERFACE   | AC0567 |
| 0 | LCME DRAWER TASK ENHANCEMENTS                     | AC0602 |
| 0 | LCME ISDN LOOP MAINTENANCE INTERFACE              | AC0603 |
| 0 | LCME TDM DUMP AND RESTORE PROCEDURES              | AC0604 |
| 0 | LCMI PROCESSOR UPGRADE SUPPORT                    | AC0458 |
| 0 | LCMI SOFTWARE FOR POTS SUPPORT                    | AC0520 |
| 0 | LINK RECONFIGURATION FOR XPMS WITH SPECIAL        | AL1629 |
| 0 | CONNECTIONS                                       |        |
| 0 | LOOP MAINTENANCE FOR ISDN S/T LINECARD            | AL1040 |
| 0 | LOOP MAINTENANCE FOR ISDN 1C LINE CARD            | AL0680 |
| 0 | LRU CC STATIC DATA                                | AF2071 |
| 0 | LTC PERFORM TOOL ENHANCEMENTS FOR ISDN            | AL1667 |
| 0 | LTCI - DATAFILL ENHANCEMENTS                      | AC0575 |
| 0 | LTCI - ISDN BRA OVERLOAD CONTROLS                 | AC0576 |
| 0 | LTCI - ISP AUDIT ENHANCEMENTS                     | AC0487 |
| 0 | LTCI - ISP GEFNET AND PMDEBUG INTERFACE           | AC0446 |
| 0 | LTCI - ISP/DCH BASE ENHANCEMENTS AND TOOLS        | AC0476 |
| 0 | LTCI - OM COLLECTION AND REPORTING                | AC0475 |
| 0 | LTCI CALL PROCESSING INTEGRATION                  | AC0369 |
| 0 | LTCI ISDN LOOP EXPANSION                          | AC0445 |
| 0 | LTCI TRUNKS AND UTR INTEGRATION                   | AC0528 |
| 0 | LTCI WARM SWACT                                   | AC0371 |
| 0 | METALLIC TESTING FOR 2B1Q LOOPS                   | AL1588 |
| 0 | MULTIPLE TERMINALS PER ISDN LOOP                  | AC0097 |
| 0 | NAME AND REASON DISPLAY FOR ISDN FUNCTIONAL CALLS | AJ0426 |
| 0 | NEW LTP LEVEL FOR DATA LINES                      | AL0166 |
| 0 | NO TEST TRUNK ACCESS FOR ISDN LINES               | AL1316 |
| 0 | OPTICAL BRA LINE CARD MAINTENANCE                 | AL0735 |
| 0 | POTS/EBS/DATAPATH ON LCME                         | AQ0696 |
| 0 | S/T LINE CARD DIAGNOSTIC                          | AL0955 |
| 0 | S/T LINE CARD XPM INTERFACE                       | AL0942 |
| 0 | S/T-ISLC MAINTENANCE FIRMWARE                     | AC0441 |
| 0 | SERVICE ORDERS FOR ISDN TERMINALS                 | AC0098 |
| 0 | SERVICE PARAMETERS FOR PRA                        | AC0269 |
| 0 | SPECCONN NETWORK CONNECTIONS                      | AL1294 |
| 0 | TABLE CONTROL FOR ISDN BRA FUNCTIONAL SIGNALLING  | AC0380 |
| 0 | XPM ISDN CALL CAPACITY EXPANSION                  | AC0452 |
| 0 | XPM SUPPORT FOR LCME POTS & 2B1Q L1 PERFORMANCE   | AQ0695 |
| 0 | MONITORING                                        |        |
| 0 | XPM 2B1Q LOOP MAINTENANCE INTERFACE               | AC0568 |
| 0 | 2B1Q DIAGNOSTIC AND PERFORMANCE REPORTING         | AL1589 |
| 0 | 2B1Q LCME BASE LOAD DEVELOPMENT                   | AC0551 |
| 0 | 2B1Q LCME CC MAINTENANCE I                        | AC0552 |
| 0 | 2B1Q LCME CC MAINTENANCE II                       | AC0570 |
| 0 | 2B1Q LCME XPM SUPPORT                             | AC0553 |
| 0 | 2B1Q LOOP AND TDM CONNECTION PROVISIONING         | AL1314 |



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0 93 12 030 2B1Q LOOP MAINTENANCE BASE AL1388  
0 2B1Q XPM TDM CONNECTION SUPPORT AC0571

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0 NTX750AD01 STATUS LTD  
0 ISDN BASIC ACCESS (UPG FROM  
0 NTX750AC)

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | ACD AGENT POSITION USING MFT                       | AJ0428 |
| 0 | BEARER CAPABILITY FOR ISDN                         | AC0094 |
| 0 | BERT FOR ISDN BASIC ACCESS LOOPS                   | AL0596 |
| 0 | BRA MERIDIAN FEATURE TRANSPARENCY: MTCE AND CP     | AJ0912 |
| 0 | INTEGRATION                                        |        |
| 0 | BRA MERIDIAN FEATURE TRANSPARENCY: XPM SUPPORT FOR | AJ0913 |
| 0 | MTCE & CP                                          |        |
| 0 | CC BCS SWACT SUPPORT FOR THE LTCI                  | AC0366 |
| 0 | CC LAYER 2/3 PROTOCOL MONITORING DEVELOPMENT       | AL1914 |
| 0 | CC SOFTWARE FOR XPM SPECIAL CONNECTIONS            | AC0095 |
| 0 | CC/XPM SUPPORT OF POTS ON LCM                      | AC0519 |
| 0 | CSM SUPPORT FOR SPECCONN NETWORK CONNECTION        | AL1668 |
| 0 | D-CHANNEL LINK FAULT HANDLING                      | AC0530 |
| 0 | DCH ENHANCEMENTS FOR ISDN FUNCTIONAL SIGNALLING    | AC0266 |
| 0 | DCH OVERLOAD CONTROLS                              | AQ0672 |
| 0 | DCH PERFORMANCE OMS (CC)                           | AL2280 |
| 0 | DCH PERFORMANCE OMS (XPM)                          | AL2279 |
| 0 | DCH Q.921 FRAME ROUTING                            | AC0368 |
| 0 | DCH SPARING MAINTENANCE                            | AL0956 |
| 0 | DCH SPARING XPM SUPPORT                            | AC0531 |
| 0 | DYNAMIC PROTOCOL VERSION CONTROL                   | AJ0431 |
| 0 | ENHANCED DCH LOADER                                | AL1389 |
| 0 | IAC WARM SWACT FOR ISDN CALL PROCESSING            | BC2233 |
| 0 | IDENTIFICATION OF ISDN ISLC-1B IN DMS ARCHITECTURE | AL0382 |
| 0 | INCREASE MAXIMUM NUMBER FOR ISDN TERMINAL PROFILES | AC0356 |
| 0 | ISDN CALL PROGRESS INDICATION                      | AC0096 |
| 0 | ISDN D-CHANNEL HANDLER ROBUSTNESS ENHANCEMENT      | BF0943 |
| 0 | ISDN HDLC DEVICE R8071 INTERFACE                   | AC0302 |
| 0 | ISDN IAC SWACT FOR TRANSPORT SERVICES              | BC2096 |
| 0 | ISDN LCM CALL PROCESSING I                         | AC0214 |
| 0 | ISDN LCM CALL PROCESSING II                        | AC0295 |
| 0 | ISDN LCM CC MAINTENANCE II                         | AL0483 |
| 0 | ISDN LCM CC MAINTENANCE III                        | AC0294 |

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|---|--------------------------------------------------------|--------|
| 0 | ISDN LCM LINE MAINTENANCE SUPPORT                      | AC0215 |
| 0 | ISDN LCM MAINTENANCE                                   | AL0165 |
| 0 | ISDN LCM MAINTENANCE XPM SUPPORT                       | AC0216 |
| 0 | ISDN LOOP MAINTENANCE ENHANCEMENTS                     | AL0944 |
| 0 | ISDN LOOP MAINTENANCE I                                | AL0167 |
| 0 | ISDN LOOP MAINTENANCE II                               | AL0087 |
| 0 | ISDN LOOP MAINTENANCE ROBUSTNESS                       | AL0381 |
| 0 | ISDN LTC ISP LOADER                                    | AC0289 |
| 0 | ISDN LTC ISP ROM BASE AND DIAGNOSTIC                   | AC0290 |
| 0 | ISDN LTC MAINTENANCE                                   | AL0164 |
| 0 | ISDN LTC MAINTENANCE HIGH LEVEL DESIGN                 | AC0293 |
| 0 | ISDN LTC PM MAINTENANCE I                              | AC0292 |
| 0 | ISDN LTC/ISP COMMUNICATIONS                            | AC0301 |
| 0 | ISDN MULTIPLE TERMINALS CALL PROCESSING                | AC0139 |
| 0 | ISDN ST MAINTENANCE                                    | AC0093 |
| 0 | ISDN SUPPORT ON LTC                                    | AL1585 |
| 0 | ISDN SUPPORT ON LTC II                                 | AL1666 |
| 0 | ISDN TERMINAL TEST AND CONFIGURATION                   | AC0092 |
| 0 | ISDN XPM ROBUSTNESS AND MEMORY RECOVERY                | AQ0778 |
| 0 | ISDN-LCM (LCMI) SOFTWARE                               | AC0298 |
| 0 | ISDN-LCM BASE LOAD DEVELOPMENT                         | AC0180 |
| 0 | ISDN-LCM C-CHANNEL INTERFACE ENHANCEMENTS              | AC0296 |
| 0 | ISG PERFORMANCE MAP DISPLAY                            | AL1296 |
| 0 | ISG PERFORMANCE TOOLS                                  | AL1322 |
| 0 | ISLM ENHANCEMENT                                       | BF0947 |
| 0 | ISP/DCH DIAGNOSTIC ENHANCEMENTS                        | AC0634 |
| 0 | ISP/DCH R8071 AUDIT                                    | AC0574 |
| 0 | LAYER 2/3 PROTOCOL MONITORING DEVELOPMENT              | AQ0671 |
| 0 | LCME CONNECTION AND TDM CONTROL                        | AC0601 |
| 0 | LCME DIAGNOSTICS                                       | AC0569 |
| 0 | LCME DRAWER CONTROL TASK AND HARDWARE INTERFACE        | AC0567 |
| 0 | LCME DRAWER TASK ENHANCEMENTS                          | AC0602 |
| 0 | LCME ISDN LOOP MAINTENANCE INTERFACE                   | AC0603 |
| 0 | LCME TDM DUMP AND RESTORE PROCEDURES                   | AC0604 |
| 0 | LCMI PROCESSOR UPGRADE SUPPORT                         | AC0458 |
| 0 | LCMI SOFTWARE FOR POTS SUPPORT                         | AC0520 |
| 0 | LINK RECONFIGURATION FOR XPMS WITH SPECIAL CONNECTIONS | AL1629 |
| 0 | LOOP MAINTENANCE FOR ISDN S/T LINECARD                 | AL1040 |
| 0 | LOOP MAINTENANCE FOR ISDN 1C LINE CARD                 | AL0680 |
| 0 | LRU CC STATIC DATA                                     | AF2071 |
| 0 | LTC PERFORM TOOL ENHANCEMENTS FOR ISDN                 | AL1667 |
| 0 | LTCI - DATAFILL ENHANCEMENTS                           | AC0575 |
| 0 | LTCI - ISDN BRA OVERLOAD CONTROLS                      | AC0576 |
| 0 | LTCI - ISP AUDIT ENHANCEMENTS                          | AC0487 |
| 0 | LTCI - ISP GEFNET AND PMDEBUG INTERFACE                | AC0446 |
| 0 | LTCI - ISP/DCH BASE ENHANCEMENTS AND TOOLS             | AC0476 |

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|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | LTCI - OM COLLECTION AND REPORTING                | AC0475 |
| 0 | LTCI CALL PROCESSING INTEGRATION                  | AC0369 |
| 0 | LTCI ISDN LOOP EXPANSION                          | AC0445 |
| 0 | LTCI TRUNKS AND UTR INTEGRATION                   | AC0528 |
| 0 | LTCI WARM SWACT                                   | AC0371 |
| 0 | METALLIC TESTING FOR 2B1Q LOOPS                   | AL1588 |
| 0 | MULTIPLE TERMINALS PER ISDN LOOP                  | AC0097 |
| 0 | NAME AND REASON DISPLAY FOR ISDN FUNCTIONAL CALLS | AJ0426 |
| 0 | NEW LTP LEVEL FOR DATA LINES                      | AL0166 |
| 0 | NO TEST TRUNK ACCESS FOR ISDN LINES               | AL1316 |
| 0 | OPTICAL BRA LINE CARD MAINTENANCE                 | AL0735 |
| 0 | POTS/EBS/DATAPATH ON LCME                         | AQ0696 |
| 0 | S/T LINE CARD DIAGNOSTIC                          | AL0955 |
| 0 | S/T LINE CARD XPM INTERFACE                       | AL0942 |
| 0 | S/T-ISLC MAINTENANCE FIRMWARE                     | AC0441 |
| 0 | SERVICE ORDERS FOR ISDN TERMINALS                 | AC0098 |
| 0 | SERVICE PARAMETERS FOR PRA                        | AC0269 |
| 0 | SPECCONN NETWORK CONNECTIONS                      | AL1294 |
| 0 | TABLE CONTROL FOR ISDN BRA FUNCTIONAL SIGNALLING  | AC0380 |
| 0 | XPM ISDN CALL CAPACITY EXPANSION                  | AC0452 |
| 0 | XPM SUPPORT FOR LCME POTS & 2B1Q L1 PERFORMANCE   | AQ0695 |
| 0 | MONITORING                                        |        |
| 0 | XPM 2B1Q LOOP MAINTENANCE INTERFACE               | AC0568 |
| 0 | 2B1Q DIAGNOSTIC AND PERFORMANCE REPORTING         | AL1589 |
| 0 | 2B1Q LCME BASE LOAD DEVELOPMENT                   | AC0551 |
| 0 | 2B1Q LCME CC MAINTENANCE I                        | AC0552 |
| 0 | 2B1Q LCME CC MAINTENANCE II                       | AC0570 |
| 0 | 2B1Q LCME XPM SUPPORT                             | AC0553 |
| 0 | 2B1Q LOOP AND TDM CONNECTION PROVISIONING         | AL1314 |
| 0 | 2B1Q LOOP MAINTENANCE BASE                        | AL1388 |
| 0 | 2B1Q XPM TDM CONNECTION SUPPORT                   | AC0571 |

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|---|--------------------------------|-----|
| 0 | NTX753AA06 STATUS              | A+M |
| 0 | ISDN FUNCTIONAL MODE BASIC     |     |
| 0 | RATE SERVICES(UPG BY NTX753AB) |     |

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | DYNAMIC TEI AND SERVICE PROFILE IDENTIFICATION     | AJ0164 |
| 0 | ENHANCED CALL PROCESSING FOR FUNCTIONAL SIGNALLING | AC0379 |
| 0 | ENHANCED XPM CALL PROCESSING FOR FUNCTIONAL        | AC0378 |
| 0 | SIGNALLING                                         |        |

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0 FUNCTIONAL SIGNALLING ACCESS TO ADDITIONAL MDC AG1341  
0 FEATURES: 3  
0 FUNCTIONAL SIGNALLING ACCESS TO MDC FEATURES: PHASE AC0376  
0 II  
0 FUNCTIONAL SIGNALLING INTERACTIONS WITH ATTENDANT AJ0507  
0 CONSOLE  
0 INTERCOM AND GROUP INTERCOM CAPABILITY FOR ISDN EKTS AJ0166  
0 ISDN BRA FUNCTIONAL SIGNALLING CALL PROCESSING AC0329  
0 ISDN BRA FUNCTIONAL SIGNALLING FEATURE ACCESS AC0330  
0 UTILITY  
0 MULTIPLE DIRECTORY NUMBER CAPABILITY FOR ISDN EKTS AJ0165  
0 MULTIPLE FUNCTIONAL SIGNALLING CALLS PER DIRECTORY AC0377  
0 NUMBER  
0 SERVICE ORDER ENHANCEMENTS FOR BRA FUNCTIONAL AJ0162  
0 SIGNALLING  
0 SERVICE PROFILE CONFIGURATION FOR BRA FUNCTIONAL AC0451  
0 SIGNALLING  
0 STATUS ENQUIRY SUPPORT AJ0425  
0 TABLE DNATTRS SUPPORT FOR ISDN TR-COMPLIANCE AG2002  
0 TR268 ADDRESS INFORMATION COMPLIANCE AJ0814  
0 TR268 CHANNEL IDENTIFICATION (CID) COMPREHENSIVE AJ0810  
0 COMPLIANCE  
0 TR268 PI/CSE/SIG AND ERROR RECOVERY COMPLIANCE AJ0812

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0 NTX753AB01 STATUS RTM  
0 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)

0 DYNAMIC TEI AND SERVICE PROFILE IDENTIFICATION AJ0164  
0 ENHANCED CALL PROCESSING FOR FUNCTIONAL SIGNALLING AC0379  
0 ENHANCED XPM CALL PROCESSING FOR FUNCTIONAL AC0378  
0 SIGNALLING  
0 FUNCTIONAL SIGNALLING ACCESS TO ADDITIONAL MDC AG1341  
0 FEATURES: 3  
0 FUNCTIONAL SIGNALLING ACCESS TO MDC FEATURES: PHASE AC0376  
0 II  
0 FUNCTIONAL SIGNALLING INTERACTIONS WITH ATTENDANT AJ0507  
0 CONSOLE  
0 INTERCOM AND GROUP INTERCOM CAPABILITY FOR ISDN EKTS AJ0166

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|---|----------------------------------------------------|--------|
| 0 | ISDN BRA FUNCTIONAL SIGNALLING CALL PROCESSING     | AC0329 |
| 0 | ISDN BRA FUNCTIONAL SIGNALLING FEATURE ACCESS      | AC0330 |
| 0 | UTILITY                                            |        |
| 0 | MULTIPLE DIRECTORY NUMBER CAPABILITY FOR ISDN EKTS | AJ0165 |
| 0 | MULTIPLE FUNCTIONAL SIGNALLING CALLS PER DIRECTORY | AC0377 |
| 0 | NUMBER                                             |        |
| 0 | SERVICE ORDER ENHANCEMENTS FOR BRA FUNCTIONAL      | AJ0162 |
| 0 | SIGNALLING                                         |        |
| 0 | SERVICE PROFILE CONFIGURATION FOR BRA FUNCTIONAL   | AC0451 |
| 0 | SIGNALLING                                         |        |
| 0 | STATUS ENQUIRY SUPPORT                             | AJ0425 |
| 0 | TABLE DNATTRS SUPPORT FOR ISDN TR-COMPLIANCE       | AG2002 |
| 0 | TR268 ADDRESS INFORMATION COMPLIANCE               | AJ0814 |
| 0 | TR268 CHANNEL IDENTIFICATION (CID) COMPREHENSIVE   | AJ0810 |
| 0 | COMPLIANCE                                         |        |
| 0 | TR268 PI/CSE/SIG AND ERROR RECOVERY COMPLIANCE     | AJ0812 |

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|---|-------------------------------|-----|
| 0 | NTX754AA02 STATUS             | A+M |
| 0 | ISDN ELECTRONIC KEY TELEPHONE |     |
| 0 | SERVICE(UPG BY NTX754AB)      |     |

|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | ISDN EKTS RING FORWARD                              | AQ0734 |
| 0 | ISDN KEY SHORT HUNT                                 | AQ0733 |
| 0 | ISDN SECONDARY EKTS MEMBER CALL FORWARD PROGRAMMING | AQ0735 |
| 0 | MADN SCA CAPABILITY FOR ISDN ELECTRONIC KEY         | AG1342 |
| 0 | TELEPHONE SERVIC                                    |        |

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|---|-------------------------------|-----|
| 0 | NTX754AB02 STATUS             | RTM |
| 0 | ISDN ELECTRONIC KEY TELEPHONE |     |
| 0 | SERVICE (UPG OF NTX754AA) (UP |     |

|   |                        |        |
|---|------------------------|--------|
| 0 | ISDN EKTS RING FORWARD | AQ0734 |
| 0 | ISDN KEY SHORT HUNT    | AQ0733 |

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0 ISDN SECONDARY EKTS MEMBER CALL FORWARD PROGRAMMING AQ0735  
0 MADN SCA CAPABILITY FOR ISDN ELECTRONIC KEY AG1342  
0 TELEPHONE SERVIC

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0 NTX755AA01 STATUS A+M  
0 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG. BY NTX755AB)

0 FLEXIBLE CALLING AND DN BRIDGING CAPABILITY FOR ISDN AG1301  
0 EKTS  
0 FLEXIBLE CALLING INTERACTION IMPROVEMENTS AG1611

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0 NTX755AB01 STATUS A+M  
0 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR.NTX755AA)

0 FLEXIBLE CALLING AND DN BRIDGING CAPABILITY FOR ISDN AG1301  
0 EKTS  
0 FLEXIBLE CALLING INTERACTION IMPROVEMENTS AG1611  
0 ISDN CALL COVERAGE PREP AQ0737  
0 ISDN SIX PORT, THIRTY PORT FLEXIBLE CALLING AQ0736  
0 PREP FOR DMS-PACKET HANDLER (DMS-PH) BELLCORE AMA AF3269  
0 SUPPORT OF NOTIFICATION BUSY LIMIT PARAMETER AQ0779  
0 TR-860 TERMINAL PORTABILITY AF3243  
0 TR268 TERMINAL PORTABILITY COMPLIANCE I AF3245  
0 3-PORT FLEXIBLE CALL CHAINING AF3244

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0 NTX755AC01 STATUS RTM  
0 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)

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|--------------------------------------------------------|--------|
| 0 FLEXIBLE CALLING AND DN BRIDGING CAPABILITY FOR ISDN | AG1301 |
| 0 EKTS                                                 |        |
| 0 FLEXIBLE CALLING INTERACTION IMPROVEMENTS            | AG1611 |
| 0 ISDN CALL COVERAGE PREP                              | AQ0737 |
| 0 ISDN SIX PORT, THIRTY PORT FLEXIBLE CALLING          | AQ0736 |
| 0 PREP FOR DMS-PACKET HANDLER (DMS-PH) BELLCORE AMA    | AF3269 |
| 0 SUPPORT OF NOTIFICATION BUSY LIMIT PARAMETER         | AQ0779 |
| 0 TR-860 TERMINAL PORTABILITY                          | AF3243 |
| 0 TR268 TERMINAL PORTABILITY COMPLIANCE I              | AF3245 |
| 0 3-PORT FLEXIBLE CALL CHAINING                        | AF3244 |

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0 NTX757AA02 STATUS RTM  
0 TR444 ISUP INTERWORKING

|                                  |        |
|----------------------------------|--------|
| 0 TR-444 COMPLIANCE (PART 2)     | AG2211 |
| 0 TR444 COMPREHENSIVE COMPLIANCE | AG2001 |

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0 NTX767AA03 STATUS RTM  
0 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE

|                              |        |
|------------------------------|--------|
| 0 TR-448 COMPLIANCE (PART 2) | AG2210 |
| 0 TR448 COMPLIANCE ACTIVITY  | AJ0811 |

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0 NTX768AA02 STATUS RTM  
0 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL0 TR-448 COMPLIANCE (PART 2) AG2210  
0 TR448 COMPLIANCE ACTIVITY AJ0811

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0 NTX769AA01 STATUS RTM  
0 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE

0 TR-444 COMPLIANCE (PART 2) AG2211

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0 NTX790AC02 STATUS RTM  
0 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)0 BASIC ISDN PRA MAINTENANCE AD0679  
0 BASIC RATE ACCESS INTERWORKING ON MSL-100 AD1943  
0 CALL PROCESSING ENVIRONMENT FOR ISDN PRA AC0270  
0 CCITT BLUE BOOK CONFORMANCE - PRA AJ1138  
0 CLEANING UP PAPERWORK. FEATURE SHOULD BE 'C'. AD0770  
0 CLEANING UP PAPERWORK. FEATURE SHOULD BE MARKED AS AD0775  
0 COMMITT.  
0 CONNECTION MANAGER FOR ISDN PRA AC0272  
0 DMS100 PRI ENHANCEMENTS AJ1539



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|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | DTCI PRA LAYER II SIGNALLING                      | AJ0463 |
| 0 | DTCI PRA LAYER III SIGNALLING                     | AJ0465 |
| 0 | FLOW AND OVERLOAD CONTROL FOR PRA                 | AG1299 |
| 0 | FPE ENHANCEMENTS FOR ISDN FUNCTIONAL SIGNALLING   | AC0280 |
| 0 | INTERWORKING ISDN SERVICES I                      | AJ0170 |
| 0 | ISDN DTC B/D MAINTENANCE                          | AD2228 |
| 0 | ISDN DTC PM MAINTENANCE                           | AJ0385 |
| 0 | ISDN DTC ROBUSTNESS                               | AD2606 |
| 0 | ISDN DTC TABLE CONTROL                            | AD2097 |
| 0 | ISDN DTCI SPECIAL CONNECTIONS                     | AD2231 |
| 0 | LAYER 2 OM'S FOR D-CHANNEL BACKUP                 | AD3513 |
| 0 | MAINTENANCE FOR ISDN PRA I                        | AC0267 |
| 0 | NETWORK DIAL PLAN DISPLAY                         | AG0981 |
| 0 | PRA CALL REDIRECTION (XPM)                        | AC0474 |
| 0 | PRA CALL REDIRECTION SERVICE                      | AC0277 |
| 0 | PRA IAC WARM SWACT                                | AG1298 |
| 0 | PRA INTERWORKING IN MDC                           | AG1300 |
| 0 | PRA INTERWORKING WITH MSL-100 AGENCIES II         | AD1173 |
| 0 | PRA INTERWORKING WITH MSL-100 AGENCIES III        | AD1942 |
| 0 | PRA INTERWORKING WITH SL-100 AGENCIES I           | AD0881 |
| 0 | PRA MAINTENANCE III                               | AD1294 |
| 0 | PRA MAINTENANCE IV                                | AD1615 |
| 0 | PRA ON LTCI                                       | AJ0789 |
| 0 | PRA VERSION CONTROL FOR INTEREXCHANGE CARRIER     | AD1800 |
| 0 | INTERWORKING                                      |        |
| 0 | PRA/SMA PREP WORK FOR UKCENTREX                   | AE0744 |
| 0 | PRI/ESA INTERWORKING FOR BILLING NUMBER DELIVERY  | NC0032 |
| 0 | SIGNALLING MANAGER ENHANCEMENTS FOR ISDN PRA      | AC0444 |
| 0 | SIGNALLING MANAGER FOR ISDN FUNCTIONAL SIGNALLING | AC0271 |
| 0 | TRUNK GROUP TABLES FOR PRA                        | AC0268 |

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0 NTX791AA02 STATUS RTM  
0 ISDN PRA: NETWORK RING AGAIN

|   |                                          |        |
|---|------------------------------------------|--------|
| 0 | FACILITY REJECT MESSAGE ON PRA           | AD1674 |
| 0 | NRAG ON PRA CC SUPPORT                   | AD1317 |
| 0 | NRAG ON PRA XPM SUPPORT                  | AD1316 |
| 0 | OMS FOR CONNECTIONLESS SIGNALLING ON PRA | AD1508 |
| 0 | PRA/SS7 TCAP INTERWORKING                | AD1673 |
| 0 | TANDEM NRAG ON PRA                       | AD1315 |

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0 NTX792AA01 STATUS RTM  
0 ISDN PRA: NETWORK NAME DISPLAY

0 NETWORK NAME DISPLAY ON PRA AD2245

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0 NTX793AA03 STATUS RTM  
0 PRA INTEGRATED SERVICES ACCESS

0 DMS100 PRI ENHANCEMENTS AJ1539  
0 INTEGRATED SERVICES ACCESS FOR ISDN PRA AC0273  
0 ISA ROUTING TABLE CONTROL AD0859

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0 NTX794AA01 STATUS RTM  
0 PRA CCS7 INTERWORKING

0 PRA/ISUP INTERWORKING AC0339

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0 NTX795AA01 STATUS RTM  
0 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE

0 FEATURE GROUP D AND PRA TRUNK INTERWORKING AG1547  
0 MF FEATURE GROUP D AND CAMA INTERWORKING FOR ONA/ESP AG1708

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0 NTX796AA01 STATUS RTM  
0 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE

0 BRA ACCESS TO ENHANCED SERVICE PROVIDERS AG1709

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0 NTX797AA01 STATUS RTM  
0 PRI MESSAGE WAITING INDICATION

0 MESSAGE WAITING INDICATOR - PRI AJ1538

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0 NTX797AB01 STATUS LTD  
0 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)

0 MESSAGE SERVICE - NETWORK MESSAGE WAITING INDICATOR AG1638  
0 MESSAGE WAITING INDICATOR - PRI AJ1538

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0 NTX801AA01 STATUS RTM  
0 TOLL FEATURES I

|   |                                          |        |
|---|------------------------------------------|--------|
| 0 | AMA TAPE ENTRIES                         | BT0195 |
| 0 | CLI - TRUNK TERMINATION                  | BR0320 |
| 0 | INC SWBD TRUNK (V6)                      | BT0350 |
| 0 | INC/OUT TTSTL LOOP AROUND                | BT0342 |
| 0 | INC/OUT TTSTL SYNCHRONOUS                | BT0341 |
| 0 | INTERCEPT TRUNK (A/D)                    | BT0060 |
| 0 | LOOP AROUND TEST - ATT MODE              | BR0282 |
| 0 | LTSL - OPEN CIRCUIT (I/C)                | BT0084 |
| 0 | LTSTL - SHORT CIRCUIT (I/C)              | BT0083 |
| 0 | LTSTL - 1120 (NONSUNC) (I/C)             | BT0085 |
| 0 | LTSTL - 1181 (SYNC) (I/C)                | BT0090 |
| 0 | O/G TTSTL SYNCHRONOUS                    | BT0150 |
| 0 | OPERATIONAL MEASUREMENTS (BASIC TOLL)    | BT0348 |
| 0 | OPERATOR VERIFICATION TRUNK (DP/MF)(A/D) | BT0064 |
| 0 | TEST LINES: LOOP AROUND                  | BR0281 |
| 0 | TOLL COMPLETING TRUNK (DP/MF) (A/D)      | BT0033 |
| 0 | TOLL CONNECTING TRUNK (DP/MF) (A/D)      | BT0032 |
| 0 | TOLL TRANSLATION AND SCREENING           | BT0183 |
| 0 | TRANSLATION AND SCREENING                | BT0030 |
| 0 | 411 RECORDING ON MAGTAPE                 | BR0181 |

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0 NTX802AA04 STATUS RTM  
0 TOLL FEATURES II

|   |                                                 |        |
|---|-------------------------------------------------|--------|
| 0 | (NSG) DMS250 T104 CALL PROCESSING               | BC0903 |
| 0 | COIN CONTROL LINE NUMBER METHOD                 | BR0312 |
| 0 | COMBINED MF TRUNK GROUP (1+ 0+ 0- CN NCN)       | BR0220 |
| 0 | COMBINED VERIFICATION AND TOLL COMPLETING TRUNK | BR0144 |
| 0 | GROUP                                           |        |

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|---|----------------------------------------------------|--------|
| 0 | INC TTSTL 104                                      | BT0144 |
| 0 | INC/OUT TTSTL 104                                  | BT0340 |
| 0 | INWATS FULL TIME                                   | BT0256 |
| 0 | INWATS(MEASURED TIME)                              | BV0035 |
| 0 | LOCAL TANDEM (TOLL)                                | BR0151 |
| 0 | LTSTL - 104 (LOC) (O/G)                            | BT0093 |
| 0 | NAILED UP CONNECTIONS                              | BR0259 |
| 0 | O/G TTSTL 104                                      | BT0149 |
| 0 | OM-COMMON (MANAGEMENT)                             | BT0345 |
| 0 | OUTWATS                                            | BT0053 |
| 0 | OUTWATS OPERATOR (SPECIAL TREATMENT)               | BV0021 |
| 0 | REPEAT TWO TEST                                    | BR0019 |
| 0 | TANDEM SWITCHING                                   | BV0419 |
| 0 | TANDEM SWITCHING - NO DIGITS INCOMING              | BR0164 |
| 0 | TANDEM SWITCHING- NO DIGITS INCOMING (2WAY TRUNKS) | BR0191 |
| 0 | T104 AGENCY REWORK TO TTLXMS                       | BC0048 |

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|---|------------------------|
| 0 | NTX803AA02 STATUS RTM  |
| 0 | EQUAL ACCESS ALTERNATE |
| 0 | SWITCHING POINT        |

|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | EMERGENCY EQUAL ACCESS SWITCHING POINT | AL0229 |
|---|----------------------------------------|--------|

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|---|--------------------------------|
| 0 | NTX804AA02 STATUS RTM          |
| 0 | OM POLLING & VERTICAL          |
| 0 | SERVICES(ORDER VIA MP NTX071BG |
| 0 | & UP)                          |

|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | AUTOMATIC POLLING OM DATA VIA DATAPAC | BC0129 |
| 0 | BRIDGED NIGHT NUMBER                  | BT0070 |
| 0 | CALL FORWARDING (SEE C0181)           | BR0232 |
| 0 | CALL FORWARDING (7/10 DIGITS)         | BC0181 |
| 0 |                                       | BV0068 |

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|---|-----------------------------------------------|--------|
| 0 | CALL WAITING                                  | BC0272 |
| 0 |                                               | BV0065 |
| 0 | CALL WAITING (SEE C0272)                      | BR0233 |
| 0 | CUSTOM CALLING - 4 SECOND DELAY CANCELLATION  | BR0589 |
| 0 | DPACSUB REWRITE                               | BC1376 |
| 0 | EQUAL ACCESS-CALL FORWARDING ENHANCEMENT      | BC1381 |
| 0 | EXPANDED SPEED CALL CAPABILITIES              | BC1262 |
| 0 | FIXED CALL FORWARDING                         | BR0255 |
| 0 | FLASH IGNORE (PBX - 2 SEC DISC)               | BV0019 |
| 0 | HOTEL/MOTEL (RB & 3RD WIRE)                   | BT0061 |
| 0 | HUNTING (MLH,DLH,DNH)(LIN/DIST/CIRC)          | BT0042 |
| 0 | HUNTING OPTIONS (SHU/RMB)                     | BT0067 |
| 0 | OVERFLOW TREATMENT (LOD,LOR)                  | BT0065 |
| 0 | POLLING AMA DATA                              | BC0083 |
| 0 |                                               | BC0113 |
| 0 |                                               | BR0016 |
| 0 | SPEED CALLING                                 | BC0273 |
| 0 | SHORT LIST                                    | BV0067 |
| 0 |                                               | BR0230 |
| 0 | SPEED CALLING (LONG & SHORT LIST) (SEE C0273) | BR0215 |
| 0 | SUBSCRIBER TRANSFER APPLIQUE CIRCUIT          | BC0180 |
| 0 | THREE WAY CALLING                             | BV0066 |
| 0 |                                               | BR0231 |
| 0 | THREE WAY CALLING (SEE C0181)                 | BR0469 |
| 0 | TOLL CALL FORWARDING ENHANCEMENTS             | BT0055 |
| 0 | TOLL DENIAL                                   | BC0747 |
| 0 | 2-WAY DIGITAL PBX TRUNKS (R0:459,483,430,502) |        |

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|---|----------------------------|-----|
| 0 | NTX806AA01 STATUS          | RTM |
| 0 | ENHANCED CALL FORWARDING - |     |
| 0 | POTS                       |     |

|   |                                            |        |
|---|--------------------------------------------|--------|
| 0 | CALL FORWARD BUSY LINE                     | BR0801 |
| 0 | CALL FORWARD DON'T ANSWER                  | BR0802 |
| 0 | POTS MULTIPLE SIMULTANEOUS CALL FORWARDING | AL0362 |

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0 NTX807AA01 STATUS A+M  
0 ENHANCED CALL WAITING - POTS(  
0 UPG. BY NTX807AB)

0 CANCEL CALL WAITING - POTS BR0711

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0 NTX807AB01 STATUS RTM  
0 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)

0 CALL WAITING FOR 3-WAY CALLING BR0810  
0 CANCEL CALL WAITING - POTS BR0711

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0 NTX808AA01 STATUS RTM  
0 ENHANCED 3-WAY CALLING - POTS

0 FPE ENHANCEMENTS AC0018  
0 NEW 3WC INTERACTIONS I AC0016  
0 NEW 3WC INTERACTIONS II AC0017  
0 3-WAY CALL CHAINING BR0800

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0 NTX812AA03 STATUS RTM  
0 CENTRALIZED MAP

|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | AUTO DEVICE CONNECT CAPABILITY FOR DNC | AG0375 |
| 0 | CENTRALIZED MAP DMS ENHANCEMENTS       | AG0098 |
| 0 | DMS PASSTHROUGH MAP APPLICATION ENTITY | BC2126 |

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0 NTX813AA01 STATUS RTM  
0 CENTRALIZED ALARMS

|   |                                         |        |
|---|-----------------------------------------|--------|
| 0 | CENTRALIZED ALARMS - DMS IMPLEMENTATION | AG0100 |
|---|-----------------------------------------|--------|

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0 NTX820AA01 STATUS RTM  
0 ENHANCED 3-WAY CALLING - IBN

|   |                         |        |
|---|-------------------------|--------|
| 0 | FPE ENHANCEMENTS        | AC0018 |
| 0 | NEW 3WC INTERACTIONS I  | AC0016 |
| 0 | NEW 3WC INTERACTIONS II | AC0017 |
| 0 | 3-WAY CALL CHAINING     | BR0800 |

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0 NTX821AA01 STATUS RTM  
0 TANDEM OPERATOR SERVICE  
0 ROUTING

0 LATA SCREENING ON 0+ CALLS AL0168

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0 NTX822AA02 STATUS RTM  
0 EBS AS MESSAGE CENTRE

0 EBS AS A MESSAGE CENTER AL0206  
0 EBS AS A MESSAGE CENTER - ENHANCEMENTS AG1575

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0 NTX824AA01 STATUS A+M  
0 ENHANCED CALL WAITING - IBN(  
0 UPG. BY NTX824AB)

0 IBN CANCEL CALL WAITING AL0171

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0 NTX824AB01 STATUS RTM  
0 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)

0 CALL WAITING FOR 3-WAY CALLING BR0810  
0 IBN CANCEL CALL WAITING AL0171

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0 NTX825AB01 STATUS RTM  
0 EXCHANGE ALTERNATE BILLING  
0 SERVICE(UPG OF NTX825AA IN  
0 BCS34

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | ACCS ENHANCEMENTS                                 | AF0737 |
| 0 | AUTOMATIC CALL GAPPING                            | AF1251 |
| 0 | AUTOMATIC CALLING CARD SERVICE                    | AL0285 |
| 0 | LIMIT TO NUMBER OF SEQUENCE CALLS                 | BR0680 |
| 0 | MCCS - CUSTOMER DIALED ON LINES                   | BV1115 |
| 0 | MCCS - CUSTOMER DIALED ON TOPS TRUNKS             | BV1114 |
| 0 | MCCS - CUSTOMER DIALED SEQUENCE CALLS             | BV1116 |
| 0 | MCCS - OPERATOR ASSISTED MANUAL INWARD VALIDATION | BV1121 |
| 0 | MCCS - OPERATOR ASSITED CCV                       | BV1112 |
| 0 | MCCS - OPERATOR BNS                               | BV1113 |

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0 NTX827AA02 STATUS RTM  
0 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | XPM PERFORM TOOL ROBUSTNESS        | AG0485 |
| 0 | XPM REALTIME AND PERFORMANCE TOOLS | AC0024 |

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0 NTX829AA01 STATUS RTM  
0 INTRALATA PIC FOR LEAS

0 INTRALATA PIC WITH LEAS AL0290

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0 NTX831AA02 STATUS RTM  
0 SL1/SL100 DATA INTERWORKING

|   |                                       |        |
|---|---------------------------------------|--------|
| 0 | ESN DTI DATA-VOICE SIGNALING          | AD0254 |
| 0 | SL-100 MODEM POOL INTERGRATION        | AD0253 |
| 0 | SL-100 4X25AA TO SL-1 QMT-8           | AD0113 |
| 0 | SL100 QMT-9 TO SL QMT-8               | AD0114 |
| 0 | SL100 QMT-9 TO SL1 QMT-9              | AD0108 |
| 0 | SL100 4X25 AN AND QMT-9 TO SL1 QMT-11 | AD0258 |
| 0 | SL100 4X25 AN TO SL1 QMT-11 SYNCH     | AD0262 |
| 0 | SL100 4X25 AN TO SL1 QMT-8 SYNCH      | AD0261 |
| 0 | SL100 4X25 AX TO SL1 QMT-11 SYNCH     | AD0259 |
| 0 | SL100 4X25 AX TO SL1 QMT-8 SYNCH      | AD0260 |
| 0 | SL100 4X25AA TO SL1 QMT-9             | AD0112 |
| 0 | SL100 4X25AN TO SL1 QMT-8             | AD0110 |
| 0 | SL100 4X25AN TO SL1 QMT-9             | AD0111 |
| 0 | STRATACOM-RLCM-DATA                   | AD0320 |

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0 NTX833AB01 STATUS LTD TARGET SUPERNODE  
0 STP OPERATIONS(UPD OF  
0 NTX833AA)

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | BUFFER MANAGEMENT SYSTEM           | AI0124 |
| 0 | CCS7 - INTER LINK TO LINK PROTOCOL | AC0160 |
| 0 | ENHANCED LIU MAINTENANCE           | AL1333 |
| 0 | F-BUS SUPPORT FOR 2 SLOT LIU7      | AL1449 |

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|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | FTS PHASE 1                                    | AI0047 |
| 0 | FTS ROBUSTNESS AND FAULT HANDLING              | AI0123 |
| 0 | FULL MTCE OF STP FBUS                          | AI0119 |
| 0 | GENERIC LIU MAINTENANCE                        | AI0273 |
| 0 | INTEGRATED PROCESSOR AND FBUS INTERFACE (IPF)  | AL1328 |
| 0 | SOFTWARE                                       |        |
| 0 | LIM CM MTC I                                   | AI0116 |
| 0 | LIM CM MTC II                                  | AI0118 |
| 0 | LINK INTERFACE MODULE LOCAL CONTROL            | AI0036 |
| 0 | LINK INTERFACE MODULE MAINTENANCE ENHANCEMENTS | AI0167 |
| 0 | LIU MAINTENANCE SUPPORT FOR MININODE           | AL1405 |
| 0 | LIU7 - CM MTCE PHASE II                        | AC0383 |
| 0 | LIU7 - ENHANCED LIU DIAGS                      | AI0226 |
| 0 | LIU7 - MTCE PHASE II                           | AC0382 |
| 0 | LIU7 - MTCE ST LOADING                         | AC0381 |
| 0 | LIU7-MTC BASE DEVELOPMENT                      | AC0203 |
| 0 | MAP FOR THE STP LIM                            | AI0038 |
| 0 | MTP - CAPABILITY CODES                         | AC0233 |
| 0 | MTP - DIAGNOSTICS FOR 9X76/9X77/9X78 CARDS     | AC0124 |
| 0 | MTP - LGP L2/L3 INTERFACE                      | AC0219 |
| 0 | MTP - SIGNAL TRANSFER POINT                    | AC0247 |
| 0 | MTP - STP LINKSET MGMT                         | AC0230 |
| 0 | MTP - STP ROUTESET MGMT                        | AC0231 |
| 0 | OM'S AND LOGS FOR THE STP LIM                  | AI0039 |
| 0 | PHYSICAL LEVEL MAINTENANCE FOR FBUS            | AI0086 |
| 0 | RATE ADAPTER DIAGNOSTICS FOR THE STP LIM       | AI0059 |
| 0 | RATE ADAPTER FIRMWARE                          | AI0060 |
| 0 | REX TEST ON LPP                                | AL1271 |
| 0 | SEPARATE MMI FROM CONTROL                      | AI0037 |
| 0 | STP LIM CLOCK DIAGNOSTIC                       | AI0103 |
| 0 | STP LIM LOCAL MTC                              | AI0117 |
| 0 | STP V.35 CAPABILITY FOR STP                    | AC0425 |
| 0 | TABLE CONTROL FOR STP LIM                      | AI0040 |
| 0 | TPS ROBUSTNESS AND PERFORMANCE IMPROVEMENTS    | AI0126 |
| 0 | TPS 3.5 (SOS)                                  | AI0051 |
| 0 | TR-82 OM COMPLIANCE                            | AL1794 |
| 0 | 9X73 OD1 ENHANCEMENTS                          | AI0115 |
| 0 | 9X74 CARD ID FIRMWARE                          | AI0153 |

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0 NTX835AA03 STATUS LTD TARGET SUPERNODE  
0 STP - SEAS (1.1) OPERATIONS

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | SEAS - ENHANCED CCS7 OM'S          | AL1071 |
| 0 | SEAS - OM DATA COLLECTION PHASE II | AL0986 |
| 0 | SEAS - RELEASE 1.1 CAPABILITIES    | AC0318 |
| 0 | SEAS - TABLE CONTROL REPORTING     | AC0167 |
| 0 | SEAS DELAYED ACTIVATION COMMANDS   | AC0175 |
| 0 | SEAS SWACT                         | AL1126 |
| 0 | SEAS 1.1 - ENHANCEMENTS            | AL1334 |

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0 NTX836AA01 STATUS RTM TARGET SUPERNODE  
0 LPP - V.35 SUBRATE LINKS

|   |                                 |        |
|---|---------------------------------|--------|
| 0 | STP- V.35 SUBRATE LINKS FOR STP | AC0428 |
|---|---------------------------------|--------|

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0 NTX839AB02 STATUS RTM TARGET SUPERNODE  
0 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)

|   |                               |        |
|---|-------------------------------|--------|
| 0 | LIU7 - DSOA CONTROL CODE MTCE | AI0227 |
| 0 | MTP - BERT CAPABILITY FOR SSP | AC0442 |
| 0 | MTP - BERT CAPABILITY FOR STP | AC0420 |

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0 NTX840AA02 STATUS LTD TARGET SUPERNODE  
0 LIU7 GATEWAY MESSAGE SCREENING

0 PREP STP GATEWAY AC0432

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0 NTX843AA01 STATUS A+M  
0 CELLULAR INTERCONNECT

0 AMA FOR TYPE 2A CELLULAR INTERCONNECTION AL0380

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0 NTX843AB01 STATUS RTM  
0 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)

0 AMA FOR TYPE 2A CELLULAR INTERCONNECTION AL0380  
0 MF MONITOR FOR TYPE 2A CELLULAR INTERCONNECT AF1451

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0 NTX850AA01 STATUS RTM  
0 TOPS ALTERNATE ANNOUNCEMENT

0 TOPS ALTERNATE MCCS ANNOUNCEMENT AL0417

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0 NTX850AB01 STATUS RTM  
0 TOPS ALTERNATE  
0 ANNOUNCEMENT (UPG.FR.NTX850AA)

0 TOPS ALTERNATE MCCS ANNOUNCEMENT AL0417

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0 NTX851AA01 STATUS RTM  
0 SMDR DERIVED FROM BCR AMA

0 SMDR DERIVED FROM BELLCORE AMA RECORD AL0427

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0 NTX853AA01 STATUS RTM  
0 IBN ALARM CALL STATUS ON  
0 CONSOLES

0 ATTENDANT CONSOLE CALL QUEUE STATUS AD0351

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0 NTX856AA02 STATUS RTM  
0 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS

0 IBN ATTENDANT CONSOLE OM ON AN INDIVIDUAL CONSOLE AL0522  
0 BASIS  
0 PEG COUNTS ON LDN'S ON ATTENDANT CONSOLES AD1439

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0 NTX871AA01 STATUS RTM  
0 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING

0 REMOTE ONI VIA O.C. BR0602  
0 REMOTE TOPS MP O.C. - DATA LINK HANDLING AF0807

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0 NTX873AA01 STATUS RTM  
0 HOST TOPS MP O.C. - DATA LINK  
0 HANDLING

0 HOST TOPS MP O.C. - DATA LINK HANDLING AF0808

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0 NTX875AA01 STATUS RTM  
0 CCS7 MASS TRUNK CONVERSION

0 SS7 MASS TRUNK CONVERSION AL0520

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0 NTX877AA01 STATUS A+M  
0 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. BY NTX877AB)

0 NON-DATA LINK CONSOLE CALL EXTENSION AL0537

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0 NTX877AB01 STATUS RTM  
0 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)

0 MULTIPLE POSITION HUNT WITH QUEUE AL0612  
0 NON-DATA LINK CONSOLE CALL EXTENSION AL0537

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0 NTX878AB02 STATUS A+M  
0 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. BY NTX878AC)

0 CALL PARK RECALL IDENTIFICATION AD0908  
0 ENHANCED MADN CALL CONTROL AG0977

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|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | INDIVIDUAL PAGE FROM GIC                           | AL0557 |
| 0 | LAST NUMBER REDIAL FROM SET                        | AL0556 |
| 0 | MAKE SET BUSY EXCEPT GIC                           | AL0619 |
| 0 | OPTIONAL PRIVACY ON MADN'S                         | BR0837 |
| 0 | ORIGINATING/TERMINATING LINE SELECT                | AD1514 |
| 0 | PRIVACY RELEASE CONFERENCE CONTROL                 | AL0207 |
| 0 | SPECIFIC KEY RINGBACK ON RING AGAIN REQUEST ON EBS | AD0637 |

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0 NTX878AC01 STATUS A+M  
0 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. BY NTX878AD)

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | CALL PARK RECALL IDENTIFICATION                    | AD0908 |
| 0 | ENHANCED MADN CALL CONTROL                         | AG0977 |
| 0 | GROUP INTERCOM ALL CALL                            | AD2126 |
| 0 | INDIVIDUAL PAGE FROM GIC                           | AL0557 |
| 0 | LAST NUMBER REDIAL FROM SET                        | AL0556 |
| 0 | MADN CUT-OFF ON DISCONNECT (COD)                   | AG1568 |
| 0 | MAKE SET BUSY EXCEPT GIC                           | AL0619 |
| 0 | OPTIONAL PRIVACY ON MADN'S                         | BR0837 |
| 0 | ORIGINATING/TERMINATING LINE SELECT                | AD1514 |
| 0 | PRIVACY RELEASE CONFERENCE CONTROL                 | AL0207 |
| 0 | SPECIFIC KEY RINGBACK ON RING AGAIN REQUEST ON EBS | AD0637 |

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0 NTX878AD01 STATUS A+M  
0 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. BY NTX878AE)

|   |                                 |        |
|---|---------------------------------|--------|
| 0 | CALL PARK RECALL IDENTIFICATION | AD0908 |
| 0 | ENHANCED MADN CALL CONTROL      | AG0977 |
| 0 | GROUP INTERCOM ALL CALL         | AD2126 |
| 0 | INDIVIDUAL PAGE FROM GIC        | AL0557 |
| 0 | LAST NUMBER REDIAL FROM SET     | AL0556 |

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|---|----------------------------------------------------|--------|
| 0 | MADN BRIDGING - 3 WAY CALL                         | AG1566 |
| 0 | MADN CUT-OFF ON DISCONNECT (COD)                   | AG1568 |
| 0 | MAKE SET BUSY EXCEPT GIC                           | AL0619 |
| 0 | OPTIONAL PRIVACY ON MADN'S                         | BR0837 |
| 0 | ORIGINATING/TERMINATING LINE SELECT                | AD1514 |
| 0 | PRIVACY RELEASE CONFERENCE CONTROL                 | AL0207 |
| 0 | SPECIFIC KEY RINGBACK ON RING AGAIN REQUEST ON EBS | AD0637 |

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|---|--------------------------------|-----|
| 0 | NTX878AE01 STATUS              | RTM |
| 0 | ENHANCED ELECTRONIC BUSINESS   |     |
| 0 | SET SERVICES(UPG. FR. NTX878AD |     |

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | CALL PARK RECALL IDENTIFICATION                    | AD0908 |
| 0 | ENHANCED MADN CALL CONTROL                         | AG0977 |
| 0 | GROUP INTERCOM ALL CALL                            | AD2126 |
| 0 | INDIVIDUAL PAGE FROM GIC                           | AL0557 |
| 0 | LAST NUMBER REDIAL FROM SET                        | AL0556 |
| 0 | MADN BRIDGING - 3 WAY CALL                         | AG1566 |
| 0 | MADN CUT-OFF ON DISCONNECT (COD)                   | AG1568 |
| 0 | MAKE SET BUSY EXCEPT GIC                           | AL0619 |
| 0 | OPTIONAL PRIVACY ON MADN'S                         | BR0837 |
| 0 | ORIGINATING/TERMINATING LINE SELECT                | AD1514 |
| 0 | PRIVACY RELEASE CONFERENCE CONTROL                 | AL0207 |
| 0 | REPEATED ALERT FOR MBS                             | NC0164 |
| 0 | SPECIFIC KEY RINGBACK ON RING AGAIN REQUEST ON EBS | AD0637 |

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|---|------------------------------|-----|
| 0 | NTX881AA01 STATUS            | A+M |
| 0 | SWITCH BIT ERROR RATE        |     |
| 0 | MAINTENANCE(UPG.BY NTX881AB) |     |

|   |                                 |        |
|---|---------------------------------|--------|
| 0 | SWITCH BIT ERROR RATE INDICATOR | AG0360 |
|---|---------------------------------|--------|

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0 NTX881AB02 STATUS A+M  
0 SWITCH BIT ERROR RATE  
0 NTCE(REP. BY NTX881AC)0 CC SUPPORT FOR DTU BERT INTEGRATION AG0273  
0 IBERT RESOURCE MANAGEMENT AG0665  
0 SWITCH BIT ERROR RATE INDICATOR AG0360  
0 SWITCH BIT ERROR RATE INDICATOR FOR TRUNKS AG0521

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0 NTX881AC03 STATUS RTM  
0 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)0 BIT ERROR RATE PERFORMANCE COVERAGE ENHANCEMENTS AG0949  
0 CC SUPPORT FOR DTU BERT INTEGRATION AG0273  
0 IBERT RESOURCE MANAGEMENT AG0665  
0 SWITCH BIT ERROR RATE INDICATOR AG0360  
0 SWITCH BIT ERROR RATE INDICATOR FOR TRUNKS AG0521

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0 NTX882AA04 STATUS RTM  
0 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES0 CC SUPPORT FOR DTU BERT INTEGRATION AG0273  
0 IBERT RESOURCE MANAGEMENT AG0665  
0 SWITCH BIT ERROR RATE INDICATOR FOR TRUNKS AG0521

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0 NTX883AA01 STATUS RTM  
0 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING

0 BERT FOR TRUNKS

AG0520

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0 NTX885AA02 STATUS A+M  
0 SWITCH PATH DIAGNOSTICS  
0 (UPG.BY NTX885AB)

0 INTEGRITY CHECK TRAFFIC SIMULATOR  
0 NETWORK PATH TEST TOOL  
0 XPM BIT ERROR RATE TEST

AL0511  
AL0154  
AL0478

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0 NTX885AB04 STATUS RTM  
0 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

0 ICTS ENHANCEMENTS  
0 INTEGRITY CHECK TRAFFIC SIMULATOR  
0 NETPATH AUTOMATION  
0 NETWORK PATH TEST TOOL  
0 PATH VERIFICATION AUTOMATION  
0 SCHEDULED TESTING OF DMS NETWORK  
0 XPM BIT ERROR RATE TEST

AJ0473  
AL0511  
AG1214  
AL0154  
AL1566  
AL0153  
AL0478

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0 NTX888AA01 STATUS RTM  
0 EA0SS

0 EAE0 EXCHANGE ACCESS OPERATOR SERVICES SIGNALLING BR0633

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0 NTX891AA02 STATUS RTM  
0 TOPS - EXCHANGE ACCESS OPR  
0 SERV SIG

0 TOPS - EXCHANGE ACCESS OPERATOR SERVICES SIGNALLING AF0719

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0 NTX892AA04 STATUS RTM  
0 MPC MULTILINK MANAGEMENT0 MPC MULTI-LINK MANAGEMENT UTILITY AC0065  
0 MPCFAST (NTX892) ENHANCEMENTS AF1516  
0 OM GROUP DEFINITION AND COLLECTION FOR MPCFAST AF1153  
0 SUBSYSTEM

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0 NTX898AA01 STATUS RTM  
0 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN

0 VARIABLE SPEED CALL ACCESS CODE BR0739

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0 NTX899AA01 STATUS RTM  
0 CALL TRANSFER ENHANCEMENTS

0 CONFIDENTIAL ALERTING ON CALL TRANSFER AD0728

0

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0 NTX901AA24 STATUS RTM  
0 LOCAL FEATURES I

|                                                       |        |
|-------------------------------------------------------|--------|
| 0 'LCM CND SUPPORT'                                   | AG1109 |
| 0 AC DC RINGING                                       | BT0023 |
| 0 AE LTD INTERFACE                                    | BR0061 |
| 0 AE-21 INTERFACE                                     | BR0095 |
| 0 ALT DADDY & TIDY CLEANUP                            | BC0553 |
| 0 AMA: SEPARATION OF BILLING AND ROUTING FUNCTION.    | AF1439 |
| 0 ANALOG COIN FUNCTIONS ON LCM                        | BF0803 |
| 0 ANI (BELL STD) OUTPUTS IN RESPONSE TO WINK SIGNAL   | BR0453 |
| 0 ANI (1 & 2 PARTY)                                   | BT0050 |
| 0 AUTO RETEST OF ALT FAILURES                         | BC0829 |
| 0 AUTOMATIC LINE TESTING REWRITE                      | AG0156 |
| 0 AUTOMATIC LINE TESTING SPEEDUP                      | BR0511 |
| 0 BADGER 612 INTERFACE                                | BR0057 |
| 0 BRIDGED AND GROUNDED RINGERS ON SAME LINE           | BR0075 |
| 0 CALL FWD ASGNMT TO PBX MESS RATE LINE (CFW FOR PBM) | AL0499 |
| 0 CALLED PARTY RELEASED TIMING ENHANCEMENT            | AF0966 |
| 0 CALLING LINE IDENTIFICATION                         | BT0072 |

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|   |                                                      |              |
|---|------------------------------------------------------|--------------|
| 0 | CHANGE LINE TREATMENT GROUP COMMAND                  | AG1285       |
| 0 | CHARGE-A-CALL (COIN FREE DIALING)                    | BR0427       |
| 0 | CLASS OF SERVICE TONES                               | BR0052       |
| 0 | CLI - TRUNK TERMINATION                              | BR0320       |
| 0 | COD OPTION ON OFFICE BASIS                           | BR0653       |
| 0 | CODED RINGING(5 CODES)                               | BV0051       |
| 0 | COIN CONTROL                                         | BR0152       |
| 0 | COIN CONTROL                                         | THIRD WIRE   |
| 0 | COIN CONTROL                                         | TIP AND RING |
| 0 | COIN DISPOSAL SIGNAL POLARITY OPTION                 | BV0052       |
| 0 | COIN FEATURES - AT & T DTF                           | BV0048       |
| 0 | COIN LINES (DTF)                                     | BC2135       |
| 0 | DACS TRUNK (DP/MF) (A/D)                             | BR0437       |
| 0 | DATA FACILITY FOR 3X09 MTA                           | BT0044       |
| 0 | DENIED ORIGINATION - TWO OR FOUR PARTY ANI           | BT0035       |
| 0 | DENIED SERVICE OPTIONS                               | BC0866       |
| 0 | DETECTION OF OPEN LINE AT MDF                        | BR0436       |
| 0 | DIAL TONE SPEED MEASUREMENT                          | BT0057       |
| 0 | DIAL TONE SPEED TEST                                 | BR0460       |
| 0 | DIGITAL..ANALOGUE MF RECEIVER COMPATABILITY          | BC0329       |
| 0 | DIGITONE RECEIVER                                    | BV0198       |
| 0 | DISTINCTIVE RINGING ON RING SIDE ONLY                | BR0129       |
| 0 | DN ATTRIBUTES SERVICE ORDER ENHANCEMENTS             | BT0027       |
| 0 | DN NETWORK ATTRIBUTES                                | AG1973       |
| 0 | DP RECEIVER                                          | AG0923       |
| 0 | DTSR ON A PER PM BASIS                               | AD0633       |
| 0 | EAS TRUNK (DP/MF) (A/D)                              | BT0028       |
| 0 | ENHANCED LINE ACCESS MEASUREMENTS                    | AL0495       |
| 0 | ENHANCED LINE ACCESS MEASUREMENTS - PART 2           | BT0034       |
| 0 | EXEC STORE EXPANSION                                 | AG0649       |
| 0 | EXPANDED INBAND SIGNALLING                           | AG1318       |
| 0 | EXPANSION OF LCD NUMBER TO 1000                      | BF0791       |
| 0 | E800 ON PX TRUNKS                                    | BR0433       |
| 0 | FAILURE FLAGS FROM LINE DIAGNOSTICS                  | AL1541       |
| 0 | FLASH IGNORE (PBX - 2 SEC DISC)                      | AF2565       |
| 0 | FLEXIBLE ANI ID=8,9 ASSIGNMENT                       | BC0552       |
| 0 | FRAUD PREVENTION                                     | BV0019       |
| 0 | FREE NUMBER TERMINATING                              | BR0501       |
| 0 |                                                      | BR0020       |
| 0 |                                                      | BR0094       |
| 0 |                                                      | BT0058       |
| 0 | FREQUENCY RINGING (DECIMONIC)                        | BR0028       |
| 0 | FREQUENCY RINGING (HARMONIC) 20HZ BASE               | BR0193       |
| 0 | FREQUENCY RINGING (SYNCHROMONIC 16)                  | BR0089       |
| 0 | FREQUENCY RINGING (SYNCHROMONIC 20)                  | BR0153       |
| 0 | FREQUENCY RINGING (20 HZ)                            | BR0030       |
| 0 | FULLY- & SEMI-SELECTIVE(SUPERIMPOSED) RINGING..U.S.. | BR0134       |
| 0 | FX LINES (LINE CARD TERMINATION)                     | BT0052       |
| 0 | GROUND START                                         | BT0025       |



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|   |                                                    |                    |
|---|----------------------------------------------------|--------------------|
| 0 | GUARANTEED DIAL TONE                               | BF0490             |
| 0 | HARMONIC RINGING (FIVE FREQUENCIES)                | BR0029             |
| 0 | HOTEL/MOTEL (RB & 3RD WIRE)                        | BT0061             |
| 0 | HUNTING                                            | BV0424             |
| 0 | HUNTING (MLH,DLH,DNH)(LIN/DIST/CIRC)               | BT0042             |
| 0 | I-F TO S-L NO. 14 LTD                              | BR0122             |
| 0 | IMMEDIATE ANSWER REPORTING                         | BC1931             |
| 0 | IMR/INW READ RESET BY NNX                          | BR0491             |
| 0 | INBAND COIN CONTROL                                | BT0059             |
| 0 | INC/OUT TTSTL LOOP AROUND                          | BT0342             |
| 0 | INC/OUT TTSTL SYNCHRONOUS                          | BT0341             |
| 0 | INDIVIDUAL FLAT RATE LINES                         | BT0020             |
| 0 | INDIVIDUAL MESSAGE RATE LINES                      | BT0021             |
| 0 | INFORMATION AND REPAIR ROUTED TO KEY SYSTEMS       | BR0114             |
| 0 | INITIAL COIN RETURN AND INITIAL COIN RETAIN OPTION | BR0463             |
| 0 | INTERCEPT TRUNK (A/D)                              | BT0060             |
| 0 | INTERFACE WITH                                     | TERADYNE LOOP TEST |
| 0 | UNIT                                               | BR0148             |
| 0 | INTERFACE WITH PULSAR II IMTS                      | BR0031             |
| 0 | INTERFACE WITH SARTS                               | BR0073             |
| 0 | KEY PAD ENABLE                                     | NC0020             |
| 0 | LCM - MEMORY RECOVERY                              | BF0411             |
| 0 | LCM - RINGING MAINTENANCE                          | BF0200             |
| 0 | LCM MAINTENANCE ENHANCEMENT                        | BF0287             |
| 0 | LCM RINGING/ANI/COIN                               | BF0197             |
| 0 | LINE CARD CODE EXPANSION                           | AL1608             |
| 0 | LINE CUT OFF RELAY OPERATION ON DISCONNECT         | BC0157             |
| 0 |                                                    | BR0197             |
| 0 | LINE DATA BASE QUERIES                             | BR0229             |
| 0 |                                                    | BV0196             |
| 0 | LINE STATUS IN JOURNAL FILE                        | BC0844             |
| 0 | LINE TREATMENT ON CALL DISCONNECT                  | BR0060             |
| 0 | LM - TAKEOVER/TAKEBACK ENHANCEMENT                 | BF1027             |
| 0 | LM ENHANCEMENTS TO SUPPORT NET/PM SPEECH LINK      | BF0498             |
| 0 | DIAGNOSTICS                                        |                    |
| 0 | LM/RLM WARM TAKEBACK                               | BC0805             |
| 0 | LM/RLM WARM TAKEOVER                               | BC0807             |
| 0 | LOOP AROUND TEST - ATT MODE                        | BR0282             |
| 0 | LOOP START                                         | BT0024             |
| 0 | LTG CAPACITY INCREASE                              | AF1756             |
| 0 | LTP AND ASSOCIATED LEVEL                           | BT0095             |
| 0 | LTP CIBINCOM REWRITE                               | AG0358             |
| 0 | LTSL - OPEN CIRCUIT (I/C)                          | BT0084             |
| 0 | LTSTL - SHORT CIRCUIT (I/C)                        | BT0083             |
| 0 | LTSTL - 1000 (BAL) (O/G & I/C)                     | BT0087             |
| 0 | LTSTL - 1111 (NETLOSS) (I/C)                       | BT0088             |
| 0 | LTSTL - 1120 (NONSYN) (I/C)                        | BT0085             |

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|----------------------------------------------------|--------|
| 0 LTSTL - 1181 (SYNC) (I/C)                        | BT0090 |
| 0 MANUAL LINES                                     | BT0022 |
| 0 MTA GATING FACILITY                              | BC0867 |
| 0 MULTIPARTY FLAT RATE                             | BV0045 |
| 0 MULTIWINK COIN CONTROL                           | BR0036 |
| 0 NEW LEN NUMBERING CLEANUP                        | BC0749 |
| 0 NO REVERTIVE RING                                | BR0063 |
| 0 NO.14 LOCAL TEST DESK                            | BT0039 |
| 0 NPE - DIGIT COLLECTION DATA DOWN LOADING         | BC0731 |
| 0 NPE - OMS FOR LCM                                | BV1109 |
| 0 N11 SERVICE CODE CALLS TERMINATING TO LINES      | BR0154 |
| 0 O/G TTSTL SYNCHRONOUS                            | BT0150 |
| 0 OFFICE LINE TOTALS/QNCOS                         | AD0943 |
| 0 OM-LOCAL (PEGS & USAGE)                          | BT0347 |
| 0 OPEN NUMBERING PLAN PHASE I                      | AJ1224 |
| 0 OPERATOR VERIFICATION TRUNK (DP/MF)(A/D)         | BT0064 |
| 0 PBX FLAT RATE (DID)                              | BT0097 |
| 0 PBX FLAT RATE NON DID                            | BT0049 |
| 0 PBX MESSAGE RATE                                 | BT0054 |
| 0 PENDING ORDER FILE ON DISK                       | BR0219 |
| 0 PER CALL LOOP TEST ON GROUND                     | BR0450 |
| 0 PERMANENT SIGNAL TIME OUT - OPEN INTERVAL        | BR0670 |
| 0 PORTA SYSTEM LINE TEST INTERFACE                 | BR0256 |
| 0 PREPAY COIN FIRST                                | BR0242 |
| 0 PREPAY COIN FIRST COIN LINE                      | BV0087 |
| 0 PS/PD TREATMENT                                  | BT0069 |
| 0 PURPLE BOX WIRE TAP                              | BT0045 |
| 0 RECEIVER OFF HOOK TRUNK                          | BT0068 |
| 0 REVERTIVE CALL PEG COUNT REGISTER                | BR0269 |
| 0 REVERTIVE CALLING - RINGING TO BOTH PARTIES ON 4 | BR0606 |
| 0 PARTY ON                                         |        |
| 0 REVERTIVE RINGING                                | BT0047 |
| 0 REVERTIVE RINGING FOR PARTIES ON DIFFERENT SIDES | BF0556 |
| 0 RING DOWN TRUNK FOR 911 SERVICE                  | BC0123 |
| 0 SEMI-POST PAY COIN LINE                          | BV0088 |
| 0 SO - SYSTEM RESPONSE TO QDN                      | BR0686 |
| 0 SPLIT LINE-OPTION PROMPTING FROM COMPATIBILITY   | BC1671 |
| 0 CHECKING                                         |        |
| 0 STATION RINGER                                   | BT0063 |
| 0 STATION RINGER TEST - 3 DIGIT ACCESS CODE        | BR0623 |
| 0 STATION RINGER TEST NUMBER FOR DMS-100           | BR0283 |
| 0 SUPERIMPOSED RINGING                             | BV0071 |
| 0 TASK NEEDS A TITLE                               | AF2668 |
| 0 TEST ACCESS OF INDIVIDUAL LINES IN A HUNT GROUP  | BR0585 |
| 0 TEST ASSIGNED/UNASSIGNED LEN (HOST & RLM)        | BR0493 |
| 0 TEST DESK ROBUSTNESS.                            | AF2599 |
| 0 TEST HEADS MULTIPLE BADGER                       | BR0128 |

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|   |                                                     |             |        |
|---|-----------------------------------------------------|-------------|--------|
| 0 | TEST LINES:                                         | LOOP AROUND | BR0281 |
| 0 | THRESHOLD ON PERMANENT SIGNALS(LINE CABLE FAILURES) |             | BR0235 |
| 0 |                                                     |             | BV0076 |
| 0 | TIP AND RING COIN CONTROL                           |             | BR0236 |
| 0 | TOLL DIVERSION ENHANCEMENTS                         |             | BR0519 |
| 0 | TOLL DIVERT                                         |             | BT0056 |
| 0 | TOUCH TONE TESTING - EXTERNAL FACILITIES            |             | BV0034 |
| 0 | TRANSLATION AND SCREENING                           |             | BT0030 |
| 0 | TTP SUPPORT FOR 3X09 MTA                            |             | BC0890 |
| 0 | TWO PARTY ANI                                       |             | BR0102 |
| 0 | TWO PARTY FLAT RATE                                 |             | BT0046 |
| 0 | TYPE B LINE CARD MAINTENANCE                        |             | BC1155 |
| 0 | UTILITIES FOR 3X09 MTA                              |             | BC0884 |
| 0 | VOICE NUMBER VERIFICATION TRUNK                     |             | BT0062 |
| 0 | 0+ DA AND 0+ 800 PERMISSIVE DIALING                 |             | BR0751 |
| 0 | 010 SERVICE CODE                                    |             | BR0497 |
| 0 | 200 MS DISCONNECT TIMING                            |             | AG1854 |
| 0 | 3RD WIRE COIN CONTROL                               |             | BR0234 |
| 0 | 3X09BA MTA SWITCH                                   |             | BC1835 |
| 0 | 411 RECORDING ON MAGTAPE                            |             | BR0181 |
| 0 | 6X17AA LINE CARD FACILITY MAINTENANCE               |             | BV0948 |
| 0 | 6X17AD LINE CARD MAINTENANCE SUPPORT                |             | AG0487 |
| 0 | 958 990 660 SERVICE CODES - N.Y. TEL                |             | BR0442 |

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0 NTX902AA07 STATUS RTM  
0 LOCAL FEATURES II

|   |                                                       |        |
|---|-------------------------------------------------------|--------|
| 0 | (NSG) DMS250 T104 CALL PROCESSING                     | BC0903 |
| 0 | CALL HOLD ON MALICIOUS CALL TRACE - POTS LINES        | BR0032 |
| 0 | CALL ROUTED TO RECORDING AND THEN OPERATOR (411)      | BR0091 |
| 0 | CALLING LINE IDENTIFICATION                           | BT0072 |
| 0 | COINLESS PAY PHONE WITH INFO DIGIT 7                  | BR0284 |
| 0 | COMBINED MF TRUNK GROUP (1+ 0+ 0- CN NCN)             | BR0220 |
| 0 | COMBINED VERIFICATION AND TOLL COMPLETING TRUNK GROUP | BR0144 |
| 0 | DDD THROUGH TOPS ANI 4 PARTY                          | BR0169 |
| 0 | DMS100 TOPS INTERFACE                                 | BR0041 |
| 0 | ENHANCED ESSENTIAL SERVICE PROTECTION                 | AG1261 |
| 0 | ESSENTIAL SERVICE PROTECTION (ESP)                    | BR0538 |
| 0 | INC TTSTL 104                                         | BT0144 |

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|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | INC/OUT TTSTL 104                                  | BT0340 |
| 0 | LINE LOAD CONTROL                                  | BV0031 |
| 0 | LINE LOAD CONTROL (LLC)                            | BR0238 |
| 0 | LOCAL TANDEM                                       | BT0031 |
| 0 | LTSTL - 104 (LOC) (O/G)                            | BT0093 |
| 0 | MALICIOUS CALL TRACE AND HOLD -REA STANDARD        | BR0115 |
| 0 | MASS CALLING                                       | BC0235 |
| 0 |                                                    | BR0228 |
| 0 |                                                    | BV0080 |
| 0 | NAILED UP CONNECTIONS                              | BR0259 |
| 0 | O/G TTSTL 104                                      | BT0149 |
| 0 | OM-COMMON (MANAGEMENT)                             | BT0345 |
| 0 | OVERLAP OUTPUTSING                                 | BC0241 |
| 0 |                                                    | BR0068 |
| 0 | PEG COUNT ON TANDEM CALLS                          | BR0270 |
| 0 | ROUTE TRANSFER                                     | BR0240 |
| 0 |                                                    | BV0033 |
| 0 | SLEEVE LEAD CONTROL                                | BR0264 |
| 0 | TERMINATING                                        |        |
| 0 | SLEEVE LEADS FOR PUBLIC FIRE REPORTING SYSTEM      | BR0044 |
| 0 | TANDEM SWITCHING                                   | BV0419 |
| 0 | TANDEM SWITCHING - NO DIGITS INCOMING              | BR0164 |
| 0 | TANDEM SWITCHING- NO DIGITS INCOMING (2WAY TRUNKS) | BR0191 |
| 0 | TOLL NETWORK PROTECTION                            | BV0030 |
| 0 | TSPS INTERFACE                                     | BR0111 |
| 0 | TWO WAY OPERATOR OFFICE TRUNKS(BELL AND AMR-5)     | BC0384 |
| 0 |                                                    | BR0344 |
| 0 | T104 AGENCY REWORK TO TTLXMS                       | BC0048 |
| 0 | 0+ SERVICE TO TOPS                                 | BR0243 |
| 0 | 0+ SERVICE TO TOPS (CLG DP)                        | BV0272 |
| 0 | 0+ SERVICE TO TOPS (CLG MF)                        | BV0050 |
| 0 | 1+611 REPAIR TRANSLATED TO 7 DIGIT NUMBER AND      | BR0071 |
| 0 | OUTPUTS                                            |        |
| 0 | 11X AND 410X SERVICE CODES                         | BR0251 |
| 0 | 4,5 AND 6 DIGIT LOCAL DIALLING                     | BR0252 |

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0 NTX903AA01 STATUS RTM  
0 TRANSMISSION MEASUREMENTS

0 INTEGRATED TERMINATING 105 TEST LINE AND RESPONDER BC1083

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0 NTX904AA04 STATUS RTM  
0 R2 SIGNALLING BASE

|   |                                    |        |
|---|------------------------------------|--------|
| 0 | GENERIC R2 ENHANCEMENTS            | AJ1028 |
| 0 | MFCR2 - PROTOCOL DEFINITION TABLES | AE0142 |
| 0 | MFCR2 ROUTING TABLES               | AE0146 |
| 0 | R2 ACTIVITY TABLES                 | AG1220 |
| 0 | R2 BASE ENHANCEMENTS               | AJ0159 |
| 0 | R2 CALL PROCESSING                 | AG1217 |
| 0 | R2 PROTOCOL ENHANCEMENTS           | AJ0205 |
| 0 | R2 REGISTER SIGNALLING             | AG1218 |

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0 NTX909AA01 STATUS RTM  
0 ANI TOLL

0 ANI RECEPTION IN DMS-200 AE0115

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0 NTX910AA01 STATUS RTM  
0 ANI LOCAL

0 ANI OUTPUTSING IN DMS100/200 AE0116

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0 NTX911AA01 STATUS RTM  
0 3J TYPE II TRUNK AGENCY

0 3J TYPE II TRUNK AGENCY AE0027

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0 NTX913AA04 STATUS RTM  
0 MERCURY CENTREX PCM-30  
0 PERIPHERALS

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | BASIC MTCE FOR 3000 LINE REMOTE               | BV0973 |
| 0 | BASIC RMM SUPPORT FOR RCC                     | BC0716 |
| 0 | BASIC RMM SUPPORT FOR RLCM                    | BC0717 |
| 0 | CC - SOCOTEL TABLE CONTROL                    | BC2061 |
| 0 | CC - SPANISH LINE SIGNALLING I                | BC1629 |
| 0 | CC - SPANISH SOCOTEL SIGNALLING I             | BC1628 |
| 0 | CO-EXISTENCE OF DPNSS AND #7 TRUNKS IN A PDTC | AE0746 |
| 0 | EXTENDED OPCODE GROUP DECODER                 | BF0872 |
| 0 | FEATURE REGRESSION TESTING PHASE 2            | AE0269 |
| 0 | NT6X93 LINE CARD DIAG                         | BC1337 |
| 0 | PDTC - SPANISH SOCOTEL SIGNALLING I           | BF0866 |
| 0 | PDTC - SPANISH TONES MAINTENANCE              | BF0873 |
| 0 | PM MAINTENANCE ENHANCEMENTS                   | BC1433 |
| 0 | RLCM - ESA - MESSAGING                        | BF0262 |
| 0 | RLCM - ESA SUPPORT                            | BC0990 |
| 0 | RLCM - LCM - ESA TRANSITIONS                  | BF0271 |
| 0 | RLCM - LTC - RMM CONTROL                      | BF0259 |

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|---|-----------------------------------------|--------|
| 0 | RLCM ESA SYNC                           | BF1028 |
| 0 | RLCM-ESA-NT6X75 DIAGNOSTIC              | BF0546 |
| 0 | RMM BOOSTRAP MONITOR & LOADER           | BF0231 |
| 0 | RMM DATA TERMINAL PROCESSING            | BF0237 |
| 0 | RMM DP DIGIT COLLECTION                 | BF0238 |
| 0 | RMM DP OUTPULSING                       | BF0240 |
| 0 | RMM DT/MF DIGIT COLLECTION (SEE BF0254) | BF0239 |
| 0 | RMM MAINTENANCE & DIAGNOSTICS           | BF0235 |
| 0 | RMM SCAN MONITORING                     | BF0236 |
| 0 | RSC - RCC - BASIC MTC                   | BF0247 |
| 0 | RSC - RCC - 6X72 FORMATTER DIAGNOSTIC   | BF0249 |
| 0 | SOCOTEL - PDTC COMPELLER                | BF0876 |
| 0 | SOCOTEL - PDTC MAINTENANCE              | BF0878 |
| 0 | SOCOTEL - PDTC PRIMITIVE AND CONTROL    | BF0877 |
| 0 | SOCOTEL - PDTC REGISTER CONTROLLER      | BF0875 |
| 0 | SOCOTEL CC MAINTENANCE (DID)            | BC2067 |
| 0 | SOCOTEL DIRECT INWARD DIAL              | AE0035 |
| 0 | SOCOTEL SIGNALLING                      | AE0010 |
| 0 | SOCOTEL SIGNALLING UTR                  | AE0028 |
| 0 | SOCOTEL TRUNK EXECS (DID)               | BC2066 |
| 0 | SOCOTEL TRUNK TO AUTOVON INTERFACE      | BC2062 |
| 0 | SOCOTEL TRUNK TO CONSOLE INTERFACE      | BC2063 |
| 0 | SOCOTEL TRUNK TO IBN LINE INTERFACE     | BC2064 |
| 0 | SOCOTEL TRUNK TO IBN TRUNK INTERFACE    | BC2065 |
| 0 | TABLE OPERATIONS FOR ILGC AND ILTC      | BC1730 |
| 0 | TERMINAL TYPES EXTENSION                | BC1605 |
| 0 | XPM OVERLOAD CONTROL - 1                | BF0611 |
| 0 | XPM REAL TIME ENHANCEMENTS - BCS16      | BF0612 |

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|---|--------------------------------|-----|
| 0 | NTX925AA01 STATUS              | RTM |
| 0 | ISC TIME OF DAY AND PERCENTAGE |     |
| 0 | ROUTING                        |     |

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | DMS-300 ROUTING ON RECEIPT OF FORWARD TRANSFER | AE0556 |
| 0 | DMS-300 TIME OF DAY AND PERCENTAGE ROUTING     | AE0158 |

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0 NTX936AA01 STATUS A+M  
0 MULTIPLE POINT CODES FOR  
0 MTP(UPG.BY NTX936AB)

0 MULTIPLE POINT CODES FOR MTP AE0415

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0 NTX936AB01 STATUS LTD  
0 MULTIPLE POINT CODES FOR  
0 MTP(UPG. FR NTX936AA)0 FOUR INTERNATIONAL POINT CODER ON LPP NC0217  
0 MULTIPLE POINT CODES FOR MTP AE0415

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0 NTX937AA06 STATUS A+M  
0 BT #7 TUP(DMS-100)(UPG. BY  
0 NTX937AB)0 BTUP INTERWORKING TO CONFERENCE FEATURES AE0687  
0 BTUP TO ATTENDANT CONSOLE - PHASE 1 AE0738  
0 BTUP TO IBN LINE - PART II AE0569  
0 BTUP TO IBN LINES TONES AND ANNOUNCEMENTS NC0047  
0 BT7 CALLED PARTY CONTROL AE0818  
0 BT7 CHARGE/NO CHARGE AE0917  
0 BT7 CLI AND SM AE0816  
0 BT7 EMERGENCY CALLS AE0901  
0 BT7 I/W ANSI ISUP - BASIC CALL AE0819



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|---|---------------------------------------|--------|
| 0 | BT7 LAST PARTY RELEASE                | AE0900 |
| 0 | BT7 MALICIOUS CALL INTERWORKING (XPM) | AE0829 |
| 0 | BT7 TRANSIT CALLS ENHANCEMENT         | AE0470 |
| 0 | CC OVERLAP SIGNALLING FOR BTUP        | AE0587 |
| 0 | DP TO BTUP OVERLAP SIGNALLING         | AE0667 |
| 0 | PCM30 TIMESLOT FLEXIBILITY            | AE0551 |
| 0 | TRANSITING BT7 OPERATOR MESSAGES      | AE0729 |

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| 0 | NTX937AB01 STATUS           | RTM |
| 0 | BT #7 TUP (DMS-100) (UPG OF |     |
| 0 | NTX937AA)                   |     |

|   |                                           |        |
|---|-------------------------------------------|--------|
| 0 | BTUP INTERWORKING TO CONFERENCE FEATURES  | AE0687 |
| 0 | BTUP TO ATTENDANT CONSOLE - PHASE 1       | AE0738 |
| 0 | BTUP TO IBN LINE - PART II                | AE0569 |
| 0 | BTUP TO IBN LINES TONES AND ANNOUNCEMENTS | NC0047 |
| 0 | BT7 CALLED PARTY CONTROL                  | AE0818 |
| 0 | BT7 CHARGE/NO CHARGE                      | AE0917 |
| 0 | BT7 CLI AND SM                            | AE0816 |
| 0 | BT7 EMERGENCY CALLS                       | AE0901 |
| 0 | BT7 I/W ANSI ISUP - BASIC CALL            | AE0819 |
| 0 | BT7 LAST PARTY RELEASE                    | AE0900 |
| 0 | BT7 MALICIOUS CALL INTERWORKING (XPM)     | AE0829 |
| 0 | BT7 TRANSIT CALLS ENHANCEMENT             | AE0470 |
| 0 | CC OVERLAP SIGNALLING FOR BTUP            | AE0587 |
| 0 | DP TO BTUP OVERLAP SIGNALLING             | AE0667 |
| 0 | PCM30 TIMESLOT FLEXIBILITY                | AE0551 |
| 0 | TRANSITING BT7 OPERATOR MESSAGES          | AE0729 |

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0 NTX938AA01 STATUS RTM  
0 OVERLAP OUTPUTSING

0 MERCURY DMS-250 OVERLAPPED OUTPUTSING AE0315

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0 NTX940AA13 STATUS RTM TARGET SUPERNODE  
0 CM BILGE

|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | CM REXTTEST ENHANCEMENTS                            | AL0709 |
| 0 | CMIC LINK DIAGNOSTIC ENHANCEMENTS                   | AL1109 |
| 0 | DDM ENHANCEMENTS FOR INM                            | AL1718 |
| 0 | DMS-BUS SOFTWARE SUPPORT FOR THE NEW 9X23 BACK CARD | AL0809 |
| 0 | ENHANCED CM MAINTENANCE CPU ALARMS                  | AL1923 |
| 0 | ENHANCED 9X12 DIAGNOSTICS                           | AL0631 |
| 0 | MESSAGE SWITCH SOFTWARE SUPPORT FOR 9X32            | AL0727 |
| 0 | MS MAP, MMI AND LOGS ENHANCEMENTS                   | AL0548 |
| 0 | REWRITE STORE ALLOCATOR                             | AL0720 |
| 0 | SOS NUCLEUS SIZE REDUCTION                          | AL2042 |
| 0 | 24MB MEMORY CM SW (PHASE I)                         | AL0706 |

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0 NTX941AA12 STATUS RTM TARGET SUPERNODE  
0 CM COMMON

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | CENTRAL DMS-BUS MMI INFORMATION FOR MESSAGE CHANNELS | AL1480 |
| 0 | CENTRAL MESSAGE SWITCH MAINTENANCE                   | BC1826 |
| 0 | CM IN-SYNC MAINTENANCE SOFTWARE                      | BC1827 |
| 0 | DISTRIBUTED LOG SYSTEM                               | BC2003 |
| 0 |                                                      | AL2021 |
| 0 | DMS-BUS BACKWARDS COMPATIBILITY SUPPORT              | AL1968 |
| 0 | DMS-BUS CENTRAL COMMUNICATION AUDIT ENHANCEMENTS     | AL1183 |
| 0 | DMS-BUS CENTRAL SUPPORT FOR DOWNLOADABLE CMU         | AL1202 |

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|   |                                                       |        |
|---|-------------------------------------------------------|--------|
| 0 | FIRMWARE                                              |        |
| 0 | DMS-BUS CENTRAL SW ENHANCEMENTS FOR P-SIDE NODE       | AL1201 |
| 0 | ISOLATION                                             |        |
| 0 | DMS-BUS CMU FIRMWARE DOWNLOADING II                   | AL1346 |
| 0 | DMS-BUS MESSAGE FLOW CONTROL - II                     | AL1884 |
| 0 | DMS-BUS MMI ENHANCEMENTS                              | AL0797 |
| 0 | DMS-BUS MMI ENHANCEMENTS FOR ISN                      | AL1826 |
| 0 | DMS-BUS MMI ENHANCEMENTS II                           | AL0803 |
| 0 | DMS-BUS MMI ENHANCEMENTS III                          | AL1200 |
| 0 | DMS-CORE ENHANCED IMAGE TEST                          | AL1054 |
| 0 | DMS-CORE INVENTORY AUDIT                              | AL1197 |
| 0 | DMS-CORE LINK HIT ANALYSIS                            | AL1182 |
| 0 | DMS-CORE REX TEST SPEEDUP II                          | AL1055 |
| 0 | ENHANCED DMS-CORE MATE LINK RTS                       | AL1053 |
| 0 | ENHANCED DMS-CORE MEMORY ALARM                        | AL1192 |
| 0 | E2A MONITORING SOFTWARE                               | AL2331 |
| 0 | FOOTPRT ENHANCEMENTS                                  | AG2480 |
| 0 | HARDWARE BASELINE MONITOR                             | AQ0721 |
| 0 | INTEGRATED EVENT MANAGEMENT SYSTEM BASE PHASE I       | AL1681 |
| 0 | MAINTENANCE ACTION PRE_CHECK                          | AL1759 |
| 0 | NT9X12AC SOFTWARE SUPPORT                             | AL1753 |
| 0 | NT9X62BA 0D1 SUPPORT                                  | AL1782 |
| 0 | PORTING DMS-CORE MAINTENANCE TO RUN ON RISC (PHASE I) | AL1193 |
| 0 | REMOTE LOGIN                                          | BC1932 |
| 0 | SYSTEM RECOVERY CONTROLLER INTERFACES                 | AL1570 |
| 0 | SYSTEM REX TEST CONTROLLER                            | AL2030 |
| 0 | TIME OF DAY SUPPORT FOR ENHANCED CORE                 | BC1909 |
| 0 | 24MB MEMORY CM SW (PHASE II)                          | AL0707 |
| 0 | 6MB MEMORY (SYNC OVERRIDE)                            | AL0710 |
| 0 | 9X14BA 6M MEMORY MAINTENANCE S/W SUPPORT              | AL0269 |

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|---|-------------------|-------------|----------|-----------------------|
| 0 | NTX942AB02 STATUS | RTM         | TARGET   | SUPERNODE             |
| 0 |                   | DMS         | -        | SUPERNODE SYSTEM LOAD |
| 0 |                   | MODULE(SLM) | (UPG.FR. | NTX942AB)             |

|   |                                  |        |
|---|----------------------------------|--------|
| 0 | PRESCHEDULED IMAGE TAKING ON SLM | AG1385 |
| 0 | SLM CONTROL SOFTWARE, PHASE 2    | AL0731 |
| 0 | SLM DIAGNOSTIC ENHANCEMENTS      | AL0840 |
| 0 | SLM FILE SYSTEM PHASE 2          | AG0874 |

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|---|-------------------------------------------|--------|
| 0 | SLM FS ENHANCEMENT - PHASE 2              | AL1298 |
| 0 | SLM MAINTENANCE ENHANCEMENTS              | AL1166 |
| 0 | SLM PHASE II - DISK/TAPE REPLACEMENTS     | AL1060 |
| 0 | SLU BASIC FILE SYSTEM - CI UTILITIES      | AG0367 |
| 0 | SLU BASIC FILE SYSTEM - DEVICE MANAGEMENT | AG0373 |
| 0 | SLU BASIC FILE SYSTEM - FILE MANAGEMENT   | AG0369 |
| 0 | SLU BASIC FILE SYSTEM - GENERAL UTILITIES | AG0372 |
| 0 | SLU INPUT OUTPUT SYSTEM                   | AL0437 |
| 0 | SYSTEM LOAD MODULE CONTROL SOFTWARE       | AL0436 |

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0 NTX944AA03 STATUS RTM TARGET SUPERNODE  
0 BASE NODE MAINTENANCE

|   |                                               |        |
|---|-----------------------------------------------|--------|
| 0 | AUDIT/REX DRIVER FOR INM NODES                | AL1378 |
| 0 | CENTRAL RP CONTROL II                         | AL1195 |
| 0 | INM SUPPORT FOR BCS APPLICATION/CC WARM SWACT | AL2271 |
| 0 | INM SUPPORT FOR IEM EVENT GENERATION AND OM   | AL2121 |
| 0 | INM SYSTEM AGENT                              | AL2120 |
| 0 | LOCAL RP CONTROL II                           | AL1117 |

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0 NTX945AA03 STATUS RTM TARGET SUPERNODE  
0 MS BASE LINK MAINTENANCE

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | BASIC INITIALIZATION AND COMMUNICATION OF ILM DATA | AL1457 |
| 0 | CENTRAL DMS BUS AND ILM INTERACTIONS ON MESSAGE    | AL1477 |
| 0 | CHANNELS                                           |        |
| 0 | CENTRAL DMS BUS DATA RECOVERY ON SYSTEM RESTARTS   | AL1482 |
| 0 | CENTRAL DMS-BUS MMI INFORMATION FOR PHYSICAL LINKS | AL1781 |
| 0 | CENTRAL DMS-BUS/ILM INTERACTIONS ON PLM            | AL1780 |
| 0 | CENTRAL MS-ILM INTERACTIONS ON PHYSICAL LINKS      | AC0644 |
| 0 | DESIGN AND DATA DEFINITION FOR DS30/IOUI INTER-MS  | AL1456 |
| 0 | LINKS                                              |        |
| 0 | DMS-BUS DATA AND MESSAGE FORMAT FOR ILM LINKS      | AL1476 |

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|   |                                                     |        |
|---|-----------------------------------------------------|--------|
| 0 | DMS-BUS SUPPORT FOR MS-ILM DATA TRANSFER AND AUDITS | AQ0718 |
| 0 | DMS-BUS SUPPORT FOR PLM PRIMITIVE ENHANCEMENTS      | AQ0717 |
| 0 | LOCAL DMS BUS NODE, LINK AND PORT INITIALIZATION    | AL1478 |
| 0 | LOCAL DMS-BUS SUPPORT FOR MCM/PLM PRIMITIVES        | AL1779 |
| 0 | LOCAL DMS-BUS SUPPORT FOR SR-512 MESSAGE CHANNELS   | AL1479 |
| 0 | MMI FOR INTERMS LINKS                               | AC0639 |

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|   |                              |     |
|---|------------------------------|-----|
| 0 | NTX946AA01 STATUS            | A+M |
| 0 | EBS - CALL NAME DISPLAY(UPG. |     |
| 0 | BY NTX946AB)                 |     |

|   |                         |        |
|---|-------------------------|--------|
| 0 | NAME AND REASON DISPLAY | AL0617 |
|---|-------------------------|--------|

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|   |                                |     |
|---|--------------------------------|-----|
| 0 | NTX946AB01 STATUS              | RTM |
| 0 | EBS - CALL NAME DISPLAY(UPG.OF |     |
| 0 | NTX946AA IN BCS26)             |     |

|   |                               |        |
|---|-------------------------------|--------|
| 0 | NAME AND REASON DISPLAY       | AL0617 |
| 0 | NAME DISPLAY FOR MADN MEMBERS | AG0976 |

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|   |                   |     |        |           |
|---|-------------------|-----|--------|-----------|
| 0 | NTX950AA06 STATUS | RTM | TARGET | SUPERNODE |
| 0 | MS BILGE          |     |        |           |

|   |                                                    |        |
|---|----------------------------------------------------|--------|
| 0 | DMS-BUS DIAGNOSTIC ENHANCEMENTS USING THE TRACER   | AL0787 |
| 0 | CARD                                               |        |
| 0 | DMS-BUS SOFTWARE SUPPORT FOR 4 MEG MEMORY CPU CARD | AL0790 |

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|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | LOCAL MESSAGE SWITCH MAINTENANCE       | BC1829 |
| 0 | MAINTAIN MESSAGING OVER RESTARTS       | AC0638 |
| 0 | MESSAGE SWITCH DIAGNOSTIC ENHANCEMENTS | AL0712 |
| 0 | RSC-ESA-STATIC DATA HANDLING IN XPM    | BF0940 |

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|---|-------------------|-----|--------|-----------|
| 0 | NTX951AA08 STATUS | RTM | TARGET | SUPERNODE |
| 0 | MS COMMON         |     |        |           |

|   |                                                      |        |
|---|------------------------------------------------------|--------|
| 0 | DESIGN AND DATA DEFINITION FOR DS30/IOUI INTER-MS    | AL1456 |
| 0 | LINKS                                                |        |
| 0 | DMS-BUS (LOCAL) 128-PORT I/F CARD S/W 1W H/W         | AG1334 |
| 0 | INTEGRATION                                          |        |
| 0 | DMS-BUS CENTRAL DATA DISTRIBUTION AND INITIALIZATION | AL1199 |
| 0 | II                                                   |        |
| 0 | DMS-BUS FAULT CORRELATION USING TRACER CARD (9X49CB) | AL1186 |
| 0 | DMS-BUS SYSTEM CLOCK NT9X53AC SOFTWARE SUPPORT       | AC0608 |
| 0 | DMS-BUS 128-PORT TRANSACTOR                          | AL1185 |
| 0 | MESSAGE SWITCH MAINTENANCE                           | BC1921 |
| 0 | MMI FOR INTERMS LINKS                                | AC0639 |
| 0 | TIME OF DAY FOR MESSAGE SWITCH                       | BC2308 |

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|---|------------------------|-----|
| 0 | NTX956AA01 STATUS      | RTM |
| 0 | TOPS EMERGENCY CALLING |     |

|   |                           |        |
|---|---------------------------|--------|
| 0 | EMERGENCY CALLING TO TOPS | AE0184 |
|---|---------------------------|--------|

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0 NTX957AA01 STATUS RTM  
0 EXPANDED CLASS OF SERVICE  
0 CODES

0 DIALLING PLAN EXPANSIONS

AE0185

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0 NTX958AA05 STATUS RTM  
0 DPNSS BASIC

|   |                                                   |        |
|---|---------------------------------------------------|--------|
| 0 | DPNSS - MSB7/ST7 MAINTENANCE                      | AE0195 |
| 0 | DPNSS CLI DISPLAY                                 | AE0839 |
| 0 | DPNSS I/W TO 2-STAGE SETUP AND AUTH CODE FEATURES | NC0251 |
| 0 | DPNSS IBN/POTS LINES                              | AE0327 |
| 0 | DPNSS INTERWORKING TO PSTN TRUNKS                 | AE0445 |
| 0 | DPNSS LINK                                        | AE0072 |
| 0 | DPNSS LINK - BASE                                 | AE0105 |
| 0 | DPNSS LINK - MAINTENANCE                          | AE0121 |
| 0 | DPNSS LINK - MAINTENANCE MONITOR                  | AE0120 |
| 0 | DPNSS LINK - MESSAGE TRANSMISSION AND RECEPTION   | AE0119 |
| 0 | DPNSS LINK - TABLE CONTROL                        | AE0106 |
| 0 | DPNSS LINK MAINTENANCE II                         | AE0285 |
| 0 | DPNSS MESSAGE PARSING                             | AE0265 |
| 0 | DPNSS PDTC WARM SWACT                             | AE0333 |
| 0 | DPNSS POST-DIALLING DELAY REDUCTION               | AE0382 |
| 0 | DPNSS POTS TRUNK                                  | AE0071 |
| 0 | DPNSS POTS TRUNKS                                 | AE0271 |
| 0 | DPNSS SUPPLEMENTARY SERVICES                      | AE0284 |
| 0 | DPNSS TRANSIT FEATURES                            | AE0272 |
| 0 | DPNSS TRUNK HOOKS AND TABLE CONTROL               | AE0205 |
| 0 | DPNSS TRUNK MAINTENANCE                           | AE0264 |
| 0 | DPNSS TRUNK MAINTENANCE ENHANCEMENT               | AE0384 |
| 0 | DPNSS TRUNK RESTRICTIONS                          | AE0304 |
| 0 | DPNSS VIRTUAL CALL                                | AE0286 |
| 0 | DPNSS/IBN FEATURE INTERACTIONS PART II            | AE0783 |
| 0 | INTERLOCKS FOR DPNSS TRUNKS AND DPNSS LINKS       | AE0287 |

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0 NTX961AA01 STATUS RTM  
0 UK DMS-250 ENHANCEMENTS

|   |                                                  |        |
|---|--------------------------------------------------|--------|
| 0 | MERCURY IMT MF AND DTMF UTR DIGIT RECEPTION      | AE0224 |
| 0 | MERCURY MEL, 3L, AND 3J DTMF UTR DIGIT RECEPTION | AE0225 |
| 0 | UNIVERSAL TONE RECEIVERS                         | AE0220 |

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0 NTX963AA01 STATUS RTM  
0 PRLCM ESA AND INTRASWITCHING

|   |                               |        |
|---|-------------------------------|--------|
| 0 | PRLCM ESA AND INTRA SWITCHING | AE0267 |
|---|-------------------------------|--------|

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0 NTX964AA01 STATUS RTM  
0 DMS 100 CENTREX INTERNATIONAL

|   |                               |        |
|---|-------------------------------|--------|
| 0 | REPACKAGE OF UK-ONLY FEATURES | AE0290 |
|---|-------------------------------|--------|

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0 NTX968AA01 STATUS RTM  
0 DMS-100 CENTREX INTL FEATURES

0 NEW MESSAGING ON INTL PLGC AE0275

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0 NTX980AA01 STATUS RTM  
0 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

|                                                        |        |
|--------------------------------------------------------|--------|
| 0 (NSG) TRANS. VERIF. DMS-250 IMT. DAL & ONAL TRK GRPS | BC0495 |
| 0 TYPES                                                |        |
| 0 (NSG) TRANSLATION VERIF. FOR PARTIT. 6-DIGIT TRANSL. | BC0490 |
| 0 CIRCUIT MONITOR                                      | BR0176 |
| 0 DIGITAL PAD ADJUSTMENT                               | BC0158 |
| 0 DOWN LOAD METALLIC TEST UNIT.                        | BC1259 |
| 0 ECHO RETURN LOSS (ERL) TEST                          | BR0201 |
| 0 SINGING POINT TEST                                   | BR0200 |
| 0 STS CONVERSION                                       | BC0858 |
| 0 TRANSLATION VERIFICATION - TRUNKS                    | BR0223 |
| 0 TRAVER ENHANCEMENT                                   | BC0693 |
| 0 TTP CALL TRANSFER                                    | BV0041 |
| 0 TTP CALL TRANSFER (LOCAL)                            | BR0196 |
| 0 TTP ENHANCEMENTS                                     | BR0021 |

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0 NTX981AA01 STATUS A+M  
0 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)0 AUTO RETEST OF ALT FAILURES BC0829  
0 LINE CUTOVER STATE BR0043

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|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | LINE TRANSMISSION TESTS - MW,QTERM             | BV0024 |
| 0 | LTP - DIGITONE TESTING                         | BV0062 |
| 0 | LTP - INSERTION LOSS, TONE GENERATION          | BV0025 |
| 0 | LTP - MONITOR,TALK,BALANCE OFFHOOK TESTS       | BV0061 |
| 0 | LTP - SEND FUNCTIONS(COIN & RINGING FUNCTIONS) | BV0063 |
| 0 | LTP AND ASSOCIATED LEVEL                       | BT0095 |
| 0 | LTP ROBUSTNESS                                 | BC2324 |

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|---|---------------------------|-----|
| 0 | NTX983AB02 STATUS         | RTM |
| 0 | SERVICE SWITCHING POINT   |     |
| 0 | PRIVATE VIRTUAL NTKWG(REP |     |
| 0 | NTX983AA)                 |     |

|   |                                        |        |
|---|----------------------------------------|--------|
| 0 | PRIVATE VIRTUAL NETWORK ENHANCEMENTS   | AG0925 |
| 0 | PRIVATE VIRTUAL NETWORKING DELIVERABLE | AG0829 |

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|---|-------------------------|-----|
| 0 | NTX984AA01 STATUS       | RTM |
| 0 | SERVICE SWITCHING POINT |     |
| 0 | PRIV.VIRTUAL NETWRKG-   |     |
| 0 | ATT.SERVICES            |     |

|   |                        |        |
|---|------------------------|--------|
| 0 | PVN ATTENDANT SERVICES | AG1555 |
|---|------------------------|--------|

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0 NTX986AA01 STATUS RTM  
0 ANI WITH AMA

0 ANI FORWARDING WITH BILLING AL0657

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0 NTX987AA01 STATUS RTM  
0 FIBER MAINTENANCE BASIC MODE

0 ENHANCED FIBER MONITORING AL0684

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0 NTX989AA01 STATUS RTM  
0 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

0 CARRIER ACCESS CODE BLOCKING FOR IC/INC AL0288

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0 NTX991AB02 STATUS A+M  
0 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG BY NTX991AC)

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | ACD MANAGEMENT INFORMATION SYSTEM INTERFACE    | AD0623 |
| 0 | ACD MIS PROTOCOL SPECIFICATION                 | AD0766 |
| 0 | DMS USER INTERFACE TO ACD MIS                  | AD0622 |
| 0 | DSP NOTIFICATION OF LOAD MANAGEMENT OPERATIONS | AD0823 |

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0 NTX991AC01 STATUS A+M  
0 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG. BY NTX991AD)

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | ACD LINE OF BUSINESS CODE KEY                  | AD2129 |
| 0 | ACD MANAGEMENT INFORMATION SYSTEM INTERFACE    | AD0623 |
| 0 | ACD MIS PROTOCOL SPECIFICATION                 | AD0766 |
| 0 | DMS USER INTERFACE TO ACD MIS                  | AD0622 |
| 0 | DSP NOTIFICATION OF LOAD MANAGEMENT OPERATIONS | AD0823 |

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0 NTX991AD01 STATUS A+M  
0 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG.. BY NTX991AE)

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | ACD LINE OF BUSINESS CODE KEY                  | AD2129 |
| 0 | ACD MANAGEMENT INFORMATION SYSTEM INTERFACE    | AD0623 |
| 0 | ACD MIS PROTOCOL SPECIFICATION                 | AD0766 |
| 0 | ACD WALK-AWAY / CLOSED KEY OPERATION           | AD2125 |
| 0 | DMS USER INTERFACE TO ACD MIS                  | AD0622 |
| 0 | DSP NOTIFICATION OF LOAD MANAGEMENT OPERATIONS | AD0823 |
| 0 | INCREASED NUMBER OF ACD MIS LINKS              | AG1947 |
| 0 | VIRTUAL FACILITY GROUP DATA IN ACD MIS         | AD2131 |

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0 NTX991AE01 STATUS A+M  
0 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG.BY NTX991AF)

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | ACD LINE OF BUSINESS CODE KEY                  | AD2129 |
| 0 | ACD MANAGEMENT INFORMATION SYSTEM INTERFACE    | AD0623 |
| 0 | ACD MIS FOR CALL TRANSFER, CALL HOLD           | NC0015 |
| 0 | ACD MIS PROTOCOL SPECIFICATION                 | AD0766 |
| 0 | ACD MULTIPLE LOB CODES                         | AD2894 |
| 0 | ACD WALK-AWAY / CLOSED KEY OPERATION           | AD2125 |
| 0 | DMS USER INTERFACE TO ACD MIS                  | AD0622 |
| 0 | DSP NOTIFICATION OF LOAD MANAGEMENT OPERATIONS | AD0823 |
| 0 | INCREASED NUMBER OF ACD MIS LINKS              | AG1947 |
| 0 | VIRTUAL FACILITY GROUP DATA IN ACD MIS         | AD2131 |

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0 NTX991AF01 STATUS RTM  
0 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

|   |                                                |        |
|---|------------------------------------------------|--------|
| 0 | ACD LINE OF BUSINESS CODE KEY                  | AD2129 |
| 0 | ACD MANAGEMENT INFORMATION SYSTEM INTERFACE    | AD0623 |
| 0 | ACD MIS FOR CALL TRANSFER, CALL HOLD           | NC0015 |
| 0 | ACD MIS PROTOCOL SPECIFICATION                 | AD0766 |
| 0 | ACD MULTIPLE LOB CODES                         | AD2894 |
| 0 | ACD WALK-AWAY / CLOSED KEY OPERATION           | AD2125 |
| 0 | DMS USER INTERFACE TO ACD MIS                  | AD0622 |
| 0 | DSP NOTIFICATION OF LOAD MANAGEMENT OPERATIONS | AD0823 |
| 0 | INCREASED NUMBER OF ACD MIS LINKS              | AG1947 |
| 0 | MIS ENHANCEMENT                                | AG2004 |
| 0 | VIRTUAL FACILITY GROUP DATA IN ACD MIS         | AD2131 |

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|                                                                    |        |            |
|--------------------------------------------------------------------|--------|------------|
| 0 (FI) ADDITIONAL NCS LINKS                                        | AD2667 | NTX353CA05 |
| 0 (FI) AUTHCODE STUTTER PROMPT TONE                                | AD2136 | NTX222BA07 |
| 0 (FI) ENHANCED FG-D CAPABILITIES                                  | AD4010 | NTX222CA09 |
| 0 (FI) FG-D SNC CP ENHANCEMENTS                                    | AM0049 | NTX222BA07 |
| 0 (FI) FG-D VNET CALLS TO OPERATOR                                 | AD2884 | NTX222CA09 |
| 0 (FI) FONCARD DIALING WITHOUT LEADING 0                           | AD3026 | NTXG48AA02 |
| 0 (FI) GVPN NETID EXPANSION                                        | AD3928 | NTXG45AA06 |
| 0 (FI) INBAND ANI DELIVERY                                         | AD3111 | NTXL40AA01 |
| 0 (FI) INTERNATIONAL OPERATOR SERVICES ON THE ISN<br>0 PLATFORM    | AD4082 | NTXG12CA06 |
| 0 (FI) INWFEAT ENHANCEMENTS                                        | AM0189 | NTX362BA02 |
| 0 (FI) LISTAB EXPANSION                                            | AD3645 | NTXL90AA02 |
| 0 (FI) LONG CALL DISCONNECT                                        | AD2761 | NTX222CA09 |
| 0 (FI) MARS-MERIDIAN AUTOMATIC ROUTE SELECTION                     | AD2641 | NTXN67AA01 |
| 0 (FI) MCI DAL OPERATOR ACCESS                                     | AD3837 | NTX222CA09 |
| 0 (FI) MCI PRISON SCREENING                                        | AD2547 | NTXG12CA06 |
| 0 (FI) MULTIPLE STAGE OUTPULSING ON FG-D                           | AM0191 | NTXL46AA01 |
| 0 (FI) NON-VALIDATED REORIGINATION FOR MCI ACD BASED<br>0 BOC CARD | AD4011 | NTXG30CA02 |
| 0 (FI) OPERATOR ANSWER SIGNAL ENHANCEMENTS                         | AD3409 | NTXG41BA05 |
| 0 (FI) OP250 TRUNK RESTRICTION REMOVAL                             | AM0057 | NTXG41BA05 |
| 0 (FI) REMOVAL OF DMS-250 EOPS CALL ARRIVAL TONE                   | AD2521 | NTXG12AA06 |
| 0 (FI) REMOVAL OF DMS-250 EOPS CALL ARRIVAL TONE                   | AD2521 | NTXG12CA06 |
| 0 (FI) RENAME TRUNK TYPE (RENAME CLLI)                             | AD3949 | NTXM07AA01 |
| 0 (FI) SPECIAL FEATURE HOTLINE ENHANCEMENTS                        | AD3932 | NTXL99AA01 |
| 0 (FI) TERMINATING OP250 WITH 10 DIGIT ANI                         | AD2454 | NTXG41BA05 |
| 0 (FI) TRAVELING PIN AND CASUAL ANI/INT'L CALLS                    | AD2620 | NTXG35AA01 |
| 0 (FI) TRAVELING PIN AND CASUAL ANI/INT'L CALLS                    | AD2620 | NTXG35BA01 |
| 0 (FI) UCS DMS-250 OUTGOING FG-D ENHANCEMENTS                      | AD2478 | NTXG22AA01 |
| 0 (FI) VALIDATION FOR TRAVEL CARD REORIGINATION                    | AD3112 | NTX360BA02 |
| 0 (FI) 3WC STR DIGIT AMBIGUITY ENHANCEMENT II                      | AD3931 | NTXG43AA05 |
| 0 (INTERIM) MCI CUSTOM ANI DATA BASE                               | BV1583 | NTX343CA02 |
| 0 (KS) BNR CHANGES FOR GERMAN BMMI                                 | BC1260 | NTX066AA02 |
| 0 (KS) BNR CHANGES FOR GERMAN BMMI                                 | BC1260 | NTX066AB01 |
| 0 (NSG) DMS250 T104 CALL PROCESSING                                | BC0903 | NTXZ03AA01 |
| 0 (NSG) DMS250 T104 CALL PROCESSING                                | BC0903 | NTX203AA01 |
| 0 (NSG) DMS250 T104 CALL PROCESSING                                | BC0903 | NTX802AA04 |
| 0 (NSG) DMS250 T104 CALL PROCESSING                                | BC0903 | NTX902AA07 |
| 0 (NSG) ENHANCED NETWORK MANAGEMENT (CODE CONTROLS)                | BC0739 | NTX060AB11 |
| 0 (NSG) FAST ROUTINE TO GET TIME OF DAY IN CLOCKI                  | BC0942 | NTX001AA29 |
| 0 (NSG) MCI VACANT COUNTRY CODE TREATMENT                          | BC1913 | NTX222CA09 |
| 0 (NSG) OM FOR INVALID AUTH CODE BY TRK GROUP (NSG-<br>0 V0731)    | BC0562 | NTX220AA13 |
| 0 (NSG) RADR WITH DTMF                                             | BC0944 | NTX001AA29 |

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|-----------------------------------------------------|-------------------|
| 0 (NSG) ROUTE LIST CHAINING                         | BC0458 NTX001AA29 |
| 0 (NSG) TRANS. VERIF. DMS-250 IMT. DAL & ONAL TRK   | BC0495 NTX055AB03 |
| 0 GRPS TYPES                                        |                   |
| 0 (NSG) TRANS. VERIF. DMS-250 IMT. DAL & ONAL TRK   | BC0495 NTX980AA01 |
| 0 GRPS TYPES                                        |                   |
| 0 (NSG) TRANSLATION VERIF. FOR PARTIT. 6-DIGIT      | BC0490 NTX055AB03 |
| 0 TRANSL.                                           |                   |
| 0 (NSG) TRANSLATION VERIF. FOR PARTIT. 6-DIGIT      | BC0490 NTX980AA01 |
| 0 TRANSL.                                           |                   |
| 0 (RTP) T1 MTCE FOR REMOTE LINKS                    | BC0956 NTX213AC01 |
| 0 'LCM CND SUPPORT'                                 | AG1109 NTXZ02AA01 |
| 0 'LCM CND SUPPORT'                                 | AG1109 NTX901AA24 |
| 0 A T & T - LAMA FORMAT                             | BR0439 NTX159AA12 |
| 0 A T & T LOCAL AMA (CONTINUED)                     | BC0683 NTX159AA12 |
| 0 A TO MU LAW CIRCUIT DIAGNOSTIC                    | BF0695 NTX611AA07 |
| 0 A TO MU LAW CIRCUIT INTEGRATION                   | BF0694 NTX611AA07 |
| 0 A-LAW NETWORK CROSSPOINTS (SEE H0147)             | BF0375 NTX470AA13 |
| 0 A-LAW NETWORK CROSSPOINTS (SEE H0147)             | BF0375 NTX471AA01 |
| 0 A-LAW TTT (SEE H0134 & H0135)                     | BF0379 NTX470AA13 |
| 0 A-LAW TTT (SEE H0134 & H0135)                     | BF0379 NTX471AA01 |
| 0 A-LAW TTU (SEE H0138 & H0139)                     | BF0376 NTX470AA13 |
| 0 A-LAW TTU (SEE H0138 & H0139)                     | BF0376 NTX471AA01 |
| 0 A-LAW UTRS FOR IBN LINES                          | AE0403 NTX269AA07 |
| 0 A-LAW UTRS FOR IBN TRUNKS                         | AE0302 NTX269AA07 |
| 0 A/C ACTIVATE/DEACTIVATE OF CFU/CFI                | BC1250 NTX413AB01 |
| 0 AABS DUAL LANGUAGE CAPABILITIES                   | NC0297 NTXP79AB01 |
| 0 AABS VSN XP RESTRUCTURE                           | AF3011 NTXA17AA02 |
| 0 AABS VSN XP RESTRUCTURE                           | AF3011 NTXQ23AA02 |
| 0 AABS/ACCS CALL SCREENING                          | NC0298 NTXP79AB01 |
| 0 AABS/ACCS CALL SCREENING                          | NC0298 NTXS35AA01 |
| 0 ABBR. DIALING & NEW RANGE RESTRICTIONS ON CALLING | AD1586 NTX345CA04 |
| 0 CARD                                              |                   |
| 0 ABBREVIATED DIALING                               | BC2053 NTX499AA10 |
| 0 ABBREVIATED DIALING IN ESA MODE (XREF F0277)      | BC0857 NTX025AA02 |
| 0 ABBREVIATED KEYING                                | BV0262 NTX701DA03 |
| 0 ABSENT SUBSCRIBER INTERCEPT                       | BC2049 NTX493AA01 |
| 0 AC DC RINGING                                     | BT0023 NTXZ02AA01 |
| 0 AC DC RINGING                                     | BT0023 NTX901AA24 |
| 0 AC TO IBNISUP INTERWORKING                        | AD1318 NTXA79AA03 |
| 0 AC-EXTENDED CALLS TO CFB/CFD                      | AC0038 NTXZ00AA01 |
| 0 AC-EXTENDED CALLS TO CFB/CFD                      | AC0038 NTX100AA27 |
| 0 ACCESS CHARGE RECORDING - END OFFICE (ATT FORMAT) | BR0494 NTX209AA03 |
| 0 ACCESS CHARGE RECORDING - END OFFICE (ATT FORMAT) | BR0494 NTX209AB01 |
| 0 ACCESS CHARGE RECORDING - END OFFICE (NT FORMAT)  | BR0564 NTX268AA02 |
| 0 ACCESS CHARGE RECORDING - TANDEM                  | BR0496 NTX211AB01 |
| 0 ACCESS CHARGE RECORDING - TANDEM (NT FORMAT)      | BR0610 NTX190AA01 |
| 0 ACCESS CONTROL                                    | BC1042 NTX292AB04 |

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|                                                      |        |            |
|------------------------------------------------------|--------|------------|
| 0 ACCESS CONTROL                                     | BC1042 | NTX292BA03 |
| 0 ACCESS FEATURE GROUP ENHANCEMENT                   | AG1866 | NTXF87AA02 |
| 0 ACCESS FEATURE GROUPING                            | AG1162 | NTXF87AA02 |
| 0 ACCESS LINE FOR INTERNATIONAL DMS-250              | AD1822 | NTXG60AA02 |
| 0 ACCESS TO CCSA                                     | BC0204 | NTXZ00AA01 |
| 0 ACCESS TO CCSA                                     | BV0420 | NTXZ00AA01 |
| 0 ACCESS TO CCSA                                     | BV0488 | NTXZ00AA01 |
| 0 ACCESS TO CCSA                                     | BC0204 | NTX100AA27 |
| 0 ACCESS TO CCSA                                     | BV0420 | NTX100AA27 |
| 0 ACCESS TO CCSA                                     | BV0488 | NTX100AA27 |
| 0 ACCESS TO CO FROM PBX                              | BV0480 | NTXZ00AA01 |
| 0 ACCESS TO CO FROM PBX                              | BV0485 | NTXZ00AA01 |
| 0 ACCESS TO CO FROM PBX                              | BV0480 | NTX100AA27 |
| 0 ACCESS TO CO FROM PBX                              | BV0485 | NTX100AA27 |
| 0 ACCESS TO ETN                                      | BV0585 | NTXZ00AA01 |
| 0 ACCESS TO ETN                                      | BV0585 | NTX100AA27 |
| 0 ACCESS TRANSPORT PRI/SS7 - XPM                     | AM0185 | NTXL15AA01 |
| 0 ACCESS TRANSPORT PRI/SS7 -CC                       | AM0184 | NTXL15AA01 |
| 0 ACCOUNT CODE BILLING                               | NC0035 | NTXJ73AA01 |
| 0 ACCOUNT CODE DATABASE FOR CNI                      | BV1199 | NTX220AA13 |
| 0 ACCOUNT CODE PASSES TO EOPS                        | AD1560 | NTXG12CA06 |
| 0 ACCOUNT CODE VALIDATION                            | BV1228 | NTX220AA13 |
| 0 ACCOUNT CODES                                      | BV0493 | NTX103AA12 |
| 0 ACCS ENHANCEMENTS                                  | AF0737 | NTX552AC02 |
| 0 ACCS ENHANCEMENTS                                  | AF0737 | NTX552AD01 |
| 0 ACCS ENHANCEMENTS                                  | AF0737 | NTX825AB01 |
| 0 ACCS ENHANCEMENTS FOR CANADIAN APPLICATION         | AC0153 | NTX552AB03 |
| 0 ACCS ENHANCEMENTS FOR CANADIAN APPLICATION         | AC0153 | NTX552AC02 |
| 0 ACCS ENHANCEMENTS FOR CANADIAN APPLICATION         | AC0153 | NTX552AD01 |
| 0 ACCS FOR AUSTRALIA                                 | AJ0123 | NTXH48AA02 |
| 0 ACCS/VPN ENHANCEMENTS                              | AJ1254 | NTXH49AA02 |
| 0 ACCS/VPN ENHANCEMENTS                              | AJ1254 | NTXH49AB01 |
| 0 ACCT CODE SCREENING BY AUTH OR ANI                 | BV1885 | NTX220AA13 |
| 0 ACCT CODE SCREENING BY AUTH OR ANI                 | BV1885 | NTX222AB04 |
| 0 ACCTCODE VALIDATION & PRIVATE SPEED TRANSLATION AT | AD0807 | NTX366BA01 |
| 0 DCP                                                |        |            |
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS       | BC1562 | NTX416AC01 |
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS       | BC1562 | NTX416AD01 |
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS       | BC1562 | NTX416AE01 |
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS       | BC1562 | NTX416AF01 |
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS       | BC1562 | NTX416AG01 |
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS       | BC1562 | NTX416AH01 |
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS       | BC1562 | NTX416AI01 |
| 0 ACD AGENT AND SUPERVISOR POSITION ID NUMBERS       | BC1562 | NTX416AJ01 |
| 0 ACD AGENT KEY                                      | BC1531 | NTX416AC01 |
| 0 ACD AGENT KEY                                      | BC1531 | NTX416AD01 |
| 0 ACD AGENT KEY                                      | BC1531 | NTX416AE01 |



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| 0 ACD AGENT KEY                                 | BC1531 NTX416AF01 |
| 0 ACD AGENT KEY                                 | BC1531 NTX416AG01 |
| 0 ACD AGENT KEY                                 | BC1531 NTX416AH01 |
| 0 ACD AGENT KEY                                 | BC1531 NTX416AI01 |
| 0 ACD AGENT KEY                                 | BC1531 NTX416AJ01 |
| 0 ACD AGENT LOGIN ENHANCEMENT                   | AD0620 NTX407AB01 |
| 0 ACD AGENT POSITION USING MFT                  | AJ0428 NTX750AC02 |
| 0 ACD AGENT POSITION USING MFT                  | AJ0428 NTX750AD01 |
| 0 ACD AGENT STABILITY DURING SWITCH MAINTENANCE | NC0269 NTX416AI01 |
| 0 ACD AGENT STABILITY DURING SWITCH MAINTENANCE | NC0269 NTX416AJ01 |
| 0 ACD AGENT STATUS LAMPS                        | BC1009 NTX415AA07 |
| 0 ACD BASE UTILITIES                            | BC1522 NTX407AB01 |
| 0 ACD BASE UTILITIES                            | BC1522 NTX415AA07 |
| 0 ACD BASED BOC CALLING CARD CALL PROCESSING    | AM0156 NTXL30AA01 |
| 0 ACD CALL AGENT KEY                            | BC1533 NTX415AA07 |
| 0 ACD CALL FORCING                              | BC1115 NTX416AC01 |
| 0 ACD CALL FORCING                              | BC1115 NTX416AD01 |
| 0 ACD CALL FORCING                              | BC1115 NTX416AE01 |
| 0 ACD CALL FORCING                              | BC1115 NTX416AF01 |
| 0 ACD CALL FORCING                              | BC1115 NTX416AG01 |
| 0 ACD CALL FORCING                              | BC1115 NTX416AH01 |
| 0 ACD CALL FORCING                              | BC1115 NTX416AI01 |
| 0 ACD CALL FORCING                              | BC1115 NTX416AJ01 |
| 0 ACD CALL FORCING TONE TO HEADSET              | AD2128 NTX416AG01 |
| 0 ACD CALL FORCING TONE TO HEADSET              | AD2128 NTX416AH01 |
| 0 ACD CALL FORCING TONE TO HEADSET              | AD2128 NTX416AI01 |
| 0 ACD CALL FORCING TONE TO HEADSET              | AD2128 NTX416AJ01 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY      | BC1121 NTX416AC01 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY      | BC1121 NTX416AD01 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY      | BC1121 NTX416AE01 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY      | BC1121 NTX416AF01 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY      | BC1121 NTX416AG01 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY      | BC1121 NTX416AH01 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY      | BC1121 NTX416AI01 |
| 0 ACD CALL SUPERVISOR KEY/ANSWER AGENT KEY      | BC1121 NTX416AJ01 |
| 0 ACD CALL TRANSFER WITH TIME                   | AD2895 NTX416AG01 |
| 0 ACD CALL TRANSFER WITH TIME                   | AD2895 NTX416AH01 |
| 0 ACD CALL TRANSFER WITH TIME                   | AD2895 NTX416AI01 |
| 0 ACD CALL TRANSFER WITH TIME                   | AD2895 NTX416AJ01 |
| 0 ACD CONFIGURATION SECURITY                    | AD0118 NTX727AC01 |
| 0 ACD CONFIGURATION SECURITY                    | AD0118 NTX727AD01 |
| 0 ACD CONFIGURATION SECURITY ENHANCEMENT        | AD0621 NTX727AD01 |
| 0 ACD DATA STRUCTURE & TABLE CONTROL            | BC1116 NTX407AB01 |
| 0 ACD DATA STRUCTURE & TABLE CONTROL            | BC1116 NTX415AA07 |
| 0 ACD DISPLAY QUEUE STATUS KEY                  | BC1008 NTX415AA07 |
| 0 ACD DISTINCTIVE RINGING                       | AD1929 NTXE09AA01 |
| 0 ACD DISTINCTIVE RINGING                       | AD1929 NTXE09AB01 |

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| 0 ACD EMERGENCY KEY                          | BC1117 NTX416AC01 |
| 0 ACD EMERGENCY KEY                          | BC1117 NTX416AD01 |
| 0 ACD EMERGENCY KEY                          | BC1117 NTX416AE01 |
| 0 ACD EMERGENCY KEY                          | BC1117 NTX416AF01 |
| 0 ACD EMERGENCY KEY                          | BC1117 NTX416AG01 |
| 0 ACD EMERGENCY KEY                          | BC1117 NTX416AH01 |
| 0 ACD EMERGENCY KEY                          | BC1117 NTX416AI01 |
| 0 ACD EMERGENCY KEY                          | BC1117 NTX416AJ01 |
| 0 ACD EMERGENCY KEY BACK-UP                  | NC0094 NTX416AH01 |
| 0 ACD EMERGENCY KEY BACK-UP                  | NC0094 NTX416AI01 |
| 0 ACD EMERGENCY KEY BACK-UP                  | NC0094 NTX416AJ01 |
| 0 ACD EMERGENCY KEY-ENHANCED                 | AD0845 NTX416AC01 |
| 0 ACD EMERGENCY KEY-ENHANCED                 | AD0845 NTX416AD01 |
| 0 ACD EMERGENCY KEY-ENHANCED                 | AD0845 NTX416AE01 |
| 0 ACD EMERGENCY KEY-ENHANCED                 | AD0845 NTX416AF01 |
| 0 ACD EMERGENCY KEY-ENHANCED                 | AD0845 NTX416AG01 |
| 0 ACD EMERGENCY KEY-ENHANCED                 | AD0845 NTX416AH01 |
| 0 ACD EMERGENCY KEY-ENHANCED                 | AD0845 NTX416AI01 |
| 0 ACD EMERGENCY KEY-ENHANCED                 | AD0845 NTX416AJ01 |
| 0 ACD EXTENDED AGENT OBSERVE                 | BC1007 NTX416AC01 |
| 0 ACD EXTENDED AGENT OBSERVE                 | BC1007 NTX416AD01 |
| 0 ACD EXTENDED AGENT OBSERVE                 | BC1007 NTX416AE01 |
| 0 ACD EXTENDED AGENT OBSERVE                 | BC1007 NTX416AF01 |
| 0 ACD EXTENDED AGENT OBSERVE                 | BC1007 NTX416AG01 |
| 0 ACD EXTENDED AGENT OBSERVE                 | BC1007 NTX416AH01 |
| 0 ACD EXTENDED AGENT OBSERVE                 | BC1007 NTX416AI01 |
| 0 ACD EXTENDED AGENT OBSERVE                 | BC1007 NTX416AJ01 |
| 0 ACD FOR FOR ARIES SETS                     | AD2541 NTX415AA07 |
| 0 ACD FOR MCMS                               | AG2162 NTXZ07AA01 |
| 0 ACD FORCED AGENT AVAILABILITY              | NC0014 NTX416AG01 |
| 0 ACD FORCED AGENT AVAILABILITY              | NC0014 NTX416AH01 |
| 0 ACD FORCED AGENT AVAILABILITY              | NC0014 NTX416AI01 |
| 0 ACD FORCED AGENT AVAILABILITY              | NC0014 NTX416AJ01 |
| 0 ACD FORCED ANNCT. FOR NEW/OVERFLOWED CALLS | NC0104 NTX416AH01 |
| 0 ACD FORCED ANNCT. FOR NEW/OVERFLOWED CALLS | NC0104 NTX416AI01 |
| 0 ACD FORCED ANNCT. FOR NEW/OVERFLOWED CALLS | NC0104 NTX416AJ01 |
| 0 ACD HEADSET                                | BZ0242 NTX415AA07 |
| 0 ACD INCALLS KEY FEATURE INTERACTIONS       | BC1119 NTX407AB01 |
| 0 ACD LINE OF BUSINESS CODE KEY              | AD2129 NTX991AC01 |
| 0 ACD LINE OF BUSINESS CODE KEY              | AD2129 NTX991AD01 |
| 0 ACD LINE OF BUSINESS CODE KEY              | AD2129 NTX991AE01 |
| 0 ACD LINE OF BUSINESS CODE KEY              | AD2129 NTX991AF01 |
| 0 ACD LOAD MANAGEMENT - BASIC COMMANDS       | AD0056 NTX727AA02 |
| 0 ACD LOAD MANAGEMENT - BASIC COMMANDS       | AD0056 NTX727AC01 |
| 0 ACD LOAD MANAGEMENT - BASIC COMMANDS       | AD0056 NTX727AD01 |
| 0 ACD LOAD MANAGEMENT - ENHANCED COMMANDS    | AD0180 NTX727AA02 |
| 0 ACD LOAD MANAGEMENT - ENHANCED COMMANDS    | AD0180 NTX727AD01 |

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| 0 ACD LOGIN/LOGOUT                               | BC1572 NTX417AA03 |
| 0 ACD MANAGEMENT INFORMATION SYSTEM INTERFACE    | AD0623 NTX991AB02 |
| 0 ACD MANAGEMENT INFORMATION SYSTEM INTERFACE    | AD0623 NTX991AC01 |
| 0 ACD MANAGEMENT INFORMATION SYSTEM INTERFACE    | AD0623 NTX991AD01 |
| 0 ACD MANAGEMENT INFORMATION SYSTEM INTERFACE    | AD0623 NTX991AE01 |
| 0 ACD MANAGEMENT INFORMATION SYSTEM INTERFACE    | AD0623 NTX991AF01 |
| 0 ACD MANAGEMENT REPORT INTERFACE                | BC1566 NTX417AA03 |
| 0 ACD MANAGEMENT REPORT LOB CODE STORAGE         | BC1567 NTX417AA03 |
| 0 ACD MANAGEMENT REPORTS APPLICATION LAYER       | BC1564 NTX417AA03 |
| 0 ACD MANAGEMENT REPORTS INTERFACE SPECIFICATION | BZ0244 NTX417AA03 |
| 0 ACD MANAGEMENT REPORTS MESSAGE DEFINITION      | AD0012 NTX417AA03 |
| 0 SPECIFICATION                                  |                   |
| 0 ACD MANAGEMENT REPORTS OPTION                  | AD0010 NTX417AA03 |
| 0 ACD MANAGEMENT REPORTS OPTION                  | AD0010 NTX728AA02 |
| 0 ACD MANAGEMENT REPORTS TEST TOOL               | AD0041 NTX417AA03 |
| 0 ACD MIS FOR CALL TRANSFER, CALL HOLD           | NC0015 NTX991AE01 |
| 0 ACD MIS FOR CALL TRANSFER, CALL HOLD           | NC0015 NTX991AF01 |
| 0 ACD MIS PROTOCOL SPECIFICATION                 | AD0766 NTX991AB02 |
| 0 ACD MIS PROTOCOL SPECIFICATION                 | AD0766 NTX991AC01 |
| 0 ACD MIS PROTOCOL SPECIFICATION                 | AD0766 NTX991AD01 |
| 0 ACD MIS PROTOCOL SPECIFICATION                 | AD0766 NTX991AE01 |
| 0 ACD MIS PROTOCOL SPECIFICATION                 | AD0766 NTX991AF01 |
| 0 ACD MSQS REFRESH                               | AD2591 NTX416AF01 |
| 0 ACD MSQS REFRESH                               | AD2591 NTX416AG01 |
| 0 ACD MSQS REFRESH                               | AD2591 NTX416AH01 |
| 0 ACD MSQS REFRESH                               | AD2591 NTX416AI01 |
| 0 ACD MSQS REFRESH                               | AD2591 NTX416AJ01 |
| 0 ACD MULTIPLE LOB CODES                         | AD2894 NTX991AE01 |
| 0 ACD MULTIPLE LOB CODES                         | AD2894 NTX991AF01 |
| 0 ACD NOT READY KEY                              | BC1118 NTX407AB01 |
| 0 ACD NOT READY KEY                              | BC1118 NTX415AA07 |
| 0 ACD OBSERVE AGENT FROM 2500 SET                | NC0185 NTXE09AB01 |
| 0 ACD OBSERVE AGENT KEY                          | BC1120 NTX415AA07 |
| 0 ACD OBSERVE AGENT 3WC                          | AG1950 NTX415AA07 |
| 0 ACD ON IVD DIGITAL SETS                        | AD2318 NTX415AA07 |
| 0 ACD ON 2500 SET FEATURE ASSIGNMENT             | AD1950 NTXE09AA01 |
| 0 ACD ON 2500 SET FEATURE ASSIGNMENT             | AD1950 NTXE09AB01 |
| 0 ACD OVERFLOW ENHANCEMENT                       | BC1006 NTX416AC01 |
| 0 ACD OVERFLOW ENHANCEMENT                       | BC1006 NTX416AD01 |
| 0 ACD OVERFLOW ENHANCEMENT                       | BC1006 NTX416AE01 |
| 0 ACD OVERFLOW ENHANCEMENT                       | BC1006 NTX416AF01 |
| 0 ACD OVERFLOW ENHANCEMENT                       | BC1006 NTX416AG01 |
| 0 ACD OVERFLOW ENHANCEMENT                       | BC1006 NTX416AH01 |
| 0 ACD OVERFLOW ENHANCEMENT                       | BC1006 NTX416AI01 |
| 0 ACD OVERFLOW ENHANCEMENT                       | BC1006 NTX416AJ01 |
| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION         | AD2130 NTX416AE01 |
| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION         | AD2130 NTX416AF01 |

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| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION                      | AD2130 NTX416AG01 |
| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION                      | AD2130 NTX416AH01 |
| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION                      | AD2130 NTX416AI01 |
| 0 ACD QUEUE SLOT ANNOUNCEMENT ALLOCATION                      | AD2130 NTX416AJ01 |
| 0 ACD QUEUE STATUS LAMP                                       | BC1011 NTX416AC01 |
| 0 ACD QUEUE STATUS LAMP                                       | BC1011 NTX416AD01 |
| 0 ACD QUEUE STATUS LAMP                                       | BC1011 NTX416AE01 |
| 0 ACD QUEUE STATUS LAMP                                       | BC1011 NTX416AF01 |
| 0 ACD QUEUE STATUS LAMP                                       | BC1011 NTX416AG01 |
| 0 ACD QUEUE STATUS LAMP                                       | BC1011 NTX416AH01 |
| 0 ACD QUEUE STATUS LAMP                                       | BC1011 NTX416AI01 |
| 0 ACD QUEUE STATUS LAMP                                       | BC1011 NTX416AJ01 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                           | AD0179 NTX416AC01 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                           | AD0179 NTX416AD01 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                           | AD0179 NTX416AE01 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                           | AD0179 NTX416AF01 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                           | AD0179 NTX416AG01 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                           | AD0179 NTX416AH01 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                           | AD0179 NTX416AI01 |
| 0 ACD REAL TIME DISPLAY ENHANCEMENT                           | AD0179 NTX416AJ01 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK)           | BC1555 NTX416AC01 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK)           | BC1555 NTX416AD01 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK)           | BC1555 NTX416AE01 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK)           | BC1555 NTX416AF01 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK)           | BC1555 NTX416AG01 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK)           | BC1555 NTX416AH01 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK)           | BC1555 NTX416AI01 |
| 0 ACD REAL TIME STATUS DISPLAY (VIA ASYNC DATALINK)           | BC1555 NTX416AJ01 |
| 0 ACD SERVICE ORDER ENHANCEMENTS                              | AG1978 NTXP53AA01 |
| 0 ACD SHOW-ENHANCEMENT I                                      | AD0181 NTX416AC01 |
| 0 ACD SHOW-ENHANCEMENT I                                      | AD0181 NTX416AD01 |
| 0 ACD SHOW-ENHANCEMENT I                                      | AD0181 NTX416AE01 |
| 0 ACD SHOW-ENHANCEMENT I                                      | AD0181 NTX416AF01 |
| 0 ACD SHOW-ENHANCEMENT I                                      | AD0181 NTX416AG01 |
| 0 ACD SHOW-ENHANCEMENT I                                      | AD0181 NTX416AH01 |
| 0 ACD SHOW-ENHANCEMENT I                                      | AD0181 NTX416AI01 |
| 0 ACD SHOW-ENHANCEMENT I                                      | AD0181 NTX416AJ01 |
| 0 ACD STATION MAINTENANCE AND CONFIGURATION<br>0 ENHANCEMENTS | NC0262 NTX416AI01 |
| 0 ACD STATION MAINTENANCE AND CONFIGURATION<br>0 ENHANCEMENTS | NC0262 NTX416AJ01 |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE                     | BC1010 NTX416AC01 |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE                     | BC1010 NTX416AD01 |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE                     | BC1010 NTX416AE01 |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE                     | BC1010 NTX416AF01 |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE                     | BC1010 NTX416AG01 |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE                     | BC1010 NTX416AH01 |

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| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE          | BC1010 NTX416AI01 |
| 0 ACD SUPERVISOR CONTROL OF NIGHT SERVICE          | BC1010 NTX416AJ01 |
| 0 ACD SYSTEM INTEGRITY                             | BC1556 NTX416AC01 |
| 0 ACD SYSTEM INTEGRITY                             | BC1556 NTX416AD01 |
| 0 ACD SYSTEM INTEGRITY                             | BC1556 NTX416AE01 |
| 0 ACD SYSTEM INTEGRITY                             | BC1556 NTX416AF01 |
| 0 ACD SYSTEM INTEGRITY                             | BC1556 NTX416AG01 |
| 0 ACD SYSTEM INTEGRITY                             | BC1556 NTX416AH01 |
| 0 ACD SYSTEM INTEGRITY                             | BC1556 NTX416AI01 |
| 0 ACD SYSTEM INTEGRITY                             | BC1556 NTX416AJ01 |
| 0 ACD TRANSFER TO INCALLS KEY                      | AD2588 NTX416AF01 |
| 0 ACD TRANSFER TO INCALLS KEY                      | AD2588 NTX416AG01 |
| 0 ACD TRANSFER TO INCALLS KEY                      | AD2588 NTX416AH01 |
| 0 ACD TRANSFER TO INCALLS KEY                      | AD2588 NTX416AI01 |
| 0 ACD TRANSFER TO INCALLS KEY                      | AD2588 NTX416AJ01 |
| 0 ACD VARIABLE WRAP-UP TIME                        | NC0022 NTX416AH01 |
| 0 ACD VARIABLE WRAP-UP TIME                        | NC0022 NTX416AI01 |
| 0 ACD VARIABLE WRAP-UP TIME                        | NC0022 NTX416AJ01 |
| 0 ACD WALK-AWAY / CLOSED KEY OPERATION             | AD2125 NTX991AD01 |
| 0 ACD WALK-AWAY / CLOSED KEY OPERATION             | AD2125 NTX991AE01 |
| 0 ACD WALK-AWAY / CLOSED KEY OPERATION             | AD2125 NTX991AF01 |
| 0 ACD 2500 SET CALL PROCESSING INTERACTIONS        | AD1857 NTXE09AA01 |
| 0 ACD 2500 SET CALL PROCESSING INTERACTIONS        | AD1857 NTXE09AB01 |
| 0 ACD 2500 SET LOAD MANAGEMENT AND ACDSHOW         | AD1862 NTXE09AA01 |
| 0 ACD 2500 SET LOAD MANAGEMENT AND ACDSHOW         | AD1862 NTXE09AB01 |
| 0 ACD 2500 SET LOGIN/LOGOUT                        | AD1858 NTXE09AA01 |
| 0 ACD 2500 SET LOGIN/LOGOUT                        | AD1858 NTXE09AB01 |
| 0 ACD 2500 SET NOT READY                           | AD1863 NTXE09AA01 |
| 0 ACD 2500 SET NOT READY                           | AD1863 NTXE09AB01 |
| 0 ACD-AGENT STATUS LAMP ENHANCEMENT                | AD1609 NTX415AA07 |
| 0 ACD-OBSERVE AGENT ENHANCED                       | AD1610 NTX415AA07 |
| 0 ACDSHOW                                          | BC1559 NTX415AA07 |
| 0 ACTION CODE TREATMENT TABLE FOR NCS ACTION CODES | AD2948 NTX353CA05 |
| 0 ACTIVE VCH SCANNING                              | AD0626 NTX322AA18 |
| 0 ACTS - PHASE II                                  | BR0489 NTX208AA02 |
| 0 ACTS - PHASE II                                  | BR0489 NTX208AB01 |
| 0 ACTS COIN TONE GENERATION TEST                   | AL0011 NTX208AB01 |
| 0 ACTS STANDARD PROM ANNOUNCEMENTS                 | BF0692 NTX208AA02 |
| 0 ACTS STANDARD PROM ANNOUNCEMENTS                 | BF0692 NTX208AB01 |
| 0 ACTS-PHASE I                                     | BC1377 NTX208AA02 |
| 0 ACTS-PHASE I                                     | BC1377 NTX208AB01 |
| 0 ACU MAINTENANCE                                  | AD1627 NTXG52AA04 |
| 0 ACU MAINTENANCE                                  | AD1627 NTXG80AA03 |
| 0 ADACC TOLL RESTRICTIONS                          | NC0316 NTXE36AB01 |
| 0 ADAPT UNIVXLA FOR VDN USE                        | AJ1541 NTX472AB08 |
| 0 ADAPTIVE ROUTING (DMS-250 RETRANSLATION)         | BV1251 NTX340AA02 |
| 0 ADAPTIVE ROUTING (DMS-250 RETRANSLATION)         | BV1251 NTX340BA01 |

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| 0 ADAPTIVE ROUTING (DMS-250 RETRANSLATION)            | BV1251 NTX340CA01 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY               | AD1131 NTX416AC01 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY               | AD1131 NTX416AD01 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY               | AD1131 NTX416AE01 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY               | AD1131 NTX416AF01 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY               | AD1131 NTX416AG01 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY               | AD1131 NTX416AH01 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY               | AD1131 NTX416AI01 |
| 0 ADC CALLED NAME/CALLED NUMBER DISPLAY               | AD1131 NTX416AJ01 |
| 0 ADD FIELDS INTO LOGICAL LEVEL OF MTR AND OPR TRUNKS | BC1920 NTX470AA13 |
| 0 ADDING OPTIONS ON A SECONDARY DIRECTORY NUMBER (DN) | AF2021 NTXE94AA02 |
| 0 ADDITION OF IDDD ALLOWED FIELD IN MCI AUTHCODE DB.  | AD0168 NTX234CA01 |
| 0 ADDITIONAL INTERNATIONAL SERVICE ORDERS             | AC0305 NTX472AB08 |
| 0 ADVANTAGE UNIT SWITCH INTERFACE (SPLASHBACK)        | BV1192 NTX222CA09 |
| 0 AE LTD INTERFACE                                    | BR0061 NTXZ02AA01 |
| 0 AE LTD INTERFACE                                    | BR0061 NTX001AA29 |
| 0 AE LTD INTERFACE                                    | BR0061 NTX901AA24 |
| 0 AE-21 INTERFACE                                     | BR0095 NTXZ02AA01 |
| 0 AE-21 INTERFACE                                     | BR0095 NTX901AA24 |
| 0 AFT ACS-SFO FILENAME                                | AM0100 NTX344CA06 |
| 0 AGENT POSITION DN DATA STREAM MESSAGES              | BC1565 NTX417AA03 |
| 0 AIOD                                                | AD0816 NTX354BA01 |
| 0 AIOD (AUTO IDENTIFIED OUTWARD DIALING)              | BR0454 NTX174AA03 |
| 0 AIOD CALL PROCESSING                                | BC1151 NTX174AA03 |
| 0 AIOD DATA STRUCTURES/TABLE CONTROL                  | BC1148 NTX174AA03 |
| 0 AIOD ENHANCEMENTS                                   | AD1944 NTX354BA01 |
| 0 AIOD FOR TIE TRUNKS                                 | BR0780 NTX174AA03 |
| 0 AIOD MAINTENANCE UTILITIES                          | BC1149 NTX174AA03 |
| 0 AIOD OPERATIONAL MEASUREMENTS                       | BC1152 NTX174AA03 |
| 0 AIOD: LOGS & ALARMS                                 | BC1153 NTX174AA03 |
| 0 AIOD: PBX TRUNK & LINE OPTIONS                      | BC1150 NTX174AA03 |
| 0 AISUP FEATURE INTERACTIONS                          | AJ1243 NTXH78AA02 |
| 0 AISUP FEATURE INTERACTIONS                          | AJ1243 NTXH78AB01 |
| 0 ALARM                                               | BR0049 NTX053AA05 |
| 0 ALARM SENDING AND CHECKING                          | BV0395 NTX053AA05 |
| 0 ALARM ENHANCEMENTS FOR SMS                          | AF0058 NTX398AA12 |
| 0 ALARM SENDING AND CHECKING - ADEMCO NO.669          | BR0110 NTX053AA05 |
| 0 ALARM STATUS MESSAGE                                | BV1905 NTX344CA06 |
| 0 ALARMING ON DCM/RLM LINKS                           | BC0724 NTX001AA29 |
| 0 ALARMS                                              | BT0043 NTX001AA29 |
| 0 ALARMS                                              | BV1236 NTX322AA18 |
| 0 ALARMS - (LM + LINES)                               | BV0023 NTX001AA29 |
| 0 ALLOW CHANGES TO OFFICE CONFIGURATION TABLE         | BC0316 NTX001AA29 |
| 0 ALM - DEAD OFFICE (HOST)                            | BT0249 NTX001AA29 |
| 0 ALM - EXTERNAL                                      | BT0247 NTX001AA29 |
| 0 ALM - INTERNAL                                      | BT0246 NTX001AA29 |
| 0 ALT DADDY & TIDY CLEANUP                            | BC0553 NTXZ02AA01 |

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| 0 ALT DADDY & TIDY CLEANUP                            | BC0553 NTX901AA24 |
| 0 ALTERNATE ADDRESS                                   | BV0247 NTX701DA03 |
| 0 ALTERNATE CARRIER SELECTION                         | AF1781 NTXE35AA01 |
| 0 AMA - MANAGEMENT                                    | BT0344 NTX042AA04 |
| 0 AMA - MANAGEMENT                                    | BT0344 NTX044AA04 |
| 0 AMA FAILURE ROUTING OPTIONS                         | BR0475 NTX030CC16 |
| 0 AMA FAILURE ROUTING OPTIONS                         | BR0475 NTX042AA04 |
| 0 AMA FAILURE ROUTING OPTIONS                         | BR0475 NTX044AA04 |
| 0 AMA FAILURE ROUTING OPTIONS                         | BR0475 NTX102AA05 |
| 0 AMA FOR TOPSMP DA CALLS                             | AF1152 NTX188AA02 |
| 0 AMA FOR TYPE 1 AND 2B CELLULAR INTERCONNECTION      | AF1394 NTXE23AA01 |
| 0 AMA FOR TYPE 2A CELLULAR INTERCONNECTION            | AL0380 NTX843AA01 |
| 0 AMA FOR TYPE 2A CELLULAR INTERCONNECTION            | AL0380 NTX843AB01 |
| 0 AMA PRESERVATION OVER PERIPHERAL WARM SWACT         | BC1717 NTX001AA29 |
| 0 AMA REAL TIME ENHANCEMENTS (AT&T FORMAT)            | BC0985 NTX001AA29 |
| 0 AMA RECORD OF SPECIFIED UNANSWERED CALL TYPE        | BR0413 NTX030CC16 |
| 0 AMA RECORD OF TANDEM SWITCH SEIZURE - ONLY CALLS    | BC0224 NTX044AA04 |
| 0 AMA RECORD OF TANDEM SWITCH SEIZURE - ONLY CALLS    | BC0253 NTX044AA04 |
| 0 AMA RECORD OF TANDEM SWITCH SEIZURE - ONLY CALLS    | BC0274 NTX044AA04 |
| 0 AMA RECORD OF TANDEM SWITCH SEIZURE - ONLY CALLS    | BR0199 NTX044AA04 |
| 0 AMA TAPE ENTRIES                                    | BT0195 NTX801AA01 |
| 0 AMA TEST CALL CAPABILITY                            | AF1462 NTX159AA12 |
| 0 AMA TEST CALL ENHANCEMENTS                          | AF1981 NTX098AA07 |
| 0 AMA TEST CALL ENHANCEMENTS                          | AF1981 NTX159AA12 |
| 0 AMA UNCOMPLETED CALLS ON TAPE                       | BT0190 NTX042AA04 |
| 0 AMA UNCOMPLETED CALLS ON TAPE                       | BT0190 NTX044AA04 |
| 0 AMA: SEPARATION OF BILLING AND ROUTING FUNCTION.    | AF1439 NTXZ02AA01 |
| 0 AMA: SEPARATION OF BILLING AND ROUTING FUNCTION.    | AF1439 NTX901AA24 |
| 0 AMADUMP - DMS250 AMA ENTRIES                        | BC0824 NTX176AA05 |
| 0 AMADUMP - DMS250 AMA ENTRIES                        | BC0824 NTX181AA12 |
| 0 AMADUMP - DMS250 AMA ENTRIES                        | BC0824 NTX182AA06 |
| 0 AMADUMP - DMS250 AMA ENTRIES                        | BC0824 NTX184AA11 |
| 0 AMADUMP - DMS250 AMA ENTRIES                        | BC0824 NTX184AB02 |
| 0 AMATPS                                              | BR0514 NTX243AA07 |
| 0 AMBIGUOUS CODE (NPA USED AS NNX) WITH 1+ PERMISSIVE | BC0470 NTX001AA29 |
| 0 DIALLING                                            |                   |
| 0 AMBIGUOUS CODE TRANSLATION FOR INTERNATIONAL        | BC1450 NTX472AA03 |
| 0 AMBIGUOUS CODE TRANSLATION FOR INTERNATIONAL        | BC1450 NTX472AB08 |
| 0 ANA VIA X.25                                        | AD0298 NTX716AA05 |
| 0 ANALOG COIN FUNCTIONS ON LCM                        | BF0803 NTXZ02AA01 |
| 0 ANALOG COIN FUNCTIONS ON LCM                        | BF0803 NTX901AA24 |
| 0 ANALOG LINES ON IPE                                 | AM0128 NTXN25AA02 |
| 0 ANALOG R2 PROTOCOL                                  | AE0137 NTXB69AA04 |
| 0 ANI (BELL STD) OUTPUTSING IN RESPONSE TO WINK       | BR0453 NTXZ02AA01 |
| 0 SIGNAL                                              |                   |
| 0 ANI (BELL STD) OUTPUTSING IN RESPONSE TO WINK       | BR0453 NTX901AA24 |
| 0 SIGNAL                                              |                   |

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| 0 ANI (1 & 2 PARTY)                                 | BT0050 NTXZ02AA01 |
| 0 ANI (1 & 2 PARTY)                                 | BT0050 NTX901AA24 |
| 0 ANI BULK LOAD/DUMP FOR MCI                        | BV1680 NTX343CA02 |
| 0 ANI COLLECTION SCREENING BY TRKGRP                | BV1677 NTX342AA02 |
| 0 ANI COLLECTION SCREENING BY TRKGRP                | BV1677 NTX342BA01 |
| 0 ANI COLLECTION SCREENING BY TRKGRP                | BV1677 NTX342CA01 |
| 0 ANI DATABASE DESIGN                               | AD0062 NTX343AB03 |
| 0 ANI DATABASE DESIGN                               | AD0062 NTX343BA01 |
| 0 ANI DATABASE FO US TELECOM                        | BV2041 NTX343AB03 |
| 0 ANI DATABASE FO US TELECOM                        | BV2041 NTX343BA01 |
| 0 ANI DELIVERY ENHANCEMENTS                         | AM0086 NTXG73AA01 |
| 0 ANI DELIVERY ON UNANSWERED PRI CALLS              | AD3400 NTXG01CA07 |
| 0 ANI FORWARDING ON 0-CALLS                         | BR0620 NTX187AA03 |
| 0 ANI FORWARDING WITH BILLING                       | AL0657 NTX986AA01 |
| 0 ANI INFORMATION IN SMDR OUTPUT                    | AF1454 NTX102AA05 |
| 0 ANI OUTPULSING IN DMS100/200                      | AE0116 NTX910AA01 |
| 0 ANI RECEPTION IN DMS-200                          | AE0115 NTX909AA01 |
| 0 ANI SCREENING (BY INDEX) TABLE                    | BV1584 NTX343CA02 |
| 0 ANI SIGNALLING COMPATIBILITY                      | BR0621 NTX187AA03 |
| 0 ANI TO ISUP CONVERSION                            | NC0303 NTXP86AA01 |
| 0 ANNOUNCEMENTS                                     | BT0038 NTX001AA29 |
| 0 ANSI ISUP COMPATIBILITY WITH CCITT MTP            | AJ1806 NTXK94AA01 |
| 0 AOSS AMA FORMATOR                                 | BC0977 NTX131AA01 |
| 0 AOSS CALL TRANSFER                                | BV1356 NTX131AA01 |
| 0 AOSS CONTROLLED TRAFFIC                           | BV1351 NTX131AA01 |
| 0 AOSS FORCE MANAGEMENT SYSTEM                      | BC0976 NTX131AA01 |
| 0 AOSS IN CHARGE POSITION & ASSISTANCE CAPABILITIES | BC0975 NTX131AA01 |
| 0 AOSS INCHARGE POSITION                            | BV1419 NTX131AA01 |
| 0 AOSS INTERCEPT CALLS                              | BC0974 NTX131AA01 |
| 0 AOSS INTERTOLL TRUNKS                             | BC0972 NTX131AA01 |
| 0 AOSS MFADS INTERFACE                              | BV1349 NTX131AA01 |
| 0 AOSS OPERATIONAL MEASUREMENTS                     | BC0978 NTX131AA01 |
| 0 AOSS OPTIONAL AMA TAPE ENTRIES                    | BV1355 NTX131AA01 |
| 0 AOSS QUEUE OVERRIDE                               | BV1354 NTX131AA01 |
| 0 AOSS SERVICE ANALYSIS                             | BV1350 NTX065AA12 |
| 0 AOSS TRACE REPORTS TO TADS                        | BV1352 NTX131AA01 |
| 0 AOSS VOICE RESPONSE AUTOMATIC INTERCEPT CALLS     | AC0070 NTX720AA01 |
| 0 AOSS VOICE RESPONSE BASIC CALL HANDLING           | AC0066 NTX720AA01 |
| 0 AOSS VOICE RESPONSE DATA LINK UTILITY             | AC0060 NTX720AA01 |
| 0 AOSS VOICE RESPONSE DRAM UTILITY                  | AC0071 NTX721AA01 |
| 0 AOSS VOICE RESPONSE EXTENDED CALL HANDLING        | AC0074 NTX720AA01 |
| 0 AOSS VOICE RESPONSE HANDLING OF IBM PROTOCOL      | AC0072 NTX723AA01 |
| 0 AOSS VOICE RESPONSE MANAGEMENT SYSTEM             | AC0073 NTX720AA01 |
| 0 AOSS VOICE RESPONSE SERVICE ANALYSIS              | AC0069 NTX720AA01 |
| 0 AOSS 411/555-1212/131 CALLS                       | BC0973 NTX131AA01 |
| 0 APERIODIC METERING                                | AG1477 NTXH22AA01 |
| 0 APERIODIC METERING                                | AG1477 NTX474AA07 |



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| 0 APERIODIC METERING (PM)                             | AG1476 NTXH22AA01 |
| 0 APERIODIC METERING (PM)                             | AG1476 NTX474AA07 |
| 0 APPLICATION SUPPORT - AMATPS, EADAS-DC              | BC1336 NTX273AA07 |
| 0 ARIES FEATURE OPERATION AND DISPLAYS.               | AD1785 NTX640AB04 |
| 0 ARIES SERVICE ORDERS                                | AD1782 NTX640AB04 |
| 0 ARIES TABLE CONTROL & CPI                           | AD1288 NTX640AB04 |
| 0 ARS - (BASIC)                                       | BV0506 NTX105AA03 |
| 0 ARTER FOR DMS-300 - ORIGINATING                     | AE0283 NTXB68AA01 |
| 0 ARTER FOR TURKEY                                    | AE0273 NTXB68AA01 |
| 0 ASCII SMDR DATA ACCESS                              | BR0724 NTX728AA02 |
| 0 ASSIGNABLE GRADE OF SERVICE                         | BR0286 NTX030BA03 |
| 0 ASSIGNABLE PAT (NCOS)                               | BC1244 NTX701CA07 |
| 0 ASYNC LINE CARD                                     | BF0471 NTX250AA15 |
| 0 ASYNC LINE CARD                                     | BF0471 NTX426AA02 |
| 0 ASYNC LINE CARD MAINTENANCE                         | BV1338 NTX250AA15 |
| 0 ASYNC LINE CARD MAINTENANCE                         | BV1338 NTX426AA02 |
| 0 ASYNCHRONOUS LINK MAINTENANCE S/W                   | BC0114 NTX048AA06 |
| 0 AT & T FORMAT FOR AMA RECORDS AND AMATAPE (XREF     | BC0505 NTX098AA07 |
| 0 R0378)                                              |                   |
| 0 AT & T FORMAT FOR AMA RECORDS AND AMATAPE (XREF     | BC0505 NTX159AA12 |
| 0 R0378)                                              |                   |
| 0 AT CAMA FORMAT                                      | BR0378 NTX098AA07 |
| 0 AT CAMA FORMAT                                      | BR0378 NTX159AA12 |
| 0 ATME 2 FOR DMS100I MFC                              | AJ0832 NTXH17AA01 |
| 0 ATR INTERWORKING WITH PRA250 TRUNKS                 | AD2358 NTXG01CA07 |
| 0 ATR TO CCS7 IMT INTERWORKING                        | AD1209 NTX351BA02 |
| 0 ATR TO CCS7 IMT INTERWORKING                        | AD1209 NTX351CA02 |
| 0 ATT AUTO TRUNK TESTING                              | BT0241 NTX051AA02 |
| 0 ATTENDANT - AUTO DIAL                               | BC0964 NTXZ00AA01 |
| 0 ATTENDANT - AUTO DIAL                               | BC0964 NTX100AA27 |
| 0 ATTENDANT ANSWER TIME BY PRECEDENCE                 | BV1932 NTXZ01AA01 |
| 0 ATTENDANT ANSWER TIME BY PRECEDENCE                 | BV1932 NTX101AA14 |
| 0 ATTENDANT CALL DETAIL ENTRY                         | BV0495 NTX103AA12 |
| 0 ATTENDANT CALL PARK RECALL TIMER                    | BR0525 NTXZ00AA01 |
| 0 ATTENDANT CALL PARK RECALL TIMER                    | BR0525 NTX100AA27 |
| 0 ATTENDANT CALL SELECTION                            | BV0489 NTXZ00AA01 |
| 0 ATTENDANT CALL SELECTION                            | BV0489 NTX100AA27 |
| 0 ATTENDANT CAMP-ON                                   | BV0446 NTXZ00AA01 |
| 0 ATTENDANT CAMP-ON                                   | BV0446 NTX100AA27 |
| 0 ATTENDANT CONFERENCE (MAXIMUM SIX CONFEREES)        | BV0437 NTXZ00AA01 |
| 0 ATTENDANT CONFERENCE (MAXIMUM SIX CONFEREES)        | BV0437 NTX100AA27 |
| 0 ATTENDANT CONSOLE AND ISUP TRUNK CALL PROCESSING -  | AD0342 NTXA05AA03 |
| 0 PHASE I                                             |                   |
| 0 ATTENDANT CONSOLE AND ISUP TRUNK CALL PROCESSING -  | AD0342 NTX167AB11 |
| 0 PHASE I                                             |                   |
| 0 ATTENDANT CONSOLE AND ISUP TRUNKS CALL PROCESSING - | AD0343 NTXA05AA03 |
| 0 PHASE 11                                            |                   |

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| 0 ATTENDANT CONSOLE AND ISUP TRUNKS CALL PROCESSING - AD0343 | NTX167AB11        |
| 0 PHASE 11                                                   |                   |
| 0 ATTENDANT CONSOLE CALL HOLD RECALL                         | AD2488 NTXZ00AA01 |
| 0 ATTENDANT CONSOLE CALL HOLD RECALL                         | AD2488 NTX100AA27 |
| 0 ATTENDANT CONSOLE CALL QUEUE STATUS                        | AD0351 NTX853AA01 |
| 0 ATTENDANT CONSOLE DATA (SEE V0432)                         | BZ0013 NTXZ00AA01 |
| 0 ATTENDANT CONSOLE DATA (SEE V0432)                         | BZ0013 NTX100AA27 |
| 0 ATTENDANT CONSOLE DISPLAY                                  | BV0592 NTXZ00AA01 |
| 0 ATTENDANT CONSOLE DISPLAY                                  | BV0592 NTX100AA27 |
| 0 ATTENDANT CONSOLE DISPLAY (ENHANCE 1)                      | BV0608 NTXZ00AA01 |
| 0 ATTENDANT CONSOLE DISPLAY (ENHANCE 1)                      | BV0608 NTX100AA27 |
| 0 ATTENDANT CONSOLE DISPLAY (ENHANCE 2)                      | BV0891 NTXZ00AA01 |
| 0 ATTENDANT CONSOLE DISPLAY (ENHANCE 2)                      | BV0891 NTX100AA27 |
| 0 ATTENDANT CONSOLE END-TO-END SIGNALLING                    | BR0791 NTXZ01AA01 |
| 0 ATTENDANT CONSOLE END-TO-END SIGNALLING                    | BR0791 NTX101AA14 |
| 0 ATTENDANT CONSOLE MONITOR DISPLAY                          | AG0815 NTX410AA02 |
| 0 ATTENDANT CONSOLE TO ACD                                   | BC1324 NTX407AB01 |
| 0 ATTENDANT CONSOLE TRUNK QUEUING                            | AD0292 NTX601CA03 |
| 0 ATTENDANT CONSOLES ON IPE'S                                | AD3064 NTXN25AA02 |
| 0 ATTENDANT CONTROL OF TRUNK GROUP ACCESS                    | BV0490 NTXZ00AA01 |
| 0 ATTENDANT CONTROL OF TRUNK GROUP ACCESS                    | BV0557 NTXZ00AA01 |
| 0 ATTENDANT CONTROL OF TRUNK GROUP ACCESS                    | BV0490 NTX100AA27 |
| 0 ATTENDANT CONTROL OF TRUNK GROUP ACCESS                    | BV0557 NTX100AA27 |
| 0 ATTENDANT CONTROL OF VFG                                   | BV1411 NTX112AB03 |
| 0 ATTENDANT DISPLAY OF QUEUED CALLS BY ICI KEY               | BV1920 NTXZ01AA01 |
| 0 ATTENDANT DISPLAY OF QUEUED CALLS BY ICI KEY               | BV1920 NTX101AA14 |
| 0 ATTENDANT INTRUSION TONE - SPAIN                           | AL0135 NTX612AA04 |
| 0 ATTENDANT INTRUSION TONE - UK AND SPAIN                    | AL0084 NTX611AA07 |
| 0 ATTENDANT LOCKED LOOP OPERATION                            | BV0438 NTXZ00AA01 |
| 0 ATTENDANT LOCKED LOOP OPERATION                            | BV0438 NTX100AA27 |
| 0 ATTENDANT MESSAGE WAITING                                  | BC0814 NTX119AA05 |
| 0 ATTENDANT PAY STATION II                                   | AG1291 NTXB17AA02 |
| 0 ATTENDANT RELEASE UPON COMPLETION OF DIALING               | BV1134 NTXZ00AA01 |
| 0 ATTENDANT RELEASE UPON COMPLETION OF DIALING               | BV1134 NTX100AA27 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BC0205 NTXZ00AA01 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BC0206 NTXZ00AA01 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BC0207 NTXZ00AA01 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BC0208 NTXZ00AA01 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BV0548 NTXZ00AA01 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BV0549 NTXZ00AA01 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BV0550 NTXZ00AA01 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BV0551 NTXZ00AA01 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BV0556 NTXZ00AA01 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BC0205 NTX100AA27 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BC0206 NTX100AA27 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BC0207 NTX100AA27 |
| 0 ATTENDANT SERVICE LOCAL CONSOLE                            | BC0208 NTX100AA27 |

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| 0 ATTENDANT SERVICE                                | LOCAL CONSOLE | BV0548 NTX100AA27 |
| 0 ATTENDANT SERVICE                                | LOCAL CONSOLE | BV0549 NTX100AA27 |
| 0 ATTENDANT SERVICE                                | LOCAL CONSOLE | BV0550 NTX100AA27 |
| 0 ATTENDANT SERVICE                                | LOCAL CONSOLE | BV0551 NTX100AA27 |
| 0 ATTENDANT SERVICE                                | LOCAL CONSOLE | BV0556 NTX100AA27 |
| 0 ATTENDANT SET UP CONFERENCE:10 OR MORE CONFEREES |               | BV0912 NTX111AA03 |
| 0 ATTENDANT SPEED CALLING                          |               | BV0584 NTXZ00AA01 |
| 0 ATTENDANT SPEED CALLING                          |               | BV0584 NTX100AA27 |
| 0 ATTENDANT TO UCD                                 |               | BC1937 NTXZ01AA01 |
| 0 ATTENDANT TO UCD                                 |               | BC1937 NTX101AA14 |
| 0 ATTENDANT TRANSFER                               |               | BV0436 NTXZ00AA01 |
| 0 ATTENDANT TRANSFER                               |               | BV0436 NTX100AA27 |
| 0 ATTENDED PAY STATION                             |               | BR0326 NTX049AP01 |
| 0 ATUP - ANSI ISUP/AISUP INTERWORKING              |               | AJ1242 NTXK93AA01 |
| 0 ATUP - ATTENDANT CONSOLE INTERWORKING            |               | AJ1067 NTXH44AB02 |
| 0 ATUP - MCT INTERWORKING                          |               | AJ1063 NTXH44AB02 |
| 0 ATUP FEATURE INTERACTIONS PART I                 |               | AJ1035 NTXH44AB02 |
| 0 ATUP FEATURE INTERACTIONS PART II                |               | AJ1061 NTXH44AB02 |
| 0 AUDIBLE ALARMS FOR OCC BILLING FAILURES          |               | BC1014 NTX220AA13 |
| 0 AUDIBLE ALARMS FOR OCC BILLING FAILURES          |               | BC1014 NTX220BA06 |
| 0 AUDIBLE ALARMS FOR OCC BILLING FAILURES          |               | BC1014 NTX220CA08 |
| 0 AUDIBLE ALARMS FOR REMOTE CSIDE LINK FAILURES    |               | AG0366 NTX270AA19 |
| 0 AUDIO INPUT ON INCOMING CALLS IN QUEUE           |               | BV0602 NTXZ01AA01 |
| 0 AUDIO INPUT ON INCOMING CALLS IN QUEUE           |               | BV0602 NTX101AA14 |
| 0 AUDIO INTERLUDE                                  |               | BC0946 NTXZ01AA01 |
| 0 AUDIO INTERLUDE                                  |               | BC0946 NTX101AA14 |
| 0 AUDIO INTERLUDE                                  |               | BC0946 NTX407AB01 |
| 0 AUDIO TABLE EXPANSION                            |               | AD0822 NTXZ00AA01 |
| 0 AUDIO TABLE EXPANSION                            |               | AD0822 NTX100AA27 |
| 0 AUDIO TONE DETECTION FOR BELL DATALINK SERVICE   |               | AC0300 NTX256AA04 |
| 0 AUDIO TONE DETECTOR                              |               | BV0733 NTX220AA13 |
| 0 AUDIO TONE DETECTOR                              |               | BV0733 NTX220BA06 |
| 0 AUDIO TONE DETECTOR                              |               | BV0733 NTX220CA08 |
| 0 AUDIT TRAIL                                      |               | BC1041 NTX292AB04 |
| 0 AUDIT TRAIL                                      |               | BC1041 NTX292BA03 |
| 0 AUDIT/REX DRIVER FOR INM NODES                   |               | AL1378 NTX944AA03 |
| 0 AUSIN - SSP PORTION OF E008 SERVICE              |               | AG2161 NTXH84AA02 |
| 0 AUSTRALIA BRA - PROTOCOL ENHANCEMENTS            |               | AJ1438 NTXH57AB01 |
| 0 AUSTRALIA LINE CARD DIAGNOSTICS                  |               | AJ1029 NTX482DA02 |
| 0 AUSTRALIA TONES FOR PLGC, PDTC, LGCI             |               | AJ0948 NTXK33AA01 |
| 0 AUSTRALIA TONES FOR PLGC, PDTC, LGCI             |               | AJ0948 NTXK33AB01 |
| 0 AUSTRALIA TONESET                                |               | AJ0497 NTXH45AA01 |
| 0 AUTH CODE ERROR CORRECTION                       |               | BV1536 NTX103AA12 |
| 0 AUTHCODE DATABASE EXTENSION TO 7 DIGITS.         |               | BV1887 NTX220AA13 |
| 0 AUTHCODE DATABASE EXTENSION TO 7 DIGITS.         |               | BV1887 NTX222AB04 |
| 0 AUTHCODE DATABASE FOR US TELECOM                 |               | BV2042 NTX234AB02 |
| 0 AUTHCODE DATABASE FOR US TELECOM                 |               | BV2042 NTX234BA01 |

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| 0 AUTHCODE DATABASE MERGES COMBINATION FOR TYPE III | BV2024 NTX234CA01 |
| 0 AUTHCODE DATABASE TYPE XIII                       | BV1934 NTX222AM05 |
| 0 AUTHCODE ENHANCEMENT FOR VPN                      | BV1868 NTX353AA04 |
| 0 AUTHCODE ENHANCEMENT FOR VPN                      | BV1868 NTX353CA05 |
| 0 AUTHCODE FOR MDR                                  | AF1980 NTXA88AA02 |
| 0 AUTHCODE TRANSLATION AT DCP                       | AD0682 NTX367BA01 |
| 0 AUTHCODE TRAP                                     | BV1364 NTX222CA09 |
| 0 AUTHCODE TRAP                                     | BV1258 NTX222CA09 |
| 0 AUTHCODES FOR SBS RELEASE 3                       | BV1008 NTX220AA13 |
| 0 AUTHCODES FOR SBS RELEASE 3                       | BV1008 NTX234AB02 |
| 0 AUTHCODES TYPE III (VARIABLE DIGIT AUTHCODES)     | BV0754 NTX234AB02 |
| 0 AUTHCODES TYPE III (VARIABLE DIGIT AUTHCODES)     | BV0754 NTX234CA01 |
| 0 AUTHORIZATION CODES                               | BV0494 NTX103AA12 |
| 0 AUTO DEVICE CONNECT CAPABILITY FOR DNC            | AG0375 NTX812AA03 |
| 0 AUTO DISPLAY FOR MERIDIAN BUSINESS SETS           | AG1549 NTXE40AB01 |
| 0 AUTO RETEST OF ALT FAILURES                       | BC0829 NTXZ02AA01 |
| 0 AUTO RETEST OF ALT FAILURES                       | BC0829 NTX054AA05 |
| 0 AUTO RETEST OF ALT FAILURES                       | BC0829 NTX472AB08 |
| 0 AUTO RETEST OF ALT FAILURES                       | BC0829 NTX901AA24 |
| 0 AUTO RETEST OF ALT FAILURES                       | BC0829 NTX981AA01 |
| 0 AUTO-APPLY ENHANCEMENTS                           | AF2816 NTX001AA29 |
| 0 AUTOMATED DA CALL COMPLETION - WITH ALTERNATE     | AF2086 NTXF10AA01 |
| 0 BILLING                                           |                   |
| 0 AUTOMATED INTERCEPT CALL COMPLETION.              | NC0146 NTXN49AA01 |
| 0 AUTOMATIC BUSY OUT OF TRUNKS UPON INTEGRITY CHECK | BR0588 NTX001AA29 |
| 0 FAILURE                                           |                   |
| 0 AUTOMATIC CALL GAPPING                            | AF1251 NTX552AC02 |
| 0 AUTOMATIC CALL GAPPING                            | AF1251 NTX552AD01 |
| 0 AUTOMATIC CALL GAPPING                            | AF1251 NTX825AB01 |
| 0 AUTOMATIC CALLING CARD SERVICE                    | AL0285 NTX552AB03 |
| 0 AUTOMATIC CALLING CARD SERVICE                    | AL0285 NTX552AC02 |
| 0 AUTOMATIC CALLING CARD SERVICE                    | AL0285 NTX552AD01 |
| 0 AUTOMATIC CALLING CARD SERVICE                    | AL0285 NTX825AB01 |
| 0 AUTOMATIC COLLECT                                 | BV0309 NTX030CC16 |
| 0 AUTOMATIC COLLECTION OF DEPOSIT ON RELEASE        | BV0348 NTX030CC16 |
| 0 AUTOMATIC CONGESTION CONTROL SUPPORT              | NC0179 NTXK95AA01 |
| 0 AUTOMATIC DA CALL COMPLETION                      | AF1777 NTXE36AA01 |
| 0 AUTOMATIC DA CALL COMPLETION                      | AF1777 NTXE36AB01 |
| 0 AUTOMATIC DIAL BACK                               | BC1043 NTX293AA02 |
| 0 AUTOMATIC DIRP DEATH RECOVERY                     | AF2705 NTX001AA29 |
| 0 AUTOMATIC FILE TRANSFER RESTRUCTURING             | AD1603 NTX344CA06 |
| 0 AUTOMATIC FILE TRANSFER RESTRUCTURING             | AD1603 NTX358BA03 |
| 0 AUTOMATIC INTERCEPT SERVICE (OUTPULSED CALLED     | BR0070 NTX001AA29 |
| 0 NUMBER)                                           |                   |
| 0 AUTOMATIC LINE AND MADN                           | BR0805 NTX106AA10 |
| 0 AUTOMATIC LINE TESTING REWRITE                    | AG0156 NTXZ02AA01 |
| 0 AUTOMATIC LINE TESTING REWRITE                    | AG0156 NTX901AA24 |

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| 0 AUTOMATIC LINE TESTING SPEEDUP                  | BR0511 NTXZ02AA01 |
| 0 AUTOMATIC LINE TESTING SPEEDUP                  | BR0511 NTX901AA24 |
| 0 AUTOMATIC LINES                                 | BT0026 NTX006AA04 |
| 0 AUTOMATIC LOGOUT OF DIAL-UP LINES               | BC1044 NTX292AB04 |
| 0 AUTOMATIC LOGOUT OF DIAL-UP LINES               | BC1044 NTX292BA03 |
| 0 AUTOMATIC NO AMA                                | BV0324 NTX030CC16 |
| 0 AUTOMATIC OUT OF CHAIN ROUTING                  | AD0046 NTX716AA05 |
| 0 AUTOMATIC POLLING OM DATA VIA DATAPAC           | BC0129 NTX058AD02 |
| 0 AUTOMATIC POLLING OM DATA VIA DATAPAC           | BC0129 NTX059AB04 |
| 0 AUTOMATIC POLLING OM DATA VIA DATAPAC           | BC0129 NTX804AA02 |
| 0 AUTOMATIC RECALL                                | BV0443 NTXZ00AA01 |
| 0 AUTOMATIC RECALL                                | BV0457 NTXZ00AA01 |
| 0 AUTOMATIC RECALL                                | BV0443 NTX100AA27 |
| 0 AUTOMATIC RECALL                                | BV0457 NTX100AA27 |
| 0 AUTOMATIC SERVICE OBSERVING CALL INFORMATION ON | BV0264 NTX070AD01 |
| 0 MAG TAPE                                        |                   |
| 0 AUTOMATIC SERVICE OBSERVING CALL INFORMATION ON | BV0400 NTX070AD01 |
| 0 MAG TAPE                                        |                   |
| 0 AUTOMATIC SERVICE OBSERVING TTY OUTPUT          | BR0296 NTX070AD01 |
| 0 AUTOMATIC SWITCH BACK TO LOCAL BILLING          | AD2240 NTXG03AA02 |
| 0 AUTOMATIC SWITCH BACK TO LOCAL BILLING          | AD2240 NTXG05AA02 |
| 0 AUTOMATIC SYSTEM TEST FOR RCU                   | AF0829 NTX387AB04 |
| 0 AUTOMATIC SYSTEM TEST FOR RCU                   | AF0829 NTX387AC02 |
| 0 AUTOMATIC SYSTEM TEST FOR RCU                   | AF0829 NTX387AD01 |
| 0 AUTOMATIC SYSTEM TEST FOR RCU(CC)               | AF0828 NTX387AB04 |
| 0 AUTOMATIC SYSTEM TEST FOR RCU(CC)               | AF0828 NTX387AC02 |
| 0 AUTOMATIC SYSTEM TEST FOR RCU(CC)               | AF0828 NTX387AD01 |
| 0 AUTOMATIC TRAFFIC CONTROL PLAN TRANSLATION      | BV1547 NTX610AA03 |
| 0 AUTOMATIC TRAFFIC CONTROL PLAN TRANSLATION      | BV1547 NTX701CA07 |
| 0 AUTOMATIC TRUNK MAINTENANCE SYSTEM (ATMS)       | BC0326 NTX136AA03 |
| 0 AUTOMATIC TRUNK ROUTINING INTERFACE             | BV1671 NTX351BA02 |
| 0 AUTOMATIC TRUNK ROUTINING INTERFACE             | BV1671 NTX351CA02 |
| 0 AUTOMATIC TRUNK TEST (VOICE TRUNK)              | BV1690 NTX051AA02 |
| 0 AUTOMATIC TRUNK TESTING REPORT                  | BC1461 NTX427AA04 |
| 0 AUTOMATIC TRUNK TESTING REPORT                  | BC1461 NTX562AA03 |
| 0 AUTOQUOTE PRINTERS                              | BV0331 NTX030CC16 |
| 0 AUTOVON AGENTS AND CCS7 IBN TRUNK INTERWORKING  | AD1292 NTXA05AA03 |
| 0 AUTOVON AGENTS AND IBNT2 PRA INTERWORKING       | AD2073 NTXF40AA01 |
| 0 AUTOVON CALL QUEUING                            | BC0709 NTX601CA03 |
| 0 AUTOVON DOC VIA SS7 SUPPORT S/W                 | AD2664 NTXF43AA01 |
| 0 AUTOVON FEATURES ON NEW PERIPHERALS             | BC1216 NTX701BA08 |
| 0 AUTOVON I F (DFS) PREC NETWORK INWARD DIALING   | BV0916 NTX601CA03 |
| 0 AUTOVON I/F (DFS) - ATT TO 4WSUB                | BV0962 NTX605AA01 |
| 0 AUTOVON I/F (DFS) - FEATURE INTERACTION         | BV0920 NTX601CA03 |
| 0 AUTOVON I/F (DFS) - FEATURE INTERACTIONS 2      | BV0964 NTX605AA01 |
| 0 AUTOVON I/F (DFS) - IBN TO 4WSUB                | BV0961 NTX605AA01 |
| 0 AUTOVON I/F (DFS) - 4WSUB TO IBN                | BV0960 NTX605AA01 |

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| 0 AUTOVON I/F (DFS) ATT INCOMING PREC CALLS                  | BV0918 NTX601CA03 |
| 0 AUTOVON I/F (DFS) ATT OUTGOING PREC CALLS                  | BV0917 NTX601CA03 |
| 0 AUTOVON I/F (DFS) PREC NETWORK OUTWARD DIALLING            | BV0605 NTX601BA06 |
| 0 AUTOVON I/F (DFS) 4WSUB TO ATT                             | BV0963 NTX605AA01 |
| 0 AUTOVON INTERFACE (DFS) - TRANSLATIONS                     | BV0919 NTX601CA03 |
| 0 AUTOVON INTERFACE - PBX STATIONS                           | BV0589 NTX601BA06 |
| 0 AUTOVON INTERFACE - THROTTLING ALGORITHMS                  | BV0607 NTX601CA03 |
| 0 AUTOVON INTERSWITCH PRA BASE CALL PROCESSING               | AD2083 NTXF40AA01 |
| 0 AUTOVON INTERSWITCH PRA TRUNK PREEMPTION                   | AD2082 NTXF40AA01 |
| 0 AUTOVON INTERSWITCH PRA TRUNK PREEMPTION II                | AD2251 NTXF40AA01 |
| 0 AUTOVON ISUP SUPERVISION ENHANCEMENT                       | AD0590 NTX707AA03 |
| 0 AUTOVON NETWORK MANAGEMENT                                 | BV0108 NTX701CA07 |
| 0 AUTOVON NUMBERING PLAN                                     | BV0115 NTX701CA07 |
| 0 AUTOVON NUMBERING PLAN                                     | BV0258 NTX701CA07 |
| 0 AUTOVON OM SEPARATION                                      | AM0168 NTX705AA01 |
| 0 AUTOVON OPTIONAL PACKAGING                                 | BC0879 NTX607AA04 |
| 0 AUTOVON OPTIONAL PACKAGING                                 | BC0879 NTX701BA08 |
| 0 AUTOVON ORIG. DESTINATION PEG COUNT                        | BR0563 NTX701CA07 |
| 0 AUTOVON PRESET CONFERENCE ADDON                            | BV1681 NTX701CA07 |
| 0 AUTOVON ROUTING ACCESS LINES                               | BV0118 NTX701CA07 |
| 0 AUTOVON ROUTING INTERSWITCH TRUNKS                         | BV0102 NTX701CA07 |
| 0 AUTOVON TRANSLATIONS ACCESS LINES                          | BV0117 NTX701DA03 |
| 0 AUTOVON TRANSLATIONS ACCESS LINES                          | BV0546 NTX701DA03 |
| 0 AUTOVON TRANSLATIONS INTERSWITCH TRUNKS                    | BV0101 NTX701CA07 |
| 0 AUTOVON TRANSLATIONS INTERSWITCH TRUNKS                    | BV0404 NTX701CA07 |
| 0 AV AGENTS TO IBN PRA INTERWORKING (VALIDATION)             | AD2788 NTXF40AA01 |
| 0 AVINSW PRA TRUNK IBN FEATURE INTERACTIONS PHASE I          | AD2253 NTXF40AA01 |
| 0 AVINSW PRA TRUNK TO ATTENDANT CONSOLE BASE CALL PROCESSING | AD2255 NTXF40AA01 |
| 0 AVINSW PRA TRUNK TO ATTENDANT CONSOLE PREEMPTION           | AD2256 NTXF40AA01 |
| 0 AVINSW PRA TRUNK TO IBN TERMINALS AND 4WIRE SETS           | AD2252 NTXF40AA01 |
| 0 AVINSW/IBN ISUP INTERWORKING & SUPERVISION ENHANCEMENTS    | AD1517 NTXA05AA03 |
| 0 AVPRA AND IBN FEATURE INTERACTIONS PHASE II                | AD2532 NTXF40AA01 |
| 0 AVPRA CALL PROCESSING BASE (VALIDATION)                    | AD2786 NTXF40AA01 |
| 0 AVPRA INTERWORKING TO AUTOVON AGENTS                       | AD2537 NTXF40AA01 |
| 0 AVPRA MISCELLANEOUS MAINTENANCE TASKS                      | AD2533 NTXF40AA01 |
| 0 AVPRA PREEMPTION (VALIDATION)                              | AD2783 NTXF40AA01 |
| 0 AVPRA PREEMPTION II VALIDATION                             | AD2779 NTXF40AA01 |
| 0 AVPRA TABLE CONTROL (VALIDATION)                           | AD2785 NTXF40AA01 |
| 0 AVPRA TO ATTENDANT CONSOLE CP (VALIDATION)                 | AD2781 NTXF40AA01 |
| 0 AVPRA TO ATTENDANT CONSOLE INTERWORKING PHASE II           | AD2529 NTXF40AA01 |
| 0 AVPRA TO ATTENDANT CONSOLE PREEMPTION (VALIDATION)         | AD2784 NTXF40AA01 |
| 0 AVPRA TO IBN FEATURES (VALIDATION)                         | AD2782 NTXF40AA01 |
| 0 AVPRA TO IBN TERMINAL INTERWORKING (VALIDATION)            | AD2780 NTXF40AA01 |
| 0 BA-1 SIGNALLING SYSTEM                                     | BC1339 NTX481AA02 |
| 0 BABBLING IDIOT ENHANCEMENTS                                | AL0047 NTX001AA29 |

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| 0 BACKUP CONTROL AND LOCATING RCU                    | BV1634 NTX322AA18 |
| 0 BADGER 612 INTERFACE                               | BR0057 NTXZ02AA01 |
| 0 BADGER 612 INTERFACE                               | BR0057 NTX901AA24 |
| 0 BADGER 612A INTERFACE AT THE RLM SITE              | BR0218 NTX023AB03 |
| 0 BASE HOOKS FOR IDC DATA COMM.                      | AD2190 NTXG61AA02 |
| 0 BASE LCM LOAD DEVELOPMENT FOR SRU                  | AE0834 NTXH96AA01 |
| 0 BASIC CCIS MAP LEVELS                              | BC0568 NTX204AA02 |
| 0 BASIC INITIALIZATION AND COMMUNICATION OF ILM DATA | AL1457 NTX945AA03 |
| 0 BASIC ISDN PRA MAINTENANCE                         | AD0679 NTX790AC02 |
| 0 BASIC MTCE FOR 3000 LINE REMOTE                    | BV0973 NTX145AA06 |
| 0 BASIC MTCE FOR 3000 LINE REMOTE                    | BV0973 NTX913AA04 |
| 0 BASIC NETWORK MANAGEMENT                           | BT0416 NTX220AA13 |
| 0 BASIC NETWORK MANAGEMENT                           | BT0416 NTX220BA06 |
| 0 BASIC NETWORK MANAGEMENT                           | BT0416 NTX220CA08 |
| 0 BASIC OM -INEFFECTIVE MACHINE ATTEMPTS             | BR0446 NTX122AA02 |
| 0 BASIC OPERATIONAL MEASUREMENT - CALL DISPOSITION   | BR0345 NTX122AA02 |
| 0 SUMMARY                                            |                   |
| 0 BASIC OPERATIONAL MEASUREMENT-ACH CCH REGISTERS    | BR0159 NTX053AA05 |
| 0 BASIC OPERATIONAL MEASUREMENT-ANN.GRP USAGE PER    | BR0307 NTX001AA29 |
| 0 CALL BASIS                                         |                   |
| 0 BASIC OPERATIONAL MEASUREMENT-REVISED OM OUTPUT    | BR0157 NTX001AA29 |
| 0 FORMAT                                             |                   |
| 0 BASIC OPM CC MTCE SOFTWARE                         | BC1440 NTX147AA01 |
| 0 BASIC OPM CC MTCE SOFTWARE                         | BC1440 NTX147AB01 |
| 0 BASIC PRA CALL PROCESSING FOR DMS-250              | AD0883 NTXG01AA06 |
| 0 BASIC PRA CALL PROCESSING FOR MCI                  | AD1715 NTXG01CA07 |
| 0 BASIC RATE ACCESS INTERWORKING ON MSL-100          | AD1943 NTX790AC02 |
| 0 BASIC RMM SUPPORT FOR RCC                          | BC0716 NTX145AA06 |
| 0 BASIC RMM SUPPORT FOR RCC                          | BC0716 NTX913AA04 |
| 0 BASIC RMM SUPPORT FOR RLCM                         | BC0717 NTX146AA03 |
| 0 BASIC RMM SUPPORT FOR RLCM                         | BC0717 NTX913AA04 |
| 0 BASIC TRANSLATION AND ROUTING                      | BV0200 NTX023AB03 |
| 0 BASIC TRANSLATION AND ROUTING                      | BV0201 NTX023AB03 |
| 0 BASIC TRANSLATION AND ROUTING                      | BV0202 NTX023AB03 |
| 0 BASIC TRANSLATION AND ROUTING                      | BV0229 NTX023AB03 |
| 0 BASIC TRANSLATION AND ROUTING                      | BV0233 NTX023AB03 |
| 0 BASIC TRANSLATION AND ROUTING                      | BV0234 NTX023AB03 |
| 0 BASIC TRANSLATION AND ROUTING                      | BV0238 NTX023AB03 |
| 0 BBF AMA RECORD.                                    | NC0240 NTXP82AA01 |
| 0 BC AMA CALL CODES 085 AND 011                      | BC1678 NTX165AA06 |
| 0 BC AMA INTERLATA WATS(CCI 111)                     | BC1698 NTX098AA07 |
| 0 BC AMA INTERLATA WATS(CCI 111)                     | BC1698 NTX159AA12 |
| 0 BCLID: USP BILLING & DN CHANGES IN MESSAGE FORMAT  | AF2810 NTXF55AA02 |
| 0 BCS - EXEC UTILITIES                               | BC0327 NTX181AA12 |
| 0 BCS APPLICATION DRIVER                             | AG1511 NTXE29AA03 |
| 0 BCSMON - ENHANCED MONITORING CAPABILITIES          | AG1927 NTX001AA29 |
| 0 BCSMON ENHANCEMENTS                                | AG1249 NTX001AA29 |

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| 0 BCS22 COMMISSIONING NONRES S/W UPDATES (PACKAGE   | AL0640 | NTX182AA06 |
| 0 NTX182AA)                                         |        |            |
| 0 BCS24 COMMISSIONING NONRES S/W UPDATES (NTX182AA) | AL0781 | NTX182AA06 |
| 0 BCS32 BILLING COMPLIANCE FOR MCI-CDR, PNR, SER    | AD3134 | NTX221CA05 |
| 0 BCS32 BILLING COMPLIANCE FOR MCI-CP               | AD3133 | NTX221CA05 |
| 0 BCS33 CDR CHANGES                                 | AD3416 | NTX221BA08 |
| 0 BCS33 TRKGRP ENHANCEMENTS                         | AD3411 | NTX222BA07 |
| 0 BD CHANNEL LOGICAL LOOPBACK                       | AL2040 | NTXP38AA01 |
| 0 BDTC DS1 INTERFACE FOR DMS-300                    | AE0082 | NTX270AA19 |
| 0 BEARER CAPABILITY FOR ISDN                        | AC0094 | NTX750AC02 |
| 0 BEARER CAPABILITY FOR ISDN                        | AC0094 | NTX750AD01 |
| 0 BELIZE R2 REGISTER SIGNALLING                     | AJ0578 | NTXH07AA01 |
| 0 BELL (U.S.) AMA FORMAT COMPATIBILITY              | BR0634 | NTX188AA02 |
| 0 BELL (U.S.) STANDARD ANNOUNCEMENTS VIA PROM       | BR0566 | NTX001AA29 |
| 0 BELL SYSTEM STANDARD SIGNALLING FORMAT            | BR0224 | NTX030CC16 |
| 0 BELL SYSTEM STANDARD SIGNALLING FORMAT            | BV0168 | NTX030CC16 |
| 0 BELL SYSTEM STANDARD SIGNALLING FORMAT            | BV0279 | NTX030CC16 |
| 0 BELL SYSTEM STANDARD SIGNALLING FORMAT            | BV0338 | NTX030CC16 |
| 0 BELL SYSTEM STANDARD SIGNALLING FORMAT            | BV0344 | NTX030CC16 |
| 0 BELLCORE AMA-ENHANCED ARS TRANSLATIONS            | AF1234 | NTX165AA06 |
| 0 BELLCORE FRAME RELAY BILLING                      | AR0102 | NTXQ35AA01 |
| 0 BERMUDA SPECIAL SERVICE CODES                     | BR0457 | NTX001AA29 |
| 0 BERT FOR INTERNATIONAL APPLICATIONS               | AE0654 | NTXK63AA01 |
| 0 BERT FOR ISDN BASIC ACCESS LOOPS                  | AL0596 | NTX750AC02 |
| 0 BERT FOR ISDN BASIC ACCESS LOOPS                  | AL0596 | NTX750AD01 |
| 0 BERT FOR TRUNKS                                   | AG0520 | NTX883AA01 |
| 0 BETTER CC INTERPRETATION OF MESSAGING FAILURES    | AL0477 | NTX270AA19 |
| 0 BIDS NON-COMPLIANT -- REMOTE TRUNK ID DISPLAY AT  | AD3288 | NTXA38AB01 |
| 0 AC                                                |        |            |
| 0 BILINGUAL INTERFACE                               | BR0253 | NTX066AB01 |
| 0 BILLING APPLICATION SPEEDUPS, MCI                 | AD0628 | NTX222CA09 |
| 0 BILLING APPLICATION SPEEDUPS, USSPRINT            | AD0510 | NTX222AB04 |
| 0 BILLING APPLICATION SPEEDUPS, USSPRINT            | AD0510 | NTX222BA07 |
| 0 BILLING ENHANCEMENTS FOR ENHANCED 800+            | AG2326 | NTXQ39AA01 |
| 0 BILLING INTEGRATION                               | AD2193 | NTXG60AA02 |
| 0 BILLING METHOD COLLECTION                         | AF1528 | NTXA17AA02 |
| 0 BILLING METHOD COLLECTION                         | AF1528 | NTXP79AB01 |
| 0 BILLING ON TERMINATING CALLS TO A LINE            | BR0520 | NTX080BA01 |
| 0 BILLING ON TERMINATING CALLS TO A LINE            | BR0520 | NTX080CA01 |
| 0 BILLING ON TERMINATING CALLS TO A LINE            | BR0520 | NTX083AA01 |
| 0 BILLING SERVER CLIENT                             | AD0704 | NTXG03AA02 |
| 0 BILLING SERVER CONFIGURATION MMI                  | AD0926 | NTXG09AA03 |
| 0 BILLING SERVER ENHANCEMENTS FOR MCI.              | AD1241 | NTXG05AA02 |
| 0 BILLING VERIFICATION                              | AF1529 | NTXA17AA02 |
| 0 BILLING VERIFICATION                              | AF1529 | NTXP79AB01 |
| 0 BIT ERROR RATE PERFORMANCE COVERAGE ENHANCEMENTS  | AG0949 | NTX881AC03 |
| 0 BIT ERROR RATE TEST ENHANCEMENTS                  | NC0168 | NTXH40AA03 |



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| 0 BLIND TRANSFER RECALL                              | AD0905 NTXZ00AA01 |
| 0 BLIND TRANSFER RECALL                              | AD0905 NTX100AA27 |
| 0 BLIND TRANSFER RECALL INDENTIFICATION              | AD0990 NTXZ00AA01 |
| 0 BLIND TRANSFER RECALL INDENTIFICATION              | AD0990 NTX100AA27 |
| 0 BLOCK CALLING NAME/NUMBER DELIVERY BLOCKING PER    | AG1550 NTXE46AA01 |
| 0 CALL                                               |                   |
| 0 BLOCKING OF RESTRICTED NUMBER TO SMDI              | AG1980 NTXN07AA01 |
| 0 BLOCKING OF RESTRICTED NUMBER TO SMDI              | AG1980 NTXN07AB01 |
| 0 BLUE BOX DSP MICROCODE                             | AD1013 NTXG25AA01 |
| 0 BLUE BOX DSP MICROCODE                             | AD1013 NTX220AA13 |
| 0 BLUE BOX DSP MICROCODE                             | AD1013 NTX220BA06 |
| 0 BLUE BOX DSP MICROCODE                             | AD1013 NTX220CA08 |
| 0 BMMI ENHANCEMENTS                                  | NC0102 NTX066AB01 |
| 0 BNM CUSTOMER NAME AND GROUP TABLE                  | AG1163 NTX563AA05 |
| 0 BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE)     | BC0377 NTX176AA05 |
| 0 BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE)     | BC0282 NTX178AA01 |
| 0 BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE)     | BC0377 NTX178AA01 |
| 0 BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE)     | BC0282 NTX181AA12 |
| 0 BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE)     | BC0377 NTX181AA12 |
| 0 BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE)     | BC0282 NTX182AA06 |
| 0 BNR - AMA/CDR TAPE DUMP UTILITY PROG (AMATAPE)     | BC0377 NTX182AA06 |
| 0 BOARD TO BOARD SUPPORT FOR RCS                     | BC1387 NTX398AA12 |
| 0 BOARD TO BOARD SUPPORT FOR SMS                     | BF0573 NTX398AA12 |
| 0 BOARD TO BOARD TESTING SPEED-UP                    | BR0510 NTX057BA01 |
| 0 BOC AMA CALL CODE 032                              | BC1386 NTX165AA06 |
| 0 BRA / AISUP BASIC CALL INTERWORKING                | AJ1300 NTXH57AB01 |
| 0 BRA ACCESS TO ENHANCED SERVICE PROVIDERS           | AG1709 NTX796AA01 |
| 0 BRA MERIDIAN FEATURE TRANSPARENCY: MTCE AND CP     | AJ0912 NTX750AC02 |
| 0 INTEGRATION                                        |                   |
| 0 BRA MERIDIAN FEATURE TRANSPARENCY: MTCE AND CP     | AJ0912 NTX750AD01 |
| 0 INTEGRATION                                        |                   |
| 0 BRA MERIDIAN FEATURE TRANSPARENCY: XPM SUPPORT FOR | AJ0913 NTX750AC02 |
| 0 MTCE & CP                                          |                   |
| 0 BRA MERIDIAN FEATURE TRANSPARENCY: XPM SUPPORT FOR | AJ0913 NTX750AD01 |
| 0 MTCE & CP                                          |                   |
| 0 BRA TO ATUP INTERWORKING                           | AJ1299 NTXH57AB01 |
| 0 BRA: MERIDIAN FEATURE TRANSPARENCY-POWER SOFTKEYS  | AC0538 NTXF88AA03 |
| 0 BRA: MERIDIAN FEATURE TRANSPARENCY-POWER SOFTKEYS  | AC0538 NTXF88AB01 |
| 0 BRAZIL R2 ENHANCEMENTS                             | AJ1124 NTXB69AA04 |
| 0 BRAZIL R2 ENHANCEMENTS                             | AJ1124 NTXH79AA01 |
| 0 BRAZIL R2 ENHANCEMENTS                             | AJ1124 NTXH80AA02 |
| 0 BRIDGED AND GROUNDED RINGERS ON SAME LINE          | BR0075 NTXZ02AA01 |
| 0 BRIDGED AND GROUNDED RINGERS ON SAME LINE          | BR0075 NTX901AA24 |
| 0 BRIDGED NIGHT NUMBER                               | BT0070 NTX007AA02 |
| 0 BRIDGED NIGHT NUMBER                               | BT0070 NTX007AB02 |
| 0 BRIDGED NIGHT NUMBER                               | AE0246 NTX472AB08 |
| 0 BRIDGED NIGHT NUMBER                               | BT0070 NTX804AA02 |

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| 0 BRISC RTIF FIRMWARE                              | AQ0697 NTXF97AA02 |
| 0 BRITISH TONE SUPPORT                             | BF0696 NTX611AA07 |
| 0 BROADCAST FAN-OUT NODAL SETUP                    | AD3093 NTXP85AA02 |
| 0 BROADCAST FAN-OUT NODAL TERMINATION              | AD3091 NTXP85AA02 |
| 0 BROADCAST INTERWORKING / FEATURE INTERACTIONS    | AD3259 NTXP85AA02 |
| 0 BROADCAST PATCHING FOR ACTIVE AND INACTIVE XPMS  | AF2582 NTXN68AA01 |
| 0 UNITS                                            |                   |
| 0 BROADCAST TABLE CONTROL ENHANCEMENTS             | AD3092 NTXP85AA02 |
| 0 BTUP INTERWORKING TO CONFERENCE FEATURES         | AE0687 NTXK96AA01 |
| 0 BTUP INTERWORKING TO CONFERENCE FEATURES         | AE0687 NTX937AA06 |
| 0 BTUP INTERWORKING TO CONFERENCE FEATURES         | AE0687 NTX937AB01 |
| 0 BTUP TO ATTENDANT CONSOLE - PHASE 1              | AE0738 NTXK96AA01 |
| 0 BTUP TO ATTENDANT CONSOLE - PHASE 1              | AE0738 NTX937AA06 |
| 0 BTUP TO ATTENDANT CONSOLE - PHASE 1              | AE0738 NTX937AB01 |
| 0 BTUP TO DPNSS BASIC CALL INTERWORKING            | AE0737 NTXK18AA01 |
| 0 BTUP TO DPNSS BASIC CALL INTERWORKING            | AE0737 NTXK18AB01 |
| 0 BTUP TO IBN LINE - PART II                       | AE0569 NTXK96AA01 |
| 0 BTUP TO IBN LINE - PART II                       | AE0569 NTX937AA06 |
| 0 BTUP TO IBN LINE - PART II                       | AE0569 NTX937AB01 |
| 0 BTUP TO IBN LINES TONES AND ANNOUNCEMENTS        | NC0047 NTXK96AA01 |
| 0 BTUP TO IBN LINES TONES AND ANNOUNCEMENTS        | NC0047 NTX937AA06 |
| 0 BTUP TO IBN LINES TONES AND ANNOUNCEMENTS        | NC0047 NTX937AB01 |
| 0 BTUP,TUP+ MAINTENANCE ENHANCEMENT AND BASIC TUPE | AE0747 NTX167AB11 |
| 0 MAINTENANCE                                      |                   |
| 0 BT3J III/IV SIGNALLING ON IBN TRUNK TYPES        | AE0356 NTXB59AA01 |
| 0 BT7 CALLED PARTY CONTROL                         | AE0818 NTXK96AA01 |
| 0 BT7 CALLED PARTY CONTROL                         | AE0818 NTX937AA06 |
| 0 BT7 CALLED PARTY CONTROL                         | AE0818 NTX937AB01 |
| 0 BT7 CHARGE/NO CHARGE                             | AE0917 NTXK96AA01 |
| 0 BT7 CHARGE/NO CHARGE                             | AE0917 NTX937AA06 |
| 0 BT7 CHARGE/NO CHARGE                             | AE0917 NTX937AB01 |
| 0 BT7 CLI AND SM                                   | AE0816 NTXK96AA01 |
| 0 BT7 CLI AND SM                                   | AE0816 NTX937AA06 |
| 0 BT7 CLI AND SM                                   | AE0816 NTX937AB01 |
| 0 BT7 EMERGENCY CALLS                              | AE0901 NTXK96AA01 |
| 0 BT7 EMERGENCY CALLS                              | AE0901 NTX937AA06 |
| 0 BT7 EMERGENCY CALLS                              | AE0901 NTX937AB01 |
| 0 BT7 I/W ANSI ISUP - BASIC CALL                   | AE0819 NTXK96AA01 |
| 0 BT7 I/W ANSI ISUP - BASIC CALL                   | AE0819 NTX937AA06 |
| 0 BT7 I/W ANSI ISUP - BASIC CALL                   | AE0819 NTX937AB01 |
| 0 BT7 LAST PARTY RELEASE                           | AE0900 NTXK96AA01 |
| 0 BT7 LAST PARTY RELEASE                           | AE0900 NTX937AA06 |
| 0 BT7 LAST PARTY RELEASE                           | AE0900 NTX937AB01 |
| 0 BT7 MALICIOUS CALL INTERWORKING (CC)             | AE0817 NTXK54AA01 |
| 0 BT7 MALICIOUS CALL INTERWORKING (XPM)            | AE0829 NTXK96AA01 |
| 0 BT7 MALICIOUS CALL INTERWORKING (XPM)            | AE0829 NTX937AA06 |
| 0 BT7 MALICIOUS CALL INTERWORKING (XPM)            | AE0829 NTX937AB01 |

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| 0 BT7 TRANSIT CALLS ENHANCEMENT                      | AE0470 NTXK96AA01 |
| 0 BT7 TRANSIT CALLS ENHANCEMENT                      | AE0470 NTX937AA06 |
| 0 BT7 TRANSIT CALLS ENHANCEMENT                      | AE0470 NTX937AB01 |
| 0 BUFFER MANAGEMENT SYSTEM                           | AI0124 NTXF71AA01 |
| 0 BUFFER MANAGEMENT SYSTEM                           | AI0124 NTX833AB01 |
| 0 BULK CALLING LINE IDENTIFICATION                   | AG1839 NTXF55AA02 |
| 0 BULK DATA MODIFICATION                             | BR0241 NTX056AA05 |
| 0 BULK MODIFICATION                                  | BV0027 NTX056AA05 |
| 0 BUSINESS CLASS FOR RESTRICTED USAGE                | BV1167 NTX220AA13 |
| 0 BUSINESS CLASS FOR RESTRICTED USAGE                | BV1167 NTX220BA06 |
| 0 BUSINESS CLASS FOR RESTRICTED USAGE                | BV1167 NTX220CA08 |
| 0 BUSINESS SET - 36 BUTTON ADD ON SUPPORT            | AL0128 NTX106AA10 |
| 0 BUSINESS SET BUSY INDICATOR                        | AL0127 NTX719AA01 |
| 0 BUSINESS SET CALL WAITING ORIGINATE                | AD1515 NTX106AA10 |
| 0 BUSINESS SET DIAL CALL WAITING                     | AD1516 NTX106AA10 |
| 0 BUSY LINE VERIFY AWT ENHANCEMENT                   | AF1120 NTXA28AA02 |
| 0 BUSY TONE FOR ATB DAL'S                            | AD1697 NTX222CA09 |
| 0 BUSY VERIFICATION - STATIONS                       | BV0440 NTXZ00AA01 |
| 0 BUSY VERIFICATION - STATIONS                       | BV0440 NTX100AA27 |
| 0 BUSY VERIFICATION -TRUNKS                          | BV0441 NTXZ00AA01 |
| 0 BUSY VERIFICATION -TRUNKS                          | BV0441 NTX100AA27 |
| 0 B911 AND 3WC INTERACTION                           | AF1735 NTX019AA02 |
| 0 CAC OM'S                                           | AD0078 NTX222CA09 |
| 0 CACHING DMOPRO                                     | AG1513 NTXE29AA03 |
| 0 CADA KBD                                           | BF0818 NTX640AA06 |
| 0 CADA KBD                                           | BF0818 NTX640AB04 |
| 0 CADENCE BASED ATD EXECS                            | BV1009 NTX220AA13 |
| 0 CADENCE BASED ATD EXECS                            | BV1009 NTX220BA06 |
| 0 CADENCE BASED ATD EXECS                            | BV1009 NTX220CA08 |
| 0 CAIA INTERFACE SPEC FOR SCOPEDIAL (SPAIN)          | AE0050 NTX612AA04 |
| 0 CALL BACK QUEUING (BASIC)                          | BV0542 NTX105AA03 |
| 0 CALL CODES 009,033,121 ASSIGNMENT VIA TRANSLATION  | BR0759 NTX098AA07 |
| 0 CALL CODES 009,033,121 ASSIGNMENT VIA TRANSLATION  | BR0759 NTX159AA12 |
| 0 CALL DETAIL RECORDING SPEEDUP                      | BC1015 NTX220AA13 |
| 0 CALL DETAIL RECORDING SPEEDUP                      | BC1015 NTX220BA06 |
| 0 CALL DETAIL RECORDING SPEEDUP                      | BC1015 NTX220CA08 |
| 0 CALL FORWARD ALL CALLS                             | BV0451 NTXZ00AA01 |
| 0 CALL FORWARD ALL CALLS                             | BV0451 NTX100AA27 |
| 0 CALL FORWARD BUSY                                  | BV0453 NTXZ00AA01 |
| 0 CALL FORWARD BUSY                                  | BV0453 NTX100AA27 |
| 0 CALL FORWARD NO ANSWER                             | BV0452 NTXZ00AA01 |
| 0 CALL FORWARD NO ANSWER                             | BV0452 NTX100AA27 |
| 0 CALL FORWARD BUSY - INHIBIT MAKE & INHIBIT LINE    | NC0084 NTXJ84AA02 |
| 0 BUSY.                                              |                   |
| 0 CALL FORWARD BUSY LINE                             | BR0801 NTX806AA01 |
| 0 CALL FORWARD BUSY/DON'T ANSWER - INTERNAL/EXTERNAL | AG1371 NTXE39AA01 |
| 0 CALL FORWARD DO NOT ANSWER AND CALL WAITING        | NC0055 NTXJ84AA02 |

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## 0 INTERACTION

|                                                       |        |            |
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| 0 CALL FORWARD DON'T ANSWER                           | BR0802 | NTX806AA01 |
| 0 CALL FORWARD DON'T ANSWER INTERACTION WITH 3WC      | AG1541 | NTXZ00AA01 |
| 0 CALL FORWARD DON'T ANSWER INTERACTION WITH 3WC      | AG1541 | NTX100AA27 |
| 0 CALL FORWARD REASON DISPLAY                         | AD0414 | NTX108AA05 |
| 0 CALL FORWARD/AUTOMATIC DIAL DISPLAY                 | AL0026 | NTX108AA05 |
| 0 CALL FORWARDING (SEE C0181)                         | BR0232 | NTX020AA01 |
| 0 CALL FORWARDING (SEE C0181)                         | BR0232 | NTX020AB03 |
| 0 CALL FORWARDING (SEE C0181)                         | BR0232 | NTX020AC01 |
| 0 CALL FORWARDING (SEE C0181)                         | BR0232 | NTX804AA02 |
| 0 CALL FORWARDING (7/10 DIGITS)                       | BC0181 | NTX020AA01 |
| 0 CALL FORWARDING (7/10 DIGITS)                       | BV0068 | NTX020AA01 |
| 0 CALL FORWARDING (7/10 DIGITS)                       | BC0181 | NTX020AB03 |
| 0 CALL FORWARDING (7/10 DIGITS)                       | BV0068 | NTX020AB03 |
| 0 CALL FORWARDING (7/10 DIGITS)                       | BC0181 | NTX020AC01 |
| 0 CALL FORWARDING (7/10 DIGITS)                       | BV0068 | NTX020AC01 |
| 0 CALL FORWARDING (7/10 DIGITS)                       | BC0181 | NTX804AA02 |
| 0 CALL FORWARDING (7/10 DIGITS)                       | BV0068 | NTX804AA02 |
| 0 CALL FORWARDING - REMOTE ACCESS                     | BR0781 | NTXA43AA01 |
| 0 CALL FORWARDING - USAGE SENSITIVE PRICING (BELLCORE | BR0777 | NTX045AA01 |
| 0 FORMAT)                                             |        |            |
| 0 CALL FORWARDING FOR SMDI                            | AD0370 | NTX732AA06 |
| 0 CALL FORWARDING OF CALL WAITING CALLS               | NC0025 | NTXJ70AA01 |
| 0 CALL FORWARDING OF PRECEDENCE CALLS                 | AD2853 | NTX715AB01 |
| 0 CALL FWD ASGNMT TO PBX MESS RATE LINE (CFW FOR PBM) | AL0499 | NTXZ02AA01 |
| 0 CALL FWD ASGNMT TO PBX MESS RATE LINE (CFW FOR PBM) | AL0499 | NTX901AA24 |
| 0 CALL GAP                                            | AD0197 | NTX716AA05 |
| 0 CALL HOLD                                           | BC0948 | NTX435AA03 |
| 0 CALL HOLD ON MALICIOUS CALL TRACE - POTS LINES      | BR0032 | NTXZ03AA01 |
| 0 CALL HOLD ON MALICIOUS CALL TRACE - POTS LINES      | BR0032 | NTX902AA07 |
| 0 CALL PARK                                           | BV0534 | NTXZ00AA01 |
| 0 CALL PARK                                           | BV0534 | NTX100AA27 |
| 0 CALL PARK BY ACD AGENT                              | NC0288 | NTX416AI01 |
| 0 CALL PARK BY ACD AGENT                              | NC0288 | NTX416AJ01 |
| 0 CALL PARK RECALL IDENTIFICATION                     | AD0908 | NTX878AB02 |
| 0 CALL PARK RECALL IDENTIFICATION                     | AD0908 | NTX878AC01 |
| 0 CALL PARK RECALL IDENTIFICATION                     | AD0908 | NTX878AD01 |
| 0 CALL PARK RECALL IDENTIFICATION                     | AD0908 | NTX878AE01 |
| 0 CALL PARTY CONTROL VIA TRANSLATIONS                 | AJ0580 | NTX470AA13 |
| 0 CALL PICKUP                                         | BV0455 | NTXZ00AA01 |
| 0 CALL PICKUP                                         | BV0455 | NTX100AA27 |
| 0 CALL PROCESSING AUDIT                               | BV1663 | NTX322AA18 |
| 0 CALL PROCESSING CDR DATA CAPTURE & FORMATTING       | AD2166 | NTXG60AA02 |
| 0 CALL PROCESSING DATABASE ACCESS SPEED UP            | BC1013 | NTX220AA13 |
| 0 CALL PROCESSING DATABASE ACCESS SPEED UP            | BC1013 | NTX220BA06 |
| 0 CALL PROCESSING DATABASE ACCESS SPEED UP            | BC1013 | NTX220CA08 |
| 0 CALL PROCESSING DATABASE ACCESS SPEED UP            | BC1013 | NTX222AB04 |

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| 0 CALL PROCESSING ENHANCEMENTS FOR BCS32              | AD3254 NTX222BA07 |
| 0 CALL PROCESSING ENHANCEMENTS FOR REL 2.2            | AD1314 NTX222AB04 |
| 0 CALL PROCESSING ENHANCEMENTS FOR REL 2.2            | AD1314 NTX222BA07 |
| 0 CALL PROCESSING ENVIRONMENT FOR ISDN PRA            | AC0270 NTX790AC02 |
| 0 CALL PROCESSING FOR LINES                           | BC1484 NTX145AA06 |
| 0 CALL PROCESSING FOR LINES                           | BC1484 NTX269AA07 |
| 0 CALL PROCESSING FOR MCI CALLING CARD                | AD0148 NTX345CA04 |
| 0 CALL PROCESSING FOR STR BBF                         | AD1193 NTXG25AA01 |
| 0 CALL PROCESSING FOR STR BBF                         | AD1193 NTX220AA13 |
| 0 CALL PROCESSING FOR STR BBF                         | AD1193 NTX220BA06 |
| 0 CALL PROCESSING FOR STR BBF                         | AD1193 NTX220CA08 |
| 0 CALL PROCESSING FOR TRUNKS AS SCAI ACD AGENTS       | AD2885 NTXN14AA01 |
| 0 CALL PROCESSING FOR US SPRINT CCS7 IMTS             | AD0431 NTX222AB04 |
| 0 CALL PROCESSING FOR US SPRINT CCS7 IMTS             | AD0431 NTX222BA07 |
| 0 CALL PROCESSING FOR VNET FG-D                       | AD0143 NTX353AA04 |
| 0 CALL PROCESSING FOR VNET FG-D                       | AD0143 NTX353CA05 |
| 0 CALL PROCESSING HOOKS FOR TOPS                      | BV1396 NTX236AA01 |
| 0 CALL PROCESSING HOOKS FOR TOPS                      | BV1396 NTX236BA01 |
| 0 CALL PROCESSING HOOKS FOR TOPS                      | BV1396 NTX236CA01 |
| 0 CALL PROCESSING INTERFACE FOR ISI                   | AG1946 NTXJ59AB03 |
| 0 CALL PROCESSING INTERFACE FOR ISI                   | AG1946 NTXJ59AC01 |
| 0 CALL PROCESSING MODIFICATIONS FOR THE CDR           | AD1440 NTX222BA07 |
| 0 CALL PROCESSING PRIORITY SCREENING                  | BV1217 NTX220AA13 |
| 0 CALL PROCESSING PRIORITY SCREENING                  | BV1217 NTX220BA06 |
| 0 CALL PROCESSING PRIORITY SCREENING                  | BV1217 NTX220CA08 |
| 0 CALL PROCESSING ROBUSTNESS                          | BC1517 NTX001AA29 |
| 0 CALL PROCESSING USING UTR FOR MF TRUNKS             | BF0665 NTX269AA07 |
| 0 CALL PROGRESS / COMFORT TONES                       | AL0810 NTXA15AA01 |
| 0 CALL PROGRESS DISPLAY/USAGE                         | BF0691 NTX250AA15 |
| 0 CALL PROGRESS SIGNALS TO DATA UNITS                 | BC1597 NTX250AA15 |
| 0 CALL PROGRESS TONES                                 | AJ0822 NTXH45AA01 |
| 0 CALL PROMPTER INTERFACE                             | AD0821 NTXG41BA05 |
| 0 CALL PROMPTER INTERFACE                             | AD0821 NTX341BA01 |
| 0 CALL REORIGINATION / RESET DIALING                  | AD1807 NTXF17AA02 |
| 0 CALL REQUEST CALL PROCESSING ENHANCEMENTS           | AG1626 NTXE47AA02 |
| 0 CALL REQUEST CALL PROCESSING ENHANCEMENTS           | AG1626 NTX119AA05 |
| 0 CALL REQUEST RETRIEVAL/CALL FORWARDING INTERACTION  | AM0169 NTX119AA05 |
| 0 CALL REQUEST RETRIEVE/KEYSET SHORT HUNT INTERACTION | AG1997 NTX119AA05 |
| 0 CONTROL                                             |                   |
| 0 CALL ROUTED TO RECORDING AND THEN OPERATOR (411)    | BR0091 NTXZ03AA01 |
| 0 CALL ROUTED TO RECORDING AND THEN OPERATOR (411)    | BR0091 NTX902AA07 |
| 0 CALL TERMINATION TO DMS250/TOPS FROM DMS250         | BV1300 NTX222CA09 |
| 0 CALL TIMING OFFICE PARAMETER CLEANUP                | BC1108 NTX001AA29 |
| 0 CALL TRANSFER CAPABILITY                            | AE0242 NTX499AA10 |
| 0 CALL WAITING                                        | BV0456 NTXZ00AA01 |
| 0 CALL WAITING                                        | BC0272 NTX020AA01 |
| 0 CALL WAITING                                        | BV0065 NTX020AA01 |

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| 0 CALL WAITING                                               | BC0272 NTX020AB03 |
| 0 CALL WAITING                                               | BV0065 NTX020AB03 |
| 0 CALL WAITING                                               | BC0272 NTX020AC01 |
| 0 CALL WAITING                                               | BV0065 NTX020AC01 |
| 0 CALL WAITING                                               | BV0456 NTX100AA27 |
| 0 CALL WAITING                                               | BC0272 NTX804AA02 |
| 0 CALL WAITING                                               | BV0065 NTX804AA02 |
| 0 CALL WAITING (SEE C0272)                                   | BR0233 NTX020AA01 |
| 0 CALL WAITING (SEE C0272)                                   | BR0233 NTX020AB03 |
| 0 CALL WAITING (SEE C0272)                                   | BR0233 NTX020AC01 |
| 0 CALL WAITING (SEE C0272)                                   | BR0233 NTX804AA02 |
| 0 CALL WAITING - ORIGINATING                                 | BC0949 NTX435AA03 |
| 0 CALL WAITING FOR 3-WAY CALLING                             | BR0810 NTX807AB01 |
| 0 CALL WAITING FOR 3-WAY CALLING                             | BR0810 NTX824AB01 |
| 0 CALLED PARTY RELEASED TIMING ENHANCEMENT                   | AF0966 NTXZ02AA01 |
| 0 CALLED PARTY RELEASED TIMING ENHANCEMENT                   | AF0966 NTX901AA24 |
| 0 CALLING CARD ENHANCEMENTS                                  | AD0699 NTX345CA04 |
| 0 CALLING CARD ENHANCEMENTS                                  | AD0699 NTX360AA03 |
| 0 CALLING CARD ENHANCEMENTS                                  | AD0699 NTX360BA02 |
| 0 CALLING CARD WITH SUPPCODES                                | AD1693 NTX345CA04 |
| 0 CALLING LINE IDENTIFICATION                                | BT0072 NTXZ02AA01 |
| 0 CALLING LINE IDENTIFICATION                                | BT0072 NTXZ03AA01 |
| 0 CALLING LINE IDENTIFICATION                                | BT0072 NTX901AA24 |
| 0 CALLING LINE IDENTIFICATION                                | BT0072 NTX902AA07 |
| 0 CALLING NAME INSPECT KEY                                   | AG1403 NTXE40AA01 |
| 0 CALLING NAME INSPECT KEY                                   | AG1403 NTXE40AB01 |
| 0 CALLING NUMBER AND NCOS DISPLAY ON ATTENDANT<br>0 CONSOLE. | AD0360 NTXA38AA03 |
| 0 CALLING NUMBER AND NCOS DISPLAY ON ATTENDANT<br>0 CONSOLE. | AD0360 NTXA38AB01 |
| 0 CALLING NUMBER AND NCOS DISPLAY ON ATTENDANT<br>0 CONSOLE. | AD0360 NTXA39AA02 |
| 0 CALLING NUMBER ANNOUNCEMENT (CNA)                          | BR0468 NTX196AA02 |
| 0 CALLING NUMBER DELIVERY BLOCKING BASIC<br>0 FUNCTIONALITY  | AG0778 NTXA41AA01 |
| 0 CALLTRAK FOR FIELD USAGE                                   | AG1996 NTX181AA12 |
| 0 CAMA ENHANCEMENTS                                          | AD2363 NTX349CA02 |
| 0 CAMA SUPERVISION - ANSWER TIMING                           | BT0176 NTX044AA04 |
| 0 CAMA SUPERVISION - CLD DISCONNECT TIMING                   | BT0177 NTX044AA04 |
| 0 CAMA SUSPENSION                                            | BV0317 NTX030CC16 |
| 0 CAMA SUSPENSION                                            | BV0588 NTX030CC16 |
| 0 CAMA SUSPENSION                                            | BT0302 NTX044AA04 |
| 0 CAMA TRUNK GROUP CALL PROCESSING ON DMS250                 | BV1625 NTX349CA02 |
| 0 CANCEL AND SKIP CONTROLS                                   | AF0154 NTX060AB11 |
| 0 CANCEL CALL WAITING - PER LINE                             | AF1731 NTXJ58AA01 |
| 0 CANCEL CALL WAITING - POTS                                 | BR0711 NTX807AA01 |
| 0 CANCEL CALL WAITING - POTS                                 | BR0711 NTX807AB01 |

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| 0 CANCEL FROM                                        | AD0295 NTX716AA05 |
| 0 CANCEL TO                                          | AD0296 NTX716AA05 |
| 0 CAPACITY ENHANCEMENT: 40 MHZ CPU                   | BC1518 NTX001AA29 |
| 0 CARIBBEAN AUDIBLE TONES                            | BF0869 NTX656AA01 |
| 0 CARRIER ACCESS CODE BLOCKING FOR IC/INC            | AL0288 NTX989AA01 |
| 0 CARRIER ACCESS CODE EXPANSION (FGB).               | NC0202 NTX209AB01 |
| 0 CARRIER ACCESS CODE EXPANSION (FGB).               | NC0202 NTX211AB01 |
| 0 CARRIER CODE ON AMA FOR TERMINATING TOPS CALLS     | AF0968 NTX187AA03 |
| 0 CARRIER ENHANCEMENTS                               | BC1075 NTX001AA29 |
| 0 CARRIER ID BY TRKGRP FOR EANTS & ONATS             | BV1637 NTX343CA02 |
| 0 CARRIER ID NUMBER IN CDR                           | BV1620 NTX343CA02 |
| 0 CARRIER MAINTENANCE ENHANCEMENT                    | AE0480 NTXH10AA02 |
| 0 CARRIER MAINTENANCE ENHANCEMENT                    | AE0480 NTX274AA04 |
| 0 CARRIER MAINTENANCE ENHANCEMENT                    | AE0480 NTX478AA04 |
| 0 CARRIER MAINTENANCE ON MTCMAIN                     | BC2016 NTX001AA29 |
| 0 CARRIER MILLIWATT TEST TERMINATION                 | BV1198 NTX220AA13 |
| 0 CARRIER MILLIWATT TEST TERMINATION                 | BV1198 NTX220BA06 |
| 0 CARRIER MILLIWATT TEST TERMINATION                 | BV1198 NTX220CA08 |
| 0 CASUAL FEATURES OPTIONALITY                        | AJ0563 NTX499AA10 |
| 0 CC & PP TRAFFIC MEASUREMENTS                       | BC0772 NTX213AC01 |
| 0 CC - MAINTENANCE & MONITOR (PART II)               | BC1759 NTXH22AA01 |
| 0 CC - MAINTENANCE & MONITOR (PART II)               | BC1759 NTX474AA07 |
| 0 CC - METERING CALL PROCESSING                      | BC1627 NTX612AA04 |
| 0 CC - METERING CHANGEOVER CONTROL                   | BC1760 NTXH22AA01 |
| 0 CC - METERING CHANGEOVER CONTROL                   | BC1760 NTX474AA07 |
| 0 CC - METERING CHARGE RECORDING                     | BC1058 NTXH22AA01 |
| 0 CC - METERING CHARGE RECORDING                     | BC1058 NTX474AA07 |
| 0 CC - METERING RATE DETERMINATION                   | BV1207 NTXH22AA01 |
| 0 CC - METERING RATE DETERMINATION                   | BV1207 NTX474AA07 |
| 0 CC - METERING SYSTEM MAINTENANCE/MONITOR           | BV1208 NTXH22AA01 |
| 0 CC - METERING SYSTEM MAINTENANCE/MONITOR           | BV1208 NTX474AA07 |
| 0 CC - METERING TARIFF APPLICATION                   | BC1758 NTXH22AA01 |
| 0 CC - METERING TARIFF APPLICATION                   | BC1758 NTX474AA07 |
| 0 CC - SOCOTEL TABLE CONTROL                         | BC2061 NTX612AA04 |
| 0 CC - SOCOTEL TABLE CONTROL                         | BC2061 NTX913AA04 |
| 0 CC - SPANISH LINE SIGNALLING I                     | BC1629 NTX612AA04 |
| 0 CC - SPANISH LINE SIGNALLING I                     | BC1629 NTX913AA04 |
| 0 CC - SPANISH SOCOTEL SIGNALLING I                  | BC1628 NTX612AA04 |
| 0 CC - SPANISH SOCOTEL SIGNALLING I                  | BC1628 NTX913AA04 |
| 0 CC ALARMS                                          | BC0771 NTX213AC01 |
| 0 CC BASE HOOKS FOR DIGITAL CELLULAR MAINTENANCE OMS | AD3214 NTXG52AA04 |
| 0 CC BASE HOOKS FOR DIGITAL CELLULAR MAINTENANCE OMS | AD3214 NTXG80AA03 |
| 0 CC BCS SWACT SUPPORT FOR THE LTCI                  | AC0366 NTX750AC02 |
| 0 CC BCS SWACT SUPPORT FOR THE LTCI                  | AC0366 NTX750AD01 |
| 0 CC BOOT LOADER FIRMWARE ENHANCEMENT                | BF0568 NTX001AA29 |
| 0 CC CALL PROPROCESSING CHANGES FOR SCAI             | AD2585 NTXJ55AA02 |
| 0 CC CALL PROCESSING SUPPORT FOR THE ICP             | AD2215 NTXG52AA04 |

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| 0 CC CALL PROCESSING SUPPORT FOR THE ICP              | AD2215 NTXG80AA03 |
| 0 CC CARRIER MTC FOR SMS                              | BC1426 NTX398AA12 |
| 0 CC COT ENHANCEMENTS FOR CUTOVER (2 WIRE TRUNKS)     | AJ1485 NTXP48AA01 |
| 0 CC DATA SUPPORT FOR 6X50AB                          | BC2093 NTX142AA02 |
| 0 CC DATA SUPPORT FOR 6X50AB                          | BC2093 NTX143AA02 |
| 0 CC DATA SUPPORT FOR 6X50AB                          | BC2093 NTX270AA19 |
| 0 CC DELAY DIAL-1 LINE SIGNALLING SYSTEM              | BC1187 NTX477AA04 |
| 0 CC DIGITAL CELLULAR ICP MAINTENANCE ENHANCEMENTS    | AD2937 NTXG80AA03 |
| 0 CC DTSR FOR SLC96                                   | BC1139 NTX398AA12 |
| 0 CC ESA STATIC DATA                                  | AF0951 NTX380AA02 |
| 0 CC GENERAL PURPOSE RO IMPLEMENTATION                | BC2128 NTX560AB03 |
| 0 CC IDT MAINTENANCE II                               | AF2443 NTXF46AA04 |
| 0 CC INTERSWITCHING                                   | AF0562 NTX380AA02 |
| 0 CC LAYER 2/3 PROTOCOL MONITORING DEVELOPMENT        | AL1914 NTX750AC02 |
| 0 CC LAYER 2/3 PROTOCOL MONITORING DEVELOPMENT        | AL1914 NTX750AD01 |
| 0 CC LINE CARD DIAGNOSTIC RESULTS FOR MLT             | BC1373 NTX195AA05 |
| 0 CC LINE DIAGNOSTIC ENHANCEMENTS FOR SMS             | AF0157 NTX398AA12 |
| 0 CC LINE INVENTORY                                   | BV1173 NTX213AC01 |
| 0 CC LINE SIGNALLING SUPPORT                          | BV1211 NTX470AA13 |
| 0 CC LINES MTC FOR SLC_96                             | BC1428 NTX398AA12 |
| 0 CC LOGS                                             | BC0773 NTX213AC01 |
| 0 CC MAINT & TABLE CONTROL FOR DIGITAL CELLULAR       | AD3216 NTXG52AA04 |
| 0 CC MAINT & TABLE CONTROL FOR DIGITAL CELLULAR       | AD3216 NTXG80AA03 |
| 0 CC MAINT FOR ICP CELL 60 DEGREE SECTORS             | AM0120 NTXG52AA04 |
| 0 CC MAINT FOR ICP CELL 60 DEGREE SECTORS             | AM0120 NTXG80AA03 |
| 0 CC MAINT FOR MULTIPLE DATALINKS TO DCP CELL         | AM0105 NTXG52AA04 |
| 0 CC MAINTENANCE FOR ICP-BASED CELL                   | AD2200 NTXG52AA04 |
| 0 CC MAINTENANCE FOR ICP-BASED CELL                   | AD2200 NTXG80AA03 |
| 0 CC MAINTENANCE FOR PCM30 ENHANCEMENTS               | AE0085 NTX222AM05 |
| 0 CC MAINTENANCE FOR PCM30 ENHANCEMENTS               | AE0085 NTX270AA19 |
| 0 CC MAINTENANCE FOR SMS                              | BC1136 NTX398AA12 |
| 0 CC MAINTENANCE SUPPORT FOR RLCM ESA CALL PROCESSING | AL0071 NTX154AA03 |
| 0 CC MAINTENANCE SUPPORT OF PLCM                      | AE0219 NTXB58AA01 |
| 0 CC MAINTENANCE SUPPORT OF PLGC                      | AE0218 NTXB58AA01 |
| 0 CC MANUAL SUPPORT FOR DEAD SYSTEM RECOVERY          | AG1241 NTX270AA19 |
| 0 CC METERING CHANGEOVER CONTROL                      | BV0277 NTX030CC16 |
| 0 CC METERING FOR FEATURES                            | AC0054 NTXH22AA01 |
| 0 CC METERING FOR FEATURES                            | AC0054 NTX474AA07 |
| 0 CC MF-3 REGISTER SIGNALLING SYSTEM                  | BC1189 NTX486AA01 |
| 0 CC MMI HOOKS FOR DIGITAL CELLULAR                   | AD3217 NTXG52AA04 |
| 0 CC MMI HOOKS FOR DIGITAL CELLULAR                   | AD3217 NTXG80AA03 |
| 0 CC MTC FOR STR IN DTC                               | BV1644 NTX220AA13 |
| 0 CC MTC FOR STR IN DTC                               | BV1644 NTX220BA06 |
| 0 CC MTC FOR STR IN DTC                               | BV1644 NTX220CA08 |
| 0 CC MTCE FOR NBS800                                  | AD1631 NTXG52AA04 |
| 0 CC MTCE SUPPORT FOR IDTC - PCM30                    | BC1104 NTX270AA19 |
| 0 CC OVERLAP SIGNALLING FOR ATUP                      | AJ1091 NTXH44AB02 |



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| 0 CC OVERLAP SIGNALLING FOR BTUP                    | AE0587 NTXK96AA01 |
| 0 CC OVERLAP SIGNALLING FOR BTUP                    | AE0587 NTX937AA06 |
| 0 CC OVERLAP SIGNALLING FOR BTUP                    | AE0587 NTX937AB01 |
| 0 CC PM MAINTENANCE FOR SLC-96                      | BC1140 NTX398AA12 |
| 0 CC PROTECTION SWITCHING FOR SLC_96                | BC1427 NTX398AA12 |
| 0 CC PROTECTION SWITCHING FOR SMR                   | BC0776 NTX213AC01 |
| 0 CC RCT INVENTORY TABLE                            | BC0760 NTX213AC01 |
| 0 CC RCT LINES MAINTENANCE PHASE II                 | BC1133 NTX213AC01 |
| 0 CC RCT MAINTENANCE                                | BC0764 NTX213AC01 |
| 0 CC REAL TIME REDUCTION FOR FEATURES               | AG0718 NTX472AB08 |
| 0 CC REGISTER SIGNALLING SUPPORT                    | BV1212 NTX470AA13 |
| 0 CC S/W SUPPORT FOR ENHANCED DRAM (E-DRAM).        | AL1696 NTXN16AA01 |
| 0 CC SCM INVENTORY TABLE                            | BC0759 NTX213AC01 |
| 0 CC SCM MAINTENANCE                                | BC0762 NTX213AC01 |
| 0 CC SOFTWARE FOR XPM SPECIAL CONNECTIONS           | AC0095 NTX750AC02 |
| 0 CC SOFTWARE FOR XPM SPECIAL CONNECTIONS           | AC0095 NTX750AD01 |
| 0 CC SUPPORT FOR DTU BERT INTEGRATION               | AG0273 NTX881AB02 |
| 0 CC SUPPORT FOR DTU BERT INTEGRATION               | AG0273 NTX881AC03 |
| 0 CC SUPPORT FOR DTU BERT INTEGRATION               | AG0273 NTX882AA04 |
| 0 CC SUPPORT FOR DTU BUSY, RTS AND TEST             | AG0274 NTX001AA29 |
| 0 CC SUPPORT FOR DTU DOWNLOADING                    | AG0275 NTX001AA29 |
| 0 CC SUPPORT FOR RCU STATE AUDIT                    | AD1184 NTX322AA18 |
| 0 CC SUPPORT FOR THE DUAQ MODEMS                    | BC1407 NTX140AA02 |
| 0 CC SUPPORT OF TONE OPTIONALITY IN XPM             | AE0186 NTX270AA19 |
| 0 CC SUPPORT OF TONE OPTIONALITY IN XPM             | AE0186 NTX612AA04 |
| 0 CC TYPE/DATA EXTENSION                            | BC0758 NTX213AC01 |
| 0 CC WARM SWACT ENHANCEMENTS                        | AJ0194 NTX001AA29 |
| 0 CC WARM SWACT MAN MACHINE INTERFACE ENHANCEMENTS  | AG1869 NTX001AA29 |
| 0 CC WARM SWACT MMI ENHANCEMENTS - PHASE II         | AG2277 NTX001AA29 |
| 0 CC WARM SWACT MODULE CHECK PROGRAM                | AG2255 NTX001AA29 |
| 0 CC WARM SWACT RESTART OUTAGE REDUCTION - PHASE II | AG2276 NTX001AA29 |
| 0 CC WINK-1 LINE SIGNALLING SYSTEM                  | BC1188 NTX476AA01 |
| 0 CC-INTERNAL CHANGEOVER FOR METERING               | BV1277 NTXH22AA01 |
| 0 CC-INTERNAL CHANGEOVER FOR METERING               | BV1277 NTX474AA07 |
| 0 CC-SPANISH TYPE-P2 LINE SIGNALLING                | AE0196 NTX612AA04 |
| 0 CC-SUPPORT FOR OUTGOING & INCOMING LD SIGNALLING  | BV1988 NTX495AA01 |
| 0 CC/IPE FEATURE REGRESSION                         | AM0035 NTXN25AA02 |
| 0 CC/XPM SUPPORT OF POTS ON LCMI                    | AC0519 NTX750AC02 |
| 0 CC/XPM SUPPORT OF POTS ON LCMI                    | AC0519 NTX750AD01 |
| 0 CCIS - CALL PROCESSING BASE                       | BC0575 NTX204AA02 |
| 0 CCIS - CP HOOKS (PART 2)                          | BC0692 NTX204AA02 |
| 0 CCIS - DOWNLOADING DATA TO MSB                    | BC0571 NTX204AA02 |
| 0 CCIS - INWATS OSO                                 | BR0435 NTX157AA01 |
| 0 CCIS - LINK ERROR RECOVERY (CC)                   | BC0574 NTX204AA02 |
| 0 CCIS - LINK MTCE                                  | BC0570 NTX204AA02 |
| 0 CCIS - ROUTE MANAGEMENT STATUS                    | BC0573 NTX204AA02 |
| 0 CCIS - SIGNALLING LINK ACTIVATION                 | BC0569 NTX204AA02 |

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| 0 CCIS - SIGNALLING LINK DEFINITION               | BC0566 NTX204AA02 |
| 0 CCIS - TRK TTP SUBLEVEL                         | BC0578 NTX204AA02 |
| 0 CCIS - TRUNK HANDLING DURING SIGNALLING FAILURE | BC0577 NTX204AA02 |
| 0 CCIS - VOICE TRUNK AGENCY                       | BC0576 NTX204AA02 |
| 0 CCIS BANDED SIGNALLING (BS) ON INTERTOLL TRUNKS | BV0801 NTX204AA02 |
| 0 CCIS DATA EXTRACTION/INSERTION                  | BC0785 NTX040AA03 |
| 0 CCIS DIRECT SIGNALLING (DS) CAPABILITY          | BV0800 NTX197AA01 |
| 0 CCIS INTERTOLL TRUNK TO/FROM LINE               | BV0828 NTX204AA02 |
| 0 CCIS INTERTOLL TRUNK TO/FROM TOPS POSITION      | BV0827 NTX040AA03 |
| 0 CCIS IT TRUNK FOR DDO                           | BC0587 NTX204AA02 |
| 0 CCIS IT TRUNK FROM LINE CP                      | BC0591 NTX204AA02 |
| 0 CCIS IT TRUNK FROM OTHER PTS TRUNKS CP          | BC0586 NTX204AA02 |
| 0 CCIS IT TRUNK FROM PTS IT TRUNK CP              | BC0583 NTX204AA02 |
| 0 CCIS IT TRUNK FROM TOPS POSITION CP             | BC0588 NTX204AA02 |
| 0 CCIS IT TRUNK TO CCIS IT TRUNK CALL PROCESSING  | BC0584 NTX204AA02 |
| 0 CCIS IT TRUNK TO LINE CP                        | BC0590 NTX204AA02 |
| 0 CCIS IT TRUNK TO OTHER PTS TRUNKS CP            | BC0585 NTX204AA02 |
| 0 CCIS IT TRUNK TO PTS IT TRUNK CP                | BC0581 NTX204AA02 |
| 0 CCIS IT TRUNK TO TOPS POSITIONS CP              | BC0589 NTX204AA02 |
| 0 CCIS IT TRUNK TO TREATMENT CP                   | BC0582 NTX204AA02 |
| 0 CCIS MESSAGE TRANSFER PART BASE                 | BC0599 NTX204AA02 |
| 0 CCIS PASS_ALONG ROUTING INFORMATION             | BC0745 NTX204AA02 |
| 0 CCIS TRUNK EXECS                                | BC0592 NTX204AA02 |
| 0 CCIS TRUNK NETWORK MANAGEMENT                   | BC0580 NTX204AA02 |
| 0 CCIS 100/102 TESTLINE                           | BC0601 NTX204AA02 |
| 0 CCIS 101 TESTLINE                               | BC0602 NTX204AA02 |
| 0 CCIS 104 TESTLINE                               | BC0603 NTX204AA02 |
| 0 CCIS 105 TESTLINE                               | BC0605 NTX204AA02 |
| 0 CCIS 108 TESTLINE                               | BC0604 NTX204AA02 |
| 0 CCITT & NTT-NCCI #7 ISUP MAINTENANCE            | AD1849 NTXG60AA02 |
| 0 CCITT #7 MTP (DMS-250)                          | AE0313 NTXR72AA01 |
| 0 CCITT #7 MTP (DMS-250)                          | AE0313 NTX041AB09 |
| 0 CCITT BLUE BOOK CONFORMANCE - PRA               | AJ1138 NTX790AC02 |
| 0 CCITT NO.5 (ANALOGUE) A-LAW SIGNALLING          | AE0029 NTX658AA02 |
| 0 CCITT NO.6 (DIGITAL) ON A-LAW PDTC              | AE0031 NTX658AA02 |
| 0 CCITT R1 (DIGITAL) SIGNALLING WITH A-LAW        | AE0030 NTX658AA02 |
| 0 CCITT#7 ISUP XPM SOFTWARE                       | AD1838 NTXG60AA02 |
| 0 CCITT#7 MTP AUSTRALIAN SCREENING                | AL1344 NTXR72AA01 |
| 0 CCITT#7 MTP AUSTRALIAN SCREENING                | AL1344 NTX041AB09 |
| 0 CCITT#7 MTP LEVEL 3 ON LPP                      | AL1343 NTXN19AA02 |
| 0 CCITT7 NATIONAL NETWORK POINT CODE MMI          | AL1474 NTXR72AA01 |
| 0 CCITT7 NATIONAL NETWORK POINT CODE MMI          | AL1474 NTX041AB09 |
| 0 CCS - BASIC MAP LEVEL                           | BC0567 NTX204AA02 |
| 0 CCSA AMA RECORDING                              | BC1263 NTXZ00AA01 |
| 0 CCSA AMA RECORDING                              | BC1263 NTX100AA27 |
| 0 CCSA LINE OPTION                                | BR0746 NTX165AA06 |
| 0 CCSA VFG OPTION                                 | BR0747 NTX165AA06 |

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0 CCS7 - INTER LINK TO LINK PROTOCOL  
0 CCS7 - SIGNALING TERMINAL  
0 CCS7 - SIGNALING TERMINAL  
0 CCS7 ATUP CALL PROCESSING II  
0 CCS7 ATUP TRUNKS  
0 CCS7 ATUP TRUNKS  
0 CCS7 AUTOVON CALL PROCESSING - PHASE 11  
0 CCS7 AUTOVON PREEMPTION - PHASE II  
0 CCS7 BASE  
0 CCS7 BASE  
0 CCS7 BASIC TEST UTILITY  
0 CCS7 BCS INSERTION  
0 CCS7 BCS INSERTION  
0 CCS7 CC STORE REDUCTION FOR NT40  
0 CCS7 CC STORE REDUCTION FOR NT40  
0 CCS7 ENHANCEMENTS TO SUPPORT LPP ON A CCS7 SSP  
0 CCS7 E800  
0 CCS7 E800  
0 CCS7 IMT TEST CALL ENHANCEMENTS  
0 CCS7 IMT TEST CALL ENHANCEMENTS  
0 CCS7 IMT TO ANNOUNCEMENT INTERWORKING  
0 CCS7 IMT TO ANNOUNCEMENT INTERWORKING  
0 CCS7 IMT TO TONE INTERWORKING  
0 CCS7 IMT TO TONE INTERWORKING  
0 CCS7 ISDN USER PART  
0 CCS7 ISDN USER PART INTERLOCAL  
0 CCS7 LINK SET MGMT  
0 CCS7 LINK SET MGMT  
0 CCS7 MSB COMMISSIONING LOAD  
0 CCS7 MSB COMMISSIONING LOAD  
0 CCS7 MSB ST INTERFACE HANDLING  
0 CCS7 MSB ST INTERFACE HANDLING  
0 CCS7 MSB ST/STAI AUDITS  
0 CCS7 MSB ST/STAI AUDITS  
0 CCS7 ROUTE SET MGMT  
0 CCS7 ROUTE SET MGMT  
0 CCS7 SCCP FOR SSP  
0 CCS7 SCCP FOR SSP  
0 CCS7 ST COMMISSIONING LOAD  
0 CCS7 ST COMMISSIONING LOAD  
0 CCS7 ST MP BUFFER RETRIEVAL  
0 CCS7 ST MP BUFFER RETRIEVAL  
0 CCS7 ST MP PRO/CONGESTION CONTROL & FLOW CONTROL  
0 CCS7 ST MP PRO/CONGESTION CONTROL & FLOW CONTROL  
0 CCS7 STATIC DATA AUDITS  
0 CCS7 STATIC DATA AUDITS  
0 CCS7 STP GATEWAY TRAVER TOOL

AC0160 NTX833AB01  
BF0650 NTXR72AA01  
BF0650 NTX041AB09  
AJ1032 NTXH44AB02  
AJ0947 NTXH44AA01  
AJ0947 NTXH44AB02  
AD0274 NTX707AA03  
AD0270 NTX707AA03  
BC1814 NTXR72AA01  
BC1814 NTX041AB09  
AF2367 NTXJ41AA01  
BC2289 NTXR72AA01  
BC2289 NTX041AB09  
AL1499 NTXR72AA01  
AL1499 NTX041AB09  
AL1247 NTXN19AA02  
BV1858 NTX554AA02  
BV1858 NTX555AB01  
AD1210 NTX361BA05  
AD1210 NTX361CA07  
AD1212 NTX361BA05  
AD1212 NTX361CA07  
AD1211 NTX361BA05  
AD1211 NTX361CA07  
BV1998 NTX167AB11  
BF0654 NTX167AB11  
BV2000 NTXR72AA01  
BV2000 NTX041AB09  
BF0551 NTXR72AA01  
BF0551 NTX041AB09  
BF0526 NTXR72AA01  
BF0526 NTX041AB09  
BF0529 NTXR72AA01  
BF0529 NTX041AB09  
BV2001 NTXR72AA01  
BV2001 NTX041AB09  
BF0658 NTXR72AA01  
BF0658 NTX041AB09  
BF0550 NTXR72AA01  
BF0550 NTX041AB09  
BF0457 NTXR72AA01  
BF0457 NTX041AB09  
BF0454 NTXR72AA01  
BF0454 NTX041AB09  
AL1249 NTXR72AA01  
AL1249 NTX041AB09  
AL1500 NTXJ40AA02

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|-----------------------------------------------------|-------------------|
| 0 CCS7 TCAP BASED N00 SERVICE                       | AD0374 NTX365BA03 |
| 0 CCS7 TCAP BASED TCN SERVICE                       | AD0373 NTX364BA02 |
| 0 CCS7 TCAP QUERY/RESPONSE & TESTSS FOR ACCT CODE & | AD0688 NTX366BA01 |
| 0 PRIV SPEED                                        |                   |
| 0 CCS7 TIMER ENHANCEMENTS                           | AC0361 NTXR72AA01 |
| 0 CCS7 TIMER ENHANCEMENTS                           | AC0361 NTX041AB09 |
| 0 CCS7 TRANSACTION CAPABILITY (TCAP)                | BF0657 NTX550AA02 |
| 0 CDC ENHANCEMENTS FOR ISDN                         | AJ0902 NTX412CA04 |
| 0 CDC ENHANCEMENTS FOR ISDN                         | AJ0902 NTX412CB01 |
| 0 CDR AND SER ENHANCEMENTS FOR MCCS AND CAMA        | BV1703 NTX221CA05 |
| 0 CDR BILLING ON CENTREX                            | AE0277 NTXB56AA01 |
| 0 CDR CAPTURE ROUTINE SPEEDUP                       | AD0508 NTX220AA13 |
| 0 CDR CAPTURE ROUTINE SPEEDUP                       | AD0508 NTX220BA06 |
| 0 CDR CAPTURE ROUTINE SPEEDUP                       | AD0508 NTX220CA08 |
| 0 CDR ENHANCEMENTS                                  | AM0061 NTX221BA08 |
| 0 CDR ENHANCEMENTS FOR BCS29                        | AD2583 NTX221BA08 |
| 0 CDR ENHANCEMENTS FOR RELEASE 2.3                  | AD1376 NTX221BA08 |
| 0 CDR ENHANCEMENTS FOR US SPRINT REL. 2.1           | AD0852 NTX221AB04 |
| 0 CDR ENHANCEMENTS FOR US SPRINT REL. 2.1           | AD0852 NTX221BA08 |
| 0 CDR EXTENSION BLOCK ACCESS CONVERSION             | BV1299 NTX220AA13 |
| 0 CDR EXTENSION BLOCK ACCESS CONVERSION             | BV1299 NTX220BA06 |
| 0 CDR EXTENSION BLOCK ACCESS CONVERSION             | BV1299 NTX220CA08 |
| 0 CDR FOR EQUAL ACCESS                              | BC1002 NTX342AA02 |
| 0 CDR FOR EQUAL ACCESS                              | BC1002 NTX342BA01 |
| 0 CDR FOR EQUAL ACCESS                              | BC1002 NTX342CA01 |
| 0 CDR FOR MCI CALLING CARD VIA CAC                  | AD0163 NTX221CA05 |
| 0 CDR FOR USTS                                      | BV1012 NTX220AA13 |
| 0 CDR FOR USTS                                      | BV1012 NTX220BA06 |
| 0 CDR FOR USTS                                      | BV1012 NTX220CA08 |
| 0 CDR FOR USTS                                      | BV1012 NTX221AB04 |
| 0 CDR FOR USTS REL 3 (SEQUENCE NUMBER)              | BV1249 NTX220AA13 |
| 0 CDR FOR USTS REL 3 (SEQUENCE NUMBER)              | BV1249 NTX220BA06 |
| 0 CDR FOR USTS REL 3 (SEQUENCE NUMBER)              | BV1249 NTX220CA08 |
| 0 CDR FOR 800 SERVICES                              | AD0127 NTX221AB04 |
| 0 CDR FOR 800 SERVICES                              | AD0127 NTX221BA08 |
| 0 CDR ON DISK FOR USTS (NTX074AA02, NTX221AD01)     | BV1222 NTX221AB04 |
| 0 CDR ON DISK FOR USTS (NTX074AA02, NTX221AD01)     | BV1222 NTX221CA05 |
| 0 CDR ONLINE SEARCH FOR USTS                        | BV1156 NTX220AA13 |
| 0 CDR ONLINE SEARCH FOR USTS                        | BV1156 NTX220BA06 |
| 0 CDR ONLINE SEARCH FOR USTS                        | BV1156 NTX220CA08 |
| 0 CDR SEARCH                                        | AJ1482 NTXL94AA01 |
| 0 CDR SEARCH                                        | BT0425 NTX220AA13 |
| 0 CDR SEARCH                                        | BT0425 NTX220BA06 |
| 0 CDR SEARCH                                        | BT0425 NTX220CA08 |
| 0 CDR SEARCH                                        | BV0726 NTX221CA05 |
| 0 CDR SEARCH (BUFFER)                               | BT0431 NTX220AA13 |
| 0 CDR SEARCH (BUFFER)                               | BT0431 NTX220BA06 |

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| 0 CDR SEARCH (BUFFER)                                      | BT0431 NTX220CA08 |
| 0 CDR SEARCH FOR MCI PRIVATE NETWORK RECORDS               | BV1903 NTX353AA04 |
| 0 CDR SEARCH FOR MCI PRIVATE NETWORK RECORDS               | BV1903 NTX353CA05 |
| 0 CDR SEARCH FOR WUTCO                                     | BV1181 NTX220AA13 |
| 0 CDR SEARCH FOR WUTCO                                     | BV1181 NTX220BA06 |
| 0 CDR SEARCH FOR WUTCO                                     | BV1181 NTX220CA08 |
| 0 CDR SEARCH ON DISK                                       | BV0861 NTX220AA13 |
| 0 CDR SEARCH ON DISK                                       | BV1204 NTX220AA13 |
| 0 CDR SEARCH ON DISK                                       | BV0861 NTX220BA06 |
| 0 CDR SEARCH ON DISK                                       | BV1204 NTX220BA06 |
| 0 CDR SEARCH ON DISK                                       | BV0861 NTX220CA08 |
| 0 CDR SEARCH ON DISK                                       | BV1204 NTX220CA08 |
| 0 CDR SEARCH ON DISK                                       | BV1325 NTX322AA18 |
| 0 CDR SEARCH ON DISK HOOKS                                 | BV1580 NTX322AA18 |
| 0 CDR SEARCH SPEED UP                                      | BV1404 NTX220AA13 |
| 0 CDR SEARCH SPEED UP                                      | BV1404 NTX220BA06 |
| 0 CDR SEARCH SPEED UP                                      | BV1404 NTX220CA08 |
| 0 CDR SEARCH UPGRADE FOR VER. 4.1 CDR                      | BV1880 NTX353AA04 |
| 0 CDR SEARCH UPGRADE FOR VER. 4.1 CDR                      | BV1880 NTX353CA05 |
| 0 CDR SEQUENCE NUMBER AT DISCONNECT                        | BV1643 NTX221CA05 |
| 0 CDR SPEED-UP VIA CLLI TABLE                              | BV1876 NTX220AA13 |
| 0 CDR SPEED-UP VIA CLLI TABLE                              | BV1876 NTX220BA06 |
| 0 CDR SPEED-UP VIA CLLI TABLE                              | BV1876 NTX220CA08 |
| 0 CDR/PNR ENHANCEMENTS FOR REL.18 TO MCI                   | AD2022 NTX221CA05 |
| 0 CDRID TO CALLID DATABASE AND ACCESS ROUTINES             | AD0138 NTXG41BA05 |
| 0 CDRID TO CALLID DATABASE AND ACCESS ROUTINES             | AD0138 NTX341BA01 |
| 0 CDRSEARCH FOR SPRINT EHNANCEMENTS                        | AD1247 NTXG09AA03 |
| 0 CDRSEARCH INTERFACE                                      | AD1320 NTXG09AA03 |
| 0 CDRSEARCH INTERFACE                                      | AD1320 NTXG09CA01 |
| 0 CELLULAR CALL FORWARDING                                 | BV1142 NTX325AA03 |
| 0 CELLULAR CALL WAITING                                    | BV1244 NTX325AA03 |
| 0 CELLULAR CONFERENCE CALLING                              | BV1140 NTX325AA03 |
| 0 CELLULAR DATABASE ENHANCEMENTS                           | AD0752 NTX322AA18 |
| 0 CELLULAR KILLER TRUNK                                    | BV1324 NTX322AA18 |
| 0 CELLULAR MTC TRUNK ASPECTS                               | BV1635 NTX322AA18 |
| 0 CELLULAR OM                                              | BV1166 NTX220AA13 |
| 0 CELLULAR OM                                              | BV1166 NTX220BA06 |
| 0 CELLULAR OM                                              | BV1166 NTX220CA08 |
| 0 CELLULAR OM                                              | BV1166 NTX322AA18 |
| 0 CELLULAR SAT REPORTING                                   | BV1725 NTX322AA18 |
| 0 CELLULAR SUBSCRIBER DATABASE (PHASE 2)                   | BV1025 NTX322AA18 |
| 0 CENTRAL DMS BUS AND ILM INTERACTIONS ON MESSAGE CHANNELS | AL1477 NTX945AA03 |
| 0 CENTRAL DMS BUS DATA RECOVERY ON SYSTEM RESTARTS         | AL1482 NTX945AA03 |
| 0 CENTRAL DMS-BUS MMI INFORMATION FOR MESSAGE CHANNELS     | AL1480 NTX941AA12 |
| 0 CENTRAL DMS-BUS MMI INFORMATION FOR PHYSICAL LINKS       | AL1781 NTX945AA03 |

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| 0 CENTRAL DMS-BUS/ILM INTERACTIONS ON PLM        | AL1780 NTX945AA03 |
| 0 CENTRAL MESSAGE SWITCH MAINTENANCE             | BC1826 NTXF70AA01 |
| 0 CENTRAL MESSAGE SWITCH MAINTENANCE             | BC1826 NTX941AA12 |
| 0 CENTRAL MS-ILM INTERACTIONS ON PHYSICAL LINKS  | AC0644 NTX945AA03 |
| 0 CENTRAL RP CONTROL II                          | AL1195 NTX944AA03 |
| 0 CENTRALIZED ALARMS - DMS IMPLEMENTATION        | AG0100 NTX813AA01 |
| 0 CENTRALIZED MAP DMS ENHANCEMENTS               | AG0098 NTX812AA03 |
| 0 CENTRALIZED PRECEDENCE ACCESS THRESHOLD        | BC1243 NTX701DA03 |
| 0 CEPT CALL DIVERSION                            | BC2260 NTX499AA10 |
| 0 CEPT CALL WAITING                              | AC0058 NTX499AA10 |
| 0 CEPT CALL WAITING                              | AC0082 NTX499AA10 |
| 0 CEPT HOT/WARM LINE                             | BC2261 NTX499AA10 |
| 0 CEPT THREE WAY CALLING                         | AC0059 NTX499AA10 |
| 0 CEPT THREE WAY CALLING                         | AC0083 NTX499AA10 |
| 0 CESIUM MASTER CLOCK INTERFACE                  | BR0194 NTX048AB01 |
| 0 CFBL INHIBIT LINE BUSY/INHIBIT MB ENHANCEMENTS | NC0200 NTXJ84AA02 |
| 0 CFD FROM HUNT GROUP STATION                    | AD0906 NTXZ00AA01 |
| 0 CFD FROM HUNT GROUP STATION                    | AD0906 NTX100AA27 |
| 0 CFGDA FOR HUNT GROUPS                          | AD1164 NTXZ00AA01 |
| 0 CFGDA FOR HUNT GROUPS                          | AD1164 NTX100AA27 |
| 0 CFW FOR MADN SECONDARY MEMBERS                 | AG0985 NTXA72AA01 |
| 0 CHANGE EBS FEATURES DURING TALKING STATE       | AF1663 NTX733AD01 |
| 0 CHANGE EBS FEATURES DURING TALKING STATE       | AF1663 NTX733AE01 |
| 0 CHANGE LINE CLASS CODES VIA SERVORD            | AL0740 NTX733AB02 |
| 0 CHANGE LINE CLASS CODES VIA SERVORD            | AL0740 NTX733AC01 |
| 0 CHANGE LINE CLASS CODES VIA SERVORD            | AL0740 NTX733AD01 |
| 0 CHANGE LINE CLASS CODES VIA SERVORD            | AL0740 NTX733AE01 |
| 0 CHANGE LINE TREATMENT GROUP COMMAND            | AG1285 NTXZ02AA01 |
| 0 CHANGE LINE TREATMENT GROUP COMMAND            | AG1285 NTX901AA24 |
| 0 CHANGE SPEED CALL CONTROLLER                   | AF1565 NTX733AE01 |
| 0 CHANGED TRUNK GROUP RECORDING ABILITY          | AF0194 NTX455AB01 |
| 0 CHARGE QUOTATION INFO TRANSFER                 | AM0102 NTXG37AA01 |
| 0 CHARGE-A-CALL (COIN FREE DIALING)              | BR0427 NTXZ02AA01 |
| 0 CHARGE-A-CALL (COIN FREE DIALING)              | BR0427 NTX901AA24 |
| 0 CHARGING CUSTOMER AT CONNECT TIME              | AD2611 NTX222CA09 |
| 0 CHINA LINE CARD DIAGNOSTICS                    | AG0827 NTX482CA03 |
| 0 CHIPS ENHANCEMENTS FOR DAM SUBSYSTEM           | AD0922 NTXG09AA03 |
| 0 CHIPS TO RASL                                  | AD0895 NTX358BA03 |
| 0 CI THROUGH NEMAS VIRTUAL CHANNEL               | BV1392 NTX344CA06 |
| 0 CIRCLE DIGIT EQUAL ACCESS COMPATIBILITY        | BC1709 NTX186AA08 |
| 0 CIRCLE DIGIT EQUAL ACCESS COMPATIBILITY        | BC1709 NTX186AB02 |
| 0 CIRCLE DIGIT IDENTIFICATION                    | BR0048 NTX049AC01 |
| 0 CIRCUIT GROUP BLOCKING                         | AJ1040 NTX167AB11 |
| 0 CIRCUIT LOCATE FOR PERIPHERAL MODULES          | BC0024 NTX053AA05 |
| 0 CIRCUIT LOCATE UNIFORM TREATMENT               | BR0247 NTX001AA29 |
| 0 CIRCUIT LOCATE(LINE)                           | BV0081 NTX053AA05 |
| 0 CIRCUIT LOCATE(TRUNK)                          | BV0008 NTX053AA05 |

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| 0 CIRCUIT MONITOR                                    | BR0176 NTX055AB03 |
| 0 CIRCUIT MONITOR                                    | BR0176 NTX980AA01 |
| 0 CIRCULAR TRUNK HUNTING                             | AF0177 NTX244AB02 |
| 0 CITY ZONE RATING                                   | BR0429 NTX141AA01 |
| 0 CITYCODE IN AUTHCODE DATABASE                      | BV1379 NTX220AA13 |
| 0 CITYCODE IN AUTHCODE DATABASE                      | BV1379 NTX222AB04 |
| 0 CITYCODE IN AUTHCODE DATABASE                      | BV1379 NTX222CA09 |
| 0 CITYCODE SCREENING                                 | BV1358 NTX220AA13 |
| 0 CITYCODE SCREENING                                 | BV1358 NTX222AB04 |
| 0 CITYCODE SCREENING                                 | BV1358 NTX222CA09 |
| 0 CLASS (PHASE I) ON MVP                             | AG1546 NTXE58AA01 |
| 0 CLASS - AUTOMATIC CALL BACK/AUTOMATIC RECALL       | AG0728 NTXA00AB02 |
| 0 CLASS - AUTOMATIC CALL BACK/AUTOMATIC RECALL       | AG0728 NTXA00AC01 |
| 0 CLASS - SCREENING LIST FEATURES ON MBS/MADN        | AG2160 NTXF72AB01 |
| 0 CLASS : CLASS PHASE TWO ON MULTIVARIETY PACKAGE    | AG1785 NTXF60AA01 |
| 0 CLASS : DISTINCTIVE RINGING/CALL WAITING           | AG1629 NTXA42AA01 |
| 0 CLASS : SELECTIVE CALL ACCEPTANCE                  | AG1675 NTXA45AA01 |
| 0 CLASS : SELECTIVE CALL FORWARDING                  | AG1628 NTXA95AA01 |
| 0 CLASS : SELECTIVE CALL REJECTION                   | AG1605 NTXA96AA01 |
| 0 CLASS : SELECTIVE LIST EDITING FOR SCREENING LISTS | AG1580 NTXE56AA02 |
| 0 CLASS CALLING NAME DELIVERY ON MADN                | AF2858 NTXQ81AA01 |
| 0 CLASS CMR FIRMWARE (C SIDE INTERFACE)              | AC0439 NTXA01AA02 |
| 0 CLASS CMR FIRMWARE (CALLING NUMBER DELIVERY)       | AG1216 NTXA01AA02 |
| 0 CLASS CMR FIRMWARE (DIAGNOSTICS)                   | AC0438 NTXA01AA02 |
| 0 CLASS CMR FIRMWARE (FIRMWARE DOWNLOADING)          | AG1215 NTXA01AA02 |
| 0 CLASS CMR FIRMWARE (OVERVIEW)                      | AC0440 NTXA01AA02 |
| 0 CLASS CUSTOMER ORIGINATED TRACE                    | AG0762 NTXA02AA02 |
| 0 CLASS FOR SMS: PHASE 1A - CND                      | AF1813 NTXE38AB01 |
| 0 CLASS MESSAGE WAITING INDICATOR                    | AG1954 NTXJ39AA01 |
| 0 CLASS OF SERVICE INDICATION ON AMA CALLS           | NC0078 NTXE28AA02 |
| 0 CLASS OF SERVICE INDICATION ON AMA CALLS           | NC0078 NTXP82AA01 |
| 0 CLASS OF SERVICE RESTRICTIONS FULLY RESTRICTED     | BV0415 NTXZ00AA01 |
| 0 SERVICE                                            |                   |
| 0 CLASS OF SERVICE RESTRICTIONS FULLY RESTRICTED     | BV0416 NTXZ00AA01 |
| 0 SERVICE                                            |                   |
| 0 CLASS OF SERVICE RESTRICTIONS FULLY RESTRICTED     | BV0415 NTX100AA27 |
| 0 SERVICE                                            |                   |
| 0 CLASS OF SERVICE RESTRICTIONS FULLY RESTRICTED     | BV0416 NTX100AA27 |
| 0 SERVICE                                            |                   |
| 0 CLASS OF SERVICE SCREENING                         | BV0627 NTX220AA13 |
| 0 CLASS OF SERVICE SCREENING                         | BV0627 NTX220BA06 |
| 0 CLASS OF SERVICE SCREENING                         | BV0627 NTX220CA08 |
| 0 CLASS OF SERVICE SCREENING                         | AD0815 NTX222AB04 |
| 0 CLASS OF SERVICE SCREENING                         | AD0815 NTX222BA07 |
| 0 CLASS OF SERVICE TONES                             | BR0052 NTXZ02AA01 |
| 0 CLASS OF SERVICE TONES                             | BR0052 NTX901AA24 |
| 0 CLASS-MDC: CLASS FOR EBS AND MADN BASIC            | AG1881 NTXF72AB01 |

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| 0 CLASS-MDC: CLASS ON CENTREX BASIC                   | AG1877 NTXF56AA01 |
| 0 CLASS-MDC: SCREENING LIST EDITING FEATURE           | AG1880 NTXJ78AA02 |
| 0 INTERACTIONS                                        |                   |
| 0 CLASS-MDC: SCREENING LIST EDITING ON CENTREX        | AG1928 NTXJ78AA02 |
| 0 DIALPLANS                                           |                   |
| 0 CLASS/CMS LONG DISTANCE INDICATOR                   | AG1841 NTXA87AA01 |
| 0 CLASS: CALLING NAME DISPLAY ENHANCEMENTS            | AF3020 NTXQ29AA01 |
| 0 CLASS: ANONYMOUS CALLER REJECTION                   | AF2879 NTPP12AA01 |
| 0 CLASS: AUTOMATIC CALL BACK AUTOMATIC RECALL         | AG1228 NTXA00AB02 |
| 0 ENHANCEMENTS                                        |                   |
| 0 CLASS: AUTOMATIC CALL BACK AUTOMATIC RECALL         | AG1228 NTXA00AC01 |
| 0 ENHANCEMENTS                                        |                   |
| 0 CLASS: AUTOMATIC RECALL DATE AND TIME               | AG1631 NTXA00AB02 |
| 0 CLASS: AUTOMATIC RECALL DATE AND TIME               | AG1631 NTXA00AC01 |
| 0 CLASS: CALL MEMORY ENHANCEMENTS                     | AG1152 NTXA82AA03 |
| 0 CLASS: CALLING NAME DELIVERY                        | AG1726 NTXE52AA01 |
| 0 CLASS: CALLING NUMBER DELIVERY                      | AG0781 NTXA01AA02 |
| 0 CLASS: CALLING NUMBER DELIVERY - DIALLABLE NUMBER   | AG1515 NTXE27AA01 |
| 0 CLASS: CALLING NUMBER DELIVERY BLOCKING             | AG1155 NTXA41AA01 |
| 0 CLASS: CMR LOADING                                  | AG1160 NTXA01AA02 |
| 0 CLASS: CMR MAINTENANCE                              | AG1161 NTXA01AA02 |
| 0 CLASS: CND INTEGRATION                              | AG0782 NTXA01AA02 |
| 0 CLASS: CUSTOMER ORIGINATED TRACE ENHANCEMENTS       | AG1151 NTXA02AA02 |
| 0 CLASS: FEATURE NOT ALLOWED ANNOUNCEMENT             | AG2057 NTXA82AA03 |
| 0 CLASS: INCOMING/OUTGOING MEMORY SLOT CALL           | AG0959 NTXA82AA03 |
| 0 PROCESSING HOOKS                                    |                   |
| 0 CLASS: LINE AND OFFICE DATA                         | AC0258 NTXA82AA03 |
| 0 CLASS: MODEM CARD DIAGNOSTIC                        | AG0780 NTXA01AA02 |
| 0 CLASS: SPONTANEOUS CALL WAITING IDENTIFICATION      | AG2073 NTXN97AA01 |
| 0 CLASS: SUBSCRIPTION USAGE SENSITIVE PRICING/BILLING | AG1154 NTXA82AA03 |
| 0 CLASSMARKS FOR BTUP                                 | NC0260 NTXK62AA01 |
| 0 CLEANING UP PAPERWORK. FEATURE SHOULD BE 'C'.       | AD0770 NTX790AC02 |
| 0 CLEANING UP PAPERWORK. FEATURE SHOULD BE MARKED AS  | AD0775 NTX790AC02 |
| 0 COMMITT.                                            |                   |
| 0 CLEAR 64KBPS ON 6X50AB                              | AL1717 NTX142AA02 |
| 0 CLEN FOR EBS                                        | AC0202 NTX733AA02 |
| 0 CLEN FOR EBS                                        | AC0202 NTX733AB02 |
| 0 CLEN FOR EBS                                        | AC0202 NTX733AC01 |
| 0 CLEN FOR EBS                                        | AC0202 NTX733AD01 |
| 0 CLEN FOR EBS                                        | AC0202 NTX733AE01 |
| 0 CLG PARTY SWITCH HOOK STATUS DC SIGNALLING          | BR0295 NTX019AA02 |
| 0 CLI - TRUNK TERMINATION                             | BR0320 NTXZ02AA01 |
| 0 CLI - TRUNK TERMINATION                             | BR0320 NTX801AA01 |
| 0 CLI - TRUNK TERMINATION                             | BR0320 NTX901AA24 |
| 0 CLID PRESENTATION RESTRICTION OVERRIDE              | AJ1494 NTXK55AA01 |
| 0 CLISCRN & FDNTCC DATABASE ENHANCEMENTS              | AM0081 NTXG60AA02 |
| 0 CLLI ENHANCEMENTS - BCS APPL SPEEDUP                | BC1490 NTX001AA29 |



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|-------------------------------------------------|--------------------|-------------------|
| 0 CLLI LOOK-UP TABLE FOR 32 WORD CDR            |                    | BV1873 NTX221CA05 |
| 0 CLLI TABLE EXPANSION TO 8K                    |                    | AD2796 NTX001AA29 |
| 0 CLOSE LOGS TO SCCS AFTER RESTARTS             |                    | AL0152 NTX001AA29 |
| 0 CLOSED USER GROUP                             |                    | BC0264 NTX061AA01 |
| 0 CLOSED USER GROUP - CSDDS                     |                    | BR0351 NTX061AA01 |
| 0 CM - ENET S/W COMMUNICATION VIA NT9X36BA      |                    | AL1011 NTXE01AA06 |
| 0 CM IN-SYNC MAINTENANCE SOFTWARE               |                    | BC1827 NTXF70AA01 |
| 0 CM IN-SYNC MAINTENANCE SOFTWARE               |                    | BC1827 NTX941AA12 |
| 0 CM REXTTEST ENHANCEMENTS                      |                    | AL0709 NTX940AA13 |
| 0 CMC/CMC MAINTENANCE ENHANCEMENTS              |                    | AD1234 NTXG06AA02 |
| 0 CMC/CMC SOFTWARE MAINTENANCE                  |                    | AD1149 NTXG06AA02 |
| 0 CMC/CMC SOFTWARE MAINTENANCE                  |                    | AD1149 NTXG07AA01 |
| 0 CMIC LINK DIAGNOSTIC ENHANCMENTS              |                    | AL1109 NTX940AA13 |
| 0 CNA ENHANCEMENTS                              |                    | BR0688 NTX196AA02 |
| 0 CNI CALL PROCESSING                           |                    | BV1189 NTX220AA13 |
| 0 CNI SPEED NUMBER DIALING                      |                    | BV1227 NTX220AA13 |
| 0 CO-EXISTENCE OF DPNSS AND #7 TRUNKS IN A PDTC |                    | AE0746 NTX913AA04 |
| 0 CO-ORDINATED VOICE AND DATA FOR ACD INTERFACE |                    | AJ0909 NTXJ60AB01 |
| 0 COD OPTION ON OFFICE BASIS                    |                    | BR0653 NTXZ02AA01 |
| 0 COD OPTION ON OFFICE BASIS                    |                    | BR0653 NTX901AA24 |
| 0 CODE CALL ACCESS                              |                    | BV0501 NTXZ00AA01 |
| 0 CODE CALL ACCESS                              |                    | BV0501 NTX100AA27 |
| 0 CODE RESTRICTION                              |                    | BV0421 NTXZ00AA01 |
| 0 CODE RESTRICTION                              |                    | BV0421 NTX100AA27 |
| 0 CODE ROUTE SUBSTITUTION                       |                    | BV1917 NTX701CA07 |
| 0 CODED RINGING(5 CODES)                        |                    | BV0051 NTXZ02AA01 |
| 0 CODED RINGING(5 CODES)                        |                    | BV0051 NTX901AA24 |
| 0 COIN CONTROL                                  | LINE NUMBER METHOD | BR0152 NTXZ02AA01 |
| 0 COIN CONTROL                                  | LINE NUMBER METHOD | BR0312 NTX802AA04 |
| 0 COIN CONTROL                                  | LINE NUMBER METHOD | BR0152 NTX901AA24 |
| 0 COIN CONTROL                                  | THIRD WIRE         | BV0052 NTXZ02AA01 |
| 0 COIN CONTROL                                  | THIRD WIRE         | BV0052 NTX901AA24 |
| 0 COIN CONTROL                                  | TIP AND RING       | BV0048 NTXZ02AA01 |
| 0 COIN CONTROL                                  | TIP AND RING       | BV0048 NTX901AA24 |
| 0 COIN CONTROL METHOD                           | INBAND             | BV0169 NTX030CC16 |
| 0 COIN CONTROL METHOD                           | LINE NUMBER        | BR0087 NTX030CC16 |
| 0 COIN CONTROL METHOD                           | MULTIWINK          | BR0195 NTX030CC16 |
| 0 COIN DISPOSAL SIGNAL POLARITY OPTION          |                    | BC2135 NTXZ02AA01 |
| 0 COIN DISPOSAL SIGNAL POLARITY OPTION          |                    | BC2135 NTX901AA24 |
| 0 COIN FEATURES - AT & T DTF                    |                    | BR0437 NTXZ02AA01 |
| 0 COIN FEATURES - AT & T DTF                    |                    | BR0437 NTX901AA24 |
| 0 COIN FIRST-RETURN ON DISCONNECT               |                    | AL0418 NTX030CC16 |
| 0 COIN LINES (DTF)                              |                    | BT0044 NTXZ02AA01 |
| 0 COIN LINES (DTF)                              |                    | BT0044 NTX901AA24 |
| 0 COIN 1+, 0+, 0-                               |                    | BV0340 NTX030CC16 |
| 0 COINLESS PAY PHONE                            | WITH INFO DIGIT 7  | BR0284 NTXZ03AA01 |
| 0 COINLESS PAY PHONE                            | WITH INFO DIGIT 7  | BR0284 NTX902AA07 |

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| 0 COLD SWACT RECOVERY ON FAILURES OF PLANNED SWACTS     | AJ0965 NTX270AA19 |
| 0 COMBINED AOSS/TOPS TRUNK GROUPS                       | BV1357 NTX131AA01 |
| 0 COMBINED MF TRUNK GROUP (1+ 0+ 0- CN NCN)             | BR0220 NTXZ03AA01 |
| 0 COMBINED MF TRUNK GROUP (1+ 0+ 0- CN NCN)             | BR0220 NTX802AA04 |
| 0 COMBINED MF TRUNK GROUP (1+ 0+ 0- CN NCN)             | BR0220 NTX902AA07 |
| 0 COMBINED VERIFICATION AND TOLL COMPLETING TRUNK GROUP | BR0144 NTXZ03AA01 |
| 0 COMBINED VERIFICATION AND TOLL COMPLETING TRUNK GROUP | BR0144 NTX802AA04 |
| 0 COMBINED VERIFICATION AND TOLL COMPLETING TRUNK GROUP | BR0144 NTX902AA07 |
| 0 COME AGAIN SIGNALLING                                 | BR0059 NTX049AH01 |
| 0 COMMERCIAL DAY OF YEAR RESTRICTION                    | AM0181 NTX235BA02 |
| 0 COMMISSIONING LINE DIAGNOSTIC                         | BC0389 NTX182AA06 |
| 0 COMMUNITY OF INTEREST                                 | BV0252 NTX701CA07 |
| 0 COMPATIBILITY OF LCDR OPTION ON CDF & CCF COIN LINES  | BR0758 NTX043AA03 |
| 0 COMPELLED REGISTER SIGNALLING TRANSACTOR              | AE0172 NTXB69AA04 |
| 0 COMPELLER TRANSACTOR AND PROTOCOL (INTERNATIONAL)     | AE0171 NTXB69AA04 |
| 0 COMPLETION OF CALLS TO A BUSY SUBSCRIBER              | AE0239 NTX499AA10 |
| 0 COMPUTER ASSISTED SIGNALLING OVER ISI                 | AG2003 NTXJ62AB   |
| 0 CONFERENCE CALL ANNOUNCEMENT                          | BC0710 NTX260AA02 |
| 0 CONFERENCE CALL ANNOUNCEMENT                          | BC0710 NTX601BA06 |
| 0 CONFERENCE CALLING                                    | BV0768 NTX220AA13 |
| 0 CONFERENCE CALLING                                    | BV0768 NTX238AA01 |
| 0 CONFERENCE CIRCUIT(3/6 PORT) DIAGNOSTIC ENHANCEMENTS  | AF1237 NTX001AA29 |
| 0 CONFIDENTIAL ALERTING ON CALL TRANSFER                | AD0728 NTX899AA01 |
| 0 CONF6PR AS 2 CONF3PR                                  | BC0982 NTX001AA29 |
| 0 CONNECTION MANAGER FOR ISDN PRA                       | AC0272 NTX790AC02 |
| 0 CONSOLE CALL FORCING                                  | AD0941 NTXE33AA02 |
| 0 CONSOLE TO SOCOTEL TRUNK INTERFACE                    | AE0049 NTX612AA04 |
| 0 CONSULTATION HOLD                                     | BV0418 NTXZ00AA01 |
| 0 CONSULTATION HOLD                                     | BV0418 NTX100AA27 |
| 0 CONTROLLED INTERFLOW                                  | AD1612 NTX416AE01 |
| 0 CONTROLLED INTERFLOW                                  | AD1612 NTX416AF01 |
| 0 CONTROLLED INTERFLOW                                  | AD1612 NTX416AG01 |
| 0 CONTROLLED INTERFLOW                                  | AD1612 NTX416AH01 |
| 0 CONTROLLED INTERFLOW                                  | AD1612 NTX416AI01 |
| 0 CONTROLLED INTERFLOW                                  | AD1612 NTX416AJ01 |
| 0 CONVERSION OF INTL ADL                                | AC0086 NTX499AA10 |
| 0 CONVERSION OF NOS FILE TRANSFER TO GENERIC RO SERVICE | AG0099 NTX562AA03 |
| 0 CONVERT AMBIGUOUS HEAD TABLE TO SEGSTOR               | BC1914 NTX470AA13 |
| 0 CONVERT SPM TO A LINE OPTION                          | AC0085 NTX472AB08 |
| 0 CORE SWACT EXEC OPTIMIZATION - PHASE I                | AG2150 NTX001AA29 |
| 0 CORE SWACT RESTART OUTAGE REDUCTION - PHASE I         | AG2149 NTX001AA29 |

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| 0 CORRIDOR CALL ROUTING AND BILLING                 | BC1390 NTX186AA08 |
| 0 CORRIDOR CALL ROUTING AND BILLING                 | BC1390 NTX186AB02 |
| 0 COST REDUCED NETWORK                              | BC0246 NTX001AA29 |
| 0 COUNTRY CODE BLOCKING                             | BC0623 NTX060AB11 |
| 0 CP ACCESS TO DCP FOR AUTHCODE                     | AD0089 NTX234AB02 |
| 0 CP ACCESS TO DCP FOR AUTHCODE                     | AD0089 NTX234BA01 |
| 0 CP AND TRKGRP TABLE CONTROL ENHANCEMENTS          | BV1399 NTX220AA13 |
| 0 CP AND TRKGRP TABLE CONTROL ENHANCEMENTS          | BV1399 NTX220BA06 |
| 0 CP AND TRKGRP TABLE CONTROL ENHANCEMENTS          | BV1399 NTX220CA08 |
| 0 CP FOR ACCT CODES BY ANI                          | BV1685 NTX343CA02 |
| 0 CP FOR IDDD SCREENING                             | BV1610 NTX343CA02 |
| 0 CP FOR INTRA-LATA AND INTRA-STATE SCREENING       | BV1609 NTX346BA01 |
| 0 CP FOR INTRA-LATA AND INTRA-STATE SCREENING       | BV1609 NTX346CA01 |
| 0 CP FOR TOD RESTRICTION BY ANI                     | BV1608 NTX343CA02 |
| 0 CP HOOKS FOR MULTI-CUSTOMER CDR                   | BV1395 NTX220AA13 |
| 0 CP HOOKS FOR MULTI-CUSTOMER CDR                   | BV1395 NTX220BA06 |
| 0 CP HOOKS FOR MULTI-CUSTOMER CDR                   | BV1395 NTX220CA08 |
| 0 CP HOOKS FOR 32-WORD CDR                          | BV1403 NTX221CA05 |
| 0 CP IRREG - AMR5                                   | BT0224 NTX049AE01 |
| 0 CP IRREG - AMR5                                   | BT0224 NTX193AA01 |
| 0 CP LONG MESSAGING IMPLEMENTATION I                | AG1818 NTX001AA29 |
| 0 CP OPTIMIZATION OF AUTHCODE PROCESSING            | BV1590 NTX220AA13 |
| 0 CP OPTIMIZATION OF AUTHCODE PROCESSING            | BV1590 NTX220BA06 |
| 0 CP OPTIMIZATION OF AUTHCODE PROCESSING            | BV1590 NTX220CA08 |
| 0 CP TOOLS I                                        | AF2155 NTXF46AA04 |
| 0 CP 800 INWATS AND UNIVERSAL ACCESS SERVICE        | AD0128 NTX222AB04 |
| 0 CP 800 INWATS AND UNIVERSAL ACCESS SERVICE        | AD0128 NTX222BA07 |
| 0 CP-CORE VRE SERVICE AND MAINTENANCE               | AD2165 NTXG60AA02 |
| 0 CP, MMI, & OM'S FOR TCAP PROTOCOL TO NCS/DAP FOR  | AD3136 NTXL39AA02 |
| 0 MCI                                               |                   |
| 0 CPM BASIC RSC APPLICATIONS SUPPORT                | AF2791 NTXP92AA01 |
| 0 CPM BASIC RSC APPLICATIONS SUPPORT                | AF2791 NTXP92AB01 |
| 0 CPM DATA STRUCTURES AND MMI                       | AF2784 NTXP92AA01 |
| 0 CPM DATA STRUCTURES AND MMI                       | AF2784 NTXP92AB01 |
| 0 CPM DIAGNOSTICS                                   | AF2790 NTXP92AA01 |
| 0 CPM DIAGNOSTICS                                   | AF2790 NTXP92AB01 |
| 0 CPM DS1 SOFTWARE: SUPPORT FOR 4 X 2 DS1 I/F PACKS | AF2788 NTXP92AA01 |
| 0 CPM DS1 SOFTWARE: SUPPORT FOR 4 X 2 DS1 I/F PACKS | AF2788 NTXP92AB01 |
| 0 CPM ISDN APPLICATIONS SUPPORT FOR RCC2            | AF2793 NTXP92AA01 |
| 0 CPM ISDN APPLICATIONS SUPPORT FOR RCC2            | AF2793 NTXP92AB01 |
| 0 CPM MATRIX SOFTWARE                               | AF2787 NTXP92AA01 |
| 0 CPM MATRIX SOFTWARE                               | AF2787 NTXP92AB01 |
| 0 CPM NEW HARDWARE DEPENDENCIES                     | AG2798 NTXP92AA01 |
| 0 CPM NEW HARDWARE DEPENDENCIES                     | AG2798 NTXP92AB01 |
| 0 CPM PCM SIGNALLING PROCESSOR MAINTENANCE          | AF2786 NTXP92AA01 |
| 0 CPM PCM SIGNALLING PROCESSOR MAINTENANCE          | AF2786 NTXP92AB01 |
| 0 CPM PMTYPES AND BASIC HOOKS                       | AF2866 NTXP92AA01 |

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| 0 CPM PMTYPES AND BASIC HOOKS                    | AF2866 NTXP92AB01 |
| 0 CPM UP SOFTWARE AND BASIC MAINTENANCE          | AF2785 NTXP92AA01 |
| 0 CPM UP SOFTWARE AND BASIC MAINTENANCE          | AF2785 NTXP92AB01 |
| 0 CPM: INTRASWITCHING AND DUAL RCC2 CP SUPPORT   | AF2867 NTXP92AA01 |
| 0 CPM: INTRASWITCHING AND DUAL RCC2 CP SUPPORT   | AF2867 NTXP92AB01 |
| 0 CPU DATAFILL ENHANCEMENTS                      | BC1453 NTXZ00AA01 |
| 0 CPU DATAFILL ENHANCEMENTS                      | BC1453 NTX100AA27 |
| 0 CPU DIAGNOSTIC IMPROVEMENTS                    | AL0043 NTX001AA29 |
| 0 CREDIT CARD CALL PROC W REMOTE DB              | AD2158 NTXG60AA02 |
| 0 CREDIT CARD CALL PROCESSING                    | AD2150 NTXG60AA02 |
| 0 CREDIT CARD DATABASE FOR INTERNATIONAL DMS-250 | AD1818 NTXG60AA02 |
| 0 CREDIT CARD DATABASE FOR INTERNATIONAL DMS-250 | AD1818 NTXG61AA02 |
| 0 CREDIT CARD INTEGRATION                        | AD2223 NTXG60AA02 |
| 0 CREDIT REQUEST                                 | BV0316 NTX030CC16 |
| 0 CRITICAL MESSAGE PRIORITIZATION                | BR0536 NTX001AA29 |
| 0 CRM/CRA OPTIONALITY FOR TR-394 ISUP            | AG1913 NTXJ54AA01 |
| 0 CROSS-ARCHITECTURE FEATURE INTERACTIONS        | AJ1223 NTX470AA13 |
| 0 CRST - TAT PROTOCOL                            | AE0173 NTXB69AA04 |
| 0 CSC (PHASE 1) MOBILE CP TASKS                  | BF0304 NTX220AA13 |
| 0 CSC (PHASE 1) MOBILE CP TASKS                  | BF0304 NTX220BA06 |
| 0 CSC (PHASE 1) MOBILE CP TASKS                  | BF0304 NTX220CA08 |
| 0 CSC (PHASE 1) MOBILE CP TASKS                  | BF0304 NTX322AA18 |
| 0 CSC (PHASE 1) MONITOR                          | BF0303 NTX220AA13 |
| 0 CSC (PHASE 1) MONITOR                          | BF0303 NTX220BA06 |
| 0 CSC (PHASE 1) MONITOR                          | BF0303 NTX220CA08 |
| 0 CSC (PHASE 1) MONITOR                          | BF0303 NTX322AA18 |
| 0 CSC (PHASE 1) MTCE TASK                        | BF0306 NTX220AA13 |
| 0 CSC (PHASE 1) MTCE TASK                        | BF0306 NTX220BA06 |
| 0 CSC (PHASE 1) MTCE TASK                        | BF0306 NTX220CA08 |
| 0 CSC (PHASE 1) MTCE TASK                        | BF0306 NTX322AA18 |
| 0 CSC (PHASE 2) MTX MESSAGE HANDLER              | BF0301 NTX220AA13 |
| 0 CSC (PHASE 2) MTX MESSAGE HANDLER              | BF0301 NTX220BA06 |
| 0 CSC (PHASE 2) MTX MESSAGE HANDLER              | BF0301 NTX220CA08 |
| 0 CSC (PHASE 2) MTX MESSAGE HANDLER              | BF0301 NTX322AA18 |
| 0 CSC ACTIVITY SWITCH                            | BF0313 NTX322AA18 |
| 0 CSC ADAPTOR DIAGNOSTICS                        | BF0317 NTX220AA13 |
| 0 CSC ADAPTOR DIAGNOSTICS                        | BF0317 NTX220BA06 |
| 0 CSC ADAPTOR DIAGNOSTICS                        | BF0317 NTX220CA08 |
| 0 CSC ADAPTOR DIAGNOSTICS                        | BF0317 NTX322AA18 |
| 0 CSC AUDIT                                      | BF0318 NTX322AA18 |
| 0 CSC AUDIT ENHANCEMENTS                         | AD2219 NTX322AA18 |
| 0 CSC CONTROLLER DIAGNOSTICS                     | BF0316 NTX220AA13 |
| 0 CSC CONTROLLER DIAGNOSTICS                     | BF0316 NTX220BA06 |
| 0 CSC CONTROLLER DIAGNOSTICS                     | BF0316 NTX220CA08 |
| 0 CSC CONTROLLER DIAGNOSTICS                     | BF0316 NTX322AA18 |
| 0 CSC DATA OVERVIEW                              | BF0333 NTX220AA13 |
| 0 CSC DATA OVERVIEW                              | BF0333 NTX220BA06 |

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| 0 CSC DATA OVERVIEW                         | BF0333 NTX220CA08 |
| 0 CSC DATA OVERVIEW                         | BF0333 NTX322AA18 |
| 0 CSC DYNAMIC SYSTEM PARAMETER UPDATE       | BF0323 NTX220AA13 |
| 0 CSC DYNAMIC SYSTEM PARAMETER UPDATE       | BF0323 NTX220BA06 |
| 0 CSC DYNAMIC SYSTEM PARAMETER UPDATE       | BF0323 NTX220CA08 |
| 0 CSC DYNAMIC SYSTEM PARAMETER UPDATE       | BF0323 NTX322AA18 |
| 0 CSC HANDOFF ENHANCEMENT                   | BF0315 NTX220AA13 |
| 0 CSC HANDOFF ENHANCEMENT                   | BF0315 NTX220BA06 |
| 0 CSC HANDOFF ENHANCEMENT                   | BF0315 NTX220CA08 |
| 0 CSC HANDOFF ENHANCEMENT                   | BF0315 NTX322AA18 |
| 0 CSC HANDOFF ENHANCEMENT AND SAT REPORTING | BF0350 NTX322AA18 |
| 0 CSC HDLC CONTROLLER DIAGNOSTICS           | BF0322 NTX220AA13 |
| 0 CSC HDLC CONTROLLER DIAGNOSTICS           | BF0322 NTX220BA06 |
| 0 CSC HDLC CONTROLLER DIAGNOSTICS           | BF0322 NTX220CA08 |
| 0 CSC HDLC CONTROLLER DIAGNOSTICS           | BF0322 NTX322AA18 |
| 0 CSC HDLC CONTROLLER FIRMWARE              | BF0307 NTX220AA13 |
| 0 CSC HDLC CONTROLLER FIRMWARE              | BF0307 NTX220BA06 |
| 0 CSC HDLC CONTROLLER FIRMWARE              | BF0307 NTX220CA08 |
| 0 CSC HDLC CONTROLLER FIRMWARE              | BF0307 NTX322AA18 |
| 0 CSC HDLC CONTROLLER TASK SCHEDULER        | BF0300 NTX220AA13 |
| 0 CSC HDLC CONTROLLER TASK SCHEDULER        | BF0300 NTX220BA06 |
| 0 CSC HDLC CONTROLLER TASK SCHEDULER        | BF0300 NTX220CA08 |
| 0 CSC HDLC CONTROLLER TASK SCHEDULER        | BF0300 NTX322AA18 |
| 0 CSC HDLC MONITOR                          | BF0311 NTX220AA13 |
| 0 CSC HDLC MONITOR                          | BF0311 NTX220BA06 |
| 0 CSC HDLC MONITOR                          | BF0311 NTX220CA08 |
| 0 CSC HDLC MONITOR                          | BF0311 NTX322AA18 |
| 0 CSC LOAD BALANCING                        | BF0310 NTX220AA13 |
| 0 CSC LOAD BALANCING                        | BF0310 NTX220BA06 |
| 0 CSC LOAD BALANCING                        | BF0310 NTX220CA08 |
| 0 CSC LOAD BALANCING                        | BF0310 NTX322AA18 |
| 0 CSC MAINTENANCE                           | BV1144 NTX322AA18 |
| 0 CSC MAINTENANCE                           | BV1144 NTX324AA02 |
| 0 CSC MAINTENANCE FOLDBACK PHASE II         | AD1186 NTX322AA18 |
| 0 CSC MAINTENANCE ROBUSTNESS                | AD0755 NTX322AA18 |
| 0 CSC MESSAGE DIAGNOSTICS                   | BF0326 NTX322AA18 |
| 0 CSC MOBILE CP TASK (PHASE 2)              | BF0314 NTX220AA13 |
| 0 CSC MOBILE CP TASK (PHASE 2)              | BF0314 NTX220BA06 |
| 0 CSC MOBILE CP TASK (PHASE 2)              | BF0314 NTX220CA08 |
| 0 CSC MOBILE CP TASK (PHASE 2)              | BF0314 NTX322AA18 |
| 0 CSC MTCE (PHASE 1)                        | BV1148 NTX220AA13 |
| 0 CSC MTCE (PHASE 1)                        | BV1148 NTX220BA06 |
| 0 CSC MTCE (PHASE 1)                        | BV1148 NTX220CA08 |
| 0 CSC MTCE (PHASE 1)                        | BV1148 NTX322AA18 |
| 0 CSC MTCE ROBUSTNESS                       | AD0536 NTX322AA18 |
| 0 CSC OM QUERY UTILITY                      | BV1613 NTX322AA18 |
| 0 CSC OM QUERY UTILITY                      | BV1613 NTX324AA02 |

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| 0 CSC OPERATIONAL MEASUREMENTS                      | BF0305 NTX220AA13 |
| 0 CSC OPERATIONAL MEASUREMENTS                      | BF0305 NTX220BA06 |
| 0 CSC OPERATIONAL MEASUREMENTS                      | BF0305 NTX220CA08 |
| 0 CSC OPERATIONAL MEASUREMENTS                      | BF0305 NTX322AA18 |
| 0 CSC SUPPORT FOR RCU STATE AUDIT                   | AD1182 NTX322AA18 |
| 0 CSC VERTICAL FEATURES                             | BF0327 NTX325AA03 |
| 0 CSC/ADAPTOR DMSX MESSAGE HANDLER                  | BF0302 NTX220AA13 |
| 0 CSC/ADAPTOR DMSX MESSAGE HANDLER                  | BF0302 NTX220BA06 |
| 0 CSC/ADAPTOR DMSX MESSAGE HANDLER                  | BF0302 NTX220CA08 |
| 0 CSC/ADAPTOR DMSX MESSAGE HANDLER                  | BF0302 NTX322AA18 |
| 0 CSH TIMER HANDLING                                | AE0076 NTX222AM05 |
| 0 CSM MAINTENANCE                                   | AD2202 NTXG52AA04 |
| 0 CSM MAINTENANCE                                   | AD2202 NTXG80AA03 |
| 0 CSM SUPPORT FOR SPECCONN NETWORK CONNECTION       | AL1668 NTX750AC02 |
| 0 CSM SUPPORT FOR SPECCONN NETWORK CONNECTION       | AL1668 NTX750AD01 |
| 0 CUSTOM CALLING - 4 SECOND DELAY CANCELLATION      | BR0589 NTX020AB03 |
| 0 CUSTOM CALLING - 4 SECOND DELAY CANCELLATION      | BR0589 NTX020AC01 |
| 0 CUSTOM CALLING - 4 SECOND DELAY CANCELLATION      | BR0589 NTX804AA02 |
| 0 CUSTOMER ADMINISTRATION OF DATA                   | BC1254 NTX412CA04 |
| 0 CUSTOMER ADMINISTRATION OF DATA                   | BC1254 NTX412CB01 |
| 0 CUSTOMER DATA (SEE V0412)                         | BZ0009 NTXZ00AA01 |
| 0 CUSTOMER DATA (SEE V0412)                         | BZ0009 NTX100AA27 |
| 0 CUSTOMER DIALED ACCOUNT RECORDING(CDAR)           | BC1699 NTX165AA06 |
| 0 CUSTOMER GROUP TRANSPARENCY                       | BR0682 NTXZ00AA01 |
| 0 CUSTOMER GROUP TRANSPARENCY                       | BR0682 NTX100AA27 |
| 0 CUSTOMER GROUP TRANSPORT ON PRI-GLOBAL NETWORKING | AM0210 NTXL42AA01 |
| 0 CUSTOMER GROUP TRANSPORT ON PRI-GLOBAL NETWORKING | AM0210 NTXQ74AA01 |
| 0 CUSTOMER NETWORK DATA CHANGES                     | BV1552 NTX412BA01 |
| 0 CUSTOMER NETWORK DATA CHANGES                     | BV1552 NTX412CA04 |
| 0 CUSTOMER NETWORK DATA CHANGES                     | BV1552 NTX412CB01 |
| 0 CUSTOMER SCREENING AT THE TRUNK TEST POSITION     | BC1467 NTX427AA04 |
| 0 CUSTOMER SERVICE CHANGE (PHASE 1)                 | BV1421 NTX412AA01 |
| 0 CUSTOMER SERVICE CHANGE (PHASE 1)                 | BV1421 NTX412BA01 |
| 0 CUSTOMER SERVICE CHANGE (PHASE 1)                 | BV1421 NTX412CA04 |
| 0 CUSTOMER SERVICE CHANGE (PHASE 1)                 | BV1421 NTX412CB01 |
| 0 CUSTOMER SERVICE CHANGE VIA SERVORD               | BC1202 NTX412AA01 |
| 0 CUSTOMER SERVICE CHANGE VIA SERVORD               | BC1202 NTX412BA01 |
| 0 CUSTOMER SERVICE CHANGE VIA SERVORD               | BC1202 NTX412CA04 |
| 0 CUSTOMER SERVICE CHANGE VIA SERVORD               | BC1202 NTX412CB01 |
| 0 CUT THROUGH DIALLING                              | BV0981 NTX431AA03 |
| 0 CUT THRU DIALING FOR IBN LINES & A/C              | BV1412 NTX431AA03 |
| 0 CUTOVER OF LCM LINES BY DN                        | AF0017 NTX057EA04 |
| 0 CUTOVER OF WORKING T1 LINES USING NAILED UP       | BR0023 NTX057AC03 |
| 0 CONNECTIONS                                       |                   |
| 0 CUTOVER OF WORKING T1 LINES USING NAILED UP       | BR0023 NTX057DA01 |
| 0 CONNECTIONS                                       |                   |
| 0 CUTOVER OF WORKING T1 LINES USING NAILED UP       | BR0023 NTX057EA04 |

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## 0 CONNECTIONS

|                                                                 |                   |
|-----------------------------------------------------------------|-------------------|
| 0 C1 CALL PROCESSING                                            | AG0708 NTXB10AA03 |
| 0 C1 DID/DOD PBX TRUNKS                                         | AJ0183 NTX470AA13 |
| 0 C1 LINE SIGNALLING                                            | AG0707 NTXB10AA03 |
| 0 C1 LINE SIGNALLING                                            | AG0707 NTXB11AA02 |
| 0 C1 LINE SIGNALLING                                            | AG0707 NTXH98AA01 |
| 0 C1 MFC TRUNK IMPLEMENTATION ON THE GENERIC R2<br>SYSTEM - CC  | AJ0782 NTXB10AA03 |
| 0 C1 MFC TRUNK IMPLEMENTATION ON THE GENERIC R2<br>SYSTEM - CC  | AJ0782 NTXH98AA01 |
| 0 C1 MFC TRUNK IMPLEMENTATION ON THE GENERIC R2<br>SYSTEM - XPM | AJ0819 NTXB10AA03 |
| 0 C1 MFC TRUNK IMPLEMENTATION ON THE GENERIC R2<br>SYSTEM - XPM | AJ0819 NTXH98AA01 |
| 0 C1 REGISTER SIGNALLING                                        | AG0711 NTXB10AA03 |
| 0 C1 TRUNK ITOPS POSITION INTERACTIONS                          | AG1294 NTXB83AA01 |
| 0 C7 TEST UTILITY ENHANCEMENT (DMS300 ISSU)                     | NC0069 NTXK49AA02 |
| 0 D-CHANNEL LINK FAULT HANDLING                                 | AC0530 NTX750AC02 |
| 0 D-CHANNEL LINK FAULT HANDLING                                 | AC0530 NTX750AD01 |
| 0 DA AMA RECORD - NT FORM                                       | AG0825 NTX030CC16 |
| 0 DACS TRUNK (DP/MF) (A/D)                                      | BT0035 NTXZ02AA01 |
| 0 DACS TRUNK (DP/MF) (A/D)                                      | BT0035 NTX901AA24 |
| 0 DAIS CONFIGURATION SERVICE                                    | AD1662 NTXG09AA03 |
| 0 DAIS CONFIGURATION SERVICE                                    | AD1662 NTXG09CA01 |
| 0 DAIS INTERFACE FOR DVIX APPLICATIONS                          | AD1583 NTXG13AA01 |
| 0 DAIS/DUTL MMI, LOGS AND OM                                    | AD1617 NTXG13AA01 |
| 0 DAL & IMT SWITCHED 56 KB DATA & MULTIPLE PINS PER<br>AUTH CP  | AD0499 NTX222AB04 |
| 0 DAL & IMT SWITCHED 56 KB DATA & MULTIPLE PINS PER<br>AUTH CP  | AD0499 NTX222BA07 |
| 0 DAL TRUNK SIGNALLING/TRUNKGRP                                 | BV0736 NTX220AA13 |
| 0 DAL TRUNK SIGNALLING/TRUNKGRP                                 | BV0736 NTX220BA06 |
| 0 DAL TRUNK SIGNALLING/TRUNKGRP                                 | BV0736 NTX220CA08 |
| 0 DATA ACCESS INTERFACE SESSION (DAIS) - XMS                    | AD1279 NTXG13AA01 |
| 0 DATA CALL IDENTIFICATION FOR SMDR                             | AC0427 NTX250AA15 |
| 0 DATA CALL PROTECTION                                          | BV0442 NTXZ00AA01 |
| 0 DATA CALL PROTECTION                                          | BV0442 NTX100AA27 |
| 0 DATA CALLING INDICATOR IN PRETRANSLATOR                       | BV1376 NTX222CA09 |
| 0 DATA COMM FOR REMOTE CREDIT CARD ACCESS                       | AD2233 NTXG60AA02 |
| 0 DATA COMM FOR REMOTE CREDIT CARD ACCESS                       | AD2233 NTXG61AA02 |
| 0 DATA DICTIONARY DUMP                                          | BC0179 NTX176AA05 |
| 0 DATA DISTRIBUTOR                                              | AG0377 NTX056AA05 |
| 0 DATA DUMP AND RESTORE                                         | BC0425 NTX183AA05 |
| 0 DATA FACILITY FOR 3X09 MTA                                    | BC0866 NTXZ02AA01 |
| 0 DATA FACILITY FOR 3X09 MTA                                    | BC0866 NTX901AA24 |
| 0 DATA LINE CARD (PRODUCTION)                                   | BF0443 NTX250AA15 |
| 0 DATA LINE CARD FACILITY MAINTENANCE                           | BV0809 NTX250AA15 |

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| 0 DATA MANAGER ROBUSTNESS                           |                   | AC0443 NTXR72AA01 |
| 0 DATA MANAGER ROBUSTNESS                           |                   | AC0443 NTX041AB09 |
| 0 DATA RECORDING AND RECALL                         | AUTOMATIC MESSAGE | BC0313 NTX074AA09 |
| 0 ACCOUNTING                                        |                   |                   |
| 0 DATA RECORDING AND RECALL                         | JOURNAL FILE      | BC0330 NTX074AA09 |
| 0 DATA RECORDING AND RECALL                         | OPERATIONAL       | BC0280 NTX001AA29 |
| 0 MEASUREMENTS                                      |                   |                   |
| 0 DATA RECORDING AND RECALL                         | OPERATIONAL       | BC0421 NTX001AA29 |
| 0 MEASUREMENTS                                      |                   |                   |
| 0 DATA RECORDING AND RECALL                         | OPERATIONAL       | BC0280 NTX074AA09 |
| 0 MEASUREMENTS                                      |                   |                   |
| 0 DATA RECORDING AND RECALL                         | OPERATIONAL       | BC0421 NTX074AA09 |
| 0 MEASUREMENTS                                      |                   |                   |
| 0 DATA TRANSFER FROM DMS TO DV-1-DESIGN AND DMS END |                   | BV2021 NTX358BA03 |
| 0 DATABASE                                          | DUMP              | BC0163 NTX176AA05 |
| 0 DATABASE                                          | DUMP              | BC0163 NTX181AA12 |
| 0 DATABASE                                          | DUMP              | BC0163 NTX182AA06 |
| 0 DATABASE                                          | DUMP              | BC0163 NTX183AA05 |
| 0 DATABASE FOR AUTHCODE TRAP                        |                   | BV1285 NTX222CA09 |
| 0 DATABASE FOR EQUAL ACCESS ACCOUNT CODES           |                   | BV1683 NTX343CA02 |
| 0 DATABASE FOR PRIORITY SCREENING                   |                   | BV1302 NTX220AA13 |
| 0 DATABASE FOR PRIORITY SCREENING                   |                   | BV1302 NTX220BA06 |
| 0 DATABASE FOR PRIORITY SCREENING                   |                   | BV1302 NTX220CA08 |
| 0 DATABASE PORTABILITY FOR ECORE                    |                   | AD0697 NTX220AA13 |
| 0 DATABASE PORTABILITY FOR ECORE                    |                   | AD0697 NTX220BA06 |
| 0 DATABASE PORTABILITY FOR ECORE                    |                   | AD0697 NTX220CA08 |
| 0 DATABASE REPORTING                                |                   | BC1706 NTX710AA02 |
| 0 DATABASE REPORTING                                |                   | BC1706 NTX710AB01 |
| 0 DATABASE SYSTEM ENHANCEMENTS                      |                   | BC1705 NTX710AA02 |
| 0 DATABASE SYSTEM ENHANCEMENTS                      |                   | BC1705 NTX710AB01 |
| 0 DATAPAC POLLING                                   |                   | BT0456 NTX322AA18 |
| 0 DATAPAC-TELECOM CANADA 1980 LAPB                  |                   | BC1696 NTX059AB04 |
| 0 DATAPATH AMA FORMAT-CALL CODES 072 AND 117        |                   | BR0793 NTX098AA07 |
| 0 DATAPATH AMA FORMAT-CALL CODES 072 AND 117        |                   | BR0793 NTX159AA12 |
| 0 DATAPATH AUTOMATIC LINE                           |                   | BV0924 NTX250AA15 |
| 0 DATAPATH AUTOMATIC MODEM INSERTION                |                   | AC0509 NTX251AA06 |
| 0 DATAPATH BIT ERROR RATE TEST                      |                   | BT1088 NTX250AA15 |
| 0 DATAPATH CALL PATH RESTORATION                    |                   | AC0565 NTX250AA15 |
| 0 DATAPATH CALL PROCESSING                          |                   | BV0921 NTX250AA15 |
| 0 DATAPATH COAX ELIMINATION FOR IBM 3194 TERMINALS  |                   | AF1096 NTX250AA15 |
| 0 DATAPATH CSDC INTERWORKING                        |                   | AC0028 NTX250AA15 |
| 0 DATAPATH CUG FOR U.S. MARKET                      |                   | AC0461 NTXE60AA01 |
| 0 DATAPATH DIGITAL CONNECTIVITY                     |                   | BV0926 NTX250AA15 |
| 0 DATAPATH DISCONNECT TIMEOUT                       |                   | BV1310 NTX250AA15 |
| 0 DATAPATH DU PROFILE                               |                   | BV1309 NTX250AA15 |
| 0 DATAPATH DU-DLC BPV COUNT                         |                   | BC0732 NTX250AA15 |
| 0 DATAPATH D4 DPX FIRMWARE                          |                   | AC0099 NTX259AA03 |



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| 0 DATAPATH EXTENSION DPX FIRMWARE VERSION 2       | AC0029 NTX259AA03 |
| 0 DATAPATH EXTENSION UNIT DPX                     | BF0859 NTX259AA03 |
| 0 DATAPATH FOR POTS & CENTREX                     | BV1315 NTX255AA02 |
| 0 DATAPATH HUNT GROUPS                            | BV0925 NTX250AA15 |
| 0 DATAPATH INBOUND MODEM POOLS                    | BV0928 NTX251AA06 |
| 0 DATAPATH KEYBOARD DIALING                       | BV0929 NTX250AA15 |
| 0 DATAPATH LOOP EXTENSION                         | BT1022 NTX256AA04 |
| 0 DATAPATH LOOP EXTENSION MAINTENANCE             | BV1342 NTX256AA04 |
| 0 DATAPATH MCD DATA TRANSMISSION DELAY            | AC0027 NTX250AA15 |
| 0 DATAPATH MODEM POOLING MAINTENANCE              | AC0113 NTX251AA06 |
| 0 DATAPATH ON DMS250 PHASE 1                      | BV1688 NTX220AA13 |
| 0 DATAPATH ON DMS250 PHASE 1                      | BV1688 NTX348AA01 |
| 0 DATAPATH OUTBOUND MODEM POOLS                   | BV0927 NTX251AA06 |
| 0 DATAPATH PROFILE ENHANCEMENTS                   | AC0198 NTX250AA15 |
| 0 DATAPATH PROFILE ENHANCEMENTS II                | AC0462 NTX250AA15 |
| 0 DATAPATH PROVISIONING & ENGINEERING             | BV1314 NTX255AA02 |
| 0 DATAPATH RING AGAIN                             | BV0943 NTX250AA15 |
| 0 DATAPATH SERVICE ORDERS                         | BV0931 NTX250AA15 |
| 0 DATAPATH SPEED CALLING                          | BV0923 NTX250AA15 |
| 0 DATAPATH SPEED RESTRICTED CALLING               | BV1317 NTX250AA15 |
| 0 DATAPATH TCM SYNC LOSS IDENTIFICATION           | AC0460 NTX250AA15 |
| 0 DATAPATH UK FIELD TRIAL                         | AE0301 NTX250AA15 |
| 0 DATAPATH USER GROUP                             | BV1318 NTX257AA01 |
| 0 DCH ENHANCEMENTS FOR ISDN FUNCTIONAL SIGNALLING | AC0266 NTX750AC02 |
| 0 DCH ENHANCEMENTS FOR ISDN FUNCTIONAL SIGNALLING | AC0266 NTX750AD01 |
| 0 DCH OVERLOAD CONTROLS                           | AQ0672 NTX750AC02 |
| 0 DCH OVERLOAD CONTROLS                           | AQ0672 NTX750AD01 |
| 0 DCH PERFORMANCE OMS (CC)                        | AL2280 NTX750AC02 |
| 0 DCH PERFORMANCE OMS (CC)                        | AL2280 NTX750AD01 |
| 0 DCH PERFORMANCE OMS (XPM)                       | AL2279 NTX750AC02 |
| 0 DCH PERFORMANCE OMS (XPM)                       | AL2279 NTX750AD01 |
| 0 DCH Q.921 FRAME ROUTING                         | AC0368 NTX750AC02 |
| 0 DCH Q.921 FRAME ROUTING                         | AC0368 NTX750AD01 |
| 0 DCH SPARING MAINTENANCE                         | AL0956 NTX750AC02 |
| 0 DCH SPARING MAINTENANCE                         | AL0956 NTX750AD01 |
| 0 DCH SPARING XPM SUPPORT                         | AC0531 NTX750AC02 |
| 0 DCH SPARING XPM SUPPORT                         | AC0531 NTX750AD01 |
| 0 DCM CHANNEL UNIT CROSS REFERENCE                | BV0725 NTX220AA13 |
| 0 DCM CHANNEL UNIT CROSS REFERENCE                | BV0725 NTX228AA02 |
| 0 DCM CHANNEL UNIT CROSS REFERENCE                | BV0725 NTX228BA01 |
| 0 DCM CHANNEL UNIT CROSS REFERENCE                | BV0725 NTX228CA01 |
| 0 DCM EXEC LINEUP FOR MTX                         | BV1147 NTX322AA18 |
| 0 DCM-R DIAGNOSTIC                                | BV0207 NTX023AB03 |
| 0 DCM-R DIAGNOSTIC                                | BV0212 NTX023AB03 |
| 0 DCMXREF -- RETEST AND ENHANCEMENTS              | BV1398 NTX228AA02 |
| 0 DCMXREF -- RETEST AND ENHANCEMENTS              | BV1398 NTX228BA01 |
| 0 DCMXREF -- RETEST AND ENHANCEMENTS              | BV1398 NTX228CA01 |

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| 0 DCR: DYNAMIC NETWORK MODIFICATIONS (ADD & DEL     | AG1974 NTXP55AA01 |
| 0 DESTINATIONS)                                     |                   |
| 0 DCR: DYNAMIC NETWORK MODIFICATIONS (ADD & DEL     | AG1974 NTXP55AB01 |
| 0 DESTINATIONS)                                     |                   |
| 0 DCR: DYNAMIC NETWORK MODIFICATIONS (ADD & DEL     | AG1974 NTX022AB01 |
| 0 DESTINATIONS)                                     |                   |
| 0 DCR: DYNAMIC NETWORK MODIFICATIONS (ADD & DEL     | AG1974 NTX022AC01 |
| 0 DESTINATIONS)                                     |                   |
| 0 DCR: MULTIPLE OUTPUTSING SCHEMES                  | AG1630 NTXP55AA01 |
| 0 DCR: MULTIPLE OUTPUTSING SCHEMES                  | AG1630 NTXP55AB01 |
| 0 DCR: MULTIPLE OUTPUTSING SCHEMES                  | AG1630 NTX022AB01 |
| 0 DCR: MULTIPLE OUTPUTSING SCHEMES                  | AG1630 NTX022AC01 |
| 0 DDD THROUGH TOPS ANI 4 PARTY                      | BR0169 NTXZ03AA01 |
| 0 DDD THROUGH TOPS ANI 4 PARTY                      | BR0169 NTX902AA07 |
| 0 DDM ENHANCEMENTS FOR INM                          | AL1718 NTX940AA13 |
| 0 DDN AR VOICEBACK                                  | NC0299 NTXP80AA01 |
| 0 DDN BASIC X.25 VIA NT1X89AA                       | AD0618 NTX716AA05 |
| 0 DDS HAIRPIN                                       | AF0231 NTX299AA02 |
| 0 DDS HAIRPIN                                       | AF0231 NTX299AB01 |
| 0 DDU ROBUSTNESS - I                                | AL1885 NTX074AA09 |
| 0 DEAD SYSTEM ALARM VERSION 2                       | BV0006 NTX001AA29 |
| 0 DEBUG TOOLS FOR M20/TTC INTERFACE                 | AE0491 NTXH11AA01 |
| 0 DECOUPLE CC HARDWARE AND SOFTWARE SYSTEM          | AG0919 NTX001AA29 |
| 0 INITIALIZATION I                                  |                   |
| 0 DECOUPLE CC RELOAD RESTART AND XPM STATIC DATA    | AL0608 NTX270AA19 |
| 0 DEDICATED AOSS TRUNKS                             | BC0971 NTX131AA01 |
| 0 DEDICATED DA SUBTENDING TMS                       | AF2395 NTXJ67AA01 |
| 0 DEDICATED VPN IMTS                                | AM0029 NTX222BA07 |
| 0 DEFAULT DATA                                      | BC1036 NTX001AA29 |
| 0 DELAY CALL DENIAL                                 | BR0405 NTX030CC16 |
| 0 DELEATION OF C-SIDE LINKS TO A GIVEN NODE         | BC0245 NTX181AA12 |
| 0 DENIED ORIG AND FREE NUMBER TERM (INTL)           | BF0801 NTX472AA03 |
| 0 DENIED ORIG AND FREE NUMBER TERM (INTL)           | BF0801 NTX472AB08 |
| 0 DENIED ORIGINATION - TWO OR FOUR PARTY ANI        | BR0436 NTXZ02AA01 |
| 0 DENIED ORIGINATION - TWO OR FOUR PARTY ANI        | BR0436 NTX901AA24 |
| 0 DENIED SERVICE OPTIONS                            | BT0057 NTXZ02AA01 |
| 0 DENIED SERVICE OPTIONS                            | BT0057 NTX901AA24 |
| 0 DENIED TERMINATION TO DU IN LOCAL TEST MODE       | AC0191 NTX250AA15 |
| 0 DESIGN AND DATA DEFINITION FOR DS30/IOUI INTER-MS | AL1456 NTX945AA03 |
| 0 LINKS                                             |                   |
| 0 DESIGN AND DATA DEFINITION FOR DS30/IOUI INTER-MS | AL1456 NTX951AA08 |
| 0 LINKS                                             |                   |
| 0 DETAILED CALL RECORDING ON LOCAL CALLS (USP)      | BR0055 NTX043AA03 |
| 0 DETECTION AND CORRECTION OF SLOW CP BABBLERS      | AG1082 NTX001AA29 |
| 0 DETECTION OF OPEN LINE AT MDF                     | BR0460 NTXZ02AA01 |
| 0 DETECTION OF OPEN LINE AT MDF                     | BR0460 NTX901AA24 |
| 0 DEVELOP CC SOFTWARE FOR CALL BACK ISDCALLS        | AD2144 NTXG60AA02 |

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| 0 DEVELOPE DS-30 I/F THROUGH RASL                     | AD0492 | NTX347AA06 |
| 0 DEVICE INDEPENDENT SUPPORT FOR APPLICATION DATA     | AF0209 | NTX001AA29 |
| 0 TRANSMISSION                                        |        |            |
| 0 DE4 DPX HAIRPIN TO DTC                              | AF0239 | NTX621AB02 |
| 0 DGTST FOR INTERNATIONAL LINES                       | AE0459 | NTX472AB08 |
| 0 DIAGNOSTIC CHANNEL ALLOCATION IN IXPM               | AE0645 | NTX270AA19 |
| 0 DIAGNOSTICS FOR THE EISP                            | AF2864 | NTXF46AA04 |
| 0 DIAL - CALL WAITING                                 | BC0947 | NTX435AA03 |
| 0 DIAL PULSE CONVERSION DP TO DTMF                    | BV0422 | NTXZ00AA01 |
| 0 DIAL PULSE CONVERSION DP TO DTMF                    | BV0423 | NTXZ00AA01 |
| 0 DIAL PULSE CONVERSION DP TO DTMF                    | BV0486 | NTXZ00AA01 |
| 0 DIAL PULSE CONVERSION DP TO DTMF                    | BV0422 | NTX100AA27 |
| 0 DIAL PULSE CONVERSION DP TO DTMF                    | BV0423 | NTX100AA27 |
| 0 DIAL PULSE CONVERSION DP TO DTMF                    | BV0486 | NTX100AA27 |
| 0 DIAL RATE                                           | BV0311 | NTX030CC16 |
| 0 DIAL SERVICE ASSIST POSN. SYS.ADMINISTRATION SYSTEM | BR0275 | NTX070AB02 |
| 0 DIAL SERVICE ASSIST POSN. SYS.CALL DETAIL RECORDING | BR0277 | NTX070AB02 |
| 0 DIAL SERVICE ASSIST POSN. SYS.CONFERENCE CONTROL    | BR0276 | NTX070AB02 |
| 0 DIAL SERVICE ASSIST POSN. SYS.GENERAL REQUIREMENTS  | BC0418 | NTX070AB02 |
| 0 DIAL SERVICE ASSIST POSN. SYS.GENERAL REQUIREMENTS  | BR0274 | NTX070AB02 |
| 0 DIAL SERVICE ASSIST POSN. SYS.GENERAL REQUIREMENTS  | BV0573 | NTX070AB02 |
| 0 DIAL SERVICE ASSIST POSN. SYS.GENERAL REQUIREMENTS  | BV0574 | NTX070AB02 |
| 0 DIAL SERVICE ASSIST POSN. SYS.GENERAL REQUIREMENTS  | BV0576 | NTX070AB02 |
| 0 DIAL SERVICE ASSIST POSN. SYS.GENERAL REQUIREMENTS  | BV0577 | NTX070AB02 |
| 0 DIAL SERVICE ASSIST POSN. SYS.GENERAL REQUIREMENTS  | BV0578 | NTX070AB02 |
| 0 DIAL SERVICE ASSIST POSN. SYS.GENERAL REQUIREMENTS  | BV0579 | NTX070AB02 |
| 0 DIAL SPRINT DIRECT                                  | AD2580 | NTXG45AA06 |
| 0 DIAL TONE SPEED MEASUREMENT                         | BC0329 | NTXZ02AA01 |
| 0 DIAL TONE SPEED MEASUREMENT                         | BC0329 | NTX901AA24 |
| 0 DIAL TONE SPEED RECORDING FOR INTL                  | AC0252 | NTX472AB08 |
| 0 DIAL TONE SPEED RECORDING FOR LCM                   | BV1103 | NTX270AA19 |
| 0 DIAL TONE SPEED TEST                                | BV0198 | NTXZ02AA01 |
| 0 DIAL TONE SPEED TEST                                | BV0198 | NTX901AA24 |
| 0 DIAL TONE UPON TRUNK SEIZURE                        | BV0908 | NTXZ00AA01 |
| 0 DIAL TONE UPON TRUNK SEIZURE                        | BV0908 | NTX100AA27 |
| 0 DIAL-UP AUTOQUOTE                                   | BR0428 | NTX140AA02 |
| 0 DIAL-UP INTO ALI DB FOR SRDB UPDATE.                | NC0162 | NTXN60AA01 |
| 0 DIAL-UP SERVICE ANALYSIS                            | BR0126 | NTX001AA29 |
| 0 DIALABLE CABLE LOCATOR TONE                         | BR0569 | NTX277AA02 |
| 0 DIALABLE SHORT CIRCUIT                              | BR0570 | NTX277AA02 |
| 0 DIALAN CUG AND MTC LOOPBACK S/W FOR CD6X76AC        | AC0545 | NTX250AA15 |
| 0 DIALBACK ON OTHER MODEMS                            | BC1451 | NTX293AA02 |
| 0 DIALED LOOPBACKS ON TRUNKS                          | AC0285 | NTX001AA29 |
| 0 DIALLING PLAN EXPANSIONS                            | AE0185 | NTX957AA01 |
| 0 DIALUP AUTOQUOTE AT 1200 BPS                        | BC2138 | NTX140AA02 |
| 0 DICTATION ACCESS AND CONTROL (DTMF ONLY)            | BV0504 | NTXZ00AA01 |
| 0 DICTATION ACCESS AND CONTROL (DTMF ONLY)            | BV0504 | NTX100AA27 |

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| 0 DID PBX VIA HAIRPIN                                         | AF0230 NTX299AA02 |
| 0 DID PBX VIA HAIRPIN                                         | AF0230 NTX299AB01 |
| 0 DID/DOD OVER 2-WAY PBX LOOP TRUNK                           | BR0072 NTX008AA01 |
| 0 DID/DOD OVER 2-WAY PBX LOOP TRUNK                           | BR0072 NTX008AB02 |
| 0 DIGIT ANALYSIS AND RSS TABLE                                | BC1793 NTX472AA03 |
| 0 DIGIT ANALYSIS AND RSS TABLE                                | BC1793 NTX472AB08 |
| 0 DIGIT BLOCK EXPANSION FOR HNPACODE                          | AD2135 NTX222BA07 |
| 0 DIGIT COLLECTION ENHANCEMENTS-RESIDENTIAL ENHANCED SERVICES | AG0504 NTXA64AA05 |
| 0 DIGIT COLLECTION ON ISUP USING UTR                          | AD1840 NTXG60AA02 |
| 0 DIGIT MANIPULATION AND ANALISYS                             | AD2157 NTXG60AA02 |
| 0 DIGIT TRANSLATIONS FOR TURKEY LOCAL                         | BC1499 NTX472AA03 |
| 0 DIGIT TRANSLATIONS FOR TURKEY LOCAL                         | BC1499 NTX472AB08 |
| 0 DIGITAL ACCESS LINES                                        | BR0297 NTX701DA03 |
| 0 DIGITAL CARRIER MODULE FOR SMALL REMOTES (DCM-RR)           | BR0265 NTX001AA29 |
| 0 DIGITAL DATA (CSDDS) AUTOMATIC DISCONNECT                   | BR0137 NTX061AA01 |
| 0 DIGITAL DATA (CSDDS) LINE                                   | BV0389 NTX061AA01 |
| 0 DIGITAL DATA (CSDDS) LINE                                   | BV0390 NTX061AA01 |
| 0 DIGITAL DATA (CSDDS) LINE                                   | BV0391 NTX061AA01 |
| 0 DIGITAL DATA (CSDDS) LINE                                   | BV0392 NTX061AA01 |
| 0 DIGITAL DATA (CSDDS) LINE                                   | BV0393 NTX061AA01 |
| 0 DIGITAL DATA (CSDDS) LINE                                   | BV0394 NTX061AA01 |
| 0 DIGITAL DATA (CSDDS) LINE                                   | BV0544 NTX061AA01 |
| 0 DIGITAL DATA (CSDDS) LINE                                   | BV0545 NTX061AA01 |
| 0 DIGITAL DATA PHASE-II FOR MCI                               | AD3423 NTXG01CA07 |
| 0 DIGITAL ECHO SUPPRESSOR CONTROL                             | BR0266 NTX701BA08 |
| 0 DIGITAL ECHO SUPPRESSORS                                    | BR0014 NTX063AA02 |
| 0 DIGITAL ECHO SUPPRESSORS SERVICE CIRCUIT                    | BC0237 NTX063AA02 |
| 0 DIGITAL ECHO SUPPRESSORS UTILITY                            | BC0052 NTX063AA02 |
| 0 DIGITAL INTERSWITCH TRUNKS                                  | BC0219 NTX701CA07 |
| 0 DIGITAL INTERSWITCH TRUNKS                                  | BV0583 NTX701CA07 |
| 0 DIGITAL INTERSWITCH TRUNKS (AUTOVON)                        | BR0316 NTX701CA07 |
| 0 DIGITAL PAD ADJUSTMENT                                      | BC0158 NTX055AC02 |
| 0 DIGITAL PAD ADJUSTMENT                                      | BC0158 NTX980AA01 |
| 0 DIGITAL PAD SWITCHING FOR GAIN ON MTX                       | AD0228 NTX322AA18 |
| 0 DIGITAL RECORDED ANNOUNCEMENT                               | BC0325 NTX001AA29 |
| 0 DIGITAL RECORDED ANNOUNCEMENT                               | BR0303 NTX001AA29 |
| 0 DIGITAL SET DIAGNOSTICS                                     | BC1558 NTX640AA06 |
| 0 DIGITAL SET DIAGNOSTICS                                     | BC1558 NTX640AB04 |
| 0 DIGITAL SIGNAL PROCESSING F/W IN STR                        | BF0824 NTX220AA13 |
| 0 DIGITAL SIGNAL PROCESSING F/W IN STR                        | BF0824 NTX220BA06 |
| 0 DIGITAL SIGNAL PROCESSING F/W IN STR                        | BF0824 NTX220CA08 |
| 0 DIGITAL TEST ACCESS (DMS300)                                | NC0070 NTXK50AA01 |
| 0 DIGITAL TEST ACCESS (DMS300)                                | NC0070 NTXK50AB02 |
| 0 DIGITAL TEST ACCESS (8 PORT)                                | AE0934 NTXK50AB02 |
| 0 DIGITAL TEST ACCESS (8 PORT)                                | AE0934 NTXK65AA02 |
| 0 DIGITAL..ANALOGUE MF RECEIVER COMPATABILITY                 | BR0129 NTXZ02AA01 |

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| 0 DIGITAL..ANALOGUE MF RECEIVER COMPATABILITY                   | BR0129 NTX901AA24 |
| 0 DIGITONE RECEIVER                                             | BT0027 NTXZ02AA01 |
| 0 DIGITONE RECEIVER                                             | BT0027 NTX901AA24 |
| 0 DIGITONE T101                                                 | BV1184 NTX220AA13 |
| 0 DIGITONE T101                                                 | BV1184 NTX220BA06 |
| 0 DIGITONE T101                                                 | BV1184 NTX220CA08 |
| 0 DIGMAN EXPANSION TO 32K                                       | AD0811 NTX340AA02 |
| 0 DIGMAN EXPANSION TO 32K                                       | AD0811 NTX340BA01 |
| 0 DIGMAN EXPANSION TO 32K                                       | AD0811 NTX340CA01 |
| 0 DIMA ENHANCEMENT                                              | BR3219 NTX323AA03 |
| 0 DIMA TOLL SCREENING                                           | AD2196 NTX323AA03 |
| 0 DIRECT ACCESS TO FROM EOPS DAL FXS, FG-A, IMT                 | AD1163 NTXG12AA06 |
| 0 DIRECT ACCESS TO TOPS VIA DALTIE, FGB, AND FGD.               | AD1139 NTX220AA13 |
| 0 DIRECT ACCESS TO TOPS VIA DALTIE, FGB, AND FGD.               | AD1139 NTX220BA06 |
| 0 DIRECT ACCESS TO TOPS VIA DALTIE, FGB, AND FGD.               | AD1139 NTX220CA08 |
| 0 DIRECT DIAL OVERSEAS                                          | BV0049 NTX028AA01 |
| 0 DIRECT DIAL OVERSEAS (DDO)                                    | BC0320 NTX030CC16 |
| 0 DIRECT DIAL OVERSEAS (DDO)                                    | BV0232 NTX030CC16 |
| 0 DIRECT DIAL OVERSEAS (DDO)                                    | BV0554 NTX030CC16 |
| 0 DIRECT DIAL OVERSEAS (DDO)                                    | BV0232 NTX072AA01 |
| 0 DIRECT INWARD DIALLING (DID)                                  | BV0413 NTXZ00AA01 |
| 0 DIRECT INWARD DIALLING (DID)                                  | BV0413 NTX100AA27 |
| 0 DIRECT INWARD MOBILE ACCESS                                   | BV1867 NTX323AA03 |
| 0 DIRECT OUTWARD DIALLING (DOD)                                 | BV0414 NTXZ00AA01 |
| 0 DIRECT OUTWARD DIALLING (DOD)                                 | BV0414 NTX100AA27 |
| 0 DIRECT STATION SELECTION/BUSYLAMP FIELD FOR MBS               | NC0081 NTXJ97AA01 |
| 0 DIRECT TERMINATION SERVICE                                    | AM0031 NTXG46AA01 |
| 0 DIRECTED CALL PARK                                            | BV1535 NTXZ00AA01 |
| 0 DIRECTED CALL PARK                                            | BV1535 NTX100AA27 |
| 0 DIRECTED CALL PARK                                            | BV1535 NTX414AA01 |
| 0 DIRECTED CALL PARK                                            | BV1535 NTX571AA01 |
| 0 DIRECTED CALL PICKUP - BARGE IN                               | BC0950 NTX435AA03 |
| 0 DIRECTED CALL PICKUP - NON BARGE IN                           | BC0951 NTX435AA03 |
| 0 DIRECTIONAL RESERVATION EQUIPMENT (DRE)                       | BR0250 NTX060AB11 |
| 0 DIRECTORY ASSISTANCE HANDLING                                 | BR0211 NTX030CC16 |
| 0 DIRECTORY ASSISTANCE TO NXID VIA DMS200(ANI NOT<br>FORWARDED) | BR0145 NTX049AJ01 |
| 0 DIRECTORY ASSISTANCE/TOLL BRANDING                            | AF2019 NTXE71AA01 |
| 0 DIRECTORY NUMBER TRIGGER FOR AMERITECH IN RELEASE 0           | AG2243 NTXP01AA03 |
| 0 DIRP CI ROBUSTNESS                                            | AF0149 NTX001AA29 |
| 0 DIRP DISK ERASE FILE SECURITY ENHANCEMENT                     | BC1719 NTX001AA29 |
| 0 DIRP LARGE FILE DOWNLOAD SAFESTORAGE FOR CHIPS                | AD0338 NTX358BA03 |
| 0 DIRP ON SLM                                                   | AF2316 NTXJ44AA01 |
| 0 DIRP REALTIME ENHANCEMENTS                                    | AF0150 NTX001AA29 |
| 0 DIRP RECORDING SPACE USAGE ENHANCEMENTS                       | AF1461 NTX001AA29 |
| 0 DIRP SECURITY ENHANCEMENTS                                    | BR0818 NTX001AA29 |
| 0 DIRP SPACE ROTATION                                           | AF1780 NTX001AA29 |

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| 0 DISA                                            | BV0508 | NTX103AA12 |
| 0 DISA                                            | AD0439 | NTX222BA07 |
| 0 DISA - REMOVE AUTH CODE TIMEOUT                 | BV1543 | NTX103AA12 |
| 0 DISA : INVALID AUTHCODE TREATMENT OPTION        | AD2964 | NTX103AA12 |
| 0 DISA DEFINABLE TIMEOUT DESTINATION              | AD0729 | NTX103AA12 |
| 0 DISA ENHANCEMENTS                               | AD0907 | NTX103AA12 |
| 0 DISA THIRD DIAL TONE                            | AF1270 | NTXA31AA01 |
| 0 DISCONTINUE SCREENING OF RESERVED SERIAL NUMBER | BR0782 | NTX322AA18 |
| 0 BITS                                            |        |            |
| 0 DISK PHYSICAL FILE SYSTEM REWRITE               | BR0792 | NTX074AA09 |
| 0 DISK SOFTWARE REWRITE - PHASE 2                 | AL0928 | NTX074AA09 |
| 0 DISK STORAGE OF PERIPHERAL LOADS                | BC0420 | NTX074AA09 |
| 0 DISK SYSTEM THRUPUT ENHANCEMENT PHASE II        | AM0088 | NTXG21AA06 |
| 0 DISPLAY AGENTS SUMMARY KEY                      | AD2445 | NTX416AF01 |
| 0 DISPLAY AGENTS SUMMARY KEY                      | AD2445 | NTX416AG01 |
| 0 DISPLAY AGENTS SUMMARY KEY                      | AD2445 | NTX416AH01 |
| 0 DISPLAY AGENTS SUMMARY KEY                      | AD2445 | NTX416AI01 |
| 0 DISPLAY AGENTS SUMMARY KEY                      | AD2445 | NTX416AJ01 |
| 0 DISPLAY DPP THROUGH IOD LEVEL                   | AF0151 | NTX243AA07 |
| 0 DISTINCTIVE AND RING AGAIN RINGING - FREQUENCY  | BR0531 | NTXZ01AA01 |
| 0 RINGING                                         |        |            |
| 0 DISTINCTIVE AND RING AGAIN RINGING - FREQUENCY  | BR0531 | NTX101AA14 |
| 0 RINGING                                         |        |            |
| 0 DISTINCTIVE CALL WAITING RINGBACK               | AF1271 | NTXA32AA01 |
| 0 DISTINCTIVE CALL WAITING TONES                  | BC1201 | NTX435AA03 |
| 0 DISTINCTIVE RINGING                             | BV0586 | NTXZ01AA01 |
| 0 DISTINCTIVE RINGING                             | BV0586 | NTX101AA14 |
| 0 DISTINCTIVE RINGING ENHANCEMENTS                | AF2303 | NTXZ00AA01 |
| 0 DISTINCTIVE RINGING ENHANCEMENTS                | AF2303 | NTX100AA27 |
| 0 DISTINCTIVE RINGING ON RING SIDE ONLY           | AG1973 | NTXZ02AA01 |
| 0 DISTINCTIVE RINGING ON RING SIDE ONLY           | AG1973 | NTX901AA24 |
| 0 DISTINCTIVE TONE BURST FOR EMERGENCY OPERATION. | AD2665 | NTX149AA03 |
| 0 DISTINCTIVE TONE BURST FOR EMERGENCY OPERATION. | AD2665 | NTX149AB03 |
| 0 DISTRIBUTED LOG SYSTEM                          | BC2003 | NTXF70AA01 |
| 0 DISTRIBUTED LOG SYSTEM                          | BC2003 | NTX941AA12 |
| 0 DISTRIBUTED LOG SYSTEM                          | AL2021 | NTX941AA12 |
| 0 DISTRIBUTED OM SYSTEM IMPLEMENTATION PHASE I    | AD2458 | NTXG29AA02 |
| 0 DISTRIBUTED OM SYSTEM IMPLEMENTATION PHASE II   | AM0091 | NTXG29AA02 |
| 0 DLM MAINTENANCE ENHANCMENTS                     | AD0069 | NTX640AA06 |
| 0 DLM MAINTENANCE ENHANCMENTS                     | AD0069 | NTX640AB04 |
| 0 DLM PM UPGRADE                                  | AD0898 | NTX640AA06 |
| 0 DLM PM UPGRADE                                  | AD0898 | NTX640AB04 |
| 0 DLM SW FOR MERIDIAN DIGITAL SETS                | BF0808 | NTX640AA06 |
| 0 DLM SW FOR MERIDIAN DIGITAL SETS                | BF0808 | NTX640AB04 |
| 0 DLM TAKEOVER                                    | AD0068 | NTX640AA06 |
| 0 DLM TAKEOVER                                    | AD0068 | NTX640AB04 |
| 0 DLM-PSTS FIRMWARE                               | BF0828 | NTX640AA06 |

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| 0 DLM-PSTS FIRMWARE                                | BF0828 NTX640AB04 |
| 0 DLSE CALL CLASSIFICATION AND SELECTION           | AF0097 NTX215AA02 |
| 0 DM SYSTEM: JOURNAL FILE                          | BV0005 NTX056AA05 |
| 0 DM SYSTEM: PENDING ORDER FILE                    | BV0004 NTX056AA05 |
| 0 DMO - PENDING ORDER FILE (SERVICE ORDERS)        | BR0246 NTX056AA05 |
| 0 DMO COMMAND EDITING                              | BV0073 NTX001AA29 |
| 0 DMO COMMAND FOR DID SERVICE                      | BR0341 NTX008AB02 |
| 0 DMO COMMAND SCREENING                            | BV0018 NTX001AA29 |
| 0 DMO PRETESTING - TRUNK AND                       | BR0022 NTX056AA05 |
| 0 TRANSLATION                                      |                   |
| 0 DMO PRO - PASS THRU                              | AD2662 NTX358BA03 |
| 0 DMO: JOURNAL FILE                                | BR0237 NTX056AA05 |
| 0 DMOPRO & BILLING FILE TRANSFER                   | AD2234 NTXG60AA02 |
| 0 DMOPRO & BILLING FILE TRANSFER                   | AD2234 NTXG61AA02 |
| 0 DMOPRO & BILLING FILE TRANSFER                   | AD2234 NTXG62AA01 |
| 0 DMS CC SOFTWARE FOR HIGH CAPACITY DPP            | AF1407 NTXF14AA01 |
| 0 DMS DATA COLLECTION ACTIVITY FOR NSR25           | AG0755 NTX563AA05 |
| 0 DMS DISK THRU-PUT ENHANCEMENT - PHASE I          | AD1970 NTX220BA06 |
| 0 DMS DISK THRU-PUT ENHANCEMENT - PHASE I          | AD1970 NTX220CA08 |
| 0 DMS INTEGRATED E911 PSAP FUNCTIONALITY           | AF2147 NTXF61AA02 |
| 0 DMS INTEGRATED E911 PSAP FUNCTIONALITY           | AF2147 NTX447AA01 |
| 0 DMS ISDN OAM PACKET HANDLER NAS CO-EXISTENCE     | AJ0493 NTXF95AA03 |
| 0 DMS LOGS/ALARMS INCOMING TO NT40                 | AD0851 NTX369AA01 |
| 0 DMS PASSTHROUGH MAP APPLICATION ENTITY           | BC2126 NTX812AA03 |
| 0 DMS QUERY CI FOR ISDN OAM                        | AJ0301 NTXF93AA02 |
| 0 DMS REMOTE ALARM SERVICE                         | AI0156 NTXA56AA02 |
| 0 DMS TO MV6000 X.25 TESTING                       | BV1231 NTX220AA13 |
| 0 DMS TO MV6000 X.25 TESTING                       | BV1231 NTX220BA06 |
| 0 DMS TO MV6000 X.25 TESTING                       | BV1231 NTX220CA08 |
| 0 DMS USER INTERFACE TO ACD MIS                    | AD0622 NTX991AB02 |
| 0 DMS USER INTERFACE TO ACD MIS                    | AD0622 NTX991AC01 |
| 0 DMS USER INTERFACE TO ACD MIS                    | AD0622 NTX991AD01 |
| 0 DMS USER INTERFACE TO ACD MIS                    | AD0622 NTX991AE01 |
| 0 DMS USER INTERFACE TO ACD MIS                    | AD0622 NTX991AF01 |
| 0 DMS-BASED PH SERVER FOR ISDN OAM PROCESSOR       | AJ0303 NTXF93AA02 |
| 0 DMS-BUS (LOCAL) 128-PORT I/F CARD S/W 1W H/W     | AG1334 NTX951AA08 |
| 0 INTEGRATION                                      |                   |
| 0 DMS-BUS BACKWARDS COMPATIBILITY SUPPORT          | AL1968 NTX941AA12 |
| 0 DMS-BUS CENTRAL COMMUNICATION AUDIT ENHANCEMENTS | AL1183 NTX941AA12 |
| 0 DMS-BUS CENTRAL DATA DISTRIBUTION AND            | AL1199 NTX951AA08 |
| 0 INITIALIZATION II                                |                   |
| 0 DMS-BUS CENTRAL SUPPORT FOR DOWNLOADABLE CMU     | AL1202 NTX941AA12 |
| 0 FIRMWARE                                         |                   |
| 0 DMS-BUS CENTRAL SW ENHANCEMENTS FOR P-SIDE NODE  | AL1201 NTX941AA12 |
| 0 ISOLATION                                        |                   |
| 0 DMS-BUS CMU FIRMWARE DOWNLOADING II              | AL1346 NTX941AA12 |
| 0 DMS-BUS DATA AND MESSAGE FORMAT FOR ILM LINKS    | AL1476 NTX945AA03 |

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| 0 DMS-BUS DIAGNOSTIC ENHANCEMENTS USING THE TRACER CARD | AL0787 | NTX950AA06 |
| 0 DMS-BUS FAULT CORRELATION USING TRACER CARD (9X49CB)  | AL1186 | NTX951AA08 |
| 0 DMS-BUS MESSAGE FLOW CONTROL - II                     | AL1884 | NTX941AA12 |
| 0 DMS-BUS MMI ENHANCEMENTS                              | AL0797 | NTX941AA12 |
| 0 DMS-BUS MMI ENHANCEMENTS FOR ISN                      | AL1826 | NTX941AA12 |
| 0 DMS-BUS MMI ENHANCEMENTS II                           | AL0803 | NTX941AA12 |
| 0 DMS-BUS MMI ENHANCEMENTS III                          | AL1200 | NTX941AA12 |
| 0 DMS-BUS S/W FOR FIBERIZED LIU SHELF (FLIS)            | AL1784 | NTXQ51AA01 |
| 0 DMS-BUS SOFTWARE SUPPORT FOR THE NEW 9X23 BACK CARD   | AL0809 | NTX940AA13 |
| 0 DMS-BUS SOFTWARE SUPPORT FOR 4 MEG MEMORY CPU CARD    | AL0790 | NTX950AA06 |
| 0 DMS-BUS SUPPORT FOR MS-ILM DATA TRANSFER AND AUDITS   | AQ0718 | NTX945AA03 |
| 0 DMS-BUS SUPPORT FOR PLM PRIMITIVE ENHANCEMENTS        | AQ0717 | NTX945AA03 |
| 0 DMS-BUS SUPPORT OF 0, 1, AND 2 LIU SHELVES            | AL1458 | NTXN83AA02 |
| 0 DMS-BUS SYSTEM CLOCK NT9X53AC SOFTWARE SUPPORT        | AC0608 | NTX951AA08 |
| 0 DMS-BUS 128-PORT TRANSACTOR                           | AL1185 | NTX951AA08 |
| 0 DMS-CORE ENHANCED IMAGE TEST                          | AL1054 | NTX941AA12 |
| 0 DMS-CORE INVENTORY AUDIT                              | AL1197 | NTX941AA12 |
| 0 DMS-CORE LINK HIT ANALYSIS                            | AL1182 | NTX941AA12 |
| 0 DMS-CORE REX TEST SPEEDUP II                          | AL1055 | NTX941AA12 |
| 0 DMS-100 AUSTRALIAN ISDN (AISUP) CALL PROCESSING II    | AJ1248 | NTXH78AA02 |
| 0 DMS-100 AUSTRALIAN ISDN (AISUP) CALL PROCESSING II    | AJ1248 | NTXH78AB01 |
| 0 DMS-100 AUSTRALIAN ISUP (AISUP CALL PROCESSING I      | AJ1246 | NTXH78AA02 |
| 0 DMS-100 AUSTRALIAN ISUP (AISUP CALL PROCESSING I      | AJ1246 | NTXH78AB01 |
| 0 DMS-100 CENTREX WAKEUP-CALL SERVICE                   | NC0343 | NTXP57AA01 |
| 0 DMS-100 INCREASED DIGIT OUTPUTSING                    | AF2370 | NTXN12AA01 |
| 0 DMS-100 SUPPORT FOR M5212                             | AG2302 | NTX106AA10 |
| 0 DMS-100 XPM AUSTRALIAN ISUP (AISUP)                   | AJ1244 | NTXH78AA02 |
| 0 DMS-100 XPM AUSTRALIAN ISUP (AISUP)                   | AJ1244 | NTXH78AB01 |
| 0 DMS-100I P-SIDE AND C-SIDE CHANNEL AUDIT              | AJ0746 | NTX470AA13 |
| 0 DMS-250 ATR ON T250 & IT250                           | AD2371 | NTX351BA02 |
| 0 DMS-250 ATR ON T250 & IT250                           | AD2371 | NTX351CA02 |
| 0 DMS-250 CABINET SOFTWARE HOOKS                        | AD1219 | NTX220BA06 |
| 0 DMS-250 CABINET SOFTWARE HOOKS                        | AD1219 | NTX220CA08 |
| 0 DMS-250 DTC WARM SWACT                                | AD0462 | NTX220AA13 |
| 0 DMS-250 DTC WARM SWACT                                | AD0462 | NTX220BA06 |
| 0 DMS-250 DTC WARM SWACT                                | AD0462 | NTX220CA08 |
| 0 DMS-250 DTMF UTR DELIVERABLES FOR BCS23               | AD0607 | NTX220AA13 |
| 0 DMS-250 DTMF UTR DELIVERABLES FOR BCS23               | AD0607 | NTX220BA06 |
| 0 DMS-250 DTMF UTR DELIVERABLES FOR BCS23               | AD0607 | NTX220CA08 |
| 0 DMS-250 EOPS CALLING CALLED PARTY HOLD                | AD2485 | NTXG12AA06 |
| 0 DMS-250 EOPS CALLING CALLED PARTY HOLD                | AD2485 | NTXG12CA06 |
| 0 DMS-250 EOPS INTERNATIONAL PARTITIONED PREXLA         | AD2373 | NTXG12CA06 |
| 0 DMS-250 EOPS MCI INBOUND INTERNATIONAL GNRL           | AD2481 | NTXG12CA06 |
| 0 ASSISTANCE CALLS                                      |        |            |
| 0 DMS-250 EOPS OSR FOR OST                              | AD2369 | NTXG12CA06 |



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| 0 DMS-250 MCI 32 WORD OSR ENHANCEMENTS              | AD2366 NTXG12CA06 |
| 0 DMS-250 OM VERIFICATION TESTING AND DOCUMENTATION | BT0436 NTX220AA13 |
| 0 DMS-250 OM VERIFICATION TESTING AND DOCUMENTATION | BT0436 NTX220BA06 |
| 0 DMS-250 OM VERIFICATION TESTING AND DOCUMENTATION | BT0436 NTX220CA08 |
| 0 DMS-250 PRA INTERWORKING WITH 1988 41449          | AD2229 NTXG32AA01 |
| 0 DMS-250 PRA TRUNK SUBSCRIPTION PARMS              | AD0520 NTXG01AA06 |
| 0 DMS-250 PTS IMT ACCESS TO EOPS                    | AD2364 NTXG12AA06 |
| 0 DMS-250 PTS IMT ACCESS TO EOPS                    | AD2364 NTXG12CA06 |
| 0 DMS-250 RECORDING UNIT CLEAN-UP                   | AD2666 NTX221BA08 |
| 0 DMS-250 RECORDING UNIT CLEAN-UP                   | AD2666 NTX221CA05 |
| 0 DMS-250 SOFTWARE REDUCTION                        | AM0206 NTX220BA06 |
| 0 DMS-250 SOFTWARE REDUCTION                        | AM0206 NTX220CA08 |
| 0 DMS-250 SS7 FGD PHASE III                         | AD2628 NTXG20AA02 |
| 0 DMS-250 STANDARD CCS7 IMTS                        | AD0357 NTX361BA05 |
| 0 DMS-250 STANDARD CCS7 IMTS                        | AD0357 NTX361CA07 |
| 0 DMS-250 STRATEGIC CALL CHARGING/RATING            | AD2868 NTXG37AA01 |
| 0 DMS-250 STRATEGIC EOPS DS IMPROVEMENTS            | AD2871 NTXG12AA06 |
| 0 DMS-250 STRATEGIC EOPS DS IMPROVEMENTS            | AD2871 NTXG12CA06 |
| 0 DMS-250 STRATEGIC OPERATOR SERVICES REORIGINATION | AD2870 NTXG38AA01 |
| 0 DMS-250 SUPERSET CALL PROCESSING                  | BV1160 NTX220AA13 |
| 0 DMS-250 SUPERSET CALL PROCESSING                  | BV1160 NTX220BA06 |
| 0 DMS-250 SUPERSET CALL PROCESSING                  | BV1160 NTX220CA08 |
| 0 DMS-250 TR-444 COMPLIANCE                         | AD3520 NTXL70AA01 |
| 0 DMS-250 TRUNK EXEC REPACKAGING                    | AD0093 NTX220AA13 |
| 0 DMS-250 TRUNK EXEC REPACKAGING                    | AD0093 NTX220BA06 |
| 0 DMS-250 TRUNK EXEC REPACKAGING                    | AD0093 NTX220CA08 |
| 0 DMS-250 UCS IMT WITH RELEASE LINK TRUNK           | AD2357 NTXG30AA02 |
| 0 DMS-250 UCS IMT WITH RELEASE LINK TRUNK           | AD2357 NTXG49AA03 |
| 0 DMS-250/DMS-300 SERVICE INTEGRATION TEST          | AD2189 NTXG60AA02 |
| 0 DMS-250/300 TERMINAL PASSWORD ENHANCEMENTS        | AJ1291 NTXL41AA01 |
| 0 DMS-300 & INTL DMS-250 CABINETIZATION             | AD1964 NTXG60AA02 |
| 0 DMS-300 PDTC WITH TURKISH TONES                   | AE0180 NTX658AA02 |
| 0 DMS-300 ROUTING ON RECEIPT OF FORWARD TRANSFER    | AE0556 NTX925AA01 |
| 0 DMS-300 SERVICE ANALYSIS ENHANCEMENTS             | AE0669 NTX065AA12 |
| 0 DMS-300 TIME OF DAY AND PERCENTAGE ROUTING        | AE0158 NTX925AA01 |
| 0 DMS100 AISUP CALL PROCESSING ENHANCEMENTS         | AJ1491 NTXH78AA02 |
| 0 DMS100 AISUP CALL PROCESSING ENHANCEMENTS         | AJ1491 NTXH78AB01 |
| 0 DMS100 PRI ENHANCEMENTS                           | AJ1539 NTX790AC02 |
| 0 DMS100 PRI ENHANCEMENTS                           | AJ1539 NTX793AA03 |
| 0 DMS100 TOPS INTERFACE                             | BR0041 NTXZ03AA01 |
| 0 DMS100 TOPS INTERFACE                             | BR0041 NTX902AA07 |
| 0 DMS100I DOWNLOADABLE TONES                        | AJ0731 NTXH09AA02 |
| 0 DMS100I DOWNLOADABLE TONES                        | AJ0731 NTXK32AA01 |
| 0 DMS200/300 MAINTENANCE UNIFICATION                | BC1510 NTX310AA01 |
| 0 DMS250 / DMS300 CCS#7 ISC                         | AM0065 NTXG45AA06 |
| 0 DMS250 CALL PROCESSING SPEEDUP                    | BC1016 NTX220AA13 |
| 0 DMS250 CALL PROCESSING SPEEDUP                    | BC1016 NTX220BA06 |

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| 0 DMS250 CALL PROCESSING SPEEDUP                  | BC1016 NTX220CA08 |
| 0 DMS250 CDR IMPLEMENTATION CLEAN-UP (MULTI-CUST) | BV1298 NTX220AA13 |
| 0 DMS250 CDR IMPLEMENTATION CLEAN-UP (MULTI-CUST) | BV1298 NTX220BA06 |
| 0 DMS250 CDR IMPLEMENTATION CLEAN-UP (MULTI-CUST) | BV1298 NTX220CA08 |
| 0 DMS250 CDR TAPE DUMP                            | BV1289 NTX220AA13 |
| 0 DMS250 CDR TAPE DUMP                            | BV1289 NTX220BA06 |
| 0 DMS250 CDR TAPE DUMP                            | BV1289 NTX220CA08 |
| 0 DMS250 ENHANCED ISUP MESSAGE TRANSPORT          | AD2174 NTX361BA05 |
| 0 DMS250 ENHANCED ISUP MESSAGE TRANSPORT          | AD2174 NTX361CA07 |
| 0 DMS250 INT'L BASE ISUP CALL PROC & TRUNK MAINT  | AD2161 NTXG60AA02 |
| 0 DMS250 INTERNATIONAL ISUP CC CALL PROCESSING    | AD1844 NTXG60AA02 |
| 0 DMS250 NSF PARAMETER FOR MCI                    | AD2392 NTX361CA07 |
| 0 DMS250 PERFORMANCE ENHANCEMENTS                 | AD2959 NTXG21AA06 |
| 0 DMS250 PERFORMANCE ENHANCEMENTS                 | AD2959 NTX220BA06 |
| 0 DMS250 PERFORMANCE ENHANCEMENTS                 | AD2959 NTX220CA08 |
| 0 DMS250 SS& IMT TERMINATIONS TO DTU.             | AD2184 NTXG42AA01 |
| 0 DMS250 SS7 FGD PHASE 1A                         | AD2169 NTXG20AA02 |
| 0 DMS250 SS7 FGD PHASE 2                          | AD2170 NTXG20AA02 |
| 0 DMS250 TRAFFIC SEPARATION                       | BV1287 NTX220AA13 |
| 0 DMS250 TRAFFIC SEPARATION                       | BV1287 NTX220BA06 |
| 0 DMS250 TRAFFIC SEPARATION                       | BV1287 NTX220CA08 |
| 0 DMS250 TRANSLATION VERIFICATION - PHASE II      | BV1294 NTX220AA13 |
| 0 DMS250 TRANSLATION VERIFICATION - PHASE II      | BV1294 NTX239AA02 |
| 0 DMS250 TRANSLATION VERIFICATION - PHASE II      | BV1294 NTX239BA02 |
| 0 DMS250 TRANSLATION VERIFICATION - PHASE II      | BV1294 NTX239CA01 |
| 0 DMS250/DMS300 CCITT #7 INTERGRATION             | AD2159 NTXG60AA02 |
| 0 DMS250/TOPS AUTHCODE AS ANI                     | BV1301 NTX341AA05 |
| 0 DMS250/TOPS AUTHCODE AS ANI                     | BV1301 NTX341CA01 |
| 0 DMS250/TOPS TO DMS250/TOPS INTERFACE            | BT0453 NTX222CA09 |
| 0 DMS250/TOPS TO GATEWAY INTERFACE                | BT0452 NTX341AA05 |
| 0 DMS250/TOPS TO GATEWAY INTERFACE                | BT0452 NTX341CA01 |
| 0 DMS300 - CCITT#7 SERVICE ANALYSIS ENHANCEMENTS  | AJ1179 NTX167AB11 |
| 0 DMS300 - DIGITAL R2 PROTOCOL                    | AE0130 NTXB69AA04 |
| 0 DMS300 - SERVICE ANALYSIS                       | BC0833 NTX065AA12 |
| 0 DMS300 ECHO CONTROL UTILITIES                   | AE0768 NTXK48AA01 |
| 0 DMS300 ECHO CONTROL UTILITIES                   | AE0768 NTXK97AA01 |
| 0 DMS300 U/A LAW PER CALL CONVERSION              | AJ1279 NTX312AA01 |
| 0 DN ATTRIBUTES SERVICE ORDER ENHANCEMENTS        | AG0923 NTXZ02AA01 |
| 0 DN ATTRIBUTES SERVICE ORDER ENHANCEMENTS        | AG0923 NTX901AA24 |
| 0 DN NETWORK ATTRIBUTES                           | AD0633 NTXZ02AA01 |
| 0 DN NETWORK ATTRIBUTES                           | AD0633 NTX901AA24 |
| 0 DNH WITH CWT AND PREFERENTIAL HUNT OPTIONS      | BR0752 NTX007AB02 |
| 0 DNPIC BULK DMO TOOL                             | AF0305 NTX710AA02 |
| 0 DNPIC BULK DMO TOOL                             | AF0305 NTX710AB01 |
| 0 DO NOT DISTURB                                  | BV0587 NTX110AA01 |
| 0 DOCUMENT CONVERSION TO IBN TOD ROUTING          | BT0457 NTX220AA13 |
| 0 DOCUMENT CONVERSION TO IBN TOD ROUTING          | BT0457 NTX220BA06 |

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| 0 DOCUMENT CONVERSION TO IBN TOD ROUTING            | BT0457 NTX220CA08 |
| 0 DOCUMENTATION OF MINOR ENHANCEMENTS               | BZ0588 NTX415AA07 |
| 0 DOMESTIC BILLING RESTRICTIONS                     | BR0335 NTX030CC16 |
| 0 DOWN LOAD METALLIC TEST UNIT.                     | BC1259 NTX055AA03 |
| 0 DOWN LOAD METALLIC TEST UNIT.                     | BC1259 NTX980AA01 |
| 0 DOWNLOADABLE TONE ENHANCEMENT                     | AE0554 NTX470AA13 |
| 0 DOWNLOADABLE TONES                                | AE0397 NTXB87AA01 |
| 0 DOWNLOADABLE TONES                                | AE0397 NTXB88AA01 |
| 0 DOWNLOADABLE TONES                                | AE0397 NTXB89AA02 |
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| 0 DOWNLOADABLE TONES                                | AE0397 NTXB95AA01 |
| 0 DOWNLOADABLE TONES                                | AE0397 NTXH09AA02 |
| 0 DOWNLOADABLE TONES                                | AE0397 NTXK13AA01 |
| 0 DOWNLOADABLE TONES                                | AE0397 NTXU17AA01 |
| 0 DOWNLOADABLE TONES FOR IRELAND                    | AE0671 NTXK13AA01 |
| 0 DOWNLOADABLE TURKEY INTL TONES                    | AE0473 NTXB89AA02 |
| 0 DOWNLOADABLE TURKEY INTL TONES                    | AE0473 NTXH09AA02 |
| 0 DP ACTIVATION FOR SUBSCRIBER SERVICES             | AG1540 NTX499AA10 |
| 0 DP RECEIVER                                       | BT0028 NTXZ02AA01 |
| 0 DP RECEIVER                                       | BT0028 NTX901AA24 |
| 0 DP TO BTUP OVERLAP SIGNALLING                     | AE0667 NTXK96AA01 |
| 0 DP TO BTUP OVERLAP SIGNALLING                     | AE0667 NTX937AA06 |
| 0 DP TO BTUP OVERLAP SIGNALLING                     | AE0667 NTX937AB01 |
| 0 DPACSUB REWRITE                                   | BC1376 NTX058AD02 |
| 0 DPACSUB REWRITE                                   | BC1376 NTX059AB04 |
| 0 DPACSUB REWRITE                                   | BC1376 NTX804AA02 |
| 0 DPNSS - MSB7/ST7 MAINTENANCE                      | AE0195 NTX958AA05 |
| 0 DPNSS BUSY INFORMATION                            | NC0259 NTXB55AB01 |
| 0 DPNSS BUSY INFORMATION                            | NC0259 NTXB55AC01 |
| 0 DPNSS CALL DIVERSION                              | AE0782 NTXB55AB01 |
| 0 DPNSS CALL DIVERSION                              | AE0782 NTXB55AC01 |
| 0 DPNSS CALL OFFER                                  | AE0781 NTXB55AB01 |
| 0 DPNSS CALL OFFER                                  | AE0781 NTXB55AC01 |
| 0 DPNSS CBWF/ISUP NRAG INTERWORKING- PREP           | AE0831 NTXK45AB01 |
| 0 DPNSS CLI DISPLAY                                 | AE0839 NTX958AA05 |
| 0 DPNSS I/W TO 2-STAGE SETUP AND AUTH CODE FEATURES | NC0251 NTX958AA05 |
| 0 DPNSS IBN/POTS LINES                              | AE0327 NTX958AA05 |
| 0 DPNSS INTERWORKING TO PSTN TRUNKS                 | AE0445 NTX958AA05 |
| 0 DPNSS LINK                                        | AE0072 NTX958AA05 |
| 0 DPNSS LINK - BASE                                 | AE0105 NTX958AA05 |
| 0 DPNSS LINK - MAINTENANCE                          | AE0121 NTX958AA05 |
| 0 DPNSS LINK - MAINTENANCE MONITOR                  | AE0120 NTX958AA05 |
| 0 DPNSS LINK - MESSAGE TRANSMISSION AND RECEPTION   | AE0119 NTX958AA05 |

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| 0 DPNSS LINK - TABLE CONTROL                         | AE0106 NTX958AA05 |
| 0 DPNSS LINK MAINTENANCE II                          | AE0285 NTX958AA05 |
| 0 DPNSS MESSAGE PARSING                              | AE0265 NTX958AA05 |
| 0 DPNSS PDTC WARM SWACT                              | AE0333 NTX958AA05 |
| 0 DPNSS POST-DIALING DELAY REDUCTION                 | AE0382 NTX958AA05 |
| 0 DPNSS POTS TRUNK                                   | AE0071 NTX958AA05 |
| 0 DPNSS POTS TRUNKS                                  | AE0271 NTX958AA05 |
| 0 DPNSS RING BACK WHEN FREE                          | AE0328 NTXB55AA01 |
| 0 DPNSS RING BACK WHEN FREE                          | AE0328 NTXB55AB01 |
| 0 DPNSS RING BACK WHEN FREE                          | AE0328 NTXB55AC01 |
| 0 DPNSS SUPPLEMENTARY SERVICES                       | AE0284 NTX958AA05 |
| 0 DPNSS TEST UTILITY                                 | AE0241 NTXK44AA01 |
| 0 DPNSS TRANSIT FEATURES                             | AE0272 NTX958AA05 |
| 0 DPNSS TRANSIT TRANSPARENCY - REAL CALL             | AE0909 NTXK43AA01 |
| 0 DPNSS TRANSIT TRANSPARENCY - REAL CALL             | AE0909 NTXK43AB01 |
| 0 DPNSS TRANSIT TRANSPARENCY - VIRTUAL CALL          | AE0910 NTXK43AA01 |
| 0 DPNSS TRANSIT TRANSPARENCY - VIRTUAL CALL          | AE0910 NTXK43AB01 |
| 0 DPNSS TRUNK HOOKS AND TABLE CONTROL                | AE0205 NTX958AA05 |
| 0 DPNSS TRUNK MAINTENANCE                            | AE0264 NTX958AA05 |
| 0 DPNSS TRUNK MAINTENANCE ENHANCEMENT                | AE0384 NTX958AA05 |
| 0 DPNSS TRUNK RESTRICTIONS                           | AE0304 NTX958AA05 |
| 0 DPNSS VIRTUAL CALL                                 | AE0286 NTX958AA05 |
| 0 DPNSS-ANSI ISUP INTERWORKING (BASIC CALL CLID)     | NC0125 NTXK45AA01 |
| 0 DPNSS-ANSI ISUP INTERWORKING (BASIC CALL CLID)     | NC0125 NTXK45AB01 |
| 0 DPNSS/IBN FEATURE INTERACTIONS PART II             | AE0783 NTX958AA05 |
| 0 DPP AMATPS SOFTWARE(COOK)                          | BF0595 NTX243AA07 |
| 0 DPP ROBUSTNESS ENHANCEMENTS                        | AF0210 NTX243AA07 |
| 0 DPX MAINTENANCE                                    | BC2240 NTX259AA03 |
| 0 DRA RAM LOSS INDICATION                            | BR0467 NTX001AA29 |
| 0 DROPCELL OM ENHANCEMENT                            | AM0108 NTX322AA18 |
| 0 DS-1 CARD MAINTENANCE ENHANCEMENT                  | BF0383 NTX001AA29 |
| 0 DS-1 EFF CARD - (NT6X50AB)                         | AC0151 NTX270AA19 |
| 0 DSA POS. PRIORITY QUEUEING                         | BR0561 NTX070AB02 |
| 0 DSN "0+" DIALING                                   | AD1286 NTX607AA04 |
| 0 DSN ACCESS RESTRICTION                             | AD2085 NTX103AA12 |
| 0 DSN FOUR-WIRE DIALING MODIFICATIONS                | BV2037 NTX701BA08 |
| 0 DSN INCOMING PREEMPTION ON PAL DIAL PULSE CIRCUITS | AD2007 NTX607AA04 |
| 0 DSN ISDN BASIC RATE ACCESS INTERWORKING            | AD2534 NTXF44AA01 |
| 0 DSN NETWORK "0+" DIALING                           | AD2430 NTXA38AA03 |
| 0 DSN NETWORK "0+" DIALING                           | AD2430 NTXA38AB01 |
| 0 DSN NWM CONTROLS VIA X.25                          | AD0294 NTXA53AA01 |
| 0 DSN NWM CONTROLS VIA X.25                          | AD0294 NTX716AA05 |
| 0 DSN NWM ROUTE CONTROL RTE                          | AD0075 NTX716AA05 |
| 0 DSN NWM TRUNK GROUP CONTROL ENHANCEMENTS           | AD2535 NTX716AA05 |
| 0 DSN 2-WIRE PREEMPTION WITH FEATURE INTERACTIONS.   | AD0194 NTX715AA02 |
| 0 DSN 2-WIRE PREEMPTION WITH FEATURE INTERACTIONS.   | AD0194 NTX715AB01 |
| 0 DSP NOTIFICATION OF LOAD MANAGEMENT OPERATIONS     | AD0823 NTX991AB02 |

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| 0 DSP NOTIFICATION OF LOAD MANAGEMENT OPERATIONS | AD0823 NTX991AC01 |
| 0 DSP NOTIFICATION OF LOAD MANAGEMENT OPERATIONS | AD0823 NTX991AD01 |
| 0 DSP NOTIFICATION OF LOAD MANAGEMENT OPERATIONS | AD0823 NTX991AE01 |
| 0 DSP NOTIFICATION OF LOAD MANAGEMENT OPERATIONS | AD0823 NTX991AF01 |
| 0 DS0-A DIAGNOSTIC                               | AG1047 NTX712AA01 |
| 0 DS1 MAPPING FOR ISDN PH                        | AJ0577 NTXF92AA02 |
| 0 DS1/EC CC CALL PROCESSING & MTCE               | AD2624 NTXG24AA03 |
| 0 DS1/EC XPM INTERFACE                           | AD2623 NTXG24AA03 |
| 0 DT AFTER CFW CANCEL AND SPD CALL PROGRAMMING   | AL0604 NTXJ84AA02 |
| 0 DTC - DP DIGIT RECEPTION/OUTPULSING            | BF0170 NTX001AA29 |
| 0 DTC CUTOVER FEATURE                            | BR0573 NTX057DA01 |
| 0 DTC CUTOVER FEATURE                            | BR0573 NTX057EA04 |
| 0 DTC MF OUTPULSING PRIMITIVES                   | BF0227 NTX001AA29 |
| 0 DTC REVERTIVE PULSING FIRMWARE                 | BF0201 NTX001AA29 |
| 0 DTC WARM SWACT FOR AB250 TRUNKS                | AD0463 NTX220AA13 |
| 0 DTC WARM SWACT FOR AB250 TRUNKS                | AD0463 NTX220BA06 |
| 0 DTC WARM SWACT FOR AB250 TRUNKS                | AD0463 NTX220CA08 |
| 0 DTC 30 CARRIER MAINTENANCE                     | BC1076 NTX274AA04 |
| 0 DTC 30 CARRIER MAINTENANCE                     | BC1076 NTX478AA04 |
| 0 DTCI PRA LAYER II SIGNALLING                   | AJ0463 NTX790AC02 |
| 0 DTCI PRA LAYER III SIGNALLING                  | AJ0465 NTX790AC02 |
| 0 DTMF OUTPULSING ON A LINE                      | BV1124 NTXZ01AA01 |
| 0 DTMF OUTPULSING ON A LINE                      | BV1124 NTX101AA14 |
| 0 DTMF OUTPULSING ON DTCS WITHOUT SENDERS        | BC1295 NTX001AA29 |
| 0 DTMF OUTPULSING ON PLD                         | NC0180 NTXK00AA02 |
| 0 DTMF OUTPULSING ON PLD                         | NC0180 NTXK00AB01 |
| 0 DTMF UTR CALL PROCESSING                       | AD0198 NTX220AA13 |
| 0 DTMF UTR CALL PROCESSING                       | AD0198 NTX220BA06 |
| 0 DTMF UTR CALL PROCESSING                       | AD0198 NTX220CA08 |
| 0 DTMF UTR MCCS CP/PP-CC SUPPORT FOR UTR'S.      | AD0504 NTX220AA13 |
| 0 DTMF UTR MCCS CP/PP-CC SUPPORT FOR UTR'S.      | AD0504 NTX220BA06 |
| 0 DTMF UTR MCCS CP/PP-CC SUPPORT FOR UTR'S.      | AD0504 NTX220CA08 |
| 0 DTSR CAPACITY IMPROVEMENT                      | AF0155 NTX270AA19 |
| 0 DTSR ON A PER PM BASIS                         | AL0495 NTXZ02AA01 |
| 0 DTSR ON A PER PM BASIS                         | AL0495 NTX270AA19 |
| 0 DTSR ON A PER PM BASIS                         | AL0495 NTX901AA24 |
| 0 DTSR REALTIME ENHANCEMENTS                     | AL0227 NTX270AA19 |
| 0 DTSR/OMS FOR RCU                               | BC2159 NTX387AB04 |
| 0 DTSR/OMS FOR RCU                               | BC2159 NTX387AC02 |
| 0 DTSR/OMS FOR RCU                               | BC2159 NTX387AD01 |
| 0 DTSR, AUDITS FOR IPE'S                         | AM0134 NTXN25AA02 |
| 0 DU AUTOBAUD                                    | BF0465 NTX250AA15 |
| 0 DU CO LOOPBACK                                 | BV0902 NTX250AA15 |
| 0 DU MILLIWATT/QUIET TERMINATION                 | BV0900 NTX250AA15 |
| 0 DU MONITOR                                     | BV0899 NTX250AA15 |
| 0 DU SILENT SWITCHMAN                            | BV0901 NTX250AA15 |
| 0 DUAL ESA CALL CONTROL                          | AF0565 NTX380AA02 |

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| 0 DUAL FREQUENCY SIGNAL UNIT INTERFACE           | BC1242 NTX701CA07 |
| 0 DUAL HOMING                                    | BV0111 NTX701CA07 |
| 0 DUAL HOMING                                    | BV0256 NTX701CA07 |
| 0 DUAL RCC ESA CALL PROCESSING II                | AF1008 NTX380AA02 |
| 0 DUAL RCC ESA FORCE DOWN OPTION                 | AF1512 NTX380AA02 |
| 0 DUAL RCC ESA IBN TRANSLATIONS                  | AF1074 NTX380AA02 |
| 0 DUAL RCC ESA MAINTENANCE                       | AF1122 NTX380AA02 |
| 0 DUAL RCC ESA SYNCHRONIZATION                   | AF0950 NTX380AA02 |
| 0 DUAL RSC PP WARM SWACT                         | AF1011 NTX380AA02 |
| 0 DUMP & RESTORE ROBUSTNESS                      | AG0080 NTX184AA11 |
| 0 DUMP & RESTORE ROBUSTNESS                      | AG0080 NTX184AB02 |
| 0 DUMP & RESTORE: CHECK COMMAND ENHANCEMENTS     | AG1560 NTXE29AA03 |
| 0 DUMP AND RESTORE - PHASE II                    | AG1859 NTXE29AA03 |
| 0 DUMP AND RESTORE: PROGRESS REPORTING           | AG1570 NTXE29AA03 |
| 0 DUMP AND RESTORE: REAL TIME SAVINGS            | AG1563 NTXE29AA03 |
| 0 DUPLICATED LAMA BILLING                        | BR0099 NTX059AB04 |
| 0 DV-1 LIU LAPB ENHANCEMENTS FOR CHIPS           | BV2018 NTX358BA03 |
| 0 DVIX APPLICATION MONITOR                       | AD0919 NTXG09AA03 |
| 0 DVIX APPLICATION MONITOR                       | AD0919 NTXG09CA01 |
| 0 DVIX PATCHER INTERFACE                         | AD1536 NTXG09AA03 |
| 0 DVIX PATCHER INTERFACE                         | AD1536 NTXG09CA01 |
| 0 DVIX SNS-CHIPS ROBUSTNESS                      | AD1236 NTXG09AA03 |
| 0 DVS CAMPUSNET TEST FACILITY                    | AD1665 NTXG09AA03 |
| 0 DVS CAMPUSNET TEST FACILITY                    | AD1665 NTXG09CA01 |
| 0 DVS LOGS/ALARMS INCOMING TO DMS                | AD0678 NTX358BA03 |
| 0 DVS-BASED CDR/OSR SEARCH FOR US SPRINT         | AD1740 NTXG09AA03 |
| 0 DV1 DVS PATCHER UTILITY                        | AD0450 NTXG09AA03 |
| 0 DV1 TO DMS-250 ALARMS                          | AD0477 NTX358BA03 |
| 0 DYNAMIC CONFIGURATION DATA UPDATE IN IXPM      | AE0643 NTX470AA13 |
| 0 DYNAMIC CONSOLE MEASUREMENTS                   | AE0366 NTXB64AA01 |
| 0 DYNAMIC DATA UPDATE FOR INTERNATIONAL XPMS     | AE0652 NTX470AA13 |
| 0 DYNAMIC MEASUREMENTS                           | BV1135 NTX114AA01 |
| 0 DYNAMIC MEASUREMENTS                           | BV1135 NTX410AA02 |
| 0 DYNAMIC OVERLOAD CONTROL                       | AD0045 NTX716AA05 |
| 0 DYNAMIC OVERLOAD CONTROL VIA SS7               | AD2542 NTXF43AA01 |
| 0 DYNAMIC PM RECONFIGURATION                     | AG0696 NTX001AA29 |
| 0 DYNAMIC PROTOCOL VERSION CONTROL               | AJ0431 NTX750AC02 |
| 0 DYNAMIC PROTOCOL VERSION CONTROL               | AJ0431 NTX750AD01 |
| 0 DYNAMIC TEI AND SERVICE PROFILE IDENTIFICATION | AJ0164 NTX753AA06 |
| 0 DYNAMIC TEI AND SERVICE PROFILE IDENTIFICATION | AJ0164 NTX753AB01 |
| 0 DYNAMICALLY CONTROLLED ROUTING                 | BV1534 NTXP55AA01 |
| 0 DYNAMICALLY CONTROLLED ROUTING                 | BV1534 NTXP55AB01 |
| 0 DYNAMICALLY CONTROLLED ROUTING                 | BV1534 NTX022AA03 |
| 0 DYNAMICALLY CONTROLLED ROUTING                 | BV1534 NTX022AB01 |
| 0 DYNAMICALLY CONTROLLED ROUTING                 | BV1534 NTX022AC01 |
| 0 D4 DPX HARDWARE (PEC: NT9L01AA)                | AC0125 NTX259AA03 |
| 0 D4 DPX MAINTENANCE UPGRADE                     | AC0195 NTX259AA03 |

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| 0 E & M DECADIC SIGNALLING FOR DMS100I               | AE0025 NTX655AA01 |
| 0 E.164 SUPPORT FOR PVCS AND DCS                     | AJ0942 NTXF93AA02 |
| 0 EA PRESUBSCRIPTION REPORTS                         | BR0772 NTX711AB02 |
| 0 EA PRESUBSCRIPTION REPORTS ON IBN                  | AL0289 NTX711AB02 |
| 0 EA-00 MINUS DIALING ROUTED VIA PIC                 | BC1389 NTX186AA08 |
| 0 EA-00 MINUS DIALING ROUTED VIA PIC                 | BC1389 NTX186AB02 |
| 0 EA-00 MINUS DIALING ROUTED VIA PIC                 | BC1389 NTX189AA01 |
| 0 EA: END OFFICE - ABBREVIATED DIALING               | BC1131 NTX186AA08 |
| 0 EA: END OFFICE - ABBREVIATED DIALING               | BC1131 NTX186AB02 |
| 0 EA: END OFFICE - ABBREVIATED DIALING               | BC1131 NTX189AA01 |
| 0 EA: END OFFICE - CODE CONTROLS                     | BC1128 NTX060BA02 |
| 0 EA: END OFFICE - CODE CONTROLS                     | BC1128 NTX060BB01 |
| 0 EA: END OFFICE - LOGS                              | BC1130 NTX186AA08 |
| 0 EA: END OFFICE - LOGS                              | BC1130 NTX186AB02 |
| 0 EA: END OFFICE - LOGS                              | BC1130 NTX189AA01 |
| 0 EA: END OFFICE - NEW TREATMENTS                    | BC1129 NTX186AA08 |
| 0 EA: END OFFICE - NEW TREATMENTS                    | BC1129 NTX186AB02 |
| 0 EA: END OFFICE - NEW TREATMENTS                    | BC1129 NTX189AA01 |
| 0 EA: END OFFICE - OPERATIONAL MEASUREMENTS          | BC1127 NTX085AA05 |
| 0 EA: END OFFICE - ORIGINATING AND TERMINATING       | BC1126 NTX186AA08 |
| 0 BILLING                                            |                   |
| 0 EA: END OFFICE - ORIGINATING AND TERMINATING       | BC1126 NTX186AB02 |
| 0 BILLING                                            |                   |
| 0 EA: END OFFICE - ORIGINATING AND TERMINATING       | BC1126 NTX189AA01 |
| 0 BILLING                                            |                   |
| 0 EA: END OFFICE - TRANSLATION & CARRIER SCREENING   | BC1124 NTX186AA08 |
| 0 EA: END OFFICE - TRANSLATION & CARRIER SCREENING   | BC1124 NTX186AB02 |
| 0 EA: END OFFICE - TRANSLATION & CARRIER SCREENING   | BC1124 NTX189AA01 |
| 0 EA: END OFFICE - TRUNK TO AT & IC                  | BC1125 NTX186AA08 |
| 0 EA: END OFFICE - TRUNK TO AT & IC                  | BC1125 NTX186AB02 |
| 0 EA: END OFFICE - TRUNK TO AT & IC                  | BC1125 NTX189AA01 |
| 0 EA: END OFFICE - TSMS                              | BC1132 NTX085AA05 |
| 0 EA: END OFFICE - TSMS                              | BC1132 NTX087AA04 |
| 0 EA: END OFFICE - TSMS                              | BC1132 NTX088AA04 |
| 0 EA: OPTIONAL SAC CODES                             | BC1723 NTX186AA08 |
| 0 EA: OPTIONAL SAC CODES                             | BC1723 NTX186AB02 |
| 0 EA:ACCESS TANDEM - NEW LOGS                        | BC1034 NTX386AA04 |
| 0 EA:ACCESS TANDEM - NEW LOGS                        | BC1034 NTX386AB02 |
| 0 EA:ACCESS TANDEM - NEW TREATMENTS                  | BC1032 NTX386AA04 |
| 0 EA:ACCESS TANDEM - NEW TREATMENTS                  | BC1032 NTX386AB02 |
| 0 EA:ACCESS TANDEM - OPERATION MEASUREMENTS          | BC1035 NTX386AA04 |
| 0 EA:ACCESS TANDEM - OPERATION MEASUREMENTS          | BC1035 NTX386AB02 |
| 0 EA:ACCESS TANDEM - SELECTIVE INCOMING LOAD CONTROL | BC1033 NTX060AE03 |
| 0 EA:ACCESS TANDEM - SELECTIVE INCOMING LOAD CONTROL | BC1033 NTX060BA02 |
| 0 EA:ACCESS TANDEM - SELECTIVE INCOMING LOAD CONTROL | BC1033 NTX060BB01 |
| 0 EA:ACCESS TANDEM - TERMINATING BILLING             | BC1031 NTX386AA04 |
| 0 EA:ACCESS TANDEM - TERMINATING BILLING             | BC1031 NTX386AB02 |

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| 0 EA:ACCESS TANDEM - TRANSLATION AND CARRIER        | BC1028 | NTX386AA04 |
| 0 SCREENING                                         |        |            |
| 0 EA:ACCESS TANDEM - TRANSLATION AND CARRIER        | BC1028 | NTX386AB02 |
| 0 SCREENING                                         |        |            |
| 0 EA:ACCESS TANDEM - TRUNK TO/FROM EAEO             | BC1029 | NTX386AA04 |
| 0 EA:ACCESS TANDEM - TRUNK TO/FROM EAEO             | BC1029 | NTX386AB02 |
| 0 EA:ACCESS TANDEM - TRUNK TO/FROM INTEREXCHANGE    | BC1030 | NTX386AA04 |
| 0 CARRIER                                           |        |            |
| 0 EA:ACCESS TANDEM - TRUNK TO/FROM INTEREXCHANGE    | BC1030 | NTX386AB02 |
| 0 CARRIER                                           |        |            |
| 0 EADAS DATA FORMAT ROBUSTNESS                      | AF0019 | NTX218AA03 |
| 0 EADAS DATAFILL SEQUENCE SIMPLIFICATION            | BC1721 | NTX218AA03 |
| 0 EADAS ENHANCED OM TRANSFER PERIOD                 | BC1382 | NTX218AA03 |
| 0 EADAS MAN-MACHINE INTERFACE                       | BC1366 | NTX218AA03 |
| 0 EADAS-OM INTERFACE                                | BC1365 | NTX218AA03 |
| 0 EADAS/NM INTERFACE-PHASE I                        | BR0691 | NTX455AA01 |
| 0 EADAS/NM INTERFACE-PHASE I                        | BR0691 | NTX455AB01 |
| 0 EADAS/NM PHASE I-AUDIT AND COMMANDS               | BC1412 | NTX455AA01 |
| 0 EADAS/NM PHASE I-AUDIT AND COMMANDS               | BC1412 | NTX455AB01 |
| 0 EADAS/NM PHASE I-MMI                              | BC1414 | NTX455AA01 |
| 0 EADAS/NM PHASE I-MMI                              | BC1414 | NTX455AB01 |
| 0 EADAS/NM PHASE I-NEW OPERATIONAL MEASUREMENTS     | BC1411 | NTX455AA01 |
| 0 EADAS/NM PHASE I-NEW OPERATIONAL MEASUREMENTS     | BC1411 | NTX455AB01 |
| 0 EADAS/NM PHASE I-30-SECOND DISCRETES              | BC1410 | NTX455AA01 |
| 0 EADAS/NM PHASE I-30-SECOND DISCRETES              | BC1410 | NTX455AB01 |
| 0 EADAS/NM PHASE I-5-MINUTE DATA                    | BC1413 | NTX455AA01 |
| 0 EADAS/NM PHASE I-5-MINUTE DATA                    | BC1413 | NTX455AB01 |
| 0 EAEO - IBN PIC USING SERVORD                      | AL0051 | NTX734AA01 |
| 0 EAEO EXCHANGE ACCESS OPERATOR SERVICES SIGNALLING | BR0633 | NTX888AA01 |
| 0 EAEO/AT FROM IC/INC CALL PROCESSING               | BC1000 | NTX342AA02 |
| 0 EAEO/AT FROM IC/INC CALL PROCESSING               | BC1000 | NTX342BA01 |
| 0 EAEO/AT FROM IC/INC CALL PROCESSING               | BC1000 | NTX342CA01 |
| 0 EAEO/AT TO IC/INC CALL PROCESSING                 | BC0999 | NTX342AA02 |
| 0 EAEO/AT TO IC/INC CALL PROCESSING                 | BC0999 | NTX342BA01 |
| 0 EAEO/AT TO IC/INC CALL PROCESSING                 | BC0999 | NTX342CA01 |
| 0 EAEO: P2(PX) TRUNK COMPATIBILITY                  | BC1791 | NTX186AA08 |
| 0 EAEO: P2(PX) TRUNK COMPATIBILITY                  | BC1791 | NTX186AB02 |
| 0 EAEO: P2(PX) TRUNK COMPATIBILITY                  | BC1791 | NTX189AA01 |
| 0 EAEO:IC/INC EVENT STATUS ENHANCEMENT              | BC1681 | NTX186AA08 |
| 0 EAEO:IC/INC EVENT STATUS ENHANCEMENT              | BC1681 | NTX186AB02 |
| 0 EANT TRUNK GROUP TABLE CONTROL                    | BC1001 | NTX342AA02 |
| 0 EANT TRUNK GROUP TABLE CONTROL                    | BC1001 | NTX342BA01 |
| 0 EANT TRUNK GROUP TABLE CONTROL                    | BC1001 | NTX342CA01 |
| 0 EARTH CALLING DIAL TONE DETECTION                 | AE0065 | NTX611AA07 |
| 0 EARTH CALLING ROBUSTNESS                          | AE0336 | NTX611AA07 |
| 0 EARTH-CALLING POST DIAL DELAY REDUCTION           | AE0401 | NTXZ00AA01 |
| 0 EARTH-CALLING POST DIAL DELAY REDUCTION           | AE0401 | NTX100AA27 |



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| 0 EAS TRUNK (DP/MF) (A/D)                             | BT0034 NTXZ02AA01 |
| 0 EAS TRUNK (DP/MF) (A/D)                             | BT0034 NTX901AA24 |
| 0 EBAF ENHANCEMENTS FOR OPEN NUMBERING                | AJ1137 NTXH53AA01 |
| 0 EBS AS A MESSAGE CENTER                             | AL0206 NTX822AA02 |
| 0 EBS AS A MESSAGE CENTER - ENHANCEMENTS              | AG1575 NTX822AA02 |
| 0 EBS CALL FORWARDING ON A PER KEY BASIS              | AL0211 NTXE62AA01 |
| 0 EBS CALL FORWARDING PER KEY-XPM CHANGES             | AD1805 NTXE62AA01 |
| 0 ECCB IMPROVEMENTS                                   | AL0195 NTX001AA29 |
| 0 ECCB ON EVERY CALL                                  | AM0064 NTX222BA07 |
| 0 ECCB ON EVERY CALL                                  | AD2849 NTX222CA09 |
| 0 ECHO RETURN LOSS (ERL) TEST                         | BR0201 NTX055AC02 |
| 0 ECHO RETURN LOSS (ERL) TEST                         | BR0201 NTX980AA01 |
| 0 ECHO SUPPRESSOR CIRCUITS - EXTENDED TO 5000         | BR0403 NTX063AA02 |
| 0 ECHO SUPPRESSOR CONTROL ANALOG                      | BV0248 NTX001AA29 |
| 0 ECHO SUPPRESSOR CONTROL ANALOG                      | BV0248 NTX701CA07 |
| 0 ECM INBOUND - REDIRECTION AND EXTENDED CALL HISTORY | AG2195 NTXJ60AB01 |
| 0 ECORE CALL PROCESSING PORTABILITY                   | AD0683 NTX220AA13 |
| 0 ECORE CALL PROCESSING PORTABILITY                   | AD0683 NTX220BA06 |
| 0 ECORE CALL PROCESSING PORTABILITY                   | AD0683 NTX220CA08 |
| 0 ECORE PORTABILITY FOR MCI                           | AD0934 NTX222CA09 |
| 0 EDITION CODE CIBINCOMS                              | BC0076 NTX181AA12 |
| 0 EDNCMS NCS MESSAGE FORMATTER                        | AD1582 NTXG09CA01 |
| 0 EIOC CLOCK SYNCHRONIZATION                          | AD1661 NTXG09AA03 |
| 0 EIOC CLOCK SYNCHRONIZATION                          | AD1661 NTXG09CA01 |
| 0 EIOC 4 MEG MEMORY BOARD DESIGN                      | AD2511 NTXG21AA06 |
| 0 EIOC-FP BASED CDR SEARCH FOR IDC                    | AD2001 NTXG61AA02 |
| 0 EIOC-FP VRE BISYNC CONNECTION                       | AD1996 NTXG61AA02 |
| 0 EIOC/DVIX NCS COMMUNICATIONS MANAGEMENT SYSTEM      | AD1580 NTXG09CA01 |
| 0 (EDNCMS)                                            |                   |
| 0 EIOC_MP CHIPS VIA EMPC                              | AD2459 NTX358BA03 |
| 0 EIU CENTRAL CONTROL                                 | AL1208 NTXF05AA03 |
| 0 EIU ENHANCEMENTS                                    | AL1403 NTXF05AA03 |
| 0 EIU ENHANCEMENTS                                    | AL1403 NTXF19AA02 |
| 0 ELIMINATION OF OLD TABLE CONTROL PHASE I            | AG2108 NTX001AA29 |
| 0 ELIMINATION OF SPB, FNT & FLAT RATE OPTIONS         | BR0522 NTX245AA01 |
| 0 EMERGENCY CALLING TO TOPS                           | AE0184 NTX956AA01 |
| 0 EMERGENCY CUT-OFF                                   | BC2081 NTX662AA01 |
| 0 EMERGENCY EQUAL ACCESS SWITCHING POINT              | AL0229 NTX803AA02 |
| 0 EMERGENCY OPERATION                                 | BC0328 NTX025AA02 |
| 0 EMERGENCY OPERATION                                 | BF0034 NTX025AA02 |
| 0 EMERGENCY OPERATION                                 | BF0035 NTX025AA02 |
| 0 EMERGENCY OPERATION                                 | BF0036 NTX025AA02 |
| 0 EMERGENCY OPERATION                                 | BF0037 NTX025AA02 |
| 0 ENABLE GAIN ON CLSI NETWORK                         | BC1729 NTX001AA29 |
| 0 ENABLE U-LAW                                        | AL2107 NTXE01AA06 |
| 0 END OF AMA ALARM                                    | BV0036 NTX042AA04 |
| 0 END OF AMA ALARM                                    | BV0036 NTX044AA04 |

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| 0 END OF DIALING CHARACTER FOR VARIABLE LENGTH      | BV1279 NTX222CA09 |
| 0 DIALING (OPT)                                     |                   |
| 0 END OF TAPE ALARM                                 | BR0222 NTX042AA04 |
| 0 END OF TAPE ALARM                                 | BR0222 NTX044AA04 |
| 0 END OFFICE CALL PROCESSING FOR OPERATOR SERVICES  | AD0158 NTXG41BA05 |
| 0 END OFFICE CALL PROCESSING FOR OPERATOR SERVICES  | AD0158 NTX341BA01 |
| 0 END TO END SIGNALLING IN PLGC                     | AE0457 NTX106AA10 |
| 0 END TO END SIGNALLING VIA SPEED CALL              | NC0001 NTXZ00AA01 |
| 0 END TO END SIGNALLING VIA SPEED CALL              | NC0001 NTX100AA27 |
| 0 ENET - ICTS                                       | AL1912 NTXP13AA02 |
| 0 ENET - ICTS APPLICATIONS (ICERT AND NETFAB)       | AL1978 NTXP13AA02 |
| 0 ENET - SPMS FOR ENET OMS                          | AL1719 NTX738AC02 |
| 0 ENET BIT ERROR RATE TEST (BERT)                   | AL0854 NTXE01AA06 |
| 0 ENET C_SIDE LINK MTCE                             | AL0571 NTXE01AA06 |
| 0 ENET CARD MAINTENANCE                             | AL1069 NTXE01AA06 |
| 0 ENET CARD MTCE SYSTEM STRUCTURE DEFINITION        | AL0575 NTXE01AA06 |
| 0 ENET CLOCK SYNC                                   | AL0577 NTXE01AA06 |
| 0 ENET CONNECTION CONTROL                           | AL0583 NTXE01AA06 |
| 0 ENET DATABASE                                     | AL0470 NTXE01AA06 |
| 0 ENET FIBER XPM SUPPORT                            | AL0687 NTXE01AA06 |
| 0 ENET IN DMS250 FOR USSPRINT                       | AD3059 NTX222BA07 |
| 0 ENET INTEGRITY FAULT HANDLER                      | AL0585 NTXE01AA06 |
| 0 ENET INTEGRITY HANDLING ENHANCEMENTS              | AL1326 NTXE01AA06 |
| 0 ENET IOSYSTEM PSLINK TARGETS                      | AL0586 NTXE01AA06 |
| 0 ENET LOCAL PROCESSOR NODE TRANSACTOR              | AL0582 NTXE01AA06 |
| 0 ENET MAINTENANCE                                  | AL0856 NTXE01AA06 |
| 0 ENET MAP                                          | AL0572 NTXE01AA06 |
| 0 ENET MAP ENHANCEMENTS                             | AL1230 NTXE01AA06 |
| 0 ENET MATRIX TEST SW                               | AL0853 NTXE01AA06 |
| 0 ENET MESSAGE RESWITCHING                          | AL0855 NTXE01AA06 |
| 0 ENET NODE TEST CONTROL                            | AL0580 NTXE01AA06 |
| 0 ENET OPERATIONAL MEASUREMENTS                     | AL0573 NTXE01AA06 |
| 0 ENET PATH DIAGNOSTICS                             | AL0960 NTXE01AA06 |
| 0 ENET PATHEND TEST MMI                             | AL0857 NTXE01AA06 |
| 0 ENET PM TABLE CONTROL MODIFICATIONS               | AL0958 NTXE01AA06 |
| 0 ENET PSLINK PHYSICAL LINK MAINTENANCE             | AL0584 NTXE01AA06 |
| 0 ENET RETROFIT                                     | AL1618 NTX057EA04 |
| 0 ENET REX TEST                                     | AL0957 NTXE01AA06 |
| 0 ENET SHELF TEST                                   | AL0959 NTXE01AA06 |
| 0 ENET SUPPORT FOR 9X45BA                           | AL2038 NTXE01AA06 |
| 0 ENET SWITCHING MATRIX DIAGNOSTICS SUPPORT         | AL0851 NTXE01AA06 |
| 0 ENET SWITCHING MATRIX TRANSACTOR NETWORK PHASE II | AL1240 NTXE01AA06 |
| 0 ENET SYSTEM RECOVERY                              | AL0850 NTXE01AA06 |
| 0 ENET 9X35 MAINTENANCE S/W                         | AL0578 NTXE01AA06 |
| 0 ENHANCE ACTION CODES FOR VNET & 800 SERVICES      | AD0966 NTX353AA04 |
| 0 ENHANCE ACTION CODES FOR VNET & 800 SERVICES      | AD0966 NTX353CA05 |
| 0 ENHANCE ACTIVITY                                  | AL0139 NTX291AA04 |

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| 0 ENHANCE CSC AUDIT                                           | BF0339 NTX322AA18 |
| 0 ENHANCE MAX_NUM_RINGS OFFICE PARAMETER                      | AD0730 NTX222CA09 |
| 0 ENHANCE TCALLCT FOR POSSIBLE FIELD USE                      | BC1774 NTX184AA11 |
| 0 ENHANCE TCALLCT FOR POSSIBLE FIELD USE                      | BC1774 NTX184AB02 |
| 0 ENHANCE TRUNK GROUP TABLE CONTROL                           | AD0032 NTX220AA13 |
| 0 ENHANCE TRUNK GROUP TABLE CONTROL                           | AD0032 NTX220BA06 |
| 0 ENHANCE TRUNK GROUP TABLE CONTROL                           | AD0032 NTX220CA08 |
| 0 ENHANCE 6X91/90 DIAGNOSTICS                                 | BF0320 NTX220AA13 |
| 0 ENHANCE 6X91/90 DIAGNOSTICS                                 | BF0320 NTX220BA06 |
| 0 ENHANCE 6X91/90 DIAGNOSTICS                                 | BF0320 NTX220CA08 |
| 0 ENHANCE 6X91/90 DIAGNOSTICS                                 | BF0320 NTX322AA18 |
| 0 ENHANCED ACCOUNT CODES ON DALS                              | AD2612 NTX222CA09 |
| 0 ENHANCED AMADUMP CAPABILITY                                 | AF0916 NTX001AA29 |
| 0 ENHANCED AUTHCODE DATA BASE                                 | BV0758 NTX234AB02 |
| 0 ENHANCED AUTHCODE DATA BASE                                 | BV0758 NTX234CA01 |
| 0 ENHANCED BCS APPLICATION                                    | BV1179 NTX181AA12 |
| 0 ENHANCED CALL CODE 032                                      | AL0119 NTX713AA01 |
| 0 ENHANCED CALL PROCESSING FOR FUNCTIONAL SIGNALLING          | AC0379 NTX753AA06 |
| 0 ENHANCED CALL PROCESSING FOR FUNCTIONAL SIGNALLING          | AC0379 NTX753AB01 |
| 0 ENHANCED CC REAL TIME INDICATOR                             | AL0506 NTX291AA04 |
| 0 ENHANCED CC SUPPORT FOR 6X50AB ON HOST PERIPHERALS          | AL0563 NTX270AA19 |
| 0 ENHANCED CM MAINTENANCE CPU ALARMS                          | AL1923 NTX940AA13 |
| 0 ENHANCED CODE CONTROLS                                      | AF0166 NTX060AB11 |
| 0 ENHANCED COMMAND SCREENING                                  | BC0904 NTX292AA01 |
| 0 ENHANCED COMMAND SCREENING                                  | BC0904 NTX292AB04 |
| 0 ENHANCED COMMAND SCREENING                                  | BC0904 NTX292BA03 |
| 0 ENHANCED COMMUNICATION DIAGNOSTICS                          | BV1595 NTX344CA06 |
| 0 ENHANCED DCH LOADER                                         | AL1389 NTX750AC02 |
| 0 ENHANCED DCH LOADER                                         | AL1389 NTX750AD01 |
| 0 ENHANCED DIRP FILE CLEANUP                                  | BC1384 NTX001AA29 |
| 0 ENHANCED DISK MNTCE                                         | BC0435 NTX074AA09 |
| 0 ENHANCED DMS-CORE MATE LINK RTS                             | AL1053 NTX941AA12 |
| 0 ENHANCED DMS-CORE MEMORY ALARM                              | AL1192 NTX941AA12 |
| 0 ENHANCED DMS-250 ISUP IMT'S TO EOPS                         | AD2450 NTXG49AA03 |
| 0 ENHANCED DMS-250 ISUP IMT'S TO EOPS                         | AD2450 NTX361CA07 |
| 0 ENHANCED DTO AND NEW ACTION CODES FOR VNET & 800<br>0 SVC.  | AD1335 NTX353CA05 |
| 0 ENHANCED EBS REASON DISPLAY                                 | AG0858 NTX108AA05 |
| 0 ENHANCED ECHO CANCELLER CONTROL & ACM AFTER<br>0 OUTPUTSING | AD1532 NTX361BA05 |
| 0 ENHANCED ECHO CANCELLER CONTROL & ACM AFTER<br>0 OUTPUTSING | AD1532 NTX361CA07 |
| 0 ENHANCED EMERGENCY CALLING TO 3J                            | AE0078 NTX222AM05 |
| 0 ENHANCED ESSENTIAL SERVICE PROTECTION                       | AG1261 NTXZ03AA01 |
| 0 ENHANCED ESSENTIAL SERVICE PROTECTION                       | AG1261 NTX902AA07 |
| 0 ENHANCED FIBER MONITORING                                   | AL0684 NTX987AA01 |
| 0 ENHANCED FIELD FAILURE INFO                                 | AF2987 NTX270AA19 |

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| 0 ENHANCED FILED AUTHCODE ON FGD                        | AM0201 | NTXL02AA03 |
| 0 ENHANCED HDLC FIRMWARE                                | BF0328 | NTX220AA13 |
| 0 ENHANCED HDLC FIRMWARE                                | BF0328 | NTX220BA06 |
| 0 ENHANCED HDLC FIRMWARE                                | BF0328 | NTX220CA08 |
| 0 ENHANCED HDLC FIRMWARE                                | BF0328 | NTX322AA18 |
| 0 ENHANCED IBN TRANSLATION-ADDITIONS TO DN AND THOUGRP  | BV2040 | NTX701BA08 |
| 0 ENHANCED II ON PANI                                   | AD2487 | NTX222BA07 |
| 0 ENHANCED IMT CALL PROCESSING FOR DIALING PLAN (REL 2) | BV0759 | NTX222AB04 |
| 0 ENHANCED IMT CALL PROCESSING FOR DIALING PLAN (REL 2) | BV0759 | NTX222CA09 |
| 0 ENHANCED IMT CALL PROCESSING FOR DIALING PLAN (REL 2) | BV0759 | NTX223AA01 |
| 0 ENHANCED IMT DIALING PLAN                             | BV1591 | NTX222CA09 |
| 0 ENHANCED IN-SWITCH 800 SERVICES                       | AD0761 | NTX222CA09 |
| 0 ENHANCED LCM OVERLOAD CONTROLS                        | AL0049 | NTX001AA29 |
| 0 ENHANCED LINE ACCESS MEASUREMENTS                     | AG0649 | NTXZ02AA01 |
| 0 ENHANCED LINE ACCESS MEASUREMENTS                     | AG0649 | NTX901AA24 |
| 0 ENHANCED LINE ACCESS MEASUREMENTS - PART 2            | AG1318 | NTXZ02AA01 |
| 0 ENHANCED LINE ACCESS MEASUREMENTS - PART 2            | AG1318 | NTX901AA24 |
| 0 ENHANCED LINK MANAGEMENT                              | BV1233 | NTX322AA18 |
| 0 ENHANCED LIU MAINTENANCE                              | AL1333 | NTXN18AA04 |
| 0 ENHANCED LIU MAINTENANCE                              | AL1333 | NTX833AB01 |
| 0 ENHANCED LOAD BALANCING                               | BV1723 | NTX322AA18 |
| 0 ENHANCED MADN CALL CONTROL                            | AG0977 | NTX878AB02 |
| 0 ENHANCED MADN CALL CONTROL                            | AG0977 | NTX878AC01 |
| 0 ENHANCED MADN CALL CONTROL                            | AG0977 | NTX878AD01 |
| 0 ENHANCED MADN CALL CONTROL                            | AG0977 | NTX878AE01 |
| 0 ENHANCED MAINTENANCE FOR TPC RACKMOUNT                | AF0732 | NTXA90AA07 |
| 0 ENHANCED MAINTENANCE FOR TPC RACKMOUNT                | AF0732 | NTX731AA06 |
| 0 ENHANCED MCI ONAL/DAL/ONAT CP & TABLE CONTROL (REL2)  | BV0757 | NTX222AB04 |
| 0 ENHANCED MCI ONAL/DAL/ONAT CP & TABLE CONTROL (REL2)  | BV0757 | NTX222CA09 |
| 0 ENHANCED MCI ONAL/DAL/ONAT CP & TABLE CONTROL (REL2)  | BV0757 | NTX223AA01 |
| 0 ENHANCED MFADS.                                       | AF2529 | NTXJ96AA01 |
| 0 ENHANCED MSB MTC                                      | BC0626 | NTX270AA19 |
| 0 ENHANCED MTCE FOR UTR'S                               | BC1766 | NTX269AA07 |
| 0 ENHANCED MTCE FOR UTR'S                               | BC1766 | NTX479AA03 |
| 0 ENHANCED NETWORK CENTRAL NODE MAINTENANCE             | AL0486 | NTXE01AA06 |
| 0 ENHANCED NETWORK IN DMS250 SUPERNODE                  | AD2463 | NTX220BA06 |
| 0 ENHANCED NETWORK IN DMS250 SUPERNODE                  | AD2463 | NTX220CA08 |
| 0 ENHANCED PRIORITY TERMINAL                            | BC1273 | NTX001AA29 |
| 0 ENHANCED RCU MAINTENANCE                              | BV1669 | NTX322AA18 |
| 0 ENHANCED REAL TIME INDICATOR                          | BC0672 | NTX001AA29 |

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| 0 ENHANCED REAL TIME INDICATOR                     | BC0672 NTX291AA04 |
| 0 ENHANCED RECALL DIALTONE CAPABILITY              | BV1890 NTX222AB04 |
| 0 ENHANCED RECALL DIALTONE CAPABILITY              | BV1890 NTX222BA07 |
| 0 ENHANCED REORDER TREATMENT                       | BR0710 NTX001AA29 |
| 0 ENHANCED REORIGINATION USING STR                 | BV1647 NTX220AA13 |
| 0 ENHANCED REORIGINATION USING STR                 | BV1647 NTX220BA06 |
| 0 ENHANCED REORIGINATION USING STR                 | BV1647 NTX220CA08 |
| 0 ENHANCED S/ DISTRIBUTION - SECURITY ENHANCEMENTS | AG1857 NTXE29AA03 |
| 0 ENHANCED SERIAL CALLING                          | AD2068 NTXZ00AA01 |
| 0 ENHANCED SERIAL CALLING                          | AD2068 NTX100AA27 |
| 0 ENHANCED SERVICE ORDER                           | AC0111 NTX733AA02 |
| 0 ENHANCED SERVICE ORDER                           | AC0111 NTX733AB02 |
| 0 ENHANCED SERVICE ORDER                           | AC0111 NTX733AC01 |
| 0 ENHANCED SERVICE ORDER                           | AC0111 NTX733AD01 |
| 0 ENHANCED SERVICE ORDER                           | AC0111 NTX733AE01 |
| 0 ENHANCED SERVICES PLATFORM (ESP) REORIGINATIONS  | AD3647 NTXL83AA02 |
| 0 ENHANCED SERVICES PLATFORM - OUTGOING ACCESS     | AD3350 NTXL83AA02 |
| 0 ENHANCED SERVORD II                              | AL0439 NTX733AB02 |
| 0 ENHANCED SERVORD II                              | AL0439 NTX733AC01 |
| 0 ENHANCED SERVORD II                              | AL0439 NTX733AD01 |
| 0 ENHANCED SERVORD II                              | AL0439 NTX733AE01 |
| 0 ENHANCED TRKGRP TABLE CONTROL FOR NT FEATURE PKG | AD0398 NTX222AB04 |
| 0 NTX222AB                                         |                   |
| 0 ENHANCED TRKGRP TABLE CONTROL FOR NT FEATURE PKG | AD0398 NTX222BA07 |
| 0 NTX222AB                                         |                   |
| 0 ENHANCED TRUNK GROUP TABLE CONTROL FOR MCI       | AD0395 NTX222CA09 |
| 0 ENHANCED TRUNK INVENTORY AND SPARES TESTING      | BR0327 NTX176AA05 |
| 0 ENHANCED TRUNK MAINTENANCE FOR TAU               | BV1308 NTX322AA18 |
| 0 ENHANCED TRUNK USAGE OM'S                        | AD2355 NTX222BA07 |
| 0 ENHANCED TRUNK USAGE OM'S                        | AD2639 NTX222CA09 |
| 0 ENHANCED T1 ACCESS                               | AD3405 NTXG40AA02 |
| 0 ENHANCED WATS                                    | AF1092 NTXA16AA01 |
| 0 ENHANCED XPM CALL PROCESSING FOR FUNCTIONAL      | AC0378 NTX753AA06 |
| 0 SIGNALLING                                       |                   |
| 0 ENHANCED XPM CALL PROCESSING FOR FUNCTIONAL      | AC0378 NTX753AB01 |
| 0 SIGNALLING                                       |                   |
| 0 ENHANCED XPM DS1 MAINTENANCE                     | AL0174 NTX270AA19 |
| 0 ENHANCED XPM SWACT MANAGEMENT                    | AJ0964 NTX270AA19 |
| 0 ENHANCED XPM/LCM ROBUSTNESS                      | BC1441 NTX001AA29 |
| 0 ENHANCED 800 SERVICES (SAC) VIA THE NCS          | AD0877 NTX353AA04 |
| 0 ENHANCED 800 SERVICES (SAC) VIA THE NCS          | AD0877 NTX353CA05 |
| 0 ENHANCED 9X12 DIAGNOSTICS                        | AL0631 NTX940AA13 |
| 0 ENHANCEMENT FOR #4ESS AND #5ESS                  | AM0162 NTXE64AA02 |
| 0 ENHANCEMENT FOR #4ESS AND #5ESS                  | AM0162 NTXJ43AA02 |
| 0 ENHANCEMENT TO CLASS OF SERVICE SCREENING        | AD1682 NTXG27AA01 |
| 0 ENHANCEMENT TO CLASS OF SERVICE SCREENING        | AD1682 NTXG28AA01 |
| 0 ENHANCEMENT TO N00 SERVICES VIA DCP              | AD1390 NTX365BA03 |

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| 0 ENHANCEMENTS TO SIGMAN FOR AT&T                 | AD1804 NTXE64AA02 |
| 0 ENHANCEMENTS TO SIGMAN TO INTERWORK #5ESS       | AD2247 NTXJ43AA02 |
| 0 EOC ROUTER                                      | AF2656 NTXF46AA04 |
| 0 EOPS ENHANCEMENTS TO INCREASE NUMBER OF LOGICAL | AD2148 NTXG12AA06 |
| 0 QUEUES                                          |                   |
| 0 EOPS ENHANCEMENTS TO INCREASE NUMBER OF LOGICAL | AD2148 NTXG12CA06 |
| 0 QUEUES                                          |                   |
| 0 EOPS PSLIEDO ANI CALL PROCESSING                | AD1565 NTX222BA07 |
| 0 EOPS PSLIEDO ANI DATABASE                       | AD1563 NTX222BA07 |
| 0 EQUAL ACCESS ENHANCED CARRIER TOLL DENIAL       | AF1098 NTXA24AA01 |
| 0 EQUAL ACCESS INTERMEDIATE TANDEM                | AF2016 NTXE67AA01 |
| 0 EQUAL ACCESS MULTIPARTY LINE IDENTIFICATION     | AF1099 NTX711AB02 |
| 0 EQUAL ACCESS ON IBN/DATAPATH                    | BC1368 NTX186AA08 |
| 0 EQUAL ACCESS ON IBN/DATAPATH                    | BC1368 NTX186AB02 |
| 0 EQUAL ACCESS ON IBN/DATAPATH                    | BC1368 NTX189AA01 |
| 0 EQUAL ACCESS PM EXECES & TEMPLATES              | BV1394 NTX342AA02 |
| 0 EQUAL ACCESS PM EXECES & TEMPLATES              | BV1394 NTX342BA01 |
| 0 EQUAL ACCESS PM EXECES & TEMPLATES              | BV1394 NTX342CA01 |
| 0 EQUAL ACCESS-CALL FORWARDING ENHANCEMENT        | BC1381 NTX020AB03 |
| 0 EQUAL ACCESS-CALL FORWARDING ENHANCEMENT        | BC1381 NTX020AC01 |
| 0 EQUAL ACCESS-CALL FORWARDING ENHANCEMENT        | BC1381 NTX804AA02 |
| 0 EQUAL ACCESS-CC REAL TIME IMPROVEMENT           | BC1380 NTX186AA08 |
| 0 EQUAL ACCESS-CC REAL TIME IMPROVEMENT           | BC1380 NTX186AB02 |
| 0 EQUAL ACCESS-CC REAL TIME IMPROVEMENT           | BC1380 NTX189AA01 |
| 0 EQUAL ACCESS-CC REAL TIME IMPROVEMENT           | BC1380 NTX386AA04 |
| 0 EQUAL ACCESS-CC REAL TIME IMPROVEMENT           | BC1380 NTX386AB02 |
| 0 EQUAL ACCESS-EXPANDED TOLL DENIAL               | BC1379 NTX186AA08 |
| 0 EQUAL ACCESS-EXPANDED TOLL DENIAL               | BC1379 NTX186AB02 |
| 0 EQUAL ACCESS-EXPANDED TOLL DENIAL               | BC1379 NTX189AA01 |
| 0 ERL AND SRL CAPABILITY TO ATMS                  | BC1157 NTX136AA03 |
| 0 ERWT FOR LINES, TRUNKS FOR ARS, CALL BACK QUEUE | BV0698 NTX105AA03 |
| 0 FEATURES                                        |                   |
| 0 ESA ACTIVATE DATA BASE ENHANCEMENT (SEE F0050)  | BC0297 NTX025AA02 |
| 0 ESA CC OPERATIONAL MEASUREMENTS                 | AF0955 NTX380AA02 |
| 0 ESA EXIT SUPPORT FOR RLCM                       | AL0070 NTX154AA03 |
| 0 ESA FOR IRLCM - BASIC                           | AE0216 NTX653AA01 |
| 0 ESA POTS INTERCALLING                           | AF1013 NTX380AA02 |
| 0 ESA PP OPERATIONAL MEASUREMENTS                 | AF0956 NTX380AA02 |
| 0 ESA REX TEST FOR RDLM                           | AD0901 NTX725AA03 |
| 0 ESA TRUNKING                                    | AF0954 NTX380AA02 |
| 0 ESA-PREFIX TRANSLATION TABLE CONTROL            | BC2087 NTX149AA03 |
| 0 ESA-PREFIX TRANSLATION TABLE CONTROL            | BC2087 NTX149AB03 |
| 0 ESF SUPPORT ON 6X50AB                           | AL1565 NTX143AA02 |
| 0 ESG ENHANCEMENTS                                | AJ1432 NTX499AA10 |
| 0 ESN - ANSWER SUPERVISION GENERATION             | BV0788 NTX102AA05 |
| 0 ESN - AUTHORIZATION CODES                       | BV0783 NTX103AA12 |
| 0 ESN - CALL-BACK QUEUING                         | BV0785 NTX105AA03 |

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| 0 ESN - NETWORK AUTOMATIC ROUTE SELECTION (TEHO AND HEHO) | BV0782 NTX430AA02 |
| 0 ESN - NETWORK CLASS OF SERVICE                          | BV0779 NTX430AA02 |
| 0 ESN - NETWORK INFORMATION SIGNALS                       | BV0789 NTX430AA02 |
| 0 ESN - NETWORK SPEED CALL                                | BV0781 NTX432AA01 |
| 0 ESN - OFF-HOOK QUEUING                                  | BV0784 NTX105AA03 |
| 0 ESN - TONE DETECTION                                    | BV0787 NTXZ00AA01 |
| 0 ESN - TONE DETECTION                                    | BV0787 NTX100AA27 |
| 0 ESN DTI DATA-VOICE SIGNALING                            | AD0254 NTX831AA02 |
| 0 ESN ON DMS-250 PRA/ISUP I                               | AD1543 NTXG01AA06 |
| 0 ESP INTERWORKING                                        | AD3352 NTXL83AA02 |
| 0 ESSENTIAL SERVICE PROTECTION (ESP)                      | BR0538 NTXZ03AA01 |
| 0 ESSENTIAL SERVICE PROTECTION (ESP)                      | BR0538 NTX902AA07 |
| 0 ETN NODAL EMULATION                                     | AD0438 NTX222AB04 |
| 0 ETN NODAL EMULATION                                     | AD0438 NTX222BA07 |
| 0 ETN NODE COMPATIBILITY ENHANCEMENTS                     | AD0764 NTX222AB04 |
| 0 ETN NODE COMPATIBILITY ENHANCEMENTS                     | AD0764 NTX222BA07 |
| 0 EVEN BIT INVERSION                                      | AE0334 NTXB74AA03 |
| 0 EXEC DEVELOPMENT FOR DC5 AND AC15 SIGNALLING            | BF0814 NTX222AM05 |
| 0 EXEC STORE EXPANSION                                    | BF0791 NTXZ02AA01 |
| 0 EXEC STORE EXPANSION                                    | BF0791 NTX901AA24 |
| 0 EXECS FOR CALLING CARD AND VNET                         | AD0150 NTX353AA04 |
| 0 EXECS FOR CALLING CARD AND VNET                         | AD0150 NTX353CA05 |
| 0 EXECUTIVE BUSY OVERRIDE FOR SPAIN                       | AL0136 NTX612AA04 |
| 0 EXECUTIVE BUSY OVERRIDE FOR UK                          | BC2083 NTX611AA07 |
| 0 EXECUTIVE BUSY OVERRIDE ON MADN                         | AF1923 NTXE44AA01 |
| 0 EXECUTIVE CONFERENCE                                    | AF1268 NTXA27AA01 |
| 0 EXECUTIVE MESSAGE SERVICE ENHANCEMENT - MULTI EMW       | AG1627 NTXE47AA02 |
| 0 PER DN                                                  |                   |
| 0 EXECUTIVE MORNING REPORT                                | AJ0190 NTXJ35AA02 |
| 0 EXECUTIVE RIGHT OF WAY                                  | BV0597 NTXZ01AA01 |
| 0 EXECUTIVE RIGHT OF WAY                                  | BV0597 NTX101AA14 |
| 0 EXPAND TRUNK GROUP IN ADF                               | AD2359 NTX353CA05 |
| 0 EXPANDED CDR RECORD FORMAT                              | BT0465 NTX322AA18 |
| 0 EXPANDED FG-D ACCOUNT CODE FOR MCI                      | AD0308 NTX343CA02 |
| 0 EXPANDED FXDNMAP                                        | AL0610 NTX030CC16 |
| 0 EXPANDED INBAND SIGNALLING                              | BR0433 NTXZ02AA01 |
| 0 EXPANDED INBAND SIGNALLING                              | BR0433 NTX901AA24 |
| 0 EXPANDED OPERATOR DISPLAY                               | BR0338 NTX030CC16 |
| 0 EXPANDED OPERATOR SERVICE TYPES                         | AM0180 NTXG41BA05 |
| 0 EXPANDED P-SIDE PORTS ON LGCS                           | AE0745 NTX270AA19 |
| 0 EXPANDED SPEED CALL CAPABILITIES                        | BC1262 NTX020AB03 |
| 0 EXPANDED SPEED CALL CAPABILITIES                        | BC1262 NTX020AC01 |
| 0 EXPANDED SPEED CALL CAPABILITIES                        | BC1262 NTX804AA02 |
| 0 EXPANDED SYSTEM CAPACITY                                | AD0408 NTX322AA18 |
| 0 EXPANDED TRUNK GUARD TIMING                             | AF1252 NTX244AA02 |
| 0 EXPANDED TRUNK GUARD TIMING                             | AF1252 NTX244AB02 |

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| 0 EXPANSION OF ANI SCREENING INDEX                             | BV1702 NTX343CA02 |
| 0 EXPANSION OF LCD NUMBER TO 1000                              | AL1541 NTXZ02AA01 |
| 0 EXPANSION OF LCD NUMBER TO 1000                              | AL1541 NTX901AA24 |
| 0 EXTEND COS TO 30X30 MATRIX                                   | BV1307 NTX220AA13 |
| 0 EXTEND COS TO 30X30 MATRIX                                   | BV1307 NTX220BA06 |
| 0 EXTEND COS TO 30X30 MATRIX                                   | BV1307 NTX220CA08 |
| 0 EXTEND RANGE OF MAX_NUM_OF_RINGS                             | AD1162 NTX220BA06 |
| 0 EXTEND RANGE OF MAX_NUM_OF_RINGS                             | AD1162 NTX220CA08 |
| 0 EXTEND REROUTE TABLE TO 1023 ENTRIES                         | BR0685 NTX001AA29 |
| 0 EXTENDED OPCODE GROUP DECODER                                | BF0872 NTX612AA04 |
| 0 EXTENDED OPCODE GROUP DECODER                                | BF0872 NTX913AA04 |
| 0 EXTENDED OPERATOR FEEDBACK DATA (BREAKDOWN BY CALL TYPE)     | BV0185 NTX030BA03 |
| 0 EXTENDED RANGE LINE CARD DIAGNOSTICS                         | AJ1496 NTX482CA03 |
| 0 EXTENSION BRIDGING                                           | AF0827 NTXA81AA01 |
| 0 EXTERNAL ECHO SUPPRESSOR CONTROL                             | BT0437 NTX220AA13 |
| 0 EXTERNAL ECHO SUPPRESSOR CONTROL                             | BT0437 NTX220BA06 |
| 0 EXTERNAL ECHO SUPPRESSOR CONTROL                             | BT0437 NTX220CA08 |
| 0 E2A MONITORING SOFTWARE                                      | AL2331 NTX941AA12 |
| 0 E800 ON PX TRUNKS                                            | AF2565 NTXZ02AA01 |
| 0 E800 ON PX TRUNKS                                            | AF2565 NTX901AA24 |
| 0 E911 ACDPSAP MIS ENHANCEMENTS                                | AF2560 NTXN86AA01 |
| 0 E911 CALL TRANSFER CP SUPPORT                                | AF1646 NTXF61AA02 |
| 0 E911 CALL TRANSFER CP SUPPORT                                | AF1646 NTX447AA01 |
| 0 E911 DIRECT ACCESS TO AT&T ALI CONTROLLER                    | AF2759 NTXN66AA01 |
| 0 E911 DIRECT ACCESS TO CCI ALI DATABASE                       | AF2146 NTXN17AA01 |
| 0 E911 EMERGENCY SERVICES                                      | BV1659 NTX322AA18 |
| 0 E911 INTEGRATED PSAP ACD FUNCTIONALITY                       | AF2739 NTXF61AA02 |
| 0 E911 LDT MAINTENANCE                                         | AF1977 NTX447AA01 |
| 0 E911 LINE APPEARANCE BASIC MAINTENANCE                       | AF1736 NTX447AA01 |
| 0 E911 LINE APPEARANCE GENERAL MAINTENANCE FOR PM & LTP LEVELS | AF1737 NTX447AA01 |
| 0 E911 LINE APPEARANCE PP CALL PROCESSING                      | AF1668 NTX447AA01 |
| 0 E911 LINE APPEARANCE PP MAINTENANCE                          | AF1650 NTX447AA01 |
| 0 E911 LINE APPEARANCE SP SIGNALING UTILITIES                  | AF1651 NTX447AA01 |
| 0 E911 LINE INTERFACE ON A DIGITAL TRUNK                       | AF1387 NTX447AA01 |
| 0 E911 ORIGINATION TABLE CONTROL                               | AF1336 NTXF61AA02 |
| 0 E911 ORIGINATION TABLE CONTROL                               | AF1336 NTX447AA01 |
| 0 E911 PRODUCT DELIVERY                                        | AF2001 NTX447AA01 |
| 0 E911 PSAP CALL PROCESSING SUPPORT                            | AF1643 NTXF61AA02 |
| 0 E911 PSAP CALL PROCESSING SUPPORT                            | AF1643 NTX447AA01 |
| 0 E911 PSAP TABLE CONTROL                                      | AF1644 NTX447AA01 |
| 0 E911 SELECTIVE ROUTING DATABASE                              | AF1375 NTX451AA02 |
| 0 E911 SELECTIVE ROUTING DATABASE UPDATE                       | AF1645 NTX451AA02 |
| 0 E911 SINGLE BUTTON TRANSFER OPERATION                        | AF2145 NTXF61AA02 |
| 0 E911 SINGLE BUTTON TRANSFER OPERATION                        | AF2145 NTXN50AA01 |
| 0 E911 TRANSLATIONS                                            | AF1338 NTXF61AA02 |



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| 0 E911 TRANSLATIONS                              | AF1338 NTX447AA01 |
| 0 E911 TRUNK ORIGINATION                         | AF1335 NTXF61AA02 |
| 0 E911 TRUNK ORIGINATION                         | AF1335 NTX447AA01 |
| 0 E911 TRUNK ORIGINATION CALL PROCESSING SUPPORT | AF1337 NTXF61AA02 |
| 0 E911 TRUNK ORIGINATION CALL PROCESSING SUPPORT | AF1337 NTX447AA01 |
| 0 F-BUS SUPPORT FOR 2 SLOT LIU7                  | AL1449 NTXN18AA04 |
| 0 F-BUS SUPPORT FOR 2 SLOT LIU7                  | AL1449 NTX833AB01 |
| 0 FACILITY CODE DIGITS IN THE CDR                | AD3256 NTX221BA08 |
| 0 FACILITY REJECT MESSAGE ON PRA                 | AD1674 NTX791AA02 |
| 0 FAILURE FLAGS FROM LINE DIAGNOSTICS            | BC0552 NTXZ02AA01 |
| 0 FAILURE FLAGS FROM LINE DIAGNOSTICS            | BC0552 NTX901AA24 |
| 0 FAST AUTHCODE & ANI DATABASE UPDATES           | AD0057 NTX222AB04 |
| 0 FAST AUTHCODE & ANI DATABASE UPDATES           | AD0057 NTX222BA07 |
| 0 FAST TRANSFER FOR MERIDIAN BUSINESS SET        | NC0112 NTXN65AA01 |
| 0 FAST TRANSLATION NAME LOOKUP TABLE             | BV1933 NTX222AM05 |
| 0 FAULTSMAN RINGBACK ENHANCEMENT                 | AE0248 NTX499AA10 |
| 0 FAULTSMAN RINGBACK ENHANCEMENT                 | AE0248 NTX663AA03 |
| 0 FAULTSMAN'S RINGBACK                           | BC2077 NTX499AA10 |
| 0 FAULTSMAN'S RINGBACK                           | BC2077 NTX663AA03 |
| 0 FBUS MTCE ENHANCEMENTS FOR LIU FAULT ISOLATION | AL1834 NTXN18AA04 |
| 0 FEATURE DISPLAY ENHANCEMENTS                   | AJ0591 NTXQ27AA02 |
| 0 FEATURE ENHANCED HIGH SPEED DU (AP) FIRMWARE   | AC0033 NTX250AA15 |
| 0 VERSION 4                                      |                   |
| 0 FEATURE GROUP B (FGB) INTERWORKING WITH SS7    | AF2105 NTXE13AB01 |
| 0 FEATURE GROUP B (FGB) INTERWORKING WITH SS7    | AF2105 NTXE14AB03 |
| 0 FEATURE GROUP D AND PRA TRUNK INTERWORKING     | AG1547 NTX795AA01 |
| 0 FEATURE GROUP D ANI DELIVERY                   | AD2175 NTXE78AA04 |
| 0 FEATURE GROUP-D ON SL-100                      | AD1313 NTXA92AA01 |
| 0 FEATURE GROUP-D ON SL-100                      | AD1313 NTXJ42AA02 |
| 0 FEATURE GROUPS C&D COMPATIBILITY               | BC1364 NTX186AA08 |
| 0 FEATURE GROUPS C&D COMPATIBILITY               | BC1364 NTX186AB02 |
| 0 FEATURE GROUPS C&D COMPATIBILITY               | BC1364 NTX189AA01 |
| 0 FEATURE PACKAGE IN SOS                         | BC0988 NTX000AA19 |
| 0 FEATURE REGRESSION TESTING PHASE 2             | AE0269 NTX913AA04 |
| 0 FF - DMS300 ECHO CONTROL PER CALL (RS232 I/F)  | NC0068 NTXK48AA01 |
| 0 FF - DMS300 ECHO CONTROL PER CALL (RS232 I/F)  | NC0068 NTXK97AA01 |
| 0 FG-D ACCESS SCREENING                          | AD1584 NTX343CA02 |
| 0 FG-D CUT-THROUGH MODIFICATIONS                 | AD1945 NTX222BA07 |
| 0 FG-D INFORMATION DIGIT PROCESSING              | AD1177 NTX222BA07 |
| 0 FGA TERMINATING RECORD                         | BR0768 NTX083AA01 |
| 0 FGB CALLS FROM LAMA EO TO IC VIA AT            | BC2136 NTX209AA03 |
| 0 FGB CALLS FROM LAMA EO TO IC VIA AT            | BC2136 NTX209AB01 |
| 0 FGB CALLS FROM LAMA EO TO IC VIA AT            | BC2136 NTX268AA02 |
| 0 FGB ON ATC TRUNKS                              | AF1778 NTX186AA08 |
| 0 FGB ON ATC TRUNKS                              | AF1778 NTX186AB02 |
| 0 FGB-AMA ENHANCEMENTS                           | BC1680 NTX209AA03 |
| 0 FGB-AMA ENHANCEMENTS                           | BC1680 NTX209AB01 |

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| 0 FGB-AMA ENHANCEMENTS                            | BC1680 NTX211AB01 |
| 0 FGD ANI ENHANCEMENTS                            | AD0820 NTX343AB03 |
| 0 FGD ANI ENHANCEMENTS                            | AD0820 NTX343BA01 |
| 0 FILE COMPARISON COMMANDS                        | BV1295 NTX220AA13 |
| 0 FILE COMPARISON COMMANDS                        | BV1295 NTX220BA06 |
| 0 FILE COMPARISON COMMANDS                        | BV1295 NTX220CA08 |
| 0 FILE SYSTEM                                     | BT0005 NTX001AA29 |
| 0 FILE TRANSFER CLIENT INTERFACE FOR DMS-SCP II   | AL1693 NTXS11AA01 |
| 0 FILE TRANSFER FROM DNC TO DMS VIA NOP/X.25      | AG0945 NTX562AA03 |
| 0 FILE TRANSFER SERVER FOR BELL OF PA (CC)        | BC1375 NTX562AA03 |
| 0 FILE/FREQ VIA DDN BASIC X.25                    | AD0777 NTX716AA05 |
| 0 FIRMWARE FOR AILC BASED I-BERT                  | BF0952 NTX250AA15 |
| 0 FIXED CALL FORWARDING                           | BR0255 NTX020AA01 |
| 0 FIXED CALL FORWARDING                           | BR0255 NTX020AB03 |
| 0 FIXED CALL FORWARDING                           | BR0255 NTX020AC01 |
| 0 FIXED CALL FORWARDING                           | BR0255 NTX804AA02 |
| 0 FIXED NODE NO. INTO H/W ASSIGNMENT TABLES       | BR0260 NTX001AA29 |
| 0 FIXED TRUNK GROUP NUMBERING                     | BC1711 NTX001AA29 |
| 0 FIXED TRUNK GROUP NUMBERING - SMDR              | AC0308 NTX001AA29 |
| 0 FIXED TRUNK GROUP NUMBERING FOR THE OM SYSTEM   | AG0568 NTX001AA29 |
| 0 FLASH IGNORE (PBX - 2 SEC DISC)                 | BV0019 NTXZ02AA01 |
| 0 FLASH IGNORE (PBX - 2 SEC DISC)                 | BV0019 NTX007AA02 |
| 0 FLASH IGNORE (PBX - 2 SEC DISC)                 | BV0019 NTX007AB02 |
| 0 FLASH IGNORE (PBX - 2 SEC DISC)                 | BV0019 NTX804AA02 |
| 0 FLASH IGNORE (PBX - 2 SEC DISC)                 | BV0019 NTX901AA24 |
| 0 FLASH RECALL DURING INITIAL PERIOD              | BV0306 NTX030CC16 |
| 0 FLEXIBLE ALARM SENDING                          | BR0521 NTX053AA05 |
| 0 FLEXIBLE AMA EXPANSION                          | AF0747 NTX737AB02 |
| 0 FLEXIBLE ANI ID=8,9 ASSIGNMENT                  | BR0501 NTXZ02AA01 |
| 0 FLEXIBLE ANI ID=8,9 ASSIGNMENT                  | BR0501 NTX901AA24 |
| 0 FLEXIBLE ANI ID=8,9 HANDLING                    | BR0456 NTX030CC16 |
| 0 FLEXIBLE ANI INFORMATION DIGIT ASSIGNMENT       | BR0713 NTX735AA01 |
| 0 FLEXIBLE BC AMA CALL CODES                      | AF0167 NTX737AA02 |
| 0 FLEXIBLE BC AMA CALL CODES                      | AF0167 NTX737AB02 |
| 0 FLEXIBLE CALL PREANSWER SUPERVISION             | AJ0187 NTX470AA13 |
| 0 FLEXIBLE CALLING AND DN BRIDGING CAPABILITY FOR | AG1301 NTX755AA01 |
| 0 ISDN EKTS                                       |                   |
| 0 FLEXIBLE CALLING AND DN BRIDGING CAPABILITY FOR | AG1301 NTX755AB01 |
| 0 ISDN EKTS                                       |                   |
| 0 FLEXIBLE CALLING AND DN BRIDGING CAPABILITY FOR | AG1301 NTX755AC01 |
| 0 ISDN EKTS                                       |                   |
| 0 FLEXIBLE CALLING INTERACTION IMPROVEMENTS       | AG1611 NTX755AA01 |
| 0 FLEXIBLE CALLING INTERACTION IMPROVEMENTS       | AG1611 NTX755AB01 |
| 0 FLEXIBLE CALLING INTERACTION IMPROVEMENTS       | AG1611 NTX755AC01 |
| 0 FLEXIBLE CONSOLE ALERTING.                      | BV1132 NTXZ01AA01 |
| 0 FLEXIBLE CONSOLE ALERTING.                      | BV1132 NTX101AA14 |
| 0 FLEXIBLE DIGIT ANALYSIS ON CENTREX LINES - CC   | AE0629 NTXB57AA02 |

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| 0 FLEXIBLE DISPLAY LANGUAGE                              | BR0455 NTX175AA01 |
| 0 FLEXIBLE INTERCEPT                                     | BV0427 NTXZ00AA01 |
| 0 FLEXIBLE INTERCEPT                                     | BV0427 NTX100AA27 |
| 0 FLEXIBLE LONG DURATION CALL REPORTING                  | BR0591 NTX042AA04 |
| 0 FLEXIBLE LONG DURATION CALL REPORTING                  | BR0591 NTX044AA04 |
| 0 FLEXIBLE REROUTES(FRR)                                 | AF0096 NTX060BB01 |
| 0 FLEXIBLE STATION CONTROLLED CONFERENCE (500/2500 SETS) | BV0913 NTXZ00AA01 |
| 0 FLEXIBLE STATION CONTROLLED CONFERENCE (500/2500 SETS) | BV0913 NTX100AA27 |
| 0 FLEXIBLE STATION CONTROLLED CONFERENCE (500/2500 SETS) | BV0913 NTX111AA03 |
| 0 FLOPPY DISK MAINTENANCE S/W                            | BC0111 NTX181AA12 |
| 0 FLOW AND OVERLOAD CONTROL FOR PRA                      | AG1299 NTX790AC02 |
| 0 FLOW CONTROLS FOR SMS                                  | AF1733 NTX398AA12 |
| 0 FLOW CONTROLS FOR SMU                                  | AF1734 NTX387AB04 |
| 0 FLOW CONTROLS FOR SMU                                  | AF1734 NTX387AC02 |
| 0 FLOW CONTROLS FOR SMU                                  | AF1734 NTX387AD01 |
| 0 FM GUIDE                                               | AF1596 NTX415AA07 |
| 0 FM GUIDE                                               | AF1598 NTX415AA07 |
| 0 FOCUSED TRUNK MAINTENANCE                              | AD3407 NTXL92AA01 |
| 0 FOOTPRINT SUPPORT FOR RISC                             | AL1587 NTXF97AA02 |
| 0 FOOTPRT ENHANCEMENTS                                   | AG2480 NTX941AA12 |
| 0 FORCED SEQUENCE APPLICATION                            | AF2531 NTX001AA29 |
| 0 FORMAT OM DIRP OUTPUT                                  | AG0239 NTX001AA29 |
| 0 FORWARD NUMBER CAPABILITY FOR TOPS-MP DA APPLICATION.  | AF2642 NTXA91AA02 |
| 0 FOUR INTERNATIONAL POINT CODER ON LPP                  | NC0217 NTX936AB01 |
| 0 FPE ENHANCEMENTS                                       | AC0018 NTX808AA01 |
| 0 FPE ENHANCEMENTS                                       | AC0018 NTX820AA01 |
| 0 FPE ENHANCEMENTS FOR ISDN FUNCTIONAL SIGNALLING        | AC0280 NTX790AC02 |
| 0 FRACTIONAL TAX                                         | BR0737 NTX030CC16 |
| 0 FRAME RELAY BILLING REQUIREMENTS                       | AJ1480 NTXQ34AA01 |
| 0 FRAME RELAY CONNECTION DATABASE                        | AL1059 NTXF25AC01 |
| 0 FRAME RELAY CONNECTION DATABASE                        | AL1059 NTXF25AD01 |
| 0 FRAME RELAY INTERFACE UNIT ADDITION TO LPP             | AI0235 NTXF25AC01 |
| 0 FRAME RELAY INTERFACE UNIT ADDITION TO LPP             | AI0235 NTXF25AD01 |
| 0 FRAME RELAY INTERFACE UNIT PM MAINTENANCE PHASE 1      | AL1058 NTXF25AC01 |
| 0 FRAME RELAY INTERFACE UNIT PM MAINTENANCE PHASE 1      | AL1058 NTXF25AD01 |
| 0 FRAME RELAY INTERFACE UNIT SOFTWARE BASE               | AI0234 NTXF25AC01 |
| 0 FRAME RELAY INTERFACE UNIT SOFTWARE BASE               | AI0234 NTXF25AD01 |
| 0 FRAME RELAY T1 TRUNKING                                | AL1907 NTXF25AC01 |
| 0 FRAME RELAY T1 TRUNKING                                | AL1907 NTXF25AD01 |
| 0 FRAUD PREVENTION                                       | BR0020 NTXZ02AA01 |
| 0 FRAUD PREVENTION                                       | BR0020 NTX044AA04 |
| 0 FRAUD PREVENTION                                       | BR0020 NTX901AA24 |
| 0 FREE NUMBER TERMINATING                                | BR0094 NTXZ02AA01 |

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| 0 FREE NUMBER TERMINATING                        | BT0058 NTXZ02AA01 |
| 0 FREE NUMBER TERMINATING                        | BR0094 NTX901AA24 |
| 0 FREE NUMBER TERMINATING                        | BT0058 NTX901AA24 |
| 0 FREEZEONREINIT PROCEDURE                       | BR0715 NTX001AA29 |
| 0 FRENCH MMI FOR TOPS_MP                         | AF1388 NTXA90AA07 |
| 0 FREQUENCY RINGING (DECIMONIC)                  | BR0028 NTXZ02AA01 |
| 0 FREQUENCY RINGING (DECIMONIC)                  | BR0028 NTX901AA24 |
| 0 FREQUENCY RINGING (HARMONIC) 20HZ BASE         | BR0193 NTXZ02AA01 |
| 0 FREQUENCY RINGING (HARMONIC) 20HZ BASE         | BR0193 NTX901AA24 |
| 0 FREQUENCY RINGING (SYNCHROMONIC 16)            | BR0089 NTXZ02AA01 |
| 0 FREQUENCY RINGING (SYNCHROMONIC 16)            | BR0089 NTX901AA24 |
| 0 FREQUENCY RINGING (SYNCHROMONIC 20)            | BR0153 NTXZ02AA01 |
| 0 FREQUENCY RINGING (SYNCHROMONIC 20)            | BR0153 NTX901AA24 |
| 0 FREQUENCY RINGING (20 HZ)                      | BR0030 NTXZ02AA01 |
| 0 FREQUENCY RINGING (20 HZ)                      | BR0030 NTX901AA24 |
| 0 FRIU BILLING DATA COLLECTION                   | AL2182 NTXQ34AA01 |
| 0 FRIU DATA LOOP DIAGNOSTICS                     | AL1284 NTXF25AC01 |
| 0 FRIU DATA LOOP DIAGNOSTICS                     | AL1284 NTXF25AD01 |
| 0 FRIU MAINTENANCE SUPPORT                       | AL1282 NTXF25AC01 |
| 0 FRIU MAINTENANCE SUPPORT                       | AL1282 NTXF25AD01 |
| 0 FRIU PER CHANNEL OA&M                          | AL1286 NTXF25AC01 |
| 0 FRIU PER CHANNEL OA&M                          | AL1286 NTXF25AD01 |
| 0 FRIU PERFORMANCE ENHANCEMENTS                  | AL1908 NTXF25AC01 |
| 0 FRIU PERFORMANCE ENHANCEMENTS                  | AL1908 NTXF25AD01 |
| 0 FRIU PM LOGS AND ALARMS                        | AL1283 NTXF25AC01 |
| 0 FRIU PM LOGS AND ALARMS                        | AL1283 NTXF25AD01 |
| 0 FRIU ROBUSTNESS                                | AL1672 NTXF25AC01 |
| 0 FRIU ROBUSTNESS                                | AL1672 NTXF25AD01 |
| 0 FRIU SWITCHING THREAD                          | AL1288 NTXF25AC01 |
| 0 FRIU SWITCHING THREAD                          | AL1288 NTXF25AD01 |
| 0 FRIU T1 MTCE SUPPORT                           | AL1287 NTXF25AC01 |
| 0 FRIU T1 MTCE SUPPORT                           | AL1287 NTXF25AD01 |
| 0 FTS INTERFACE                                  | BV0777 NTX601BA06 |
| 0 FTS PHASE 1                                    | AI0047 NTXF71AA01 |
| 0 FTS PHASE 1                                    | AI0047 NTX833AB01 |
| 0 FTS ROBUSTNESS AND FAULT HANDLING              | AI0123 NTXF71AA01 |
| 0 FTS ROBUSTNESS AND FAULT HANDLING              | AI0123 NTX833AB01 |
| 0 FULL MTCE OF STP FBUS                          | AI0119 NTXN18AA04 |
| 0 FULL MTCE OF STP FBUS                          | AI0119 NTX833AB01 |
| 0 FULL PREEMPTION FOR AUTOVON PBX TRUNKS         | AD0195 NTX701DA03 |
| 0 FULL SCREEN MAP CAPABILITY FOR NEMAS           | BV1881 NTX344CA06 |
| 0 FULLY- & SEMI-SELECTIVE(SUPERIMPOSED)          | BR0134 NTXZ02AA01 |
| 0 RINGING..U.S..                                 |                   |
| 0 FULLY- & SEMI-SELECTIVE(SUPERIMPOSED)          | BR0134 NTX901AA24 |
| 0 RINGING..U.S..                                 |                   |
| 0 FUNCTIONAL SIGNALLING ACCESS TO ADDITIONAL MDC | AG1341 NTX753AA06 |
| 0 FEATURES: 3                                    |                   |

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| 0 FUNCTIONAL SIGNALLING ACCESS TO ADDITIONAL MDC      | AG1341 | NTX753AB01 |
| 0 FEATURES: 3                                         |        |            |
| 0 FUNCTIONAL SIGNALLING ACCESS TO MDC FEATURES: PHASE | AC0376 | NTX753AA06 |
| 0 II                                                  |        |            |
| 0 FUNCTIONAL SIGNALLING ACCESS TO MDC FEATURES: PHASE | AC0376 | NTX753AB01 |
| 0 II                                                  |        |            |
| 0 FUNCTIONAL SIGNALLING INTERACTIONS WITH ATTENDANT   | AJ0507 | NTX753AA06 |
| 0 CONSOLE                                             |        |            |
| 0 FUNCTIONAL SIGNALLING INTERACTIONS WITH ATTENDANT   | AJ0507 | NTX753AB01 |
| 0 CONSOLE                                             |        |            |
| 0 FW FOR IBERT COMPATIBILITY WITH DPX                 | BF0726 | NTX259AA03 |
| 0 FX LINES (LINE CARD TERMINATION)                    | BT0052 | NTXZ02AA01 |
| 0 FX LINES (LINE CARD TERMINATION)                    | BT0052 | NTX901AA24 |
| 0 FXB HAIRPIN                                         | AF0234 | NTX621AB02 |
| 0 GATEWAY FEATURES                                    | AE0043 | NTX496AA03 |
| 0 GATEWAY TO DMS250/TOPS TERMINATION                  | BT0454 | NTX341AA05 |
| 0 GATEWAY TO DMS250/TOPS TERMINATION                  | BT0454 | NTX341CA01 |
| 0 GD AND GA IES FOR MCI ISDN - XPM AND CC             | AD3398 | NTXG01CA07 |
| 0 GENERAL INTERWORKING SYSTEM PART I                  | BC1301 | NTX470AA13 |
| 0 GENERAL INTERWORKING SYSTEM PART I                  | BC1301 | NTX485AA03 |
| 0 GENERALIZE XPM/MSB7 CHANNEL ALLOCATION              | BF1025 | NTXR72AA01 |
| 0 GENERALIZE XPM/MSB7 CHANNEL ALLOCATION              | BF1025 | NTX041AB09 |
| 0 GENERALIZED DISTINCTIVE RINGING                     | AD0011 | NTXZ01AA01 |
| 0 GENERALIZED DISTINCTIVE RINGING                     | AD0011 | NTX101AA14 |
| 0 GENERALIZED MAP CAPABILITY                          | BC1302 | NTX000AA19 |
| 0 GENERATION OF NORTH ELECTRIC ANI FORMAT             | BR0107 | NTX049AE01 |
| 0 GENERIC DMS-250 APPLICATIONS TO TCAP/SCCP INTERFACE | AD0353 | NTX364BA02 |
| 0 GENERIC DMS-250 APPLICATIONS TO TCAP/SCCP INTERFACE | AD0353 | NTX365BA03 |
| 0 GENERIC LIU MAINTENANCE                             | AI0273 | NTXN18AA04 |
| 0 GENERIC LIU MAINTENANCE                             | AI0273 | NTX833AB01 |
| 0 GENERIC QUERY RESPONSE INTERFACE FOR CALL           | AD0352 | NTX220AA13 |
| 0 PROCESSING.                                         |        |            |
| 0 GENERIC QUERY RESPONSE INTERFACE FOR CALL           | AD0352 | NTX220BA06 |
| 0 PROCESSING.                                         |        |            |
| 0 GENERIC QUERY RESPONSE INTERFACE FOR CALL           | AD0352 | NTX220CA08 |
| 0 PROCESSING.                                         |        |            |
| 0 GENERIC R0 SERVICE ENHANCEMENTS                     | AG0110 | NTX560AB03 |
| 0 GENERIC R2 ENHANCEMENTS                             | AJ1028 | NTX904AA04 |
| 0 GLARE DETECTION2-WAY ONALS                          | BV0748 | NTX220AA13 |
| 0 GLARE DETECTION2-WAY ONALS                          | BV0748 | NTX220BA06 |
| 0 GLARE DETECTION2-WAY ONALS                          | BV0748 | NTX220CA08 |
| 0 GLOBAL FONCARD ENHANCEMENTS                         | AD3338 | NTXL88AA01 |
| 0 GLOBAL TITLE TRANSLATIONS ENHANCEMENTS              | AD3648 | NTXL93AA01 |
| 0 GOC - 990 NXX CODE                                  | BC0810 | NTXZ00AA01 |
| 0 GOC - 990 NXX CODE                                  | BC0810 | NTX100AA27 |
| 0 GOS BOOKED CALL DATABASE                            | AF4170 | NTXR58AA01 |
| 0 GOS RATING SYSTEM                                   | AF4169 | NTXR51AA02 |

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0 GROUND START  
0 GROUND START  
0 GROUP INTERCOM ALL CALL  
0 GROUP INTERCOM ALL CALL  
0 GROUP INTERCOM ALL CALL  
0 GROUP NUMBER FEATURE CONTROL  
0 GROUP NUMBER FEATURE CONTROL  
0 GROUP NUMBER FEATURE CONTROL  
0 GUARANTEED DIAL TONE  
0 GUARANTEED DIAL TONE  
0 GUARANTEED DIAL TONE FOR DMS-100 INTL  
0 GUYANA SIGNALLING  
0 G27 SERVICE DATA SUPPORT  
0 H/W OFFICE RELEASE RECORDS IN DMS MEMORY  
0 H/W-S/W INITIALIZATION COORDINATION - II  
0 HANDOFF ALGORITHM ENHANCEMENT  
0 HANDOFF ENHANCEMENT  
0 HANDOFF ENHANCEMENT  
0 HANDOFF ENHANCEMENT  
0 HANDOFF ENHANCEMENT  
0 HANDOFF OPERATIONAL MEASUREMENT  
0 HANDOFF OPERATIONAL MEASUREMENT  
0 HANDOFF OPERATIONAL MEASUREMENT  
0 HANDOFF OPERATIONAL MEASUREMENT  
0 HARD CODED OM NAMES  
0 HARD TO REACH CODES  
0 HARDWARE BASELINE MONITOR  
0 HARDWARE METERING FOR TRUNKS TABLE CONTROL  
0 HARDWARE METERING FOR TRUNKS TABLE CONTROL  
0 HARDWARE PULSE GENERATION FOR TRUNKS  
0 HARDWARE PULSE GENERATION FOR TRUNKS  
0 HARMONIC RINGING (FIVE FREQUENCIES)  
0 HARMONIC RINGING (FIVE FREQUENCIES)  
0 HAYES KBD HIGH SPEED ENHANCEMENTS  
0 HDLC LEVEL 2 LAPB PROTOCOL FOR CSC LINK  
0 HIDE AUTHCODE FIELD FOR ONLINE CDR SEARCH  
0 HIDE AUTHCODE FIELD FOR ONLINE CDR SEARCH  
0 HIDE AUTHCODE FIELD FOR ONLINE CDR SEARCH  
0 HIGH PERFORMANCE ROUTING  
0 HIGH PERFORMANCE ROUTING  
0 HIGH PERFORMANCE ROUTING  
0 HIGH PERFORMANCE ROUTING  
0 HIGH SPEED DU (AE) FIRMWARE VERSION 3  
0 HIGH SPEED DU (PRODUCTION VERSION)  
0 HIGH SPEED DU WITH ELASTOMER KEY PAD  
0 HIGH-SPEED MPC ROM AND DIAGNOSTICS

BT0025 NTXZ02AA01  
BT0025 NTX901AA24  
AD2126 NTX878AC01  
AD2126 NTX878AD01  
AD2126 NTX878AE01  
AL0741 NTX733AC01  
AL0741 NTX733AD01  
AL0741 NTX733AE01  
BF0490 NTXZ02AA01  
BF0490 NTX901AA24  
AC0130 NTX472AB08  
AJ1265 NTXH58AA01  
AJ1230 NTXF95AA03  
BR0350 NTX120AA01  
AJ0191 NTX001AA29  
BV1658 NTX322AA18  
BV1235 NTX220AA13  
BV1235 NTX220BA06  
BV1235 NTX220CA08  
BV1235 NTX322AA18  
BV1223 NTX220AA13  
BV1223 NTX220BA06  
BV1223 NTX220CA08  
BV1223 NTX322AA18  
BR0314 NTX001AA29  
AD0300 NTX716AA05  
AQ0721 NTX941AA12  
AJ0573 NTXH22AA01  
AJ0573 NTX474AA07  
AJ0570 NTXH22AA01  
AJ0570 NTX474AA07  
BR0029 NTXZ02AA01  
BR0029 NTX901AA24  
AC0463 NTX250AA15  
BF0346 NTX322AA18  
BV1306 NTX220AA13  
BV1306 NTX220BA06  
BV1306 NTX220CA08  
BC1989 NTPP55AA01  
BC1989 NTPP55AB01  
BC1989 NTX022AA03  
BC1989 NTX022AB01  
BC1989 NTX022AC01  
AC0035 NTX250AA15  
BF0444 NTX250AA15  
BF0798 NTX250AA15  
AF1514 NTXE98AA02

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| 0 HIGH-SPEED MPC, ROM AND DIAGNOSTICS       | AF2412 NTXE98AA02 |
| 0 HIGH-WATER-MARK OMS FOR CP, EXT, FTRQ     | AG0361 NTX001AA29 |
| 0 HLC OM QUERY UTILITY                      | BV1705 NTX324AA02 |
| 0 HNPA ROUTE LIST CONNECTIVITY              | BC0622 NTX001AA29 |
| 0 HOOKS AND STATIC DATA FOR ICP             | AD2199 NTXG52AA04 |
| 0 HOOKS AND STATIC DATA FOR ICP             | AD2199 NTXG80AA03 |
| 0 HOOKS FOR X.25 FOR NETWORK MANAGEMENT     | AD0222 NTX347AA06 |
| 0 HOOKS IN TRANSFER FOR CURRENT VS RECOVERY | AD0224 NTX222AB04 |
| 0 HOOKS IN TRANSFER FOR CURRENT VS RECOVERY | AD0224 NTX222BA07 |
| 0 HOST TOPS MP O.C. - DATA LINK HANDLING    | AF0808 NTX873AA01 |
| 0 HOST/REMOTE NETWORKING BY QUEUE TYPE.     | NC0152 NTXN54AA01 |
| 0 HOT LINE (ADMINISTRATION CONTROLLED)      | AE0101 NTX499AA10 |
| 0 HOTEL ADMINISTRATION SYSTEM (HADS)        | BC0319 NTX030CC16 |
| 0 HOTEL ADMINISTRATION SYSTEM (HADS)        | BV0181 NTX030CC16 |
| 0 HOTEL 1+, 0+, 0-                          | BV0339 NTX030CC16 |
| 0 HOTEL/MOTEL (RB & 3RD WIRE)               | BT0061 NTXZ02AA01 |
| 0 HOTEL/MOTEL (RB & 3RD WIRE)               | BT0061 NTX007AA02 |
| 0 HOTEL/MOTEL (RB & 3RD WIRE)               | BT0061 NTX007AB02 |
| 0 HOTEL/MOTEL (RB & 3RD WIRE)               | BT0061 NTX804AA02 |
| 0 HOTEL/MOTEL (RB & 3RD WIRE)               | BT0061 NTX901AA24 |
| 0 HOTLINE BY AUTHCODE                       | BT0439 NTX220AA13 |
| 0 HOTLINE BY AUTHCODE                       | BT0439 NTX220BA06 |
| 0 HOTLINE BY AUTHCODE                       | BT0439 NTX220CA08 |
| 0 HOURLY CDR GENERATION                     | BV1291 NTX221CA05 |
| 0 HSDA ROM MAINTENANCE                      | AF0533 NTXA90AA07 |
| 0 HTR PEGGING AND MARKING                   | BC0023 NTX060AA02 |
| 0 HTR PEGGING AND MARKING                   | BC0023 NTX060AE03 |
| 0 HTR PEGGING AND MARKING                   | BC0023 NTX060BA02 |
| 0 HTR PEGGING AND MARKING                   | BC0023 NTX060BB01 |
| 0 HUNT GROUP ENHANCEMENT                    | AL0054 NTX007AB02 |
| 0 HUNT GROUP ENHANCEMENT                    | AL0054 NTX472AB08 |
| 0 HUNT GROUP SIZE EXPANSION                 | BR0750 NTX007AB02 |
| 0 HUNT GROUP SIZE EXPANSION                 | BR0750 NTX472AB08 |
| 0 HUNTING                                   | BV0424 NTXZ02AA01 |
| 0 HUNTING                                   | BV0424 NTX901AA24 |
| 0 HUNTING (MLH,DLH,DNH)(LIN/DIST/CIRC)      | BT0042 NTXZ02AA01 |
| 0 HUNTING (MLH,DLH,DNH)(LIN/DIST/CIRC)      | BT0042 NTX007AA02 |
| 0 HUNTING (MLH,DLH,DNH)(LIN/DIST/CIRC)      | BT0042 NTX007AB02 |
| 0 HUNTING (MLH,DLH,DNH)(LIN/DIST/CIRC)      | BT0042 NTX804AA02 |
| 0 HUNTING (MLH,DLH,DNH)(LIN/DIST/CIRC)      | BT0042 NTX901AA24 |
| 0 HUNTING OPTIONS (SHU/RMB)                 | BT0067 NTX007AA02 |
| 0 HUNTING OPTIONS (SHU/RMB)                 | BT0067 NTX007AB02 |
| 0 HUNTING OPTIONS (SHU/RMB)                 | BT0067 NTX804AA02 |
| 0 HX IMMUNITY REGIONS FOR CI PROCESSES      | AL0972 NTX001AA29 |
| 0 H0569 SPECIALIZED TONE RECEIVER - DTC     | AD0033 NTX220AA13 |
| 0 H0569 SPECIALIZED TONE RECEIVER - DTC     | AD0033 NTX220BA06 |
| 0 H0569 SPECIALIZED TONE RECEIVER - DTC     | AD0033 NTX220CA08 |

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| 0 H0925 SPECIALIZED TONE RECEIVER - DTC DAUGHTER     | AD0034 NTX220AA13 |
| 0 H0925 SPECIALIZED TONE RECEIVER - DTC DAUGHTER     | AD0034 NTX220BA06 |
| 0 H0925 SPECIALIZED TONE RECEIVER - DTC DAUGHTER     | AD0034 NTX220CA08 |
| 0 I-F TO S-L NO. 14 LTD                              | BR0122 NTXZ02AA01 |
| 0 I-F TO S-L NO. 14 LTD                              | BR0122 NTX901AA24 |
| 0 I/F TO S-C ONI TURRET VISUAL INDICATORS.           | BR0125 NTX001AA29 |
| 0 I/F TO S-C TSC SCAMA ..ONI/ANIF..                  | BR0124 NTX001AA29 |
| 0 I/O SYSTEM S/W & HANDOFF FOR PHASE 2               | BV1028 NTX322AA18 |
| 0 I/O SYSTEM S/W FOR (PHASE 1)                       | BV1027 NTX220AA13 |
| 0 I/O SYSTEM S/W FOR (PHASE 1)                       | BV1027 NTX220BA06 |
| 0 I/O SYSTEM S/W FOR (PHASE 1)                       | BV1027 NTX220CA08 |
| 0 I/O SYSTEM S/W FOR (PHASE 1)                       | BV1027 NTX322AA18 |
| 0 I/O SYSTEM STRAY NODE REMOVAL TOOL                 | BC0258 NTX181AA12 |
| 0 I/O SYSTEM STRAY NODE REMOVAL TOOL                 | BC0258 NTX184AA11 |
| 0 I/O SYSTEM STRAY NODE REMOVAL TOOL                 | BC0258 NTX184AB02 |
| 0 IAC WARM SWACT FOR ISDN CALL PROCESSING            | BC2233 NTX750AC02 |
| 0 IAC WARM SWACT FOR ISDN CALL PROCESSING            | BC2233 NTX750AD01 |
| 0 IBERT RESOURCE MANAGEMENT                          | AG0665 NTX881AB02 |
| 0 IBERT RESOURCE MANAGEMENT                          | AG0665 NTX881AC03 |
| 0 IBERT RESOURCE MANAGEMENT                          | AG0665 NTX882AA04 |
| 0 IBERT SW ENHANCEMENTS                              | BC2051 NTX250AA15 |
| 0 IBERT SW PHASE I                                   | BC2052 NTX250AA15 |
| 0 IBERT: BIT ERROR RATE TESTING F/W ENHANCEMENTS     | AC0105 NTX250AA15 |
| 0 IBM DA PROTOCOL AND SIMULATOR                      | AF1266 NTXE05AA01 |
| 0 IBM 3274 DATA UNIT                                 | BF0470 NTX250AA15 |
| 0 IBM 3278 DATA UNIT                                 | BF0472 NTX250AA15 |
| 0 IBN & ESB COMPATIBILITY                            | BC0958 NTX399AA01 |
| 0 IBN ATTENDANT CONSOLE - DMODEM ROBUSTNESS          | AG1489 NTXZ00AA01 |
| 0 IBN ATTENDANT CONSOLE - DMODEM ROBUSTNESS          | AG1489 NTX100AA27 |
| 0 IBN ATTENDANT CONSOLE OM ON AN INDIVIDUAL CONSOLE  | AL0522 NTX856AA02 |
| 0 BASIS                                              |                   |
| 0 IBN AUTH CODES FOR ALTERNATE ROUTE SELECTION (ARS) | BR0822 NTX103AA12 |
| 0 IBN CALL FORWARD ENHANCEMENTS                      | BC1206 NTX413AB01 |
| 0 IBN CALL FORWARD VALIDATION                        | BR0549 NTXZ00AA01 |
| 0 IBN CALL FORWARD VALIDATION                        | BR0549 NTX100AA27 |
| 0 IBN CANCEL CALL WAITING                            | AL0171 NTX824AA01 |
| 0 IBN CANCEL CALL WAITING                            | AL0171 NTX824AB01 |
| 0 IBN CLASS 5 INWATS                                 | BV0687 NTX112AA01 |
| 0 IBN CLASS 5 INWATS                                 | BV0687 NTX112AB03 |
| 0 IBN CLASS 5 PSEUDO OUTWATS                         | BV0686 NTX112AA01 |
| 0 IBN CLASS 5 PSEUDO OUTWATS                         | BV0686 NTX112AB03 |
| 0 IBN COMPATIBILITY WITH ATT AMA FORMAT AND MUMR     | BR0512 NTX159AA12 |
| 0 IBN CONSOLE INTERFACE (SEE V0432)                  | BZ0023 NTXZ00AA01 |
| 0 IBN CONSOLE INTERFACE (SEE V0432)                  | BZ0023 NTX100AA27 |
| 0 IBN EXPANDED SPEED CALL LISTS                      | AC0265 NTXZ00AA01 |
| 0 IBN EXPANDED SPEED CALL LISTS                      | AC0265 NTX100AA27 |
| 0 IBN EXPANSION - FTRQ FACILITY AND EXT BLOCKS       | AC0312 NTXZ00AA01 |



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| 0 IBN EXPANSION - FTRQ FACILITY AND EXT BLOCKS       | AC0312               | NTX100AA27 |            |
| 0 IBN FEATURE ACTIVATION OM'S I                      | BC1753               | NTXZ00AA01 |            |
| 0 IBN FEATURE ACTIVATION OM'S I                      | BC1753               | NTX100AA27 |            |
| 0 IBN ISUP NETINFO TRANSLATIONS                      | AD2467               | NTXJ68AA01 |            |
| 0 IBN LCC COMPATIBILITY WITH FRO LINE OPTION         | AF1936               | NTXZ00AA01 |            |
| 0 IBN LCC COMPATIBILITY WITH FRO LINE OPTION         | AF1936               | NTX100AA27 |            |
| 0 IBN LINE DATA (SEE V0412)                          | BZ0010               | NTXZ00AA01 |            |
| 0 IBN LINE DATA (SEE V0412)                          | BZ0010               | NTX100AA27 |            |
| 0 IBN LINE/TRUNK TO SOCOTEL TRUNK INTERFACE          | AE0048               | NTX612AA04 |            |
| 0 IBN QUANTITY CONTROL (100 LINES)                   | BR0526               | NTXZ00AA01 |            |
| 0 IBN QUANTITY CONTROL (100 LINES)                   | BR0526               | NTX100AA27 |            |
| 0 IBN TRUNK DATA (SEE V0412)                         | BZ0011               | NTXZ00AA01 |            |
| 0 IBN TRUNK DATA (SEE V0412)                         | BZ0011               | NTX100AA27 |            |
| 0 IBN TRUNKS WITH ISUP SIGNALLING                    | AG0671               | NTXA79AA03 |            |
| 0 IBN-OPTIONAL CALL FORWARD LINKS                    | AL0655               | NTX413AB01 |            |
| 0 IBNRTE TABLE CAPACITY INCREASE                     | AF2012               | NTXZ00AA01 |            |
| 0 IBNRTE TABLE CAPACITY INCREASE                     | AF2012               | NTX100AA27 |            |
| 0 ICCAS, PHASE 1A                                    | AD2232               | NTXG61AA02 |            |
| 0 ICP CALL PROCESSING SUPPORT FOR NBS800             | AD1630               | NTXG52AA04 |            |
| 0 ICP INTERFACE TO ACU                               | AD1629               | NTXG52AA04 |            |
| 0 ICP INTERFACE TO ACU                               | AD1629               | NTXG80AA03 |            |
| 0 ICP INTERFACE TO NBS800 BST                        | AD1628               | NTXG52AA04 |            |
| 0 ICP SUPPORT FOR 60 DEGREE SECTORIZATION            | AD2332               | NTXG52AA04 |            |
| 0 ICP SUPPORT FOR 60 DEGREE SECTORIZATION            | AD2332               | NTXG80AA03 |            |
| 0 ICP SUPPORT OF MULTIPLE D-CHANNELS PER CELL.       | AM0118               | NTXG52AA04 |            |
| 0 ICR SUPPORT IMPLEMENTATION                         | BC2074               | NTX494AA03 |            |
| 0 ICR SUPPORT IMPLEMENTATION                         | BC2074               | NTX498AA01 |            |
| 0 ICTS ENHANCEMENTS                                  | AJ0473               | NTX885AB04 |            |
| 0 IDC - VRE INTERFACE FOR CALL CHARGE QUOTATION      | AD1998               | NTXG61AA02 |            |
| 0 IDC BILL SERVER USER PROCS                         | AD1997               | NTXG60AA02 |            |
| 0 IDC BILL SERVER USER PROCS                         | AD1997               | NTXG61AA02 |            |
| 0 IDCC OSS INTERFACE PARSING BASE                    | AL1999               | NTXR55AA01 |            |
| 0 IDDD DIALING                                       | BV1257               | NTX222CA09 |            |
| 0 IDDD SPEED CALLING                                 | AE0204               | NTX230AA03 |            |
| 0 IDDD SPEED CALLING                                 | AE0204               | NTX230BA01 |            |
| 0 IDDD SPEED CALLING                                 | AE0204               | NTX230CA01 |            |
| 0 IDDD VIA ARS                                       | AF1097               | NTXA22AA01 |            |
| 0 IDENTIFICATION OF ALARMS                           | OUTPUTSE ANI DIGIT 8 | BR0066     | NTX001AA29 |
| 0 IDENTIFICATION OF ALARMS                           | OUTPUTSE ANI DIGIT 8 | BR0066     | NTX053AA05 |
| 0 IDENTIFICATION OF INTERCEPT                        | OUTPUTSE ANI DIGIT 9 | BC0248     | NTX001AA29 |
| 0 IDENTIFICATION OF ISDN ISLC-1B IN DMS ARCHITECTURE | AL0382               | NTX750AC02 |            |
| 0 IDENTIFICATION OF ISDN ISLC-1B IN DMS ARCHITECTURE | AL0382               | NTX750AD01 |            |
| 0 IDENTIFICATION OF KILLER TRKS                      | BR0017               | NTX053AA05 |            |
| 0 IDENTIFICATION OF TRUNK CLASS SENT-PAID RESTRICTED | BR0132               | NTX030CC16 |            |
| 0 CALLS                                              |                      |            |            |
| 0 IDENTIFICATION OF:                                 | ALARMS,ANI ID 8      | BR0171     | NTX030CC16 |
| 0 IDENTIFICATION OF:                                 | INTERCEPT,ANI ID 9   | BR0173     | NTX030CC16 |

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| 0 IDENTIFICATION OF:                                 | ORIGINATING CLASS -   | BR0289 | NTX030CC16 |
| 0 ANI MATCH                                          |                       |        |            |
| 0 IDENTIFICATION OF:                                 | TRK CLASS HOTEL/MOTEL | BR0142 | NTX030CC16 |
| 0 CALLS                                              |                       |        |            |
| 0 IDENTIFICATION OF:                                 | TRK CLASS HOTEL/MOTEL | BV0345 | NTX030CC16 |
| 0 CALLS                                              |                       |        |            |
| 0 IDTC MAINTENANCE ENHANCEMENTS                      |                       | BC1340 | NTX478AA04 |
| 0 IDTC MFC TRUNK ROBUSTNESS                          |                       | AJ0821 | NTX470AA13 |
| 0 IEC/IXC CORPORATE NETWORKING FOR CCS7              |                       | AM0186 | NTXG49AA03 |
| 0 IEC/IXC CORPORATE NETWORKING FOR CCS7              |                       | AM0186 | NTXL04AA02 |
| 0 IEC/IXC CORPORATE NETWORKING FOR CCS7              |                       | AM0186 | NTXL11AA01 |
| 0 IEC/IXC CORPORATE NETWORKING FOR CCS7              |                       | AM0186 | NTXL12AA01 |
| 0 IEC/IXC CORPORATE NETWORKING FOR CCS7              |                       | AM0186 | NTXM09AA01 |
| 0 IEC/IXC CORPORATE NETWORKING FOR CCS7              |                       | AM0186 | NTXM11AA01 |
| 0 IEC/IXC CORPORATE NETWORKING FOR CCS7              |                       | AM0186 | NTXM12AA01 |
| 0 IEC/IXC CORPORATE NETWORKING FOR CCS7              |                       | AM0186 | NTX361BA05 |
| 0 IEM BASIC EVENT CONSOLIDATION                      |                       | AL1729 | NTXP97AA01 |
| 0 ILCM CAPACITY ENHANCEMENT                          |                       | AE0646 | NTX470AA13 |
| 0 ILGC CAPACITY IMPROVEMENT                          |                       | AJ0817 | NTX472AB08 |
| 0 ILGC/LGC COEXISTENCE I                             |                       | AJ0818 | NTX472AB08 |
| 0 ILLINOIS BELL - ISDN STATION ADMIN - DMS UPLOAD    |                       | AG1472 | NTX563AA05 |
| 0 IMAGE TEST ENHANCEMENTS                            |                       | AG0336 | NTX001AA29 |
| 0 IMMEDIATE ANSWER REPORTING                         |                       | BC1931 | NTXZ02AA01 |
| 0 IMMEDIATE ANSWER REPORTING                         |                       | BC1931 | NTX901AA24 |
| 0 IMMEDIATE NOTIFICATION OF PRIORITY ENQUEUED CALLS. |                       | BR0528 | NTX262AA01 |
| 0 IMPLEMENT CURRENT VS RECOVERY FOR CHIPS ON DMS     |                       | AD0185 | NTX222AB04 |
| 0 IMPLEMENT CURRENT VS RECOVERY FOR CHIPS ON DMS     |                       | AD0185 | NTX222BA07 |
| 0 IMPLEMENTATION OF RMM ON IRLCM                     |                       | AE0293 | NTXB75AA01 |
| 0 IMPROVE MEMORY PARITY DETECTION                    |                       | AG1922 | NTX001AA29 |
| 0 IMPROVE SWITCH ROBUSTNESS AGAINST RAM ERRORS       |                       | AL0077 | NTX001AA29 |
| 0 IMPROVED AMA TIMING COMPENSATION                   |                       | BC1403 | NTX001AA29 |
| 0 IMPROVED COIN SERVICE - REVENUE ALLOCATION         |                       | AF1400 | NTX089AA01 |
| 0 IMPROVED STATSPAC FORCE MANAGEMENT CAPABILITY      |                       | AF2022 | NTXE73AA01 |
| 0 IMR/INW READ RESET BY NNX                          |                       | BR0491 | NTXZ02AA01 |
| 0 IMR/INW READ RESET BY NNX                          |                       | BR0491 | NTX901AA24 |
| 0 IMT ACCESS TO CALLING CARD                         |                       | AD1690 | NTX222CA09 |
| 0 IMT CALL PROCESSING                                |                       | BV2045 | NTX222AB04 |
| 0 IMT CALL PROCESSING                                |                       | BV2045 | NTX222BA07 |
| 0 IMT CDR THROTTLING                                 |                       | AD1001 | NTX221CA05 |
| 0 IMT FOR VPN TANDEMING                              |                       | BV1877 | NTX353AA04 |
| 0 IMT FOR VPN TANDEMING                              |                       | BV1877 | NTX353CA05 |
| 0 IN-SWITCH TCN DATABASE                             |                       | BV2058 | NTX360AA03 |
| 0 IN-SWITCH TCN DATABASE                             |                       | BV2058 | NTX360BA02 |
| 0 INBAND ANI DELIVERY                                |                       | AD2374 | NTX222CA09 |
| 0 INBAND COIN CONTROL                                |                       | BT0059 | NTXZ02AA01 |
| 0 INBAND COIN CONTROL                                |                       | BT0059 | NTX901AA24 |
| 0 INBAND COIN CONTROL ON SCAMA SUPER GROUPS          |                       | BR0395 | NTX192AA01 |

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0 INBAND COIN CONTROL ON SCAMA SUPER GROUPS  
0 INBOUND ECM - INCREASED EVENT REPORTING  
0 INBOUND FREE DIAL TO COUNTRY CODE DATABASE  
0 INC SWBD TRUNK (V6)  
0 INC SWBD TRUNK (V6)  
0 INC TTSTL 100  
0 INC TTSTL 101  
0 INC TTSTL 102  
0 INC TTSTL 103  
0 INC TTSTL 104  
0 INC TTSTL 104  
0 INC TTSTL 104  
0 INC TTSTL 104  
0 INC. TRUNK PULSING CONTROL - DELAY DIAL  
0 INC. TRUNK PULSING CONTROL - IMMEDIATE DIAL  
0 INC. TRUNK PULSING CONTROL - WINK START  
0 INC. TRUNK SIGNALLING - EM  
0 INC. TRUNK SIGNALLING - RB  
0 INC. TRUNK SIGNALLING - SF  
0 INC. TRUNK SUPERVISION - HIT  
0 INC. TRUNK SUPERVISION - INC.DISCONNECT  
0 INC. TRUNK SUPERVISION - RING FORWARD  
0 INC. TRUNK SUPERVISION -REVERSE MAKE BUSY  
0 INC/OUT EM/RB MF/DP  
0 INC/OUT RB/RB MF/DP  
0 INC/OUT RB/SF MF/DP  
0 INC/OUT SF/RB MF/DP  
0 INC/OUT TTSTL LOOP AROUND  
0 INC/OUT TTSTL LOOP AROUND  
0 INC/OUT TTSTL LOOP AROUND  
0 INC/OUT TTSTL LOOP AROUND  
0 INC/OUT TTSTL SYNCHRONOUS  
0 INC/OUT TTSTL SYNCHRONOUS  
0 INC/OUT TTSTL SYNCHRONOUS  
0 INC/OUT TTSTL 100  
0 INC/OUT TTSTL 101  
0 INC/OUT TTSTL 102  
0 INC/OUT TTSTL 103  
0 INC/OUT TTSTL 104  
0 INC/OUT TTSTL 104  
0 INC/OUT TTSTL 104  
0 INC/OUT TTSTL 104  
0 INCLUSION OF CCS7 INTO SPMS  
0 INCOMING CAMA  
0 INCOMING CAMA  
0 INCOMING EXCLUSION  
0 INCOMING EXCLUSION

BR0395 NTX193AA01  
AG2005 NTXJ60AB01  
AD1823 NTXG60AA02  
BT0350 NTX001AA29  
BT0350 NTX801AA01  
BT0140 NTX001AA29  
BT0141 NTX001AA29  
BT0142 NTX001AA29  
BT0143 NTX001AA29  
BT0144 NTXZ03AA01  
BT0144 NTX203AA01  
BT0144 NTX802AA04  
BT0144 NTX902AA07  
BT0158 NTX001AA29  
BT0156 NTX001AA29  
BT0157 NTX001AA29  
BT0153 NTX001AA29  
BT0152 NTX001AA29  
BT0154 NTX001AA29  
BT0160 NTX001AA29  
BT0161 NTX001AA29  
BT0162 NTX001AA29  
BT0163 NTX001AA29  
BT0331 NTX001AA29  
BT0330 NTX001AA29  
BT0328 NTX001AA29  
BT0329 NTX001AA29  
BT0342 NTXZ02AA01  
BT0342 NTX001AA29  
BT0342 NTX801AA01  
BT0342 NTX901AA24  
BT0341 NTXZ02AA01  
BT0341 NTX801AA01  
BT0341 NTX901AA24  
BT0336 NTX001AA29  
BT0337 NTX001AA29  
BT0338 NTX001AA29  
BT0339 NTX001AA29  
BT0340 NTXZ03AA01  
BT0340 NTX203AA01  
BT0340 NTX802AA04  
BT0340 NTX902AA07  
AG1926 NTX738AC02  
BT0300 NTX001AA29  
BT0300 NTX044AA04  
BV0858 NTX231AA01  
BV0858 NTX231BA01

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| 0 INCOMING EXCLUSION                                 | BV0858 NTX231CA01 |
| 0 INCOMING EXCLUSION DATAVASE EXPANSION              | BV2044 NTX231AA01 |
| 0 INCOMING EXCLUSION DATAVASE EXPANSION              | BV2044 NTX231BA01 |
| 0 INCOMING EXCLUSION DATAVASE EXPANSION              | BV2044 NTX231CA01 |
| 0 INCOMING FGB CALL PROCESSING AND ANI SCREENING     | BV2050 NTX222AB04 |
| 0 INCOMING FGB CALL PROCESSING AND ANI SCREENING     | BV2050 NTX222BA07 |
| 0 INCOMING MESSAGE OVERLOAD HANDLING FOR LINES       | AG0053 NTX001AA29 |
| 0 INCOMING OPERATOR SERVICES TRUNK CALL PROCESSING   | AD0136 NTXG41BA05 |
| 0 INCOMING OPERATOR SERVICES TRUNK CALL PROCESSING   | AD0136 NTX341BA01 |
| 0 INCOMING START-TO-DIAL (ISDD) MEASUREMENT          | AL0169 NTX270AA19 |
| 0 INCOMING TEST TRUNK(2X90AD) ENHANCEMENTS(CC)       | BC1693 NTX195AA05 |
| 0 INCOMING TRUNK CALL PROCESSING                     | BC1701 NTX710AA02 |
| 0 INCOMING TRUNK CALL PROCESSING                     | BC1701 NTX710AB01 |
| 0 INCOMING TRUNK FROM 3CL SWITCHBOARD (2X86)         | BR0046 NTX001AA29 |
| 0 INCREASE (VIRTUAL) EXTENSION BLOCKS FOR DMS-250    | AD2140 NTX220BA06 |
| 0 INCREASE (VIRTUAL) EXTENSION BLOCKS FOR DMS-250    | AD2140 NTX220CA08 |
| 0 INCREASE AUTH CODES PER CUSTOMER GROUP             | BC1252 NTX103AA12 |
| 0 INCREASE FLEXIBILITY OF AMA SOFTWARE PLATFORM      | AF2755 NTX098AA07 |
| 0 INCREASE FLEXIBILITY OF AMA SOFTWARE PLATFORM      | AF2755 NTX159AA12 |
| 0 INCREASE IN NUMBER OF IBN CUSTOMER GROUPS          | BC0811 NTXZ00AA01 |
| 0 INCREASE IN NUMBER OF IBN CUSTOMER GROUPS          | BC0811 NTX100AA27 |
| 0 INCREASE MAXIMUM NUMBER FOR ISDN TERMINAL PROFILES | AC0356 NTX750AC02 |
| 0 INCREASE MAXIMUM NUMBER FOR ISDN TERMINAL PROFILES | AC0356 NTX750AD01 |
| 0 INCREASE NEMAS THROUGHPUT                          | AD0454 NTX344CA06 |
| 0 INCREASE NUMBER OF EQUIVALENT DN APPEARANCES FOR   | BC1482 NTXZ00AA01 |
| 0 IBN                                                |                   |
| 0 INCREASE NUMBER OF EQUIVALENT DN APPEARANCES FOR   | BC1482 NTX100AA27 |
| 0 IBN                                                |                   |
| 0 INCREASE RANGE OF EXTNUM FIELD IN CLLICDR          | AD1464 NTX222BA07 |
| 0 INCREASE STORE EFFICIENCY OF ANI INDEX TABLE       | BV1893 NTX343CA02 |
| 0 INCREASE STORE EFFICIENCY OF AUTHCODES             | BV1704 NTX220AA13 |
| 0 INCREASE STORE EFFICIENCY OF AUTHCODES             | BV1704 NTX220BA06 |
| 0 INCREASE STORE EFFICIENCY OF AUTHCODES             | BV1704 NTX220CA08 |
| 0 INCREASE THE NUMBER OF FILE SYSTEM DEVICES         | BC1521 NTX001AA29 |
| 0 INCREASE THE NUMBER OF IO NODE TYPES               | BC2311 NTX001AA29 |
| 0 INCREASED NUMBER OF ACD MIS LINKS                  | AG1947 NTX991AD01 |
| 0 INCREASED NUMBER OF ACD MIS LINKS                  | AG1947 NTX991AE01 |
| 0 INCREASED NUMBER OF ACD MIS LINKS                  | AG1947 NTX991AF01 |
| 0 INCREASED NUMBER OF CELLS                          | AD1188 NTX322AA18 |
| 0 INDEPENDANT COIN RECALL PERIOD                     | BR0422 NTX030CC16 |
| 0 INDIVIDUAL FLAT RATE LINES                         | BT0020 NTXZ02AA01 |
| 0 INDIVIDUAL FLAT RATE LINES                         | BT0020 NTX901AA24 |
| 0 INDIVIDUAL LINE BILLING ON INWATS CALLS            | BR0500 NTX080AA02 |
| 0 INDIVIDUAL MESSAGE RATE LINES                      | BT0021 NTXZ02AA01 |
| 0 INDIVIDUAL MESSAGE RATE LINES                      | BT0021 NTX901AA24 |
| 0 INDIVIDUAL PAGE FROM GIC                           | AL0557 NTX878AB02 |
| 0 INDIVIDUAL PAGE FROM GIC                           | AL0557 NTX878AC01 |

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| 0 INDIVIDUAL PAGE FROM GIC                           | AL0557 NTX878AD01 |
| 0 INDIVIDUAL PAGE FROM GIC                           | AL0557 NTX878AE01 |
| 0 INFORMATION AND REPAIR ROUTED TO KEY SYSTEMS       | BR0114 NTXZ02AA01 |
| 0 INFORMATION AND REPAIR ROUTED TO KEY SYSTEMS       | BR0114 NTX901AA24 |
| 0 INHIBIT TIME & CHARGES MESSAGE                     | BV1898 NTX341AA05 |
| 0 INHIBIT TIME & CHARGES MESSAGE                     | BV1898 NTX341CA01 |
| 0 INITIAL COIN RETURN AND INITIAL COIN RETAIN OPTION | BR0463 NTXZ02AA01 |
| 0 INITIAL COIN RETURN AND INITIAL COIN RETAIN OPTION | BR0463 NTX901AA24 |
| 0 INM SUPPORT FOR BCS APPLICATION/CC WARM SWACT      | AL2271 NTX944AA03 |
| 0 INM SUPPORT FOR IEM EVENT GENERATION AND OM        | AL2121 NTX944AA03 |
| 0 INM SYSTEM AGENT                                   | AL2120 NTX944AA03 |
| 0 INPUT COMMAND SCREENING                            | BV0040 NTX001AA29 |
| 0 INPUT COMMAND SCREENING AUTOMATIC LOG ON           | BV0409 NTX001AA29 |
| 0 INPUT COMMAND SCREENING I/O PORT RESTRICTIONS      | BR0165 NTX001AA29 |
| 0 INSERT DELAY FOR PAYPHONE CALLS                    | AM0083 NTXG60AA02 |
| 0 INSERT TONE ON COIN PHONE TERMINATIONS             | AE0057 NTX668AA01 |
| 0 INSTRUCTIONAL DISPLAY                              | BV0244 NTX030CC16 |
| 0 INT'L RATING ENHANCEMENTS                          | AJ1446 NTXB84AA04 |
| 0 INT'L RATING: CHARGE CALCULATOR                    | AG1236 NTXB84AA04 |
| 0 INT'L RATING: MASS TABLE CONTROL                   | AG1235 NTXB84AA04 |
| 0 INT'L RATING: RATE STEP CALCULATOR                 | AG1237 NTXB84AA04 |
| 0 INT'L RATING: SUB-MINUTE BILLING                   | AJ1256 NTXB84AA04 |
| 0 INT'L RATING: TAX CALCULATION                      | AJ1025 NTXB84AA04 |
| 0 INT'L RATING: TEST CI COMMAND                      | AG1231 NTXB84AA04 |
| 0 INTEGRATED BERT PRODUCT SPEC                       | BZ0592 NTX250AA15 |
| 0 INTEGRATED ECHO CANCELLER ENHANCEMENTS - CALL      | AM0046 NTXG24AA03 |
| 0 PROCESSING                                         |                   |
| 0 INTEGRATED ECHO CANCELLOR (PREP)                   | AD1689 NTXG24AA03 |
| 0 INTEGRATED EVENT MANAGEMENT SYSTEM BASE PHASE I    | AL1681 NTX941AA12 |
| 0 INTEGRATED HARDWARE MAINTENANCE FOR PH - OAMP      | AJ1018 NTXF95AA03 |
| 0 RESIDENT S/W                                       |                   |
| 0 INTEGRATED LINE TEST W/DRTU                        | AF2983 NTX387AB04 |
| 0 INTEGRATED LINE TEST W/DRTU                        | AF2983 NTX387AC02 |
| 0 INTEGRATED LINE TEST W/DRTU                        | AF2983 NTX387AD01 |
| 0 INTEGRATED LOCAL SPECIALS                          | AF0240 NTX621AB02 |
| 0 INTEGRATED LOCAL SPECIALS/SPOTS                    | AF0242 NTX299AB01 |
| 0 INTEGRATED MP MAINTENANCE                          | AF1727 NTXA83AA02 |
| 0 INTEGRATED MP MAP SUPPORT                          | AF1991 NTXA83AA02 |
| 0 INTEGRATED NODE (SINGLE POINT CODE)                | AL1678 NTXN00AA01 |
| 0 INTEGRATED PROCESSOR AND FBUS INTERFACE (IPF)      | AL1328 NTXN18AA04 |
| 0 SOFTWARE                                           |                   |
| 0 INTEGRATED PROCESSOR AND FBUS INTERFACE (IPF)      | AL1328 NTX833AB01 |
| 0 SOFTWARE                                           |                   |
| 0 INTEGRATED SERVICES ACCESS FOR ISDN PRA            | AC0273 NTX793AA03 |
| 0 INTEGRATED TERMINATING 105 TEST LINE AND RESPONDER | BC1083 NTX903AA01 |
| 0 INTEGRATED TPC MAINTENANCE                         | AF1992 NTXA83AA02 |
| 0 INTEGRATED TPC MAP SUPPORT                         | AF1940 NTXA83AA02 |

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| 0 INTEGRITY CHECK TRAFFIC SIMULATOR                   |                    | AL0511 NTX885AA02 |
| 0 INTEGRITY CHECK TRAFFIC SIMULATOR                   |                    | AL0511 NTX885AB04 |
| 0 INTER ADMINISTRATION ACCOUNTING                     |                    | AE0154 NTXB07AA01 |
| 0 INTER MTX HANDOFF                                   |                    | BV1863 NTX322AA18 |
| 0 INTER MTX HANDOFF                                   |                    | BV1863 NTX376AA05 |
| 0 INTER MTX HANDOFF FIRMWARE                          |                    | BF0832 NTX322AA18 |
| 0 INTER MTX HANDOFF FIRMWARE                          |                    | BF0832 NTX376AA05 |
| 0 INTER MTX HANDOFF FIRMWARE                          |                    | BF0832 NTX376AB01 |
| 0 INTER VPN DIALING                                   |                    | AD1179 NTXG44AA01 |
| 0 INTERACTIVE DISPLAY SERVICE ORDER                   |                    | AJ0443 NTXF88AA03 |
| 0 INTERACTIVE DISPLAY SERVICE ORDER                   |                    | AJ0443 NTXF88AB01 |
| 0 INTERCEPT TRUNK (A/D)                               |                    | BT0060 NTXZ02AA01 |
| 0 INTERCEPT TRUNK (A/D)                               |                    | BT0060 NTX801AA01 |
| 0 INTERCEPT TRUNK (A/D)                               |                    | BT0060 NTX901AA24 |
| 0 INTERCOM AND GROUP INTERCOM CAPABILITY FOR ISDN     |                    | AJ0166 NTX753AA06 |
| 0 EKTS                                                |                    |                   |
| 0 INTERCOM AND GROUP INTERCOM CAPABILITY FOR ISDN     |                    | AJ0166 NTX753AB01 |
| 0 EKTS                                                |                    |                   |
| 0 INTERFACE TO                                        | CO-LOCATED NE/AE   | BC0125 NTX001AA29 |
| 0 SWITCHBRD I/C                                       |                    |                   |
| 0 INTERFACE TO                                        | CO-LOCATED NE/AE   | BC0127 NTX001AA29 |
| 0 SWITCHBRD I/C                                       |                    |                   |
| 0 INTERFACE TO                                        | CO-LOCATED NE/AE   | BR0147 NTX001AA29 |
| 0 SWITCHBRD I/C                                       |                    |                   |
| 0 INTERFACE TO                                        | CO-LOCATED NE/AE   | BC0124 NTX001AA29 |
| 0 SWITCHBRD O/G                                       |                    |                   |
| 0 INTERFACE TO                                        | CO-LOCATED NE/AE   | BR0146 NTX001AA29 |
| 0 SWITCHBRD O/G                                       |                    |                   |
| 0 INTERFACE TO                                        | SC XY FOR ANI/CAMA | BR0113 NTX001AA29 |
| 0 INTERFACE TO CENTRALIZED ATT SYSTEMS VIA APC ROTL V |                    | BC0128 NTX052AB02 |
| 0 INTERFACE TO STROMBERG-CARLSON TURRET FOR ONI       |                    | BR0010 NTX001AA29 |
| 0 INTERFACE WITH                                      | TERADYNE LOOP TEST | BR0148 NTXZ02AA01 |
| 0 UNIT                                                |                    |                   |
| 0 INTERFACE WITH                                      | TERADYNE LOOP TEST | BR0148 NTX901AA24 |
| 0 UNIT                                                |                    |                   |
| 0 INTERFACE WITH PULSAR II IMTS                       |                    | BR0031 NTXZ02AA01 |
| 0 INTERFACE WITH PULSAR II IMTS                       |                    | BR0031 NTX901AA24 |
| 0 INTERFACE WITH SARTS                                |                    | BR0073 NTXZ02AA01 |
| 0 INTERFACE WITH SARTS                                |                    | BR0073 NTX901AA24 |
| 0 INTERFACE WITH 108 TEST LINE                        |                    | BR0015 NTX063AA02 |
| 0 INTERGRATED ECHO CANCELLER BASIC OA&M               |                    | AM0030 NTXG24AA03 |
| 0 INTERIM AUTHCODE HOTLINES REL 1                     |                    | BV0879 NTX220AA13 |
| 0 INTERIM AUTHCODE HOTLINES REL 1                     |                    | BV0879 NTX222AB04 |
| 0 INTERIM AUTHCODE HOTLINES REL 1                     |                    | BV0879 NTX222CA09 |
| 0 INTERIM CELLULAR SUBSCRIBER DATABASE                |                    | BV1026 NTX220AA13 |
| 0 INTERIM CELLULAR SUBSCRIBER DATABASE                |                    | BV1026 NTX220BA06 |
| 0 INTERIM CELLULAR SUBSCRIBER DATABASE                |                    | BV1026 NTX220CA08 |

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| 0 INTERIM CELLULAR SUBSCRIBER DATABASE                | BV1026 | NTX322AA18 |
| 0 INTERLINK MAINTENANCE                               | AF0551 | NTX380AA02 |
| 0 INTERLINK MESSAGING                                 | AF0563 | NTX380AA02 |
| 0 INTERLINK TABLE CONTROL AND STATIC DATA             | AF0932 | NTX380AA02 |
| 0 INTERLOCKS FOR DPNSS TRUNKS AND DPNSS LINKS         | AE0287 | NTX958AA05 |
| 0 INTERNATIONAL A-LAW ENET VERIFICATION               | AE0927 | NTXB74AA03 |
| 0 INTERNATIONAL BCS APPLICATION DOCUMENTATION         | AL0006 | NTX181AA12 |
| 0 INTERNATIONAL CALL CHARGE ANNOUNCEMENT SYSTEM       | AD2000 | NTXG61AA02 |
| 0 INTERNATIONAL CALL DIVERSION ENHANCEMENTS           | AC0136 | NTX499AA10 |
| 0 INTERNATIONAL CAMA                                  | AE0147 | NTX657AA01 |
| 0 INTERNATIONAL COMMUNICATION TEST LINE               | BC1191 | NTX483AA03 |
| 0 INTERNATIONAL COMMUNICATION TEST LINE               | BC1191 | NTX483AB01 |
| 0 INTERNATIONAL DIALING                               | BV1264 | NTX220AA13 |
| 0 INTERNATIONAL DIALING                               | BV1264 | NTX220BA06 |
| 0 INTERNATIONAL DIALING                               | BV1264 | NTX220CA08 |
| 0 INTERNATIONAL DMS-250 CALL CHARGE DATABASE          | AD1826 | NTXG60AA02 |
| 0 INTERNATIONAL DMS-250 CDR FORMATTER & CAPTURE       | AD1824 | NTXG60AA02 |
| 0 ROUTINES                                            |        |            |
| 0 INTERNATIONAL DMS-250 CDR FORMATTER & CAPTURE       | AD1824 | NTXG61AA02 |
| 0 ROUTINES                                            |        |            |
| 0 INTERNATIONAL DMS-250 CLI SCREENING TABLE           | AD1821 | NTXG60AA02 |
| 0 INTERNATIONAL DMS-250 CREDIT CARD DATABASE ACCESS   | AD1999 | NTXG60AA02 |
| 0 INTERNATIONAL DMS-250 CREDIT CARD DATABASE ACCESS   | AD1999 | NTXG61AA02 |
| 0 INTERNATIONAL FREE DIAL AND 3RD PARTY, BILLED CALLS | AD2222 | NTXG60AA02 |
| 0 INTERNATIONAL KILLER TRUNKS                         | AC0081 | NTX470AA13 |
| 0 INTERNATIONAL LINE TESTING                          | BC0963 | NTX472AA03 |
| 0 INTERNATIONAL LINE TESTING                          | BC0963 | NTX472AB08 |
| 0 INTERNATIONAL LINE TO ANNOUNCEMENT                  | BC1796 | NTX472AA03 |
| 0 INTERNATIONAL LINE TO ANNOUNCEMENT                  | BC1796 | NTX472AB08 |
| 0 INTERNATIONAL NETWORK MANAGEMENT                    | AC0132 | NTX669AA01 |
| 0 INTERNATIONAL OM CONVERSION                         | BC2285 | NTX470AA13 |
| 0 INTERNATIONAL OM SUPPORT AND PACKAGING              | AC0304 | NTX470AA13 |
| 0 INTERNATIONAL OPERATOR SERVICES                     | AD2638 | NTXG45AA06 |
| 0 INTERNATIONAL OVERLOAD CONTROL ENHANCEMENTS         | AC0184 | NTX470AA13 |
| 0 INTERNATIONAL PERIPHERALS OVERLOAD CONTROL          | BC1927 | NTX470AA13 |
| 0 INTERNATIONAL PERIPHERALS OVERLOAD CONTROL          | BF0915 | NTX470AA13 |
| 0 INTERNATIONAL PERIPHERALS OVERLOAD CONTROL          | BC1927 | NTX485AA03 |
| 0 INTERNATIONAL PERIPHERALS OVERLOAD CONTROL          | BF0915 | NTX485AA03 |
| 0 INTERNATIONAL SERVICE ORDERS                        | BC1732 | NTX472AA03 |
| 0 INTERNATIONAL SERVICE ORDERS                        | BC1732 | NTX472AB08 |
| 0 INTERNATIONAL TRAVER                                | BC1185 | NTX470AA13 |
| 0 INTERNATIONAL TRUNK MAINTENANCE ASPECTS             | BC1338 | NTX470AA13 |
| 0 INTERNATIONAL TRUNK TESTING                         | BC0962 | NTX470AA13 |
| 0 INTERNATIONAL TYPE "B" LINE DIAG (METERING)         | BF0684 | NTX482AB03 |
| 0 INTERNATIONAL TYPE B DIAGNOSTIC                     | AG0095 | NTX482AB03 |
| 0 INTERNATIONAL VPN                                   | AD2581 | NTXG45AA06 |
| 0 INTERNATIONAL 800 SERVICE                           | AD2582 | NTXG45AA06 |

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| 0 INTERPOSITION CALLS AND TRANSFERS                  | BV0591 NTXZ00AA01 |
| 0 INTERPOSITION CALLS AND TRANSFERS                  | BV0591 NTX100AA27 |
| 0 INTERPOSITION TRANSFER                             | BV0245 NTX030CC16 |
| 0 INTERSWITCH OPERATIONAL MEASUREMENTS               | AF0726 NTX380AA02 |
| 0 INTERWORKING ISDN SERVICES I                       | AJ0170 NTX790AC02 |
| 0 INTERWORKING OF ISUP TO MF WITH 2 STAGE OUTPULSING | AG2553 NTXQ73AA01 |
| 0 INTL NO DOUBLE CONNECT                             | AC0133 NTX499AA10 |
| 0 INTL SERVICE ANALYSIS BASE                         | AE0153 NTXB02AA01 |
| 0 INTL SERVICE ANALYSIS LOCAL                        | AE0167 NTXB03AA01 |
| 0 INTL SUBSCRIBER FEATURES DENIED                    | AC0135 NTX499AA10 |
| 0 INTL TRAFFIC SEPARATION                            | AC0131 NTXB00AA01 |
| 0 INTL TRAFFIC SEPARATION                            | AC0131 NTXB01AA01 |
| 0 INTL TRUNK TO ANNOUNCEMENT (SPEEDUP)               | BF0805 NTX470AA13 |
| 0 INTL TRUNK TO ANNOUNCEMENT (SPEEDUP)               | BF0805 NTX485AA03 |
| 0 INTRA-NODAL BLOCKAGE DATABASE TYPE XIII            | BV1937 NTX222AM05 |
| 0 INTRALATA PIC FOR IBN                              | AF2333 NTXF69AA01 |
| 0 INTRALATA PIC FOR POTS                             | AF2332 NTXF58AA01 |
| 0 INTRALATA PIC WITH LEAS                            | AL0290 NTX829AA01 |
| 0 INTRASWITCHED CMR ON RSC                           | AG1159 NTX150AA04 |
| 0 INTRASWITCHING - PHASE 1                           | BF0367 NTX150AA04 |
| 0 INTRASWITCHING - PHASE 1                           | BF0367 NTX156AA02 |
| 0 INTRASWITCHING COMMISSIONING FIRMWARE              | BZ0002 NTX024AA01 |
| 0 INTRASWITCHING ON IRLCM FOR SUBSCRIBER FEATURES    | AE0178 NTX652AA02 |
| 0 INTRASWITCHING ON THE IRLCM                        | AE0108 NTX652AA02 |
| 0 INVALID AUTHCODE OM BY TRUNK GROUP                 | BT0433 NTX220AA13 |
| 0 INVALID AUTHCODE OM BY TRUNK GROUP                 | BT0433 NTX220BA06 |
| 0 INVALID AUTHCODE OM BY TRUNK GROUP                 | BT0433 NTX220CA08 |
| 0 INVALID AUTHCODE OM BY TRUNK GROUP <REF C0562>     | BV0731 NTX220AA13 |
| 0 INVALID AUTHCODE OM BY TRUNK GROUP <REF C0562>     | BV0731 NTX220BA06 |
| 0 INVALID AUTHCODE OM BY TRUNK GROUP <REF C0562>     | BV0731 NTX220CA08 |
| 0 INVENTORY TABLE FOR SLC96                          | BC1135 NTX398AA12 |
| 0 INWARD VALIDATION                                  | BR0360 NTX036AA01 |
| 0 INWATS                                             | BT0209 NTX006AA04 |
| 0 INWATS COMPLETION FROM LOCAL SOURCE                | BR0749 NTX006AA04 |
| 0 INWATS FULL TIME                                   | BT0256 NTX006AA04 |
| 0 INWATS FULL TIME                                   | BT0256 NTX802AA04 |
| 0 INWATS RECORD ON AMA TAPE                          | BR0258 NTX080AA02 |
| 0 INWATS TO CENTREX CUSTOMER GROUP (BUS SERV)        | BR0354 NTX112AA01 |
| 0 INWATS TO CENTREX CUSTOMER GROUP (BUS SERV)        | BR0354 NTX112AB03 |
| 0 INWATS(MEASURED TIME)                              | BV0035 NTX006AA04 |
| 0 INWATS(MEASURED TIME)                              | BV0035 NTX802AA04 |
| 0 INWATTS - MEASURED TIME                            | BR0239 NTX006AA04 |
| 0 IO FLOW CONTROL MODIFICATIONS                      | BC0306 NTX184AA11 |
| 0 IO FLOW CONTROL MODIFICATIONS                      | BC0306 NTX184AB02 |
| 0 IPE DOWNLOADING                                    | AM0034 NTXN25AA02 |
| 0 IPE LINES MAINTENANCE - PHASE II                   | AM0126 NTXN25AA02 |
| 0 IPE LINES TABLE CONTROL                            | AM0039 NTXN25AA02 |



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| 0 IPE ON RCC                                     | AM0133 NTXN25AA02 |
| 0 IPE PM MAINTENANCE - PHASE I                   | AM0037 NTXN25AA02 |
| 0 IPE PM MAINTENANCE - PHASE II                  | AM0033 NTXN25AA02 |
| 0 IPE PM MAINTENANCE - PHASE III                 | AM0125 NTXN25AA02 |
| 0 IPE PM TABLE CONTROL/CALL PROCESSING           | AM0041 NTXN25AA02 |
| 0 IPE SERVICE ORDERS/QUERY COMMANDS              | AM0036 NTXN25AA02 |
| 0 IRISH R2 SIGNALLING PROTOCOL                   | AE0630 NTXK12AA01 |
| 0 IRLCM RTS ENHANCEMENT                          | AE0538 NTX472AB08 |
| 0 ISA ROUTING TABLE CONTROL                      | AD0859 NTX793AA03 |
| 0 ISC TRUNKS RECOVERY FROM BLOCKING              | AE0339 NTX176AA05 |
| 0 ISDN - OAM NAME DISPLAY CONTROL - DMS CHANGES  | AJ0509 NTX563AA05 |
| 0 ISDN A-LAW BEARER CAPABILITY ENHANCEMENTS      | AJ1268 NTXH57AB01 |
| 0 ISDN BRA FUNCTIONAL SIGNALLING CALL PROCESSING | AC0329 NTX753AA06 |
| 0 ISDN BRA FUNCTIONAL SIGNALLING CALL PROCESSING | AC0329 NTX753AB01 |
| 0 ISDN BRA FUNCTIONAL SIGNALLING FEATURE ACCESS  | AC0330 NTX753AA06 |
| 0 UTILITY                                        |                   |
| 0 ISDN BRA FUNCTIONAL SIGNALLING FEATURE ACCESS  | AC0330 NTX753AB01 |
| 0 UTILITY                                        |                   |
| 0 ISDN CALL COVERAGE PREP                        | AQ0737 NTX755AB01 |
| 0 ISDN CALL COVERAGE PREP                        | AQ0737 NTX755AC01 |
| 0 ISDN CALL FORWARD - RELEASE LINK               | AM0076 NTXG75AA02 |
| 0 ISDN CALL FORWARD - RELEASE LINK - PREP        | AM0078 NTXG75AA02 |
| 0 ISDN CALL PROGRESS INDICATION                  | AC0096 NTX750AC02 |
| 0 ISDN CALL PROGRESS INDICATION                  | AC0096 NTX750AD01 |
| 0 ISDN D-CHANNEL HANDLER ROBUSTNESS ENHANCEMENT  | BF0943 NTX750AC02 |
| 0 ISDN D-CHANNEL HANDLER ROBUSTNESS ENHANCEMENT  | BF0943 NTX750AD01 |
| 0 ISDN DIGITAL TEST ACCESS MAINTENANCE           | AL1321 NTXJ51AA02 |
| 0 ISDN DTC B/D MAINTENANCE                       | AD2228 NTXG01AA06 |
| 0 ISDN DTC B/D MAINTENANCE                       | AD2228 NTXG01CA07 |
| 0 ISDN DTC B/D MAINTENANCE                       | AD2228 NTX790AC02 |
| 0 ISDN DTC PM MAINTENANCE                        | AJ0385 NTXG01AA06 |
| 0 ISDN DTC PM MAINTENANCE                        | AJ0385 NTXG01CA07 |
| 0 ISDN DTC PM MAINTENANCE                        | AJ0385 NTX790AC02 |
| 0 ISDN DTC ROBUSTNESS                            | AD2606 NTXG01AA06 |
| 0 ISDN DTC ROBUSTNESS                            | AD2606 NTXG01CA07 |
| 0 ISDN DTC ROBUSTNESS                            | AD2606 NTX790AC02 |
| 0 ISDN DTC TABLE CONTROL                         | AD2097 NTXG01AA06 |
| 0 ISDN DTC TABLE CONTROL                         | AD2097 NTXG01CA07 |
| 0 ISDN DTC TABLE CONTROL                         | AD2097 NTX790AC02 |
| 0 ISDN DTCI SPECIAL CONNECTIONS                  | AD2231 NTXG01AA06 |
| 0 ISDN DTCI SPECIAL CONNECTIONS                  | AD2231 NTXG01CA07 |
| 0 ISDN DTCI SPECIAL CONNECTIONS                  | AD2231 NTX790AC02 |
| 0 ISDN EKTS RING FORWARD                         | AQ0734 NTX754AA02 |
| 0 ISDN EKTS RING FORWARD                         | AQ0734 NTX754AB02 |
| 0 ISDN ESA BASE                                  | AF2274 NTXJ00AA03 |
| 0 ISDN ESA BASE                                  | AF2274 NTXJ00AB01 |
| 0 ISDN ESA STIMULUS CP                           | AF2275 NTXJ00AA03 |

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| 0 ISDN ESA STIMULUS CP                            | AF2275 NTXJ00AB01 |
| 0 ISDN FAC IE MODIFICATIONS FOR NARS MENU BILLING | AD3395 NTXL76AA03 |
| 0 INFO-XPM/CC                                     |                   |
| 0 ISDN HDLC DEVICE R8071 INTERFACE                | AC0302 NTX750AC02 |
| 0 ISDN HDLC DEVICE R8071 INTERFACE                | AC0302 NTX750AD01 |
| 0 ISDN IAC SWACT FOR TRANSPORT SERVICES           | BC2096 NTX750AC02 |
| 0 ISDN IAC SWACT FOR TRANSPORT SERVICES           | BC2096 NTX750AD01 |
| 0 ISDN INBOUND MODEM POOLING DELIVERABLE          | AC0615 NTXN99AA01 |
| 0 ISDN INFO TRANSPORT ACROSS TANDEM CCS7 IMT      | AD1221 NTX361BA05 |
| 0 CONNECTION-PHASE1                               |                   |
| 0 ISDN INFO TRANSPORT ACROSS TANDEM CCS7 IMT      | AD1221 NTX361CA07 |
| 0 CONNECTION-PHASE1                               |                   |
| 0 ISDN ISA CALLTYPE THROTTLING                    | AM0079 NTXG72AA01 |
| 0 ISDN ISA CLID/CSI SCREENING                     | AM0077 NTXG01AA06 |
| 0 ISDN ISA ON CCS #7                              | AM0073 NTXG70AA01 |
| 0 ISDN ISA ROUTING                                | AM0075 NTXG71AA01 |
| 0 ISDN KEY SHORT HUNT                             | AQ0733 NTX754AA02 |
| 0 ISDN KEY SHORT HUNT                             | AQ0733 NTX754AB02 |
| 0 ISDN LCM CALL PROCESSING I                      | AC0214 NTX750AC02 |
| 0 ISDN LCM CALL PROCESSING I                      | AC0214 NTX750AD01 |
| 0 ISDN LCM CALL PROCESSING II                     | AC0295 NTX750AC02 |
| 0 ISDN LCM CALL PROCESSING II                     | AC0295 NTX750AD01 |
| 0 ISDN LCM CC MAINTENANCE II                      | AL0483 NTX750AC02 |
| 0 ISDN LCM CC MAINTENANCE II                      | AL0483 NTX750AD01 |
| 0 ISDN LCM CC MAINTENANCE III                     | AC0294 NTX750AC02 |
| 0 ISDN LCM CC MAINTENANCE III                     | AC0294 NTX750AD01 |
| 0 ISDN LCM LINE MAINTENANCE SUPPORT               | AC0215 NTX750AC02 |
| 0 ISDN LCM LINE MAINTENANCE SUPPORT               | AC0215 NTX750AD01 |
| 0 ISDN LCM MAINTENANCE                            | AL0165 NTX750AC02 |
| 0 ISDN LCM MAINTENANCE                            | AL0165 NTX750AD01 |
| 0 ISDN LCM MAINTENANCE XPM SUPPORT                | AC0216 NTX750AC02 |
| 0 ISDN LCM MAINTENANCE XPM SUPPORT                | AC0216 NTX750AD01 |
| 0 ISDN LOOP MAINTENANCE ENHANCEMENTS              | AL0944 NTX750AC02 |
| 0 ISDN LOOP MAINTENANCE ENHANCEMENTS              | AL0944 NTX750AD01 |
| 0 ISDN LOOP MAINTENANCE I                         | AL0167 NTX750AC02 |
| 0 ISDN LOOP MAINTENANCE I                         | AL0167 NTX750AD01 |
| 0 ISDN LOOP MAINTENANCE II                        | AL0087 NTX750AC02 |
| 0 ISDN LOOP MAINTENANCE II                        | AL0087 NTX750AD01 |
| 0 ISDN LOOP MAINTENANCE ROBUSTNESS                | AL0381 NTX750AC02 |
| 0 ISDN LOOP MAINTENANCE ROBUSTNESS                | AL0381 NTX750AD01 |
| 0 ISDN LTC ISP LOADER                             | AC0289 NTX750AC02 |
| 0 ISDN LTC ISP LOADER                             | AC0289 NTX750AD01 |
| 0 ISDN LTC ISP ROM BASE AND DIAGNOSTIC            | AC0290 NTX750AC02 |
| 0 ISDN LTC ISP ROM BASE AND DIAGNOSTIC            | AC0290 NTX750AD01 |
| 0 ISDN LTC MAINTENANCE                            | AL0164 NTX750AC02 |
| 0 ISDN LTC MAINTENANCE                            | AL0164 NTX750AD01 |
| 0 ISDN LTC MAINTENANCE HIGH LEVEL DESIGN          | AC0293 NTX750AC02 |

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| 0 ISDN LTC MAINTENANCE HIGH LEVEL DESIGN                          | AC0293 | NTX750AD01 |
| 0 ISDN LTC PM MAINTENANCE I                                       | AC0292 | NTX750AC02 |
| 0 ISDN LTC PM MAINTENANCE I                                       | AC0292 | NTX750AD01 |
| 0 ISDN LTC/ISP COMMUNICATIONS                                     | AC0301 | NTX750AC02 |
| 0 ISDN LTC/ISP COMMUNICATIONS                                     | AC0301 | NTX750AD01 |
| 0 ISDN MULTIPLE TERMINALS CALL PROCESSING                         | AC0139 | NTX750AC02 |
| 0 ISDN MULTIPLE TERMINALS CALL PROCESSING                         | AC0139 | NTX750AD01 |
| 0 ISDN NETWORK BASED ACD - TRANSPORT OF MSL-100                   | AM0084 | NTXG01AA06 |
| 0 ISDN NX64 MULTI-BUSINESS GROUPS                                 | AM0211 | NTXL45AA03 |
| 0 ISDN NX64 TABLE CONTROL                                         | AM0192 | NTXL45AA03 |
| 0 ISDN OAM LAPB/LAPD CONFIGURATION (DMS)                          | AJ0945 | NTXF92AA02 |
| 0 ISDN OAM LAPB/LAPD CONFIGURATION (OAMP)                         | AJ0955 | NTXF95AA03 |
| 0 ISDN OAM MAP LEVEL AND OAMP DOWNLOADING                         | AJ0956 | NTXF92AA02 |
| 0 ISDN OAM SESSION SERVICE MANAGER                                | AJ0302 | NTXF95AA03 |
| 0 ISDN OCTET 5,A-D BEARER CAPABILITY                              | AJ1537 | NTXH57AB01 |
| 0 ISDN OPERATOR - CALL PROCESSING                                 | AM0196 | NTXG41BA05 |
| 0 ISDN OPERATOR - ENHANCEMENTS                                    | AD3328 | NTXG41BA05 |
| 0 ISDN OPERATOR - INTERWORKING                                    | AM0197 | NTXG41BA05 |
| 0 ISDN PACKET HANDLER AM/RM MAINTENANCE                           | AJ0605 | NTXJ48AA01 |
| 0 ISDN PACKET HANDLER MAINTENANCE DATA COLLECTION                 | AJ0607 | NTXF94AB01 |
| 0 ISDN PACKET HANDLER NAS ACTIVATION FROM MAP                     | AJ0957 | NTXJ48AA01 |
| 0 ISDN PACKET HANDLER SERVICE DATA FILE COMPILER/<br>0 DECOMPILER | AJ0398 | NTXF95AA03 |
| 0 ISDN PACKET HANDLER SERVICE PROVISIONING INTERFACE              | AJ0397 | NTXF95AA03 |
| 0 ISDN PACKET HANDLER TO OAM PROCESSOR UPLOAD/<br>0 DOWNLOAD      | AJ0399 | NTXF95AA03 |
| 0 ISDN PRA MESSAGE BILLING                                        | AD2604 | NTX221BA08 |
| 0 ISDN PRA SIGNALING AND PREEMPTION FOR PALS                      | AD2536 | NTXN69AA01 |
| 0 ISDN PREFIX OUTBOUND MODEM POOLING                              | AC0547 | NTXE25AA01 |
| 0 ISDN PRI PROTOCOL FOR ESP                                       | AD3329 | NTXL83AA02 |
| 0 ISDN PRI TO OPERATOR CENTER_PROTOCOL SPEC.                      | AM0198 | NTXG41BA05 |
| 0 ISDN PROVISIONING PACKET HANDLER ACTIVATION                     | AJ0400 | NTXF95AA03 |
| 0 ISDN RCCI CC MAINTENANCE I                                      | AL1046 | NTXJ00AA03 |
| 0 ISDN RCCI CC MAINTENANCE I                                      | AL1046 | NTXJ00AB01 |
| 0 ISDN RCCI XPM BASE                                              | AL1043 | NTXJ00AA03 |
| 0 ISDN RCCI XPM BASE                                              | AL1043 | NTXJ00AB01 |
| 0 ISDN RELEASE LINK TRUNK - XPM                                   | AM0177 | NTXG75AA02 |
| 0 ISDN SECONDARY EKTS MEMBER CALL FORWARD PROGRAMMING             | AQ0735 | NTX754AA02 |
| 0 ISDN SECONDARY EKTS MEMBER CALL FORWARD PROGRAMMING             | AQ0735 | NTX754AB02 |
| 0 ISDN SERVORD ENHANCEMENTS - OAMP RESIDENT                       | AJ0943 | NTXF95AA03 |
| 0 ISDN SIX PORT, THIRTY PORT FLEXIBLE CALLING                     | AQ0736 | NTX755AB01 |
| 0 ISDN SIX PORT, THIRTY PORT FLEXIBLE CALLING                     | AQ0736 | NTX755AC01 |
| 0 ISDN ST MAINTENANCE                                             | AC0093 | NTX750AC02 |
| 0 ISDN ST MAINTENANCE                                             | AC0093 | NTX750AD01 |
| 0 ISDN SUPPORT ON LTC                                             | AL1585 | NTX750AC02 |
| 0 ISDN SUPPORT ON LTC                                             | AL1585 | NTX750AD01 |
| 0 ISDN SUPPORT ON LTC II                                          | AL1666 | NTX750AC02 |

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| 0 ISDN SUPPORT ON LTC II                          | AL1666 NTX750AD01 |
| 0 ISDN TERMINAL TEST AND CONFIGURATION            | AC0092 NTX750AC02 |
| 0 ISDN TERMINAL TEST AND CONFIGURATION            | AC0092 NTX750AD01 |
| 0 ISDN XPM DIGITAL TEST ACCESS                    | AL1320 NTXJ51AA02 |
| 0 ISDN XPM ROBUSTNESS AND MEMORY RECOVERY         | AQ0778 NTX750AC02 |
| 0 ISDN XPM ROBUSTNESS AND MEMORY RECOVERY         | AQ0778 NTX750AD01 |
| 0 ISDN-LCM (LCMI) SOFTWARE                        | AC0298 NTX750AC02 |
| 0 ISDN-LCM (LCMI) SOFTWARE                        | AC0298 NTX750AD01 |
| 0 ISDN-LCM BASE LOAD DEVELOPMENT                  | AC0180 NTX750AC02 |
| 0 ISDN-LCM BASE LOAD DEVELOPMENT                  | AC0180 NTX750AD01 |
| 0 ISDN-LCM C-CHANNEL INTERFACE ENHANCEMENTS       | AC0296 NTX750AC02 |
| 0 ISDN-LCM C-CHANNEL INTERFACE ENHANCEMENTS       | AC0296 NTX750AD01 |
| 0 ISDN/CCS7 BEARER CAPABILITY SCREENING & ROUTING | AM0074 NTXG74AA02 |
| 0 ISDN/CCS7 BEARER CAPABILITY SCREENING & ROUTING | AJ0944 NTXF95AA03 |
| 0 ISG PERFORMANCE MAP DISPLAY                     | AL1296 NTX750AC02 |
| 0 ISG PERFORMANCE MAP DISPLAY                     | AL1296 NTX750AD01 |
| 0 ISG PERFORMANCE TOOLS                           | AL1322 NTX750AC02 |
| 0 ISG PERFORMANCE TOOLS                           | AL1322 NTX750AD01 |
| 0 ISI BASE - ECM ROBUSTNESS                       | AG2337 NTXJ59AB03 |
| 0 ISI BASE - ECM ROBUSTNESS                       | AG2337 NTXJ59AC01 |
| 0 ISI BASE - SESSION MANAGEMENT                   | AG2336 NTXJ59AB03 |
| 0 ISI BASE - SESSION MANAGEMENT                   | AG2336 NTXJ59AC01 |
| 0 ISLM ENHANCEMENT                                | BF0947 NTX750AC02 |
| 0 ISLM ENHANCEMENT                                | BF0947 NTX750AD01 |
| 0 ISP INTERFACE FOR CELLULAR MESSAGING            | AD2203 NTXG52AA04 |
| 0 ISP INTERFACE FOR CELLULAR MESSAGING            | AD2203 NTXG80AA03 |
| 0 ISP/DCH DIAGNOSTIC ENHANCEMENTS                 | AC0634 NTX750AC02 |
| 0 ISP/DCH DIAGNOSTIC ENHANCEMENTS                 | AC0634 NTX750AD01 |
| 0 ISP/DCH R8071 AUDIT                             | AC0574 NTX750AC02 |
| 0 ISP/DCH R8071 AUDIT                             | AC0574 NTX750AD01 |
| 0 ISUP - FPE ENHANCEMENT TO HANDLE ISUP           | AC0112 NTX167AB11 |
| 0 ISUP - INTERWORKING TO TOPS                     | BC2321 NTX167AB11 |
| 0 ISUP ACCESS TANDEM FGD SIGNALLING               | AG1254 NTXE14AB03 |
| 0 ISUP ACCESS TANDEM FGD SIGNALLING II            | AG1576 NTXE14AB03 |
| 0 ISUP ACCESS TO CONSOLE VIA LOOP BACK TRUNKS     | AC0248 NTX167AB11 |
| 0 ISUP AUTOVON INTERSWITCH TRUNKS AND TEST LINES  | AD0271 NTX707AA03 |
| 0 INTERWORKING                                    |                   |
| 0 ISUP AUTOVON INTERSWITCH TRUNKS TANDEM CALL     | AD0275 NTX707AA03 |
| 0 PROCESSING                                      |                   |
| 0 ISUP AV INTERSWITCH TRUNK & 4-WIRE SUBSCR. SET  | AD0345 NTX707AA03 |
| 0 INTERWORKING                                    |                   |
| 0 ISUP AV INTERSWITCH TRUNK AND TEST LINES        | AD0344 NTX707AA03 |
| 0 INTERWORKING                                    |                   |
| 0 ISUP AV INTERSWITCH TRUNKS AND AV PBX TRUNKS    | AD0346 NTX707AA03 |
| 0 INTERWORKING                                    |                   |
| 0 ISUP AV INTERSWITCH TRUNKS AND SCOPEDIAL LINE   | AD0364 NTXA05AA03 |
| 0 INTERWORKING                                    |                   |

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| 0 ISUP AVINSW TRUNKS AND IBN TRUNKS INTERWORKING        | AD0358 NTXA05AA03 |
| 0 ISUP CONTINUITY TEST                                  | AC0046 NTX167AB11 |
| 0 ISUP CONTINUITY TEST FOR AUTOVON INTERSWITCH TRUNKS   | AD0734 NTX707AA03 |
| 0 ISUP EO FGD SIGNALLING                                | AG1253 NTXE13AB01 |
| 0 ISUP FGD SIGNALLING - END OFFICE TO CARRIER           | AG1639 NTXE13AB01 |
| 0 ISUP FGD TO EOP                                       | AD3150 NTXG12AA06 |
| 0 ISUP GROUP MESSAGE HANDLING                           | BC2319 NTX167AB11 |
| 0 ISUP IBN FEATURE ACCESS VIA LOOPAROUND TRUNKS         | AC0186 NTX167AB11 |
| 0 ISUP IMT ENHANCEMENTS FOR RELEASE 18                  | AD2626 NTX361CA07 |
| 0 ISUP MAINTENANCE SYSTEM                               | BC2108 NTX167AB11 |
| 0 ISUP OPERATIONAL MEASUREMENTS                         | AG0922 NTX167AB11 |
| 0 ISUP OPERATIONS ADMIN. AND MAINTENANCE (OA&M)         | AG1539 NTXE13AB01 |
| 0 ENHANCEMENTS                                          |                   |
| 0 ISUP OPERATIONS ADMIN. AND MAINTENANCE (OA&M)         | AG1539 NTXE14AB03 |
| 0 ENHANCEMENTS                                          |                   |
| 0 ISUP PROTOCOL VERSION CONTROL                         | AG0921 NTX167AB11 |
| 0 ISUP REL CAUSE TO TREATMENT MAPPING                   | AG1538 NTX167AB11 |
| 0 ISUP SHARED TRUNKING ENHANCEMENT                      | AG1984 NTXN01AA01 |
| 0 ISUP SHARED TRUNKING ENHANCEMENT                      | AG1984 NTXN01AB01 |
| 0 ISUP SUPERVISION CLEAN UP                             | AC0080 NTX167AB11 |
| 0 ISUP TABLE OPERATIONS                                 | BC2109 NTX167AB11 |
| 0 ISUP TANDEM CALL                                      | BC2322 NTX167AB11 |
| 0 ISUP TEST LINES - TL100, TL102                        | BC2323 NTX167AB11 |
| 0 ISUP TESTLINE ENHANCEMENTS                            | AC0120 NTX167AB11 |
| 0 ISUP TIMER CONTROL                                    | AG1532 NTXE66AA02 |
| 0 ISUP TOLL SIGNALLING                                  | BC2320 NTX167AB11 |
| 0 ISUP TRUNK MAINTENANCE ENHANCEMENT                    | AE0543 NTX167AB11 |
| 0 ISUP TRUNK OPTIONS 1                                  | AG1531 NTXE66AA02 |
| 0 ISUP TRUNKS & ATTENDANT CONSOLE INTERWORKING-BSY      | AD0359 NTXA05AA03 |
| 0 VERIFY LINE                                           |                   |
| 0 ISUP TRUNKS & ATTENDANT CONSOLE INTERWORKING-BSY      | AD0359 NTX167AB11 |
| 0 VERIFY LINE                                           |                   |
| 0 ISUP TRUNKS TO ATTENDANT CONSOLE INTERWORKING 5       | AD0363 NTX167AB11 |
| 0 ISUP TRUNKS TO ATTENDANT CONSOLE INTERWORKING 6       | AD0362 NTX167AB11 |
| 0 ISUP TRUNKS TO ATTENDANT CONSOLE INTERWORKING 7       | AD1157 NTX167AB11 |
| 0 ISUP TRUNKS TO ATTENDANT CONSOLE INTERWORKING-8       | AD1156 NTX167AB11 |
| 0 ISUP TTP ENHANCEMENTS                                 | BC2318 NTX167AB11 |
| 0 ISUP 105 TESTLINE                                     | AC0199 NTX167AB11 |
| 0 ISUP/AC INTERWORK CAMP-ON                             | AG0511 NTX167AB11 |
| 0 ISUP/IBN FEATURE INTERACTION III (3WC, EBO, DCPU)     | AC0251 NTX167AB11 |
| 0 ISUP/IBN FEATURE INTERACTIONS I (DISA, MEETME, ACD)   | AC0250 NTX167AB11 |
| 0 ISUP/IBN FEATURE INTERACTIONS II (CPK, MADN, CNF6...) | AC0249 NTX167AB11 |
| 0 ISUP/PBX TRUNK INTERWORKING                           | AG0705 NTX167AB11 |
| 0 ISUP/POTS LINES INTERWORKING                          | AC0121 NTX167AB11 |
| 0 ITOPS BILLING AND RATING FOR CEP                      | AG0717 NTXB08AA02 |
| 0 ITOPS CALL PROCESSING KEY FUNCTIONS                   | AG0714 NTXB13AA06 |

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| 0 ITOPS CALL PROCESSING KEY FUNCTIONS           | AG0714 NTXB13AB01 |
| 0 ITOPS ENHANCEMENT                             | AE0546 NTXH12AA01 |
| 0 ITOPS FORCE MANAGEMENT SYSTEM                 | AG0713 NTXB13AA06 |
| 0 ITOPS FORCE MANAGEMENT SYSTEM                 | AG0713 NTXB13AB01 |
| 0 ITOPS ICAMA FORMAT                            | AG0636 NTXB13AA06 |
| 0 ITOPS ICAMA FORMAT                            | AG0636 NTXB13AB01 |
| 0 ITOPS INTERNATIONAL CALL HANDLING             | AG0716 NTXB13AA06 |
| 0 ITOPS INTERNATIONAL CALL HANDLING             | AG0716 NTXB13AB01 |
| 0 ITOPS SCREEN DISPLAYS                         | AG0712 NTXB13AA06 |
| 0 ITOPS SCREEN DISPLAYS                         | AG0712 NTXB13AB01 |
| 0 ITOPS SUPERVISORY POSITIONS                   | AG0715 NTXB13AA06 |
| 0 ITOPS SUPERVISORY POSITIONS                   | AG0715 NTXB13AB01 |
| 0 ITOPS: ACCOUNT CODES I                        | AJ1026 NTXH54AA02 |
| 0 ITOPS: ACCOUNT CODES II                       | AJ1255 NTXH54AA02 |
| 0 ITOPS: APS CALL HANDLING                      | AG1233 NTXB13AA06 |
| 0 ITOPS: APS CALL HANDLING                      | AG1233 NTXB13AB01 |
| 0 ITOPS: ASSISTANCE MONITOR CAPABILITY          | AG1230 NTXB13AA06 |
| 0 ITOPS: ASSISTANCE MONITOR CAPABILITY          | AG1230 NTXB13AB01 |
| 0 ITOPS: ASSISTANCE PAGING CAPABILITY           | AJ0180 NTXB13AA06 |
| 0 ITOPS: ASSISTANCE PAGING CAPABILITY           | AJ0180 NTXB13AB01 |
| 0 ITOPS: BOOKED CALL DATABASE SIZE INCREASE     | AJ0804 NTXB13AA06 |
| 0 ITOPS: BOOKED CALL DATABASE SIZE INCREASE     | AJ0804 NTXB13AB01 |
| 0 ITOPS: CCITT CREDIT CARD FORMAT               | AJ1445 NTXB84AA04 |
| 0 ITOPS: ENHANCED ACD (CALL PROCESSING)         | AJ0802 NTXB13AB01 |
| 0 ITOPS: ENHANCED ACD (QUEUEING SYSTEM)         | AJ0801 NTXB13AB01 |
| 0 ITOPS: ENHANCED QUEUEING (CALL PROCESSING) II | AJ1024 NTXB13AB01 |
| 0 ITOPS: ESTIMATED CALL CHARGES                 | AJ0181 NTXH16AA01 |
| 0 ITOPS: FIXED DURATION CALLS                   | AJ0177 NTXH13AA01 |
| 0 ITOPS: FLEXIBLE SUBSCRIBER NUMBER DISPLAY     | AJ0182 NTXB13AA06 |
| 0 ITOPS: FLEXIBLE SUBSCRIBER NUMBER DISPLAY     | AJ0182 NTXB13AB01 |
| 0 ITOPS: INTRUSION TONES                        | AJ0179 NTXH71AA01 |
| 0 ITOPS: POSITION DATA STREAMLINING             | AJ0572 NTXB13AA06 |
| 0 ITOPS: POSITION DATA STREAMLINING             | AJ0572 NTXB13AB01 |
| 0 ITOPS: ROUTING DATABASE                       | AJ0178 NTXB13AA06 |
| 0 ITOPS: ROUTING DATABASE                       | AJ0178 NTXB13AB01 |
| 0 ITOPS: TBI FUNCTIONALITY                      | AG1234 NTXB13AA06 |
| 0 ITOPS: TBI FUNCTIONALITY                      | AG1234 NTXB13AB01 |
| 0 ITOPS: TRAVER CAPABILITY                      | AJ0803 NTXB13AA06 |
| 0 ITOPS: TRAVER CAPABILITY                      | AJ0803 NTXB13AB01 |
| 0 ITSE CALL CLASSIFICATION AND SELECTION        | AF0098 NTX215AA02 |
| 0 ITT ANI FORMAT (RECEIPT)                      | BR0009 NTX049AG01 |
| 0 IT250 TRUNK GROUP AGENCY                      | BV1980 NTX341AA05 |
| 0 IT250 TRUNK GROUP AGENCY                      | BV1980 NTX341AM02 |
| 0 IT250 TRUNK GROUP AGENCY                      | BV1980 NTX341CA01 |
| 0 IVD ASR FEATURE OPERATION - PHASE II          | AD2494 NTXJ36AA02 |
| 0 IVD ASR MAINTENANCE                           | AD2489 NTXJ36AA02 |
| 0 IVD AUTO SET RELOCATION FEATURE OPERATION     | AD2492 NTXJ36AA02 |

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| 0 IVD AUTO SET RELOCATION TABLE CONTROL              | AD2491 NTXJ36AA02 |
| 0 IVD AUTO SET RELOCATION XPM INTERACTION            | AD2493 NTXJ36AA02 |
| 0 IVD BAD PORT ADMINISTRATION                        | BV2056 NTX640AA06 |
| 0 IVD BAD PORT ADMINISTRATION                        | BV2056 NTX640AB04 |
| 0 IVD CALL PROCESSING                                | BC1524 NTX640AA06 |
| 0 IVD CALL PROCESSING                                | BC1524 NTX640AB04 |
| 0 IVD CALL PROCESSING AUDITS                         | BC1536 NTX640AA06 |
| 0 IVD CALL PROCESSING AUDITS                         | BC1536 NTX640AB04 |
| 0 IVD CP FEATURES                                    | BC1548 NTX640AA06 |
| 0 IVD CP FEATURES                                    | BC1548 NTX640AB04 |
| 0 IVD DATA CALL PROCESSING                           | BC1537 NTX640AA06 |
| 0 IVD DATA CALL PROCESSING                           | BC1537 NTX640AB04 |
| 0 IVD FACILITY MAINTENANCE ENHANCEMENTS              | AD0070 NTX640AA06 |
| 0 IVD FACILITY MAINTENANCE ENHANCEMENTS              | AD0070 NTX640AB04 |
| 0 IVD HOOKS                                          | AD0026 NTX640AA06 |
| 0 IVD HOOKS                                          | AD0026 NTX640AB04 |
| 0 IVD LGC CALL PROGRESS INDICATIONS                  | AD0306 NTX640AA06 |
| 0 IVD LGC CALL PROGRESS INDICATIONS                  | AD0306 NTX640AB04 |
| 0 IVD LGC REQUIREMENTS                               | BF0625 NTX640AA06 |
| 0 IVD LGC REQUIREMENTS                               | BF0625 NTX640AB04 |
| 0 IVD MADO HAYES PROTOCOL                            | AD0067 NTX640AA06 |
| 0 IVD MADO HAYES PROTOCOL                            | AD0067 NTX640AB04 |
| 0 IVD MADO TERMINAL TEST                             | AD0333 NTX640AA06 |
| 0 IVD MADO TERMINAL TEST                             | AD0333 NTX640AB04 |
| 0 IVD MAINTENANCE                                    | BC1523 NTX640AA06 |
| 0 IVD MAINTENANCE                                    | BC1523 NTX640AB04 |
| 0 IVD MAINTENANCE WITH RELAY PORT CARD               | AD0303 NTX640AA06 |
| 0 IVD MAINTENANCE WITH RELAY PORT CARD               | AD0303 NTX640AB04 |
| 0 IVD SERVICE ORDERS                                 | BC1538 NTX640AA06 |
| 0 IVD SERVICE ORDERS                                 | BC1538 NTX640AB04 |
| 0 IVD TABLE CONTROL - PHASE I                        | BC1525 NTX640AA06 |
| 0 IVD TABLE CONTROL - PHASE I                        | BC1525 NTX640AB04 |
| 0 IXPM ENHANCED FLOW CONTROL                         | AG0719 NTX470AA13 |
| 0 IXPM PERFORMANCE MONITORING                        | AG1031 NTX470AA13 |
| 0 IXPM STATIC DATA AUDIT                             | AJ0171 NTX470AA13 |
| 0 IXPM WARM SWACT                                    | BF0971 NTX470AA13 |
| 0 JAPAN CCS7 MTP MANAGEMENT                          | AL1104 NTXH14AA01 |
| 0 JAPAN CCS7 MTP MESSAGE FORMATS                     | AL1103 NTXH14AA01 |
| 0 JAPAN SS7 L1 L2 F/W AND S/W                        | AL1088 NTXH14AA01 |
| 0 JAPANESE DID                                       | AR0019 NTXH74AA01 |
| 0 JAPANESE SR SIGNALLING FOR 4W ANALOG AND TTC 2MBPS | AG2199 NTXZ10AA01 |
| 0 TRUNKS                                             |                   |
| 0 JAPANESE TONES FOR NEW MESSAGING PDTC              | AE0488 NTX274AA04 |
| 0 JAPAN300 SUPERNODE AND ITOPS COMPATIBILITY         | AE0523 NTXB21AA01 |
| 0 JFFFREEZE - DMO ENFORCEMENT FOR JOURNAL FILE       | AG1524 NTX056AA05 |
| 0 JOURNAL FILE DUMP FACILITY                         | BC0809 NTX176AA05 |
| 0 JOURNAL FILE DUMP FACILITY                         | BC0809 NTX181AA12 |

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| 0 JOURNAL FILE DUMP FACILITY                                 | BC0809 NTX182AA06 |
| 0 JOURNAL FILE DUMP FACILITY                                 | BC0809 NTX183AA05 |
| 0 JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX<br>0 FEATURES | BV0884 NTX220AA13 |
| 0 JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX<br>0 FEATURES | BV0884 NTX220BA06 |
| 0 JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX<br>0 FEATURES | BV0884 NTX220CA08 |
| 0 JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX<br>0 FEATURES | BV0884 NTX230AA03 |
| 0 JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX<br>0 FEATURES | BV0884 NTX230BA01 |
| 0 JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX<br>0 FEATURES | BV0884 NTX230CA01 |
| 0 JOURNAL FILE FOR PROGRAMMABLE SPEEDS AND MTX<br>0 FEATURES | BV0884 NTX234AB02 |
| 0 JOURNAL FILE OPTION WITH DMOPRO                            | BC1543 NTX056AA05 |
| 0 JOURNAL FILE PRINT UTILITY                                 | BC0409 NTX176AA05 |
| 0 JOURNAL FILE RESTART IMPROVEMENTS                          | BC0078 NTX056AA05 |
| 0 JUSMAG INTERFACE SPEC FOR SCOPEDIAL (SPAIN)                | AE0051 NTX612AA04 |
| 0 K&S DSM INTEGRATION                                        | BC1169 NTX001AA29 |
| 0 K&S SERVICE CODE TRANSLATION HOOKS                         | AJ1129 NTX470AA13 |
| 0 KEY ACCESS FOR MESSAGE WAITING INDICATION                  | AJ0432 NTX119AA05 |
| 0 KEY ADDRESSING FOR REPACKAGE PPHONE                        | BV2059 NTX106AA10 |
| 0 KEY PAD ENABLE                                             | NC0020 NTX901AA24 |
| 0 KILLER TRUNK ENHANCEMENT PHASE I                           | BV2033 NTX223AA01 |
| 0 KILLER TRUNK ENHANCEMENT PHASE I                           | BV2033 NTX223CA01 |
| 0 KILLER TRUNK REDESIGN                                      | AF0093 NTX053AA05 |
| 0 KILLER TRUNK REPORT SEPARATION                             | BC1460 NTX427AA04 |
| 0 KILLER TRUNK REPORT SEPARATION                             | BC1460 NTX562AA03 |
| 0 KILLER TRUNKS                                              | BV0770 NTX220AA13 |
| 0 KILLER TRUNKS                                              | BV0770 NTX220BA06 |
| 0 KILLER TRUNKS                                              | BV0770 NTX220CA08 |
| 0 KP & ST ACCEPTANCE ON AN ONI CALL                          | BR0599 NTX001AA29 |
| 0 KT INSTRUMENTATION AND SCHEDULING                          | AF0531 NTX053AA05 |
| 0 KT USAGE SCANNING AND REPORT GENERATION                    | AF0532 NTX053AA05 |
| 0 LAMA (CSDDS)                                               | BC0265 NTX061AA01 |
| 0 LAMA - CSDDS                                               | BR0353 NTX061AA01 |
| 0 LAN MANAGEMENT FROM DMS MAP                                | AJ0447 NTXF05AA03 |
| 0 LAN MANAGEMENT FROM DMS MAP                                | AJ0447 NTXF19AA02 |
| 0 LANGUAGE DIGIT INSERTION                                   | AE0059 NTX496AA03 |
| 0 LAPB 6X91 MAINTENANCE                                      | BV1391 NTX347AA06 |
| 0 LAST NUMBER REDIAL (LNR)                                   | BC1204 NTXZ01AA01 |
| 0 LAST NUMBER REDIAL (LNR)                                   | BC1204 NTX101AA14 |
| 0 LAST NUMBER REDIAL FROM SET                                | AL0556 NTX878AB02 |
| 0 LAST NUMBER REDIAL FROM SET                                | AL0556 NTX878AC01 |
| 0 LAST NUMBER REDIAL FROM SET                                | AL0556 NTX878AD01 |



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| 0 LAST NUMBER REDIAL FROM SET                     | AL0556 NTX878AE01 |
| 0 LATA SCREENING ON 0+ CALLS                      | AL0168 NTX821AA01 |
| 0 LAYER 2 OM'S FOR D-CHANNEL BACKUP               | AD3513 NTXF40AA01 |
| 0 LAYER 2 OM'S FOR D-CHANNEL BACKUP               | AD3513 NTXG01AA06 |
| 0 LAYER 2 OM'S FOR D-CHANNEL BACKUP               | AD3513 NTXG01CA07 |
| 0 LAYER 2 OM'S FOR D-CHANNEL BACKUP               | AD3513 NTXN53AA02 |
| 0 LAYER 2 OM'S FOR D-CHANNEL BACKUP               | AD3513 NTX790AC02 |
| 0 LAYER 2/3 PROTOCOL MONITORING DEVELOPMENT       | AQ0671 NTX750AC02 |
| 0 LAYER 2/3 PROTOCOL MONITORING DEVELOPMENT       | AQ0671 NTX750AD01 |
| 0 LCM - MEMORY RECOVERY                           | BF0411 NTXZ02AA01 |
| 0 LCM - MEMORY RECOVERY                           | BF0411 NTX901AA24 |
| 0 LCM - RINGING MAINTENANCE                       | BF0200 NTXZ02AA01 |
| 0 LCM - RINGING MAINTENANCE                       | BF0200 NTX901AA24 |
| 0 LCM BREAK PULSE FILTERING                       | AE0110 NTX611AA07 |
| 0 LCM DRAWER MAINTENANCE                          | BF0957 NTX001AA29 |
| 0 LCM DRAWER MAINTENANCE - PHASE II               | AL0132 NTX001AA29 |
| 0 LCM ENHANCEMENTS                                | BC0880 NTX270AA19 |
| 0 LCM MAINTENANCE ENHANCEMENT                     | BF0287 NTXZ02AA01 |
| 0 LCM MAINTENANCE ENHANCEMENT                     | BF0287 NTX901AA24 |
| 0 LCM OVERLOAD CONTROL                            | BF0956 NTX001AA29 |
| 0 LCM RINGING/ANI/COIN                            | BF0197 NTXZ02AA01 |
| 0 LCM RINGING/ANI/COIN                            | BF0197 NTX901AA24 |
| 0 LCM SRU ENHANCEMENTS                            | AE0895 NTXH96AA01 |
| 0 LCM TAKEOVER/TAKEBACK ENHANCEMENT               | AF1647 NTX270AA19 |
| 0 LCME CONNECTION AND TDM CONTROL                 | AC0601 NTX750AC02 |
| 0 LCME CONNECTION AND TDM CONTROL                 | AC0601 NTX750AD01 |
| 0 LCME DIAGNOSTICS                                | AC0569 NTX750AC02 |
| 0 LCME DIAGNOSTICS                                | AC0569 NTX750AD01 |
| 0 LCME DRAWER CONTROL TASK AND HARDWARE INTERFACE | AC0567 NTX750AC02 |
| 0 LCME DRAWER CONTROL TASK AND HARDWARE INTERFACE | AC0567 NTX750AD01 |
| 0 LCME DRAWER TASK ENHANCEMENTS                   | AC0602 NTX750AC02 |
| 0 LCME DRAWER TASK ENHANCEMENTS                   | AC0602 NTX750AD01 |
| 0 LCME ISDN LOOP MAINTENANCE INTERFACE            | AC0603 NTX750AC02 |
| 0 LCME ISDN LOOP MAINTENANCE INTERFACE            | AC0603 NTX750AD01 |
| 0 LCME TDM DUMP AND RESTORE PROCEDURES            | AC0604 NTX750AC02 |
| 0 LCME TDM DUMP AND RESTORE PROCEDURES            | AC0604 NTX750AD01 |
| 0 LCMI PROCESSOR UPGRADE SUPPORT                  | AC0458 NTX750AC02 |
| 0 LCMI PROCESSOR UPGRADE SUPPORT                  | AC0458 NTX750AD01 |
| 0 LCMI SOFTWARE FOR POTS SUPPORT                  | AC0520 NTX750AC02 |
| 0 LCMI SOFTWARE FOR POTS SUPPORT                  | AC0520 NTX750AD01 |
| 0 LCR FLOW CONTROL                                | AD0405 NTX322AA18 |
| 0 LCR OVERFLOW INDICATION                         | AD0749 NTX322AA18 |
| 0 LCR/CCH RECEIVER SELECTIVITY                    | AD1185 NTX322AA18 |
| 0 LDPMALL AND LOADPM ALL FOR CSC                  | AD2002 NTX322AA18 |
| 0 LEAS - SPECIAL DIRECTORY NUMBER IDENTIFICATION  | AF1453 NTX710AA02 |
| 0 LEAS - SPECIAL DIRECTORY NUMBER IDENTIFICATION  | AF1453 NTX710AB01 |
| 0 LEAS INTERWORKING WITH SS7                      | AF2361 NTXE14AB03 |

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| 0 LEC CALLING CARD VALIDATION (BONG TONE)           | AD2671 NTXG47AA02 |
| 0 LEVEL 1 CAPACITY IMPROVEMENT AND MEMORY REDUCTION | BC0447 NTX000AA19 |
| 0 LEVEL 1 CAPACITY IMPROVEMENT AND MEMORY REDUCTION | BC0447 NTX184AA11 |
| 0 LEVEL 1 CAPACITY IMPROVEMENT AND MEMORY REDUCTION | BC0447 NTX184AB02 |
| 0 LGC BACKWARD BCS COMPATABILITY                    | BF0374 NTX001AA29 |
| 0 LGC MP RT IMPROVEMENTS - PHASE 2                  | BF0389 NTX001AA29 |
| 0 LGC 500/2500 CP                                   | BF0366 NTX001AA29 |
| 0 LGC 500/2500 ENHANCED CP                          | BF0369 NTX001AA29 |
| 0 LICENCEE FOLDBACK                                 | BC1052 NTX001AA29 |
| 0 LIM CM MTC I                                      | AI0116 NTXF20AA02 |
| 0 LIM CM MTC I                                      | AI0116 NTX833AB01 |
| 0 LIM CM MTC II                                     | AI0118 NTXF20AA02 |
| 0 LIM CM MTC II                                     | AI0118 NTX833AB01 |
| 0 LIMIT TO NUMBER OF SEQUENCE CALLS                 | BR0680 NTX552AB03 |
| 0 LIMIT TO NUMBER OF SEQUENCE CALLS                 | BR0680 NTX552AC02 |
| 0 LIMIT TO NUMBER OF SEQUENCE CALLS                 | BR0680 NTX552AD01 |
| 0 LIMIT TO NUMBER OF SEQUENCE CALLS                 | BR0680 NTX825AB01 |
| 0 LIMITED ACD - ENHANCED AGENT FEATURES             | AD2239 NTX415AA07 |
| 0 LIMITED OFFHOOK QUEUING                           | BV0845 NTX233AA01 |
| 0 LIMITED OFFHOOK QUEUING                           | BV0845 NTX233BA01 |
| 0 LIMITED OFFHOOK QUEUING                           | BV0845 NTX233CA01 |
| 0 LIMITED STP FUNCTIONALITY ON MSB7                 | AE0733 NTX316AA01 |
| 0 LINE & DN INVENTORY                               | BT0066 NTX001AA29 |
| 0 LINE CALL PROCESSING FOR JAPAN SMS                | AG2196 NTXH86AA01 |
| 0 LINE CALL PROCESSING FOR JAPAN SMS                | AG2196 NTXH86AB01 |
| 0 LINE CALL PROCESSING USING UTRS                   | BF0664 NTX145AA06 |
| 0 LINE CALL PROCESSING USING UTRS                   | BF0664 NTX269AA07 |
| 0 LINE CARD CODE EXPANSION                          | AL1608 NTXZ02AA01 |
| 0 LINE CARD CODE EXPANSION                          | AL1608 NTX901AA24 |
| 0 LINE CARD MONITOR                                 | NC0109 NTXP00AA01 |
| 0 LINE CUT OFF RELAY OPERATION ON DISCONNECT        | BC0157 NTXZ02AA01 |
| 0 LINE CUT OFF RELAY OPERATION ON DISCONNECT        | BR0197 NTXZ02AA01 |
| 0 LINE CUT OFF RELAY OPERATION ON DISCONNECT        | BC0157 NTX901AA24 |
| 0 LINE CUT OFF RELAY OPERATION ON DISCONNECT        | BR0197 NTX901AA24 |
| 0 LINE CUTOVER STATE                                | BR0043 NTX054AA05 |
| 0 LINE CUTOVER STATE                                | BR0043 NTX472AB08 |
| 0 LINE CUTOVER STATE                                | BR0043 NTX981AA01 |
| 0 LINE DATA BASE QUERIES                            | BR0229 NTXZ02AA01 |
| 0 LINE DATA BASE QUERIES                            | BV0196 NTXZ02AA01 |
| 0 LINE DATA BASE QUERIES                            | BR0229 NTX901AA24 |
| 0 LINE DATA BASE QUERIES                            | BV0196 NTX901AA24 |
| 0 LINE DENIAL OF USP VERTICAL PARTS                 | AL0426 NTX045AA01 |
| 0 LINE DIAGNOSTIC ENHANCEMENTS FOR SMS              | AF0159 NTX398AA12 |
| 0 LINE LOAD CONTROL                                 | BV0031 NTXZ03AA01 |
| 0 LINE LOAD CONTROL                                 | BV0250 NTX701DA03 |
| 0 LINE LOAD CONTROL                                 | AD0047 NTX716AA05 |
| 0 LINE LOAD CONTROL                                 | BV0031 NTX902AA07 |

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| 0 LINE LOAD CONTROL (LLC)                                | BR0238 NTXZ03AA01 |
| 0 LINE LOAD CONTROL (LLC)                                | BR0238 NTX902AA07 |
| 0 LINE LOAD CONTROL - PHASE II                           | AF1750 NTXP81AA01 |
| 0 LINE MAINTENANCE COEXISTENCE                           | AE0392 NTXB85AA01 |
| 0 LINE MAINTENANCE FOR NEW JAPAN LINE CARD - 6X33        | AG2163 NTXH86AA01 |
| 0 LINE MAINTENANCE FOR NEW JAPAN LINE CARD - 6X33        | AG2163 NTXH86AB01 |
| 0 LINE REVERSAL ON SEIZURE                               | AE0169 NTXB04AA01 |
| 0 LINE SIGNAL PROCESSORS                                 | BF0395 NTX470AA13 |
| 0 LINE STATUS IN JOURNAL FILE                            | BC0844 NTXZ02AA01 |
| 0 LINE STATUS IN JOURNAL FILE                            | BC0844 NTX901AA24 |
| 0 LINE TESTING USING LTU                                 | BV0214 NTX023AB03 |
| 0 LINE THREAD FOR TURKEY LOCAL LOCAL II                  | BC1784 NTX472AA03 |
| 0 LINE THREAD FOR TURKEY LOCAL LOCAL II                  | BC1784 NTX472AB08 |
| 0 LINE TRANSMISSION TESTS - MW,QTERM                     | BV0024 NTX054AA05 |
| 0 LINE TRANSMISSION TESTS - MW,QTERM                     | BV0024 NTX472AB08 |
| 0 LINE TRANSMISSION TESTS - MW,QTERM                     | BV0024 NTX981AA01 |
| 0 LINE TREATMENT ON CALL DISCONNECT                      | BR0060 NTXZ02AA01 |
| 0 LINE TREATMENT ON CALL DISCONNECT                      | BR0060 NTX901AA24 |
| 0 LINES INVENTORY FOR SLC96                              | BC1137 NTX398AA12 |
| 0 LINK INTERFACE MODULE LOCAL CONTROL                    | AI0036 NTXF20AA02 |
| 0 LINK INTERFACE MODULE LOCAL CONTROL                    | AI0036 NTX833AB01 |
| 0 LINK INTERFACE MODULE MAINTENANCE ENHANCEMENTS         | AI0167 NTXF20AA02 |
| 0 LINK INTERFACE MODULE MAINTENANCE ENHANCEMENTS         | AI0167 NTX833AB01 |
| 0 LINK MANAGEMENT                                        | BV1165 NTX322AA18 |
| 0 LINK MANAGEMENT ENHANCEMENTS                           | AD0562 NTX322AA18 |
| 0 LINK RECONFIGURATION FOR XPMS WITH SPECIAL CONNECTIONS | AL1629 NTX750AC02 |
| 0 LINK RECONFIGURATION FOR XPMS WITH SPECIAL CONNECTIONS | AL1629 NTX750AD01 |
| 0 LINKSET - BASIC LINK MANAGEMENT - MSB                  | BC1807 NTXR72AA01 |
| 0 LINKSET - BASIC LINK MANAGEMENT - MSB                  | BC1807 NTX041AB09 |
| 0 LINKSET - MAN MACHINE INTERFACE - CC                   | BC1811 NTXR72AA01 |
| 0 LINKSET - MAN MACHINE INTERFACE - CC                   | BC1811 NTX041AB09 |
| 0 LINKSET TABLE CONTROL - CC                             | BC1813 NTXR72AA01 |
| 0 LINKSET TABLE CONTROL - CC                             | BC1813 NTX041AB09 |
| 0 LIU MAINTENANCE SUPPORT FOR MININODE                   | AL1405 NTXN18AA04 |
| 0 LIU MAINTENANCE SUPPORT FOR MININODE                   | AL1405 NTX833AB01 |
| 0 LIU7 - CM MTCE PHASE II                                | AC0383 NTXN18AA04 |
| 0 LIU7 - CM MTCE PHASE II                                | AC0383 NTX833AB01 |
| 0 LIU7 - DSOA CONTROL CODE MTCE                          | AI0227 NTX839AB02 |
| 0 LIU7 - ENHANCED LIU DIAGS                              | AI0226 NTXN18AA04 |
| 0 LIU7 - ENHANCED LIU DIAGS                              | AI0226 NTX833AB01 |
| 0 LIU7 - MTCE PHASE II                                   | AC0382 NTXN19AA02 |
| 0 LIU7 - MTCE PHASE II                                   | AC0382 NTX833AB01 |
| 0 LIU7 - MTCE ST LOADING                                 | AC0381 NTXN19AA02 |
| 0 LIU7 - MTCE ST LOADING                                 | AC0381 NTX833AB01 |
| 0 LIU7-MTC BASE DEVELOPMENT                              | AC0203 NTXN18AA04 |

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| 0 LIU7-MTC BASE DEVELOPMENT                         | AC0203 | NTX833AB01 |
| 0 LM - TAKEOVER/TAKEBACK ENHANCEMENT                | BF1027 | NTXZ02AA01 |
| 0 LM - TAKEOVER/TAKEBACK ENHANCEMENT                | BF1027 | NTX901AA24 |
| 0 LM CHANNEL USAGE DISPLAY (NON RES)                | BC0374 | NTX181AA12 |
| 0 LM ENHANCEMENTS TO SUPPORT NET/PM SPEECH LINK     | BF0498 | NTXZ02AA01 |
| 0 DIAGNOSTICS                                       |        |            |
| 0 LM ENHANCEMENTS TO SUPPORT NET/PM SPEECH LINK     | BF0498 | NTX901AA24 |
| 0 DIAGNOSTICS                                       |        |            |
| 0 LM SPEECH LINK DIAGNOSTICS                        | BC1217 | NTX270AA19 |
| 0 LM TAKEOVER/TAKEBACK DIAGNOSTIC                   | BC1163 | NTX001AA29 |
| 0 LM/RLM WARM TAKEBACK                              | BC0805 | NTXZ02AA01 |
| 0 LM/RLM WARM TAKEBACK                              | BC0805 | NTX901AA24 |
| 0 LM/RLM WARM TAKEOVER                              | BC0807 | NTXZ02AA01 |
| 0 LM/RLM WARM TAKEOVER                              | BC0807 | NTX901AA24 |
| 0 LMD OM GROUP OPTIMIZATIONS                        | AG0637 | NTX001AA29 |
| 0 LMS ISOLATION                                     | AL1895 | NTXF20AA02 |
| 0 LOAD BALANCING ENHANCEMENT IN CSC                 | BF0349 | NTX322AA18 |
| 0 LOAD ROUTE SELECTION ENHANCEMENTS.                | NC0130 | NTX001AA29 |
| 0 LOADER ENHANCEMENTS                               | BC0651 | NTX270AA19 |
| 0 LOADING/UNLOADING OF OFFICE IMAGE NON-RES         | BC0112 | NTX074AA09 |
| 0 LOCAL AUDIBLE ALARM RETIREMENT                    | BR0692 | NTX001AA29 |
| 0 LOCAL CALL DETAIL RECORDING                       | BC0303 | NTX043AA03 |
| 0 LOCAL COIN OVERTIME CHARGING                      | BR0372 | NTX090AA01 |
| 0 LOCAL DMS BUS NODE, LINK AND PORT INITIALIZATION  | AL1478 | NTX945AA03 |
| 0 LOCAL DMS-BUS SUPPORT FOR MCM/PLM PRIMITIVES      | AL1779 | NTX945AA03 |
| 0 LOCAL DMS-BUS SUPPORT FOR SR-512 MESSAGE CHANNELS | AL1479 | NTX945AA03 |
| 0 LOCAL MESSAGE SWITCH MAINTENANCE                  | BC1829 | NTX950AA06 |
| 0 LOCAL RP CONTROL II                               | AL1117 | NTX944AA03 |
| 0 LOCAL SLAVE TTY TO A REMOTE MASTER FOR DMS        | BR0101 | NTX056AA05 |
| 0 OPERATION                                         |        |            |
| 0 LOCAL TANDEM                                      | BT0031 | NTXZ03AA01 |
| 0 LOCAL TANDEM                                      | BT0031 | NTX902AA07 |
| 0 LOCAL TANDEM (TOLL)                               | BR0151 | NTX802AA04 |
| 0 LOCAL TOLL TRUNKS WITH TBI (1 SYS)                | BF0679 | NTX481AA02 |
| 0 LOCAL TRANSLATIONS FOR INTERNATIONAL              | BC1449 | NTX472AA03 |
| 0 LOCAL TRANSLATIONS FOR INTERNATIONAL              | BC1449 | NTX472AB08 |
| 0 LOCALITY ENHANCEMENTS FOR BTDA                    | NC0116 | NTXA90AA07 |
| 0 LOCATION CODE COMPLIANCE FOR MCI                  | AD3394 | NTX222CA09 |
| 0 LOCKOUT                                           | BV0448 | NTXZ00AA01 |
| 0 LOCKOUT                                           | BV0448 | NTX100AA27 |
| 0 LOG ANALYSIS PROGRAM                              | BC0354 | NTX178AA01 |
| 0 LOG GENERATION NWM TEST TOOLS                     | AD2615 | NTX183AA05 |
| 0 LOG RETRIEVE FACILITY FOR E1 INCIDENTS            | AG1004 | NTX074AA09 |
| 0 LOG SYSTEM INTERNAL CONTROL CLEANUP               | BC2312 | NTX001AA29 |
| 0 LOG TAP                                           | AD1619 | NTXG19AA01 |
| 0 LOG/REPORT EDITING UTILITY                        | BC0170 | NTX184AA11 |
| 0 LOG/REPORT EDITING UTILITY                        | BC0170 | NTX184AB02 |

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| 0 LOGICAL DUMP AND RESTORE                           | BC0494 NTX183AA05 |
| 0 LOGICAL REFORMATING FOR OTC                        | AG2323 NTX001AA29 |
| 0 LOGUTIL                                            | BT0003 NTX053AA05 |
| 0 LONG CALL CDR AUDIT                                | AM0059 NTXG77AA01 |
| 0 LOOP AROUND TEST - ATT MODE                        | BR0282 NTXZ02AA01 |
| 0 LOOP AROUND TEST - ATT MODE                        | BR0282 NTX801AA01 |
| 0 LOOP AROUND TEST - ATT MODE                        | BR0282 NTX901AA24 |
| 0 LOOP EXTENSION LOW SPEED DTU WITH ELASTOMER KEYPAD | BF0928 NTX256AA04 |
| 0 LOOP EXTENSION LOW SPEED LIU                       | BF0467 NTX256AA04 |
| 0 LOOP MAINTENANCE FOR ISDN S/T LINECARD             | AL1040 NTX750AC02 |
| 0 LOOP MAINTENANCE FOR ISDN S/T LINECARD             | AL1040 NTX750AD01 |
| 0 LOOP MAINTENANCE FOR ISDN 1C LINE CARD             | AL0680 NTX750AC02 |
| 0 LOOP MAINTENANCE FOR ISDN 1C LINE CARD             | AL0680 NTX750AD01 |
| 0 LOOP MONITOR ELIMINATION ON 2X83.                  | BC0981 NTX001AA29 |
| 0 LOOP START                                         | BT0024 NTXZ02AA01 |
| 0 LOOP START                                         | BT0024 NTX901AA24 |
| 0 LOOP-AROUND TEST FOR STR                           | AD0237 NTX220AA13 |
| 0 LOOP-AROUND TEST FOR STR                           | AD0237 NTX220BA06 |
| 0 LOOP-AROUND TEST FOR STR                           | AD0237 NTX220CA08 |
| 0 LOOPAROUND TESTLINE FOR CCITT ISUP (DMS-300)       | AE0548 NTXH40AA03 |
| 0 LOOPBACK REDUCTION FOR ISUP/AC                     | AG0704 NTX167AB11 |
| 0 LOOPBACK TRUNK ACCESS FOR ISUP TO POTS LINE        | AC0078 NTX167AB11 |
| 0 LOST MESSAGES REPORTING ENHANCEMENTS               | AL1052 NTX001AA29 |
| 0 LOUD SPEAKER & RADIO PAGING ACCESS                 | BV0502 NTXZ00AA01 |
| 0 LOUD SPEAKER & RADIO PAGING ACCESS                 | BV0503 NTXZ00AA01 |
| 0 LOUD SPEAKER & RADIO PAGING ACCESS                 | BV0502 NTX100AA27 |
| 0 LOUD SPEAKER & RADIO PAGING ACCESS                 | BV0503 NTX100AA27 |
| 0 LOW SPEED DU WITH ELASTOMER KEY PAD                | BF0797 NTX250AA15 |
| 0 LOW VOLTAGE ALARM LOG MESSAGE                      | BR0699 NTX001AA29 |
| 0 LOWER LAYER COMPATIBILITY                          | AM0066 NTXL47AA01 |
| 0 LP BLUE BOX FIRMWARE                               | AD1014 NTXG25AA01 |
| 0 LP BLUE BOX FIRMWARE                               | AD1014 NTX220BA06 |
| 0 LP BLUE BOX FIRMWARE                               | AD1014 NTX220CA08 |
| 0 LPP IN DMS250 FOR MCI                              | AD2465 NTX222CA09 |
| 0 LPP ON SCP                                         | AL1498 NTXN19AA02 |
| 0 LPP USING DS0 ON PDTC.                             | AE0805 NTXK68AA01 |
| 0 LRU CC STATIC DATA                                 | AF2071 NTX750AC02 |
| 0 LRU CC STATIC DATA                                 | AF2071 NTX750AD01 |
| 0 LTA ON RCTS(CC)                                    | BC1679 NTX213AC01 |
| 0 LTA ON RCTS(PP)                                    | BR0695 NTX213AC01 |
| 0 LTC - ABCD BIT CARD DIAGNOSTIC                     | BF0432 NTX478AA04 |
| 0 LTC - BCS CC APPLICATION SUPPORT (C0863,C0864)     | BF0285 NTX001AA29 |
| 0 LTC - BIT SIGNALLING                               | BF0392 NTX478AA04 |
| 0 LTC - SPEECH PATH DIAGNOSTIC                       | BF0218 NTX001AA29 |
| 0 LTC - SWACT PERIPHERAL ENHANCEMENT                 | BF0364 NTX001AA29 |
| 0 LTC - UTR CARD DIAGNOSTIC                          | BF0434 NTX479AA03 |
| 0 LTC - UTR UTILITY                                  | BF0396 NTX479AA03 |

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| 0 LTC DIGIT COLLECTION ENHANCEMENT               | BF0487 NTX001AA29 |
| 0 LTC EVENT RECORDERS/TRANSMITTERS               | BF0393 NTX470AA13 |
| 0 LTC NETWORK LINKS DIAGNOSTIC                   | BF0558 NTX001AA29 |
| 0 LTC PCM 30 I/F CARD MAINTENANCE                | BF0430 NTX478AA04 |
| 0 LTC PERFORM TOOL ENHANCEMENTS FOR ISDN         | AL1667 NTX750AC02 |
| 0 LTC PERFORM TOOL ENHANCEMENTS FOR ISDN         | AL1667 NTX750AD01 |
| 0 LTC SWACT - UNCONTROLLED                       | BF0363 NTX001AA29 |
| 0 LTC WAVEFORM PROCESSORS                        | BF0394 NTX470AA13 |
| 0 LTCI - DATAFILL ENHANCEMENTS                   | AC0575 NTX750AC02 |
| 0 LTCI - DATAFILL ENHANCEMENTS                   | AC0575 NTX750AD01 |
| 0 LTCI - ISDN BRA OVERLOAD CONTROLS              | AC0576 NTX750AC02 |
| 0 LTCI - ISDN BRA OVERLOAD CONTROLS              | AC0576 NTX750AD01 |
| 0 LTCI - ISP AUDIT ENHANCEMENTS                  | AC0487 NTX750AC02 |
| 0 LTCI - ISP AUDIT ENHANCEMENTS                  | AC0487 NTX750AD01 |
| 0 LTCI - ISP GEFNET AND PMDEBUG INTERFACE        | AC0446 NTX750AC02 |
| 0 LTCI - ISP GEFNET AND PMDEBUG INTERFACE        | AC0446 NTX750AD01 |
| 0 LTCI - ISP/DCH BASE ENHANCEMENTS AND TOOLS     | AC0476 NTX750AC02 |
| 0 LTCI - ISP/DCH BASE ENHANCEMENTS AND TOOLS     | AC0476 NTX750AD01 |
| 0 LTCI - OM COLLECTION AND REPORTING             | AC0475 NTX750AC02 |
| 0 LTCI - OM COLLECTION AND REPORTING             | AC0475 NTX750AD01 |
| 0 LTCI CALL PROCESSING INTEGRATION               | AC0369 NTX750AC02 |
| 0 LTCI CALL PROCESSING INTEGRATION               | AC0369 NTX750AD01 |
| 0 LTCI ISDN LOOP EXPANSION                       | AC0445 NTX750AC02 |
| 0 LTCI ISDN LOOP EXPANSION                       | AC0445 NTX750AD01 |
| 0 LTCI TRUNKS AND UTR INTEGRATION                | AC0528 NTX750AC02 |
| 0 LTCI TRUNKS AND UTR INTEGRATION                | AC0528 NTX750AD01 |
| 0 LTCI WARM SWACT                                | AC0371 NTX750AC02 |
| 0 LTCI WARM SWACT                                | AC0371 NTX750AD01 |
| 0 LTG CAPACITY INCREASE                          | AF1756 NTXZ02AA01 |
| 0 LTG CAPACITY INCREASE                          | AF1756 NTX901AA24 |
| 0 LTP - DIGITONE TESTING                         | BV0062 NTX054AA05 |
| 0 LTP - DIGITONE TESTING                         | BV0062 NTX472AB08 |
| 0 LTP - DIGITONE TESTING                         | BV0062 NTX981AA01 |
| 0 LTP - INSERTION LOSS, TONE GENERATION          | BV0025 NTX054AA05 |
| 0 LTP - INSERTION LOSS, TONE GENERATION          | BV0025 NTX472AB08 |
| 0 LTP - INSERTION LOSS, TONE GENERATION          | BV0025 NTX981AA01 |
| 0 LTP - MONITOR,TALK,BALANCE OFFHOOK TESTS       | BV0061 NTX054AA05 |
| 0 LTP - MONITOR,TALK,BALANCE OFFHOOK TESTS       | BV0061 NTX472AB08 |
| 0 LTP - MONITOR,TALK,BALANCE OFFHOOK TESTS       | BV0061 NTX981AA01 |
| 0 LTP - SEND FUNCTIONS(COIN & RINGING FUNCTIONS) | BV0063 NTX054AA05 |
| 0 LTP - SEND FUNCTIONS(COIN & RINGING FUNCTIONS) | BV0063 NTX472AB08 |
| 0 LTP - SEND FUNCTIONS(COIN & RINGING FUNCTIONS) | BV0063 NTX981AA01 |
| 0 LTP AND ASSOCIATED LEVEL                       | BT0095 NTXZ02AA01 |
| 0 LTP AND ASSOCIATED LEVEL                       | BT0095 NTX001AA29 |
| 0 LTP AND ASSOCIATED LEVEL                       | BT0095 NTX053AA05 |
| 0 LTP AND ASSOCIATED LEVEL                       | BT0095 NTX054AA05 |
| 0 LTP AND ASSOCIATED LEVEL                       | BT0095 NTX472AB08 |

0 LTP AND ASSOCIATED LEVEL  
0 LTP AND ASSOCIATED LEVEL  
0 LTP CIBINCOM REWRITE  
0 LTP CIBINCOM REWRITE  
0 LTP ROBUSTNESS  
0 LTP ROBUSTNESS  
0 LTP ROBUSTNESS  
0 LTPLTA: DGTST  
0 LTSL - OPEN CIRCUIT (I/C)  
0 LTSL - OPEN CIRCUIT (I/C)  
0 LTSL - OPEN CIRCUIT (I/C)  
0 LTSTL - SHORT CIRCUIT (I/C)  
0 LTSTL - SHORT CIRCUIT (I/C)  
0 LTSTL - SHORT CIRCUIT (I/C)  
0 LTSTL - 1000 (BAL) (O/G & I/C)  
0 LTSTL - 1000 (BAL) (O/G & I/C)  
0 LTSTL - 102 (LOC) (O/G)  
0 LTSTL - 103 (LOC) (O/G)  
0 LTSTL - 104 (LOC) (O/G)  
0 LTSTL - 104 (LOC) (O/G)  
0 LTSTL - 104 (LOC) (O/G)  
0 LTSTL - 104 (LOC) (O/G)  
0 LTSTL - 1111 (NETLOSS) (I/C)  
0 LTSTL - 1111 (NETLOSS) (I/C)  
0 LTSTL - 1120 (NONSYN) (I/C)  
0 LTSTL - 1120 (NONSYN) (I/C)  
0 LTSTL - 1120 (NONSYN) (I/C)  
0 LTSTL - 1181 (SYNC) (I/C)  
0 LTSTL - 1181 (SYNC) (I/C)  
0 LTSTL - 1181 (SYNC) (I/C)  
0 LTU-LESS FACILITY MTCE  
0 MACHINE CONGESTIONS (MC) ENHANCEMENT  
0 MACHINE-INDEPENDANT SOS - PHASE 1  
0 MADN BRIDGING - 3 WAY CALL  
0 MADN BRIDGING - 3 WAY CALL  
0 MADN CUT-OFF ON DISCONNECT (COD)  
0 MADN CUT-OFF ON DISCONNECT (COD)  
0 MADN CUT-OFF ON DISCONNECT (COD)  
0 MADN RING FORWARD  
0 MADN SCA CAPABILITY FOR ISDN ELECTRONIC KEY  
0 TELEPHONE SERVIC  
0 MADN SCA CAPABILITY FOR ISDN ELECTRONIC KEY  
0 TELEPHONE SERVIC  
0 MADN SERVICE ODERS  
0 MADO PROFILE  
0 MADO PROFILE  
0 MADO SUPPORT OF SMARTCOM III VI.0

BT0095 NTX901AA24  
BT0095 NTX981AA01  
AG0358 NTXZ02AA01  
AG0358 NTX901AA24  
BC2324 NTX054AA05  
BC2324 NTX472AB08  
BC2324 NTX981AA01  
AE0320 NTX472AB08  
BT0084 NTXZ02AA01  
BT0084 NTX801AA01  
BT0084 NTX901AA24  
BT0083 NTXZ02AA01  
BT0083 NTX801AA01  
BT0083 NTX901AA24  
BT0087 NTXZ02AA01  
BT0087 NTX901AA24  
BT0091 NTX001AA29  
BT0092 NTX001AA29  
BT0093 NTXZ03AA01  
BT0093 NTX203AA01  
BT0093 NTX802AA04  
BT0093 NTX902AA07  
BT0088 NTXZ02AA01  
BT0088 NTX901AA24  
BT0085 NTXZ02AA01  
BT0085 NTX801AA01  
BT0085 NTX901AA24  
BT0090 NTXZ02AA01  
BT0090 NTX801AA01  
BT0090 NTX901AA24  
BC1019 NTX146AA03  
AF0181 NTX060AB11  
BC1017 NTX001AA29  
AG1566 NTX878AD01  
AG1566 NTX878AE01  
AG1568 NTX878AC01  
AG1568 NTX878AD01  
AG1568 NTX878AE01  
AF1272 NTXA33AA01  
AG1342 NTX754AA02  
  
AG1342 NTX754AB02  
  
BC1025 NTX106AA10  
BC1535 NTX640AA06  
BC1535 NTX640AB04  
AD1979 NTX640AB04

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| 0 MADO T-LINK F/W                                 | BF0632 NTX640AA06 |
| 0 MADO T-LINK F/W                                 | BF0632 NTX640AB04 |
| 0 MADO USER SELF TEST                             | AD0251 NTX640AA06 |
| 0 MADO USER SELF TEST                             | AD0251 NTX640AB04 |
| 0 MAGNETIC TAPE LOCAL INHIBIT                     | BR0002 NTX042AA04 |
| 0 MAGNETIC TAPE LOCAL INHIBIT                     | BR0002 NTX044AA04 |
| 0 MAINTAIN DATA IN TARIFF TABLE AND TARIFF NUMBER | BC1905 NTXH22AA01 |
| 0 TABLE IN XPM                                    |                   |
| 0 MAINTAIN DATA IN TARIFF TABLE AND TARIFF NUMBER | BC1905 NTX474AA07 |
| 0 TABLE IN XPM                                    |                   |
| 0 MAINTAIN MESSAGING OVER RESTARTS                | AC0638 NTX950AA06 |
| 0 MAINTENANCE ACTION PRE_CHECK                    | AL1759 NTX941AA12 |
| 0 MAINTENANCE AUDIT ENHANCEMENTS                  | AD1180 NTX322AA18 |
| 0 MAINTENANCE FOLDBACK                            | AD0745 NTX322AA18 |
| 0 MAINTENANCE FOR ISDN PRA I                      | AC0267 NTX790AC02 |
| 0 MAINTENANCE FOR NAILED-UP SPECIALS ON SMS       | BC1374 NTX299AA02 |
| 0 MAINTENANCE FOR NAILED-UP SPECIALS ON SMS       | BC1374 NTX299AB01 |
| 0 MAINTENANCE MMI FOR ICP-BASED CELL              | AD2218 NTXG52AA04 |
| 0 MAINTENANCE MMI FOR ICP-BASED CELL              | AD2218 NTXG80AA03 |
| 0 MAKE SET BUSY EXCEPT GIC                        | AL0619 NTX878AB02 |
| 0 MAKE SET BUSY EXCEPT GIC                        | AL0619 NTX878AC01 |
| 0 MAKE SET BUSY EXCEPT GIC                        | AL0619 NTX878AD01 |
| 0 MAKE SET BUSY EXCEPT GIC                        | AL0619 NTX878AE01 |
| 0 MALICIOUS CALL IDENTIFICATION                   | AG0709 NTX487AA03 |
| 0 MALICIOUS CALL TRACE AND HOLD -REA STANDARD     | BR0115 NTXZ03AA01 |
| 0 MALICIOUS CALL TRACE AND HOLD -REA STANDARD     | BR0115 NTX902AA07 |
| 0 MALICIOUS CALL TRACE FOR SUBSCRIBER LINES       | BF0674 NTX487AA03 |
| 0 MANDATORY DIRP PARALLEL RECORDING               | NC0079 NTXJ94AA01 |
| 0 MANUAL LINES                                    | BT0022 NTXZ02AA01 |
| 0 MANUAL LINES                                    | BT0022 NTX901AA24 |
| 0 MAP ACCESS VIA MPC PHASE I                      | AF3022 NTXP15AA01 |
| 0 MAP ALARM LEVEL SCREENING                       | BC1466 NTX427AA04 |
| 0 MAP CALLING PARTY TO CHARGE CLASS               | AD2764 NTX222CA09 |
| 0 MAP DISPLAY FOR ATTENDANT OM                    | BV0838 NTXZ00AA01 |
| 0 MAP DISPLAY FOR ATTENDANT OM                    | BV0838 NTX100AA27 |
| 0 MAP FOR THE STP LIM                             | AI0038 NTXF20AA02 |
| 0 MAP FOR THE STP LIM                             | AI0038 NTX833AB01 |
| 0 MAP LEVEL FOR NOP                               | BC1747 NTX000AA19 |
| 0 MAP LEVEL FOR NOP                               | BC1747 NTX560AB03 |
| 0 MAP LINE MAINTENANCE                            | BV1175 NTX213AC01 |
| 0 MAP SOFTWARE ENHANCEMENT                        | BC0668 NTX001AA29 |
| 0 MAP SUPPORT FOR CYBERNEX TERMINAL               | BR0202 NTX001AA29 |
| 0 MAP SUPPORT FOR VT100 TERMINALS                 | BR0162 NTX001AA29 |
| 0 MAP SUPPORT TOOLS                               | BC1392 NTX001AA29 |
| 0 MAP-PASS THROUGH FOR EIOC.                      | AD1242 NTXG16AA01 |
| 0 MARKET_OF_OFFICE ENHANCEMENTS                   | AJ1088 NTX270AA19 |
| 0 MARKET_OF_OFFICE ENHANCEMENTS                   | AJ1088 NTX470AA13 |



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| 0 MASS CALLING                                      | BC0235 NTXZ03AA01 |
| 0 MASS CALLING                                      | BR0228 NTXZ03AA01 |
| 0 MASS CALLING                                      | BV0080 NTXZ03AA01 |
| 0 MASS CALLING                                      | BC0235 NTX060AB11 |
| 0 MASS CALLING                                      | BV0080 NTX060AB11 |
| 0 MASS CALLING                                      | BC0235 NTX902AA07 |
| 0 MASS CALLING                                      | BR0228 NTX902AA07 |
| 0 MASS CALLING                                      | BV0080 NTX902AA07 |
| 0 MASS DMO TEST PROGRAM                             | BC0336 NTX030CC16 |
| 0 MASTER EXTERNAL CLOCK SUPPORT FOR COMPOSITE CLOCK | AL1161 NTXF26AA01 |
| 0 SIGNAL                                            |                   |
| 0 MASTER EXTERNAL/INTERNAL CLOCK SYNCHRONIZATION    | AL0688 NTXF27AA01 |
| 0 MATCH COMMAND IMPROVEMENT                         | AL0045 NTX001AA29 |
| 0 MATCHING LINE DRAWER STATUS OVER CC WARM SWACT    | AG1824 NTX001AA29 |
| 0 MBS POWER FEATURE - NAME PROGRAMMING              | AJ0445 NTXF88AA03 |
| 0 MBS POWER FEATURE - NAME PROGRAMMING              | AJ0445 NTXF88AB01 |
| 0 MCCS - CUSTOMER DIALED ON LINES                   | BV1115 NTX552AB03 |
| 0 MCCS - CUSTOMER DIALED ON LINES                   | BV1115 NTX552AC02 |
| 0 MCCS - CUSTOMER DIALED ON LINES                   | BV1115 NTX552AD01 |
| 0 MCCS - CUSTOMER DIALED ON LINES                   | BV1115 NTX825AB01 |
| 0 MCCS - CUSTOMER DIALED ON TOPS TRUNKS             | BV1114 NTX552AB03 |
| 0 MCCS - CUSTOMER DIALED ON TOPS TRUNKS             | BV1114 NTX552AC02 |
| 0 MCCS - CUSTOMER DIALED ON TOPS TRUNKS             | BV1114 NTX552AD01 |
| 0 MCCS - CUSTOMER DIALED ON TOPS TRUNKS             | BV1114 NTX825AB01 |
| 0 MCCS - CUSTOMER DIALED SEQUENCE CALLS             | BV1116 NTX552AB03 |
| 0 MCCS - CUSTOMER DIALED SEQUENCE CALLS             | BV1116 NTX552AC02 |
| 0 MCCS - CUSTOMER DIALED SEQUENCE CALLS             | BV1116 NTX552AD01 |
| 0 MCCS - CUSTOMER DIALED SEQUENCE CALLS             | BV1116 NTX825AB01 |
| 0 MCCS - OPERATOR ASSISTED MANUAL INWARD VALIDATION | BV1121 NTX170AA01 |
| 0 MCCS - OPERATOR ASSISTED MANUAL INWARD VALIDATION | BV1121 NTX552AB03 |
| 0 MCCS - OPERATOR ASSISTED MANUAL INWARD VALIDATION | BV1121 NTX552AC02 |
| 0 MCCS - OPERATOR ASSISTED MANUAL INWARD VALIDATION | BV1121 NTX552AD01 |
| 0 MCCS - OPERATOR ASSISTED MANUAL INWARD VALIDATION | BV1121 NTX825AB01 |
| 0 MCCS - OPERATOR ASSITED CCV                       | BV1112 NTX170AA01 |
| 0 MCCS - OPERATOR ASSITED CCV                       | BV1112 NTX552AB03 |
| 0 MCCS - OPERATOR ASSITED CCV                       | BV1112 NTX552AC02 |
| 0 MCCS - OPERATOR ASSITED CCV                       | BV1112 NTX552AD01 |
| 0 MCCS - OPERATOR ASSITED CCV                       | BV1112 NTX825AB01 |
| 0 MCCS - OPERATOR BNS                               | BV1113 NTX552AB03 |
| 0 MCCS - OPERATOR BNS                               | BV1113 NTX552AC02 |
| 0 MCCS - OPERATOR BNS                               | BV1113 NTX552AD01 |
| 0 MCCS - OPERATOR BNS                               | BV1113 NTX825AB01 |
| 0 MCCS ON ISUP IMT                                  | AD2627 NTX361BA05 |
| 0 MCCS ON ISUP IMT                                  | AD2627 NTX361CA07 |
| 0 MCCS ON PURE FG-D FOR LEC CALLING CARD            | AM0050 NTXG47AA02 |
| 0 MCI ANI DELIVERY IN ALL B-CHANNELS BUSY CONDITION | AD3128 NTXG01CA07 |
| 0 MCI BCSI ENHANCEMENT                              | AD3151 NTX361CA07 |

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| 0 MCI BOC DIRECT INWARD DIALING                                | AD3215 NTX222CA09 |
| 0 MCI CAC I/F OVER NX25                                        | AD0175 NTX222CA09 |
| 0 MCI CALL DETAIL RECORDING                                    | BV0669 NTX221CA05 |
| 0 MCI CALLING CARD CALL PROCESSING ENHANCEMENTS                | AD0154 NTX345CA04 |
| 0 MCI CALLING CARD REORIGINATION USING STR                     | AD0142 NTX345CA04 |
| 0 MCI CALLING CARD SERVICE                                     | BR3229 NTX345CA04 |
| 0 MCI CALLING NUMBER TRANSPORT                                 | AD1534 NTX361CA07 |
| 0 MCI CCS7 ISUP TO RESELLER INTERWORKING                       | AD3148 NTXM01AA01 |
| 0 MCI CCS7 ISUP TO RESELLER INTERWORKING                       | AD3148 NTXM02AA01 |
| 0 MCI CCS7 ISUP TO RESELLER INTERWORKING                       | AD3148 NTXM04AA01 |
| 0 MCI CCS7 ISUP TO RESELLER INTERWORKING                       | AD3148 NTX361CA07 |
| 0 MCI CDR AND PNR ENHANCEMENTS                                 | AD0153 NTX221CA05 |
| 0 MCI CDR AND PNR ENHANCEMENTS FOR VNET & 800 SVC.             | AD0977 NTX353AA04 |
| 0 MCI CDR AND PNR ENHANCEMENTS FOR VNET & 800 SVC.             | AD0977 NTX353CA05 |
| 0 MCI CDR AND PNR FORMATTER REWRITE                            | AD0968 NTX221CA05 |
| 0 MCI CDR UPGRADE - VER. 4.1                                   | BV1879 NTX353AA04 |
| 0 MCI CDR UPGRADE - VER. 4.1                                   | BV1879 NTX353CA05 |
| 0 MCI CREDIT CARD CALLING                                      | AJ1288 NTX345CA04 |
| 0 MCI DIGITAL DATA CALLING                                     | AJ1287 NTX222CA09 |
| 0 MCI DIRECT ACCESS TO EOPS                                    | AD1559 NTXG12CA06 |
| 0 MCI DMS-250 EOPS OSR UPGRADES TO 8.1                         | AM0159 NTXG12CA06 |
| 0 MCI DMS-250 OPNET PHASE II ANI DATABASE EXPANSION            | AD3512 NTXL71AA01 |
| 0 MCI DMS-250 OPNET PHASE II CALL PROCESSING                   | AD3478 NTXL71AA01 |
| 0 MCI DMS-250/ACD VNET OPERATOR SERVICES                       | AM0158 NTXL36AA01 |
| 0 MCI ENTREE SERVICE                                           | AD0451 NTX222CA09 |
| 0 MCI EOPS/MCCS ROTARY CALLING                                 | AD1554 NTXG12CA06 |
| 0 MCI IAM ENHANCEMENTS                                         | AD1533 NTX361CA07 |
| 0 MCI INBOUND/OUTBOUND INTERNATIONAL OPERATOR SERVICES PHAS II | AD2863 NTXG12CA06 |
| 0 MCI MCSS ACCESS TO EOPS                                      | AD1553 NTXG12CA06 |
| 0 MCI NCS LINK I/F                                             | AD1226 NTXG09CA01 |
| 0 MCI ONAL/DAL CALL PROCESSING (REL 1)                         | BV0746 NTX222AB04 |
| 0 MCI ONAL/DAL CALL PROCESSING (REL 1)                         | BV0746 NTX222CA09 |
| 0 MCI ONAL/DAL CALL PROCESSING (REL 1)                         | BV0746 NTX223AA01 |
| 0 MCI ONAL/DAL DATA BASE & TABLE CONTROL (REL1)                | BV0745 NTX222AB04 |
| 0 MCI ONAL/DAL DATA BASE & TABLE CONTROL (REL1)                | BV0745 NTX222CA09 |
| 0 MCI ONAL/DAL DATA BASE & TABLE CONTROL (REL1)                | BV0745 NTX223AA01 |
| 0 MCI ONAT CALL PROCESSING & TABLE CONTROL (REL. 2)            | BV0846 NTX223AA01 |
| 0 MCI ONAT CALL PROCESSING & TABLE CONTROL (REL. 2)            | BV0846 NTX321AA01 |
| 0 MCI ONAT CALL PROCESSING & TABLE CONTROL (REL. 2)            | BV0846 NTX321BA01 |
| 0 MCI ONAT CALL PROCESSING & TABLE CONTROL (REL. 2)            | BV0846 NTX321CA01 |
| 0 MCI OPERATOR SERVICES PRS/CSR FATURES ON THE DMS-250         | AD3618 NTXG12CA06 |
| 0 MCI OPERATOR SERVICES RECORDS                                | AD1556 NTXG12CA06 |
| 0 MCI OPERATOR SERVICES RELEASE LINK TRUNK PHASE I             | AD2866 NTXG30CA02 |
| 0 MCI OPERATOR SERVICES TIME AND CHARGES                       | AD3477 NTXG30CA02 |
| 0 MCI OPNET PHASE II TABLE CONTROL                             | AD3504 NTXL71AA01 |

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| 0 MCI PRI DIGITAL DATA - PHASE I                      | AD3129 NTXG01CA07 |
| 0 MCI PRIVATE NETWORK RECORDS                         | BV1901 NTX353AA04 |
| 0 MCI PRIVATE NETWORK RECORDS                         | BV1901 NTX353CA05 |
| 0 MCI RELEASE 2 AUTHCODES                             | BV1007 NTX234AB02 |
| 0 MCI RELEASE 2 AUTHCODES                             | BV1007 NTX234CA01 |
| 0 MCI SERVICE ACCESS CODES CALL PROCESSING            | BR3233 NTX222CA09 |
| 0 MCI SPECIAL BACKWARD CALL INDICATOR PARM            | AD1531 NTX361CA07 |
| 0 MCI SS7 ENHANCEMENTS                                | AD2391 NTX361CA07 |
| 0 MCI STANDARD CCS7 IMT ENHANCEMENTS                  | AD0701 NTX222CA09 |
| 0 MCI TCAP BASED LOCALL EXCHANGE CARRIER (LEC)        | AD2765 NTXG78AA02 |
| 0 CALLING CARD                                        |                   |
| 0 MCI TRANSLATION VERIFICATION                        | BV1017 NTX239AA02 |
| 0 MCI TRANSLATION VERIFICATION                        | BV1017 NTX239BA02 |
| 0 MCI TRANSLATION VERIFICATION                        | BV1017 NTX239CA01 |
| 0 MCI TR444                                           | AD3442 NTXL70CA01 |
| 0 MCI VNET PHASE 1                                    | BR3230 NTX353AA04 |
| 0 MCI VNET PHASE 1                                    | BR3230 NTX353CA05 |
| 0 MCI 32 WORD AUDIT                                   | AD1601 NTX222CA09 |
| 0 MCI 32 WORD CDR SEARCH ON DISK                      | BV1678 NTX221CA05 |
| 0 MCI 32 WORD SRB CDR                                 | BV1397 NTX221CA05 |
| 0 MCI 32-WORD CDR ENHANCEMENTS                        | BR3234 NTX221CA05 |
| 0 MCI 800 CALL SCREENING                              | AD0971 NTX222CA09 |
| 0 MCI'S ATR ENHANCEMENT FOR ACD PLATFORM              | AM0157 NTXL31AA01 |
| 0 MCI'S 900 NCS BASED SERVICE                         | AD2362 NTX222CA09 |
| 0 MCI'S 900 SERVICE IN-SWITCH                         | AD2360 NTX222CA09 |
| 0 MCL DIRECTORY NUMBER FORMATTING                     | AE0597 NTXK01AA01 |
| 0 MDC CIRCUIT TEST ENHANCEMENT                        | AG0979 NTX106AA10 |
| 0 MDC ENHANCED WATS                                   | AF1664 NTXE96AA01 |
| 0 MDC WARM LINE                                       | NC0011 NTXJ38AA01 |
| 0 MDR DATA IN THE AMA STREAM                          | AF1455 NTXA88AA02 |
| 0 MDR7 - SS#7 MESSAGE DETAIL RECORDING                | AL1677 NTXJ91AA01 |
| 0 MDR7: EIU TRANSMIT FUNCTION                         | AL1640 NTXJ91AA01 |
| 0 MECHANIZED FORCE ADMINISTRATION DATA SYSTEM (MFADS) | BR0333 NTX030BA03 |
| 0 MECHANIZED LINE CARD ASSIGNMENT                     | BR0311 NTX176AA05 |
| 0 MEET ME CONFERENCE FEATURE EXPANSION                | BV0958 NTX111AA03 |
| 0 MEET ME PAGE                                        | AF1275 NTXA73AA01 |
| 0 MEET-ME CONFERENCE                                  | BV0477 NTXZ00AA01 |
| 0 MEET-ME CONFERENCE                                  | BV0477 NTX100AA27 |
| 0 MEL DC5 DELAY DIAL                                  | AE0077 NTX222AM05 |
| 0 MEL SIGNALLING AND CSH TIME HANDLING                | AE0079 NTX222AM05 |
| 0 MEMORY ADMINISTRATION - NEW OM                      | AF1452 NTX001AA29 |
| 0 MEMORY DIAGNOSTIC FOR 4 MEG. MEMORY BOARD           | AD2462 NTXG21AA06 |
| 0 MERCURY DMS-250 OVERLAPPED OUTPULSING               | AE0315 NTX938AA01 |
| 0 MERCURY DMS-250 TOPS SERVICE INTERCEPTION           | AE0261 NTX030CC16 |
| 0 MERCURY F1 AMA RECORD                               | BV2014 NTX341AM02 |
| 0 MERCURY IMT MF AND DTMF UTR DIGIT RECEPTION         | AE0224 NTX961AA01 |
| 0 MERCURY MEL, 3L, AND 3J DTMF UTR DIGIT RECEPTION    | AE0225 NTX961AA01 |

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| 0 MERCURY MIMT TO T250 TRUNK INTERCONNECTION               | AE0263 | NTX222AM05 |
| 0 MERIDIAN DIGITAL CENTREX ON SMS                          | AF0237 | NTX398AA12 |
| 0 MERIDIAN LGC MAINTENANCE                                 | BF0817 | NTX640AA06 |
| 0 MERIDIAN LGC MAINTENANCE                                 | BF0817 | NTX640AB04 |
| 0 MERIDIAN SUPERNODE BILLING                               | AD1809 | NTXE75AA05 |
| 0 MERIDIAN SUPERNODE BILLING                               | AD1809 | NTXE75AB01 |
| 0 MERIDIAN SUPERNODE OPTION 201: S/W SUPPORT               | AD3248 | NTXP90AA01 |
| 0 MERIDIAN SUPERNODE PLATFORM                              | AD1808 | NTXE75AA05 |
| 0 MERIDIAN SUPERNODE PLATFORM                              | AD1808 | NTXE75AB01 |
| 0 MERIDIAN TELECENTER                                      | AM0164 | NTXQ21AA01 |
| 0 MESSAGE RATE REMOTE CALL FORWARDING BASE DN              | BR0815 | NTX021AA04 |
| 0 MESSAGE SERVICE - LEAVE MESSAGE                          | AG1625 | NTXE47AA02 |
| 0 MESSAGE SERVICE - LIST MANAGEMENT                        | AG1624 | NTXE47AA02 |
| 0 MESSAGE SERVICE - NETWORK MESSAGE WAITING INDICATOR      | AG1638 | NTXA68AA01 |
| 0 MESSAGE SERVICE - NETWORK MESSAGE WAITING INDICATOR      | AG1638 | NTX797AB01 |
| 0 MESSAGE SWITCH DIAGNOSTIC ENHANCEMENTS                   | AL0712 | NTX950AA06 |
| 0 MESSAGE SWITCH MAINTENANCE                               | BC1921 | NTX951AA08 |
| 0 MESSAGE SWITCH SOFTWARE SUPPORT FOR 9X32                 | AL0727 | NTX940AA13 |
| 0 MESSAGE TRANSPORT SYSTEM                                 | BC1211 | NTX470AA13 |
| 0 MESSAGE WAITING FOR SMDI                                 | AD0367 | NTX732AA06 |
| 0 MESSAGE WAITING INDICATOR - PRI                          | AJ1538 | NTX797AA01 |
| 0 MESSAGE WAITING INDICATOR - PRI                          | AJ1538 | NTX797AB01 |
| 0 MESSAGE WAITING LAMP UPDATE - LINK PHONE                 | BC0979 | NTX119AA05 |
| 0 MESSAGE WAITING LINE CARD FACILITY MAINTENANCE           | BC0898 | NTX119AA05 |
| 0 METALLIC JACK                                            | AG0054 | NTX250AA15 |
| 0 METALLIC TESTING FOR 2B1Q LOOPS                          | AL1588 | NTX750AC02 |
| 0 METALLIC TESTING FOR 2B1Q LOOPS                          | AL1588 | NTX750AD01 |
| 0 METER COUNT PRINTOUT                                     | AE0056 | NTXH22AA01 |
| 0 METER COUNT PRINTOUT                                     | AE0056 | NTX474AA07 |
| 0 METER PULSE RECEPTION AND TANDEM I (PREP)                | AJ0581 | NTXH23AA02 |
| 0 METER PULSE RECEPTION AND TANDEM II                      | AJ0851 | NTXH23AA02 |
| 0 METERING DATAFILL VERIFICATION TOOL                      | BC2327 | NTX176AA05 |
| 0 METERING LINE CAPACITY ENHANCEMENTS                      | AE0292 | NTXH22AA01 |
| 0 METERING LINE CAPACITY ENHANCEMENTS                      | AE0292 | NTX474AA07 |
| 0 MEXICAN R2 AND FIXED ANI TRUNKS                          | AJ1423 | NTXH80AA02 |
| 0 MF FEATURE GROUP D AND CAMA INTERWORKING FOR ONA/<br>ESP | AG1708 | NTX795AA01 |
| 0 MF MONITOR FOR TYPE 2A CELLULAR INTERCONNECT             | AF1451 | NTX843AB01 |
| 0 MF TRUNK CALL PROCESSING USING UTRS                      | BC1483 | NTX269AA07 |
| 0 MFC CC/XPM PROTOCOL                                      | AE0144 | NTXB69AA04 |
| 0 MFC MONITOR TOOL                                         | AJ1027 | NTX470AA13 |
| 0 MFCR2 - DE BUG TOOLS                                     | AE0136 | NTXB69AA04 |
| 0 MFCR2 - PROTOCOL DEFINITION TABLES                       | AE0142 | NTX904AA04 |
| 0 MFCR2 IN PDTC - MAIN FEATURE                             | AE0139 | NTXB69AA04 |
| 0 MFCR2 LINE SIGNALLING PRIMITIVES.                        | AE0141 | NTXB69AA04 |
| 0 MFCR2 ROUTING TABLES                                     | AE0146 | NTX904AA04 |
| 0 MFCR2 TASK IN PDTC                                       | AE0145 | NTXB69AA04 |

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| 0 MFCR2 TRUNKS - DATA AND MAINTENANCE                  | AE0143 NTXB69AA04 |
| 0 MIL UK BT TRUNK AND LINE SIGNALLING I                | BC1625 NTX611AA07 |
| 0 MIL UK BT TONES I                                    | BC1623 NTX611AA07 |
| 0 MILITARY CALL DETAIL RECORDING                       | BC1174 NTX701CA07 |
| 0 MILITARY CDR - CALL PROCESSING                       | BC1175 NTX701CA07 |
| 0 MILITARY CDR - SUPPORT UTILITIES                     | BC1176 NTX701CA07 |
| 0 MILITARY CDR - TABLE CONTROL                         | BC1177 NTX701BA08 |
| 0 MILITARY PBX - AUTOVON NETWORK ACCESS                | BC0872 NTX607AA04 |
| 0 MILITARY PBX - FEATURE INTERACTIONS                  | BC0875 NTX607AA04 |
| 0 MILITARY PBX - INCOMING TRANSLATION                  | BC0874 NTX607AA04 |
| 0 MILITARY PBX - PERIPHERAL EXECS FOR AUTOVON          | BC0878 NTX607AA04 |
| 0 SUPERVISION                                          |                   |
| 0 MILITARY PBX - PNID CALL PROCESSING                  | BC0869 NTX607AA04 |
| 0 MILITARY PBX - PNOD CALL PROCESSING                  | BC0870 NTX607AA04 |
| 0 MILITARY PBX - PREEMPTION PROCESSING                 | BC0873 NTX607AA04 |
| 0 MILITARY PBX - ROUTER                                | BC0871 NTX607AA04 |
| 0 MILITARY PBX - TRUNK GROUP DATA                      | BC0876 NTX607AA04 |
| 0 MULTIPLE AUTHCODES PER TRUNK GROUP.                  | AD0130 NTX222AB04 |
| 0 MULTIPLE AUTHCODES PER TRUNK GROUP.                  | AD0130 NTX222BA07 |
| 0 MINIMUM CHARGE                                       | BR0336 NTX030CC16 |
| 0 MINOR POF ENHANCEMENT                                | BC1051 NTX001AA29 |
| 0 MIS ENHANCEMENT                                      | AG2004 NTX991AF01 |
| 0 MISC. SUPPORT FOR TRUNKS AS SCAI ACD AGENTS          | AD2886 NTXN14AA01 |
| 0 MISCELLANEOUS CKTLOC UPDATES                         | AD3339 NTXQ60AA01 |
| 0 MISCELLANEOUS IBN FEATURE ENHANCEMENTS               | AG0503 NTXA64AA05 |
| 0 MIXED SIGNALING ON VNET DAL                          | AD0458 NTX353AA04 |
| 0 MIXED SIGNALING ON VNET DAL                          | AD0458 NTX353CA05 |
| 0 MLT - PHASE II                                       | BR0499 NTX195AA05 |
| 0 MLT PHASE I                                          | BR0441 NTX195AA05 |
| 0 MMI FOR INTERMS LINKS                                | AC0639 NTX945AA03 |
| 0 MMI FOR INTERMS LINKS                                | AC0639 NTX951AA08 |
| 0 MMI FOR WARM SWACT                                   | BC1022 NTX181AA12 |
| 0 MMI RESPONSE MEASUREMENTS                            | BC2302 NTX001AA29 |
| 0 MMI SOFTWARE INTERFACE FOR CABINETIZED MERIDIAN SL - | AD0757 NTXA10AA01 |
| 0 100                                                  |                   |
| 0 MOBILE HANDLING ITMS ROAMER                          | BR0203 NTX030CC16 |
| 0 MOBILE RADIO INTERFACE                               | BV0837 NTX601BA06 |
| 0 MOBILE 10-DIGIT ANI                                  | BV1619 NTX322AA18 |
| 0 MODEM ELIMINATION                                    | AD2557 NTX322AA18 |
| 0 MODEM POOL DU (PRODUCTION)                           | BF0446 NTX251AA06 |
| 0 MODEM POOLING PHASE II                               | BV1311 NTX251AA06 |
| 0 MODIFY TM TONE DIAGNOSTICS FOR NT2X59BA              | BC1064 NTX001AA29 |
| 0 MONITOR TALK                                         | BC0091 NTX001AA29 |
| 0 MONITOR TALK                                         | BC0091 NTX055AA03 |
| 0 MONITOR TALK                                         | BV0042 NTX055AA03 |
| 0 MONITOR TALK                                         | BC0091 NTX065AA12 |
| 0 MONITOR USER ACTIVITY                                | AD2066 NTXF42AA01 |

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| 0 MORNING MAINTENANCE REPORT II                      | AJ0472 NTXJ35AA02 |
| 0 MOROCCAN PHYSICAL RINGING                          | AE0515 NTXH02AA01 |
| 0 MOROCCAN R2 LINE SIGNALLING                        | AE0514 NTXB69AA04 |
| 0 MOROCCAN R2 LINE SIGNALLING                        | AE0514 NTXH04AA01 |
| 0 MOROCCAN SOCOTEL CALL PROCESSING                   | AE0567 NTXH03AA01 |
| 0 MOROCCAN SOCOTEL CALL PROCESSING                   | AE0567 NTXH05AA03 |
| 0 MOROCCAN SOCOTEL CALL PROCESSING                   | AE0567 NTXH06AA03 |
| 0 MOROCCAN SOCOTEL REGISTER SIGNALLING               | AE0568 NTXH03AA01 |
| 0 MOROCCAN SOCOTEL REGISTER SIGNALLING               | AE0568 NTXH05AA03 |
| 0 MOROCCAN SOCOTEL REGISTER SIGNALLING               | AE0568 NTXH06AA03 |
| 0 MOROCCAN TONES                                     | AE0448 NTXH00AA01 |
| 0 MOROCCAN TYPE A LINE CARD DIAGNOSTICS              | AE0513 NTXH01AA02 |
| 0 MOROCCAN TYPE B LINE CARD DIAGNOSTICS              | AE0536 NTXH01AA02 |
| 0 MOST ECONOMICAL ROUTING PHASE II                   | AD0291 NTXA54AA01 |
| 0 MPC BX.25 LEVEL 2.                                 | BF0508 NTX273AA07 |
| 0 MPC BX.25 LEVEL 3.                                 | BF0507 NTX273AA07 |
| 0 MPC CC ASYNCHRONOUS SUPPORT                        | AF2475 NTXN10AA01 |
| 0 MPC COMMAND INTERPRETER                            | BF0502 NTX273AA07 |
| 0 MPC DATAPAC X.25 CC INTERFACE                      | AF0015 NTX273AA07 |
| 0 MPC DATAPAC X.25 PP S/W                            | AF0016 NTX273AA07 |
| 0 MPC IOC HANDLER                                    | BF0503 NTX273AA07 |
| 0 MPC LEVEL ONE HANDLER                              | BF0504 NTX273AA07 |
| 0 MPC LOGS FOR IOD MAINTENANCE                       | BC2132 NTX273AA07 |
| 0 MPC MULTI-LINK MANAGEMENT UTILITY                  | AC0065 NTX892AA04 |
| 0 MPC OM CC INTERFACE TO PP AND PP DATA REGISTRATION | AF1129 NTX273AA07 |
| 0 MPC OM COLLECTION(CC)                              | AF1128 NTX273AA07 |
| 0 MPC OM GROUP DEFINITIONS                           | AF1127 NTX273AA07 |
| 0 MPC OM PP INTERFACE TO CC                          | AF1131 NTX273AA07 |
| 0 MPC OM PP LINK DATA COLLECTION                     | AF1130 NTX273AA07 |
| 0 MPC OS                                             | BF0501 NTX273AA07 |
| 0 MPC PP ASYNCHRONOUS LEVEL-1                        | AF2473 NTXN10AA01 |
| 0 MPC PP ASYNCHRONOUS SUPPORT                        | AF2474 NTXN10AA01 |
| 0 MPC ROM MAINTENANCE AND CC LOADER.                 | BF0505 NTX001AA29 |
| 0 MPC ROM MAINTENANCE AND CC LOADER.                 | BF0505 NTX273AA07 |
| 0 MPC 1980 CCITT X.25 CC PROTOCOL SUPPORT            | AF1767 NTXE65AA01 |
| 0 MPC 1980 CCITT X.25 PP ARCHITECTURE                | AF1768 NTXE65AA01 |
| 0 MPC 1980 CCITT X.25 PP L1                          | AF1770 NTXE65AA01 |
| 0 MPC 1980 CCITT X.25 PP L2 AND L3                   | AF1769 NTXE65AA01 |
| 0 MPC 1984 X.25 CC DEVELOPMENT                       | AF2777 NTXN85AA01 |
| 0 MPCFAST (NTX892) ENHANCEMENTS                      | AF1516 NTX892AA04 |
| 0 MS MAP, MMI AND LOGS ENHANCEMENTS                  | AL0548 NTX940AA13 |
| 0 MSB - DTC NUC BASIC MTCE                           | BC0474 NTX270AA19 |
| 0 MSB6 NEW STI CARD SUPPORT                          | BC1506 NTX040AA03 |
| 0 MSN DEDICATED ACCESS TRUNK INTERFACE               | AD2176 NTXE75AA05 |
| 0 MSN DEDICATED ACCESS TRUNK INTERFACE               | AD2176 NTXE75AB01 |
| 0 MSN FEATURE GROUP A INTERFACE                      | AD2177 NTXE75AA05 |
| 0 MSN FEATURE GROUP A INTERFACE                      | AD2177 NTXE75AB01 |

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| 0 MSN FEATURE GROUP B INTERFACE                 | AD1806 NTXE75AA05 |
| 0 MSN FEATURE GROUP B INTERFACE                 | AD1806 NTXE75AB01 |
| 0 MSN FEATURE GROUP D INTERFACE                 | AD1803 NTXE75AA05 |
| 0 MSN FEATURE GROUP D INTERFACE                 | AD1803 NTXE75AB01 |
| 0 MSN N00 DIALING                               | AD1802 NTXE77AA01 |
| 0 MSN REAL TIME DOCUMENTATION                   | AD2178 NTXE75AA05 |
| 0 MSN REAL TIME DOCUMENTATION                   | AD2178 NTXE75AB01 |
| 0 MSN TRAVEL CARD CALL PROCESSING               | AD2185 NTXE76AA01 |
| 0 MSN TRAVEL CARD NUMBER DATABASE               | AD1946 NTXE76AA01 |
| 0 MTA GATING FACILITY                           | BC0867 NTXZ02AA01 |
| 0 MTA GATING FACILITY                           | BC0867 NTX901AA24 |
| 0 MTCBASE PERFORMANCE ENHANCEMENTS              | AG1239 NTX000AA19 |
| 0 MTCBASE PERFORMANCE TOOLS                     | AG1296 NTX001AA29 |
| 0 MTCE - CORE                                   | BT0225 NTX001AA29 |
| 0 MTCE - TRUNK DIAGNOSTICS                      | BT0228 NTX001AA29 |
| 0 MTCE - TTP                                    | BT0229 NTX001AA29 |
| 0 MTCE SUPPORT FOR RLCM                         | BC0720 NTX146AA03 |
| 0 MTCE TTP TRUNK MONITOR                        | BT0233 NTX055AA03 |
| 0 MTCE UPDATES FOR CR TM                        | BC0628 NTX001AA29 |
| 0 MTM FIRMWARE SUPPORTING 32K RAM 0X70 CARD     | BF0626 NTX348AA01 |
| 0 MTM PRIMITIVE REMOVAL TO INCREASE EXEC STORE  | BF0347 NTX220AA13 |
| 0 MTM PRIMITIVE REMOVAL TO INCREASE EXEC STORE  | BF0347 NTX220BA06 |
| 0 MTM PRIMITIVE REMOVAL TO INCREASE EXEC STORE  | BF0347 NTX220CA08 |
| 0 MTP - BERT CAPABILITY FOR SSP                 | AC0442 NTXE30AA01 |
| 0 MTP - BERT CAPABILITY FOR SSP                 | AC0442 NTX839AB02 |
| 0 MTP - BERT CAPABILITY FOR STP                 | AC0420 NTX839AB02 |
| 0 MTP - CAPABILITY CODES                        | AC0233 NTX833AB01 |
| 0 MTP - CC RESTART HANDLING IMPROVEMENTS        | AC0228 NTXR72AA01 |
| 0 MTP - CC RESTART HANDLING IMPROVEMENTS        | AC0228 NTX041AB09 |
| 0 MTP - CC ROUTING CAPABILITY                   | AC0150 NTXR72AA01 |
| 0 MTP - CC ROUTING CAPABILITY                   | AC0150 NTX041AB09 |
| 0 MTP - CONGESTION HANDLING                     | BC2292 NTXR72AA01 |
| 0 MTP - CONGESTION HANDLING                     | BC2292 NTX041AB09 |
| 0 MTP - CONGESTION/TIMER OPTION TABLE CONTROL   | BC2290 NTXR72AA01 |
| 0 MTP - CONGESTION/TIMER OPTION TABLE CONTROL   | BC2290 NTX041AB09 |
| 0 MTP - COV, CBK, REROUTE ENHANCEMENTS          | AC0149 NTXR72AA01 |
| 0 MTP - COV, CBK, REROUTE ENHANCEMENTS          | AC0149 NTX041AB09 |
| 0 MTP - DIAGNOSTICS FOR 9X76/9X77/9X78 CARDS    | AC0124 NTXN19AA02 |
| 0 MTP - DIAGNOSTICS FOR 9X76/9X77/9X78 CARDS    | AC0124 NTX833AB01 |
| 0 MTP - DISTRIBUTED DATA AUDITS & OM COLLECTION | AC0225 NTXR72AA01 |
| 0 MTP - DISTRIBUTED DATA AUDITS & OM COLLECTION | AC0225 NTX041AB09 |
| 0 MTP - DISTRIBUTED MTP DATA                    | AC0226 NTXR72AA01 |
| 0 MTP - DISTRIBUTED MTP DATA                    | AC0226 NTX041AB09 |
| 0 MTP - GENERIC DISTRIBUTED DATA MANAGER        | AC0148 NTXR72AA01 |
| 0 MTP - GENERIC DISTRIBUTED DATA MANAGER        | AC0148 NTX041AB09 |
| 0 MTP - LGP L2/L3 INTERFACE                     | AC0219 NTXN19AA02 |
| 0 MTP - LGP L2/L3 INTERFACE                     | AC0219 NTX833AB01 |

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| 0 MTP - MESSAGE TRANSFER PART               | AL0076 NTXR72AA01 |
| 0 MTP - MESSAGE TRANSFER PART               | AL0076 NTX041AB09 |
| 0 MTP - MULTI-MSB CAPABILITY                | AC0223 NTXR72AA01 |
| 0 MTP - MULTI-MSB CAPABILITY                | AC0223 NTX041AB09 |
| 0 MTP - MULTI-MSB MMI                       | AC0220 NTXR72AA01 |
| 0 MTP - MULTI-MSB MMI                       | AC0220 NTX041AB09 |
| 0 MTP - POINT CODE ROUTING ALGORITHM        | BF1024 NTXR72AA01 |
| 0 MTP - POINT CODE ROUTING ALGORITHM        | BF1024 NTX041AB09 |
| 0 MTP - PREVENTATIVE CYCLIC RETRANSMISSION  | AC0222 NTXE32AA01 |
| 0 MTP - QUASI ASSOCIATED SIGNALLING         | BC2291 NTXR72AA01 |
| 0 MTP - QUASI ASSOCIATED SIGNALLING         | BC2291 NTX041AB09 |
| 0 MTP - ROBUSTNESS IMPROVEMENTS             | AC0411 NTXR72AA01 |
| 0 MTP - ROBUSTNESS IMPROVEMENTS             | BF0989 NTXR72AA01 |
| 0 MTP - ROBUSTNESS IMPROVEMENTS             | AC0411 NTX041AB09 |
| 0 MTP - ROBUSTNESS IMPROVEMENTS             | BF0989 NTX041AB09 |
| 0 MTP - SIGNAL TRANSFER POINT               | AC0247 NTX833AB01 |
| 0 MTP - ST POOLS FOR CCS7 SIGNALLING LINKS  | BC2293 NTXR72AA01 |
| 0 MTP - ST POOLS FOR CCS7 SIGNALLING LINKS  | BC2293 NTX041AB09 |
| 0 MTP - STP LINKSET MGMT                    | AC0230 NTX833AB01 |
| 0 MTP - STP ROUTESET MGMT                   | AC0231 NTX833AB01 |
| 0 MTP AUDITS FOR CCS7                       | BF0942 NTXR72AA01 |
| 0 MTP AUDITS FOR CCS7                       | BF0942 NTX041AB09 |
| 0 MTP TEST DRIVER                           | AD0104 NTXG08AA01 |
| 0 MTS ENHANCEMENTS FOR BILLING SERVER.      | AD0487 NTXG09AA03 |
| 0 MTX AUDITS                                | BV1237 NTX322AA18 |
| 0 MTX AUDITS                                | BV1237 NTX324AA02 |
| 0 MTX CALL PROCESSING SUPPORT FOR SUPERNODE | AD1446 NTX322AA18 |
| 0 MTX FPE HANDOFF                           | BV1581 NTX322AA18 |
| 0 MTX HDLC CONTROLLER DIAGNOSTICS           | BF0321 NTX220AA13 |
| 0 MTX HDLC CONTROLLER DIAGNOSTICS           | BF0321 NTX220BA06 |
| 0 MTX HDLC CONTROLLER DIAGNOSTICS           | BF0321 NTX220CA08 |
| 0 MTX HDLC CONTROLLER DIAGNOSTICS           | BF0321 NTX322AA18 |
| 0 MTX HDLC CONTROLLER FIRMWARE              | BF0308 NTX220AA13 |
| 0 MTX HDLC CONTROLLER FIRMWARE              | BF0308 NTX220BA06 |
| 0 MTX HDLC CONTROLLER FIRMWARE              | BF0308 NTX220CA08 |
| 0 MTX HDLC CONTROLLER FIRMWARE              | BF0308 NTX322AA18 |
| 0 MTX HDLC MONITOR                          | BF0312 NTX220AA13 |
| 0 MTX HDLC MONITOR                          | BF0312 NTX220BA06 |
| 0 MTX HDLC MONITOR                          | BF0312 NTX220CA08 |
| 0 MTX HDLC MONITOR                          | BF0312 NTX322AA18 |
| 0 MTX MAINTENANCE SUPPORT FOR DMS SUPERNODE | AD1443 NTX322AA18 |
| 0 MTX NETWORK DISTRIBUTED DATABASES         | AD2209 NTXG83AA02 |
| 0 MTX NETWORK DISTRIBUTED DATABASES         | AD2209 NTX376AA05 |
| 0 MTX NETWORK DISTRIBUTED DATABASES         | AD2209 NTX376AB01 |
| 0 MTX NETWORKING MESSAGING                  | BV2066 NTXG83AA02 |
| 0 MTX NETWORKING MESSAGING                  | BV2066 NTX322AA18 |
| 0 MTX NETWORKING MESSAGING                  | BV2066 NTX376AA05 |



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| 0 MTX NETWORKING MESSAGING                           | BV2066 NTX376AB01 |
| 0 MTX PAGE TIMEOUT TREATMENT                         | BV1615 NTX322AA18 |
| 0 MTX SERIAL NUMBER DISABLE OPTION                   | BV1614 NTX322AA18 |
| 0 MTX TOLL DENIED OPERATOR ASSIST OPTION             | BV1616 NTX322AA18 |
| 0 MTX UNIVERSAL FEATURE USAGE                        | AD2208 NTXG83AA02 |
| 0 MTX UNIVERSAL FEATURE USAGE                        | AD2208 NTX376AA05 |
| 0 MTX UNIVERSAL FEATURE USAGE                        | AD2208 NTX376AB01 |
| 0 MTX VERTICAL SERVICE HOLD DURATIONS                | BV1582 NTX325AA03 |
| 0 MULTI-CUSTOMER ANI VERIFICATION DATA BASES         | BV1585 NTX342AA02 |
| 0 MULTI-CUSTOMER ANI VERIFICATION DATA BASES         | BV1585 NTX342BA01 |
| 0 MULTI-CUSTOMER ANI VERIFICATION DATA BASES         | BV1585 NTX342CA01 |
| 0 MULTI-LINK ASCII DEVICE DRIVER                     | AD0366 NTX730AA02 |
| 0 MULTI-LOCATION BUSINESS GROUP I                    | AG1252 NTXN01AA01 |
| 0 MULTI-LOCATION BUSINESS GROUP I                    | AG1252 NTXN01AB01 |
| 0 MULTI-PARTY BRIDGING                               | AF0178 NTX297AA01 |
| 0 MULTI-STAGE QUEUE STATUS                           | AD1129 NTX416AC01 |
| 0 MULTI-STAGE QUEUE STATUS                           | AD1129 NTX416AD01 |
| 0 MULTI-STAGE QUEUE STATUS                           | AD1129 NTX416AE01 |
| 0 MULTI-STAGE QUEUE STATUS                           | AD1129 NTX416AF01 |
| 0 MULTI-STAGE QUEUE STATUS                           | AD1129 NTX416AG01 |
| 0 MULTI-STAGE QUEUE STATUS                           | AD1129 NTX416AH01 |
| 0 MULTI-STAGE QUEUE STATUS                           | AD1129 NTX416AI01 |
| 0 MULTI-STAGE QUEUE STATUS                           | AD1129 NTX416AJ01 |
| 0 MULTI-STREAM CDR FOR DMS250                        | BV1243 NTX341AA05 |
| 0 MULTI-STREAM CDR FOR DMS250                        | BV1243 NTX341CA01 |
| 0 MULTI-TRAFFIC OFFICE OPERATION                     | BV0242 NTX030BA03 |
| 0 MULTI-VOLUME TAPE FILES                            | AF1725 NTXN80AA01 |
| 0 MULTI-X.25 SUPPORT FOR NEMAS AFT ON EIOC-MP        | AD2237 NTX344CA06 |
| 0 MULTIPARTY FLAT RATE                               | BV0045 NTXZ02AA01 |
| 0 MULTIPARTY FLAT RATE                               | BV0045 NTX901AA24 |
| 0 MULTIPLOT DIRECTORY NUMBERS ON MLH GROUP           | NC0056 NTXJ82AA02 |
| 0 MULTIPLE APPLICATIONS ON THE 6X91 FILE SYSTEM      | BV1698 NTX347AA06 |
| 0 MULTIPLE AUTHCODE SETS                             | AD0818 NTX368BA01 |
| 0 MULTIPLE CONSOLE OPERATION                         | BV0435 NTXZ00AA01 |
| 0 MULTIPLE CONSOLE OPERATION                         | BV0435 NTX100AA27 |
| 0 MULTIPLE DIRECTORY NUMBER CAPABILITY FOR ISDN EKTS | AJ0165 NTX753AA06 |
| 0 MULTIPLE DIRECTORY NUMBER CAPABILITY FOR ISDN EKTS | AJ0165 NTX753AB01 |
| 0 MULTIPLE FUNCTIONAL SIGNALLING CALLS PER DIRECTORY | AC0377 NTX753AA06 |
| 0 NUMBER                                             |                   |
| 0 MULTIPLE FUNCTIONAL SIGNALLING CALLS PER DIRECTORY | AC0377 NTX753AB01 |
| 0 NUMBER                                             |                   |
| 0 MULTIPLE LISTED DIRECTORY NUMBERS                  | BV0434 NTXZ00AA01 |
| 0 MULTIPLE LISTED DIRECTORY NUMBERS                  | BV0434 NTX100AA27 |
| 0 MULTIPLE OPERATOR CENTER CALL ROUTING PHASE I      | AD2486 NTXG26AA01 |
| 0 MULTIPLE POINT CODES FOR MTP                       | AE0415 NTX936AA01 |
| 0 MULTIPLE POINT CODES FOR MTP                       | AE0415 NTX936AB01 |
| 0 MULTIPLE POSITION HUNT WITH QUEUE                  | AL0612 NTX877AB01 |

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| 0 MULTIPLE RETRIALS ON TRUNK GROUPS                 | BV1551 NTX610AA03 |
| 0 MULTIPLE RETRIALS ON TRUNK GROUPS                 | BV1551 NTX701CA07 |
| 0 MULTIPLE TERMINALS PER ISDN LOOP                  | AC0097 NTX750AC02 |
| 0 MULTIPLE TERMINALS PER ISDN LOOP                  | AC0097 NTX750AD01 |
| 0 MULTIPLE TREATMENT TABLES                         | BV2017 NTX322AA18 |
| 0 MULTIPLE TRUNK GROUP ASSIGNMENT PER SINGLE CLLI   | BR3224 NTX222CA09 |
| 0 MULTIPLE VALIDATED PINS PER AUTHCODE              | AD0521 NTX222AB04 |
| 0 MULTIPLE VALIDATED PINS PER AUTHCODE              | AD0521 NTX222BA07 |
| 0 MULTIUNIT MESSAGE RATE SERVICES                   | BR0440 NTX160AA06 |
| 0 MULTIWINK COIN CONTROL                            | BR0036 NTXZ02AA01 |
| 0 MULTIWINK COIN CONTROL                            | BR0036 NTX901AA24 |
| 0 MUSIC ON HOLD FOR EBS                             | AD0989 NTXA84AA01 |
| 0 MVP DIAL PLAN                                     | BC0954 NTX436AA01 |
| 0 M20/TTC DIAGNOSTICS                               | AE0489 NTXH11AA01 |
| 0 M20/TTC MAINTENANCE INTERFACE                     | AE0490 NTXH11AA01 |
| 0 M20/TTC SIGNALLING INTERFACE                      | AE0485 NTXH11AA01 |
| 0 M20B MAINTENANCE - CC SUPPORT                     | AE0484 NTXH11AA01 |
| 0 M2006 SINGLE-LINE DIGITAL SET SUPPORT             | AM0117 NTX640AB04 |
| 0 M2317 UPDATES AND FEATURE INTERACTIONS.           | AD0897 NTX641AA01 |
| 0 M3000 AND DELTA II SERVICE ORDERS                 | AD0468 NTX640AA06 |
| 0 M3000 AND DELTA II SERVICE ORDERS                 | AD0468 NTX640AB04 |
| 0 M3000 CALL PROGRESS INDICATION II                 | AD0465 NTX642AA03 |
| 0 M3000 LINE DISPLAY (LGC) HOOKS                    | AD0340 NTX642AA03 |
| 0 M3000 SCREEN UPDATES AND FEAT. CALLING            | AD0732 NTX642AA03 |
| 0 M3000 TABLE CONTROL                               | AD0307 NTX642AA03 |
| 0 M518 SUPPORT AND INTRODUCTION                     | AG0978 NTX106AA10 |
| 0 M5209 INTRODUCTION                                | AC0309 NTX108AA05 |
| 0 N X 64KB SERVICES - XPM                           | AM0178 NTXL45AA03 |
| 0 NAILED UP CONNECTIONS                             | AE0365 NTXB63AA01 |
| 0 NAILED UP CONNECTIONS                             | BR0259 NTXZ03AA01 |
| 0 NAILED UP CONNECTIONS                             | BR0259 NTX237AA02 |
| 0 NAILED UP CONNECTIONS                             | BR0259 NTX802AA04 |
| 0 NAILED UP CONNECTIONS                             | BR0259 NTX902AA07 |
| 0 NAME AND REASON DISPLAY                           | AL0617 NTX946AA01 |
| 0 NAME AND REASON DISPLAY                           | AL0617 NTX946AB01 |
| 0 NAME AND REASON DISPLAY FOR ISDN FUNCTIONAL CALLS | AJ0426 NTX750AC02 |
| 0 NAME AND REASON DISPLAY FOR ISDN FUNCTIONAL CALLS | AJ0426 NTX750AD01 |
| 0 NAME DISPLAY FOR MADN MEMBERS                     | AG0976 NTX946AB01 |
| 0 NARS BILLING - CP CAPTURE MODIFICATIONS           | AD3401 NTXL76AA03 |
| 0 NARS CALL TRANSFER VIA ISDN RLT                   | AD2963 NTXL76AA03 |
| 0 NARS TABLE CONTROL AND CC MODIFICATIONS           | AD3397 NTXL76AA03 |
| 0 NAS RLT AC SPECIAL FUNCTION KEY                   | AD3286 NTXA38AB01 |
| 0 NAS RLT AUTOVON/IBN ISUP TRUNK INTERACTIONS       | AD3285 NTXA38AB01 |
| 0 NAS RLT TABLE CONTROL AND ISUP MESSAGING          | AD3287 NTXA38AB01 |
| 0 NCCI/CCITT#7 ON DMS-100                           | AG2345 NTXH85AA02 |
| 0 NCOS AND CLID DISPLAY ON AC-II                    | AD1154 NTXA38AA03 |
| 0 NCOS AND CLID DISPLAY ON AC-II                    | AD1154 NTXA38AB01 |

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| 0 NCOS AND CLID DISPLAY ON AC-II                         | AD1154 NTXA39AA02 |
| 0 NCS ACCESS FROM MAP                                    | AJ0576 NTXF94AB01 |
| 0 NCS ACCESS USING EMPC                                  | AD3524 NTXL77AA01 |
| 0 NCS ENHANCEMENT                                        | AM0095 NTX353CA05 |
| 0 NCS FOR EIOC                                           | AD1214 NTX353CA05 |
| 0 NCS FORMATTER ENHANCEMENTS FOR VNET AND 800 SERVICES   | AD0975 NTX353AA04 |
| 0 NCS FORMATTER ENHANCEMENTS FOR VNET AND 800 SERVICES   | AD0975 NTX353CA05 |
| 0 NCS INTERFACE                                          | AD1322 NTXG09CA01 |
| 0 NCS MESSAGE FORMATTER ENHANCEMENTS                     | AD0149 NTX353AA04 |
| 0 NCS MESSAGE FORMATTER ENHANCEMENTS                     | AD0149 NTX353CA05 |
| 0 NEGATIVE ROAMER FILE                                   | BV1322 NTX322AA18 |
| 0 NEMAS APPLICATION ACCESS VIA EMPC                      | AD2455 NTX344CA06 |
| 0 NEMAS HDLC CONTROLLER FIRMWARE                         | BF0337 NTX347AA06 |
| 0 NEMAS MESSAGE TRANSFER PROTOCOL FILE TRANSFER          | BV1390 NTX344CA06 |
| 0 NEMAS MMI                                              | BV1592 NTX344CA06 |
| 0 NEMAS MULTI LINK PROCEDURE (MLP)                       | BV1597 NTX347AA06 |
| 0 NEMAS ON ACD                                           | AD3141 NTX344CA06 |
| 0 NEMAS RELEASE I OMS AND ALARMS                         | BV1682 NTX347AA06 |
| 0 NEMAS RTT & STS ON DVS                                 | AD1581 NTXG09CA01 |
| 0 NETPATH AUTOMATION                                     | AG1214 NTX885AB04 |
| 0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE 1 | AD0361 NTXA38AA03 |
| 0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE 1 | AD0361 NTXA38AB01 |
| 0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE 1 | AD0361 NTXA39AA02 |
| 0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE 2 | AD0388 NTXA38AA03 |
| 0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE 2 | AD0388 NTXA38AB01 |
| 0 NETWORK ATTENDANT BUSY VERIFICATION STATIONS - PHASE 2 | AD0388 NTXA39AA02 |
| 0 NETWORK ATTENDANT CONTROL                              | AD1521 NTXA38AA03 |
| 0 NETWORK ATTENDANT CONTROL                              | AD1521 NTXA38AB01 |
| 0 NETWORK ATTENDANT CONTROL                              | AD1521 NTXA39AA02 |
| 0 NETWORK ATTENDANT RECALL                               | AD1523 NTXA38AA03 |
| 0 NETWORK ATTENDANT RECALL                               | AD1523 NTXA38AB01 |
| 0 NETWORK ATTENDANT RECALL                               | AD1523 NTXA39AA02 |
| 0 NETWORK BASED SPMS STUDY                               | AG0353 NTX738AB02 |
| 0 NETWORK BASED SPMS STUDY                               | AG0353 NTX738AC02 |
| 0 NETWORK BROADCAST REMOTE TERMINATION                   | AD3258 NTXP85AA02 |
| 0 NETWORK CAMP-ON-I                                      | AD1153 NTXA38AA03 |
| 0 NETWORK CAMP-ON-I                                      | AD1153 NTXA38AB01 |
| 0 NETWORK CAMP-ON-I                                      | AD1153 NTXA39AA02 |
| 0 NETWORK CAMP-ON-II                                     | AD1518 NTXA38AA03 |

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| 0 NETWORK CAMP-ON-II                                 | AD1518 NTXA38AB01 |
| 0 NETWORK CAMP-ON-II                                 | AD1518 NTXA39AA02 |
| 0 NETWORK CLID AND NCOS DISPLAY INTERACTION WITH 3WC | AD1525 NTXA38AA03 |
| 0 NETWORK CLID AND NCOS DISPLAY INTERACTION WITH 3WC | AD1525 NTXA38AB01 |
| 0 NETWORK CLID AND NCOS DISPLAY INTERACTION WITH 3WC | AD1525 NTXA39AA02 |
| 0 NETWORK DIAL PLAN DISPLAY                          | AG0981 NTXA00AB02 |
| 0 NETWORK DIAL PLAN DISPLAY                          | AG0981 NTXA00AC01 |
| 0 NETWORK DIAL PLAN DISPLAY                          | AG0981 NTXA35AA03 |
| 0 NETWORK DIAL PLAN DISPLAY                          | AG0981 NTX790AC02 |
| 0 NETWORK DISPLAY ENHANCEMENT                        | AG1255 NTXA35AA03 |
| 0 NETWORK INTEGRITY ANALYSIS PACKAGE                 | BC0426 NTX053AA05 |
| 0 NETWORK MANAGEMENT                                 | BV0007 NTX060AB11 |
| 0 NETWORK MANAGEMENT                                 | BT0435 NTX220AA13 |
| 0 NETWORK MANAGEMENT                                 | BV0728 NTX220AA13 |
| 0 NETWORK MANAGEMENT                                 | BT0435 NTX220BA06 |
| 0 NETWORK MANAGEMENT                                 | BV0728 NTX220BA06 |
| 0 NETWORK MANAGEMENT                                 | BT0435 NTX220CA08 |
| 0 NETWORK MANAGEMENT                                 | BV0728 NTX220CA08 |
| 0 NETWORK MANAGEMENT (CODE BLOCKING)                 | BC0070 NTX060AB11 |
| 0 NETWORK MANAGEMENT (PHI)                           | BT0251 NTX001AA29 |
| 0 NETWORK MANAGEMENT (PHI)                           | BT0251 NTX060AA02 |
| 0 NETWORK MANAGEMENT (PHI)                           | BT0251 NTX060AB11 |
| 0 NETWORK MANAGEMENT (PHI)                           | BT0251 NTX060AE03 |
| 0 NETWORK MANAGEMENT (PHI)                           | BT0251 NTX060BA02 |
| 0 NETWORK MANAGEMENT (PHI)                           | BT0251 NTX060BB01 |
| 0 NETWORK MANAGEMENT SHORT CLLI SIMPLIFICATION       | BC1718 NTX060AB11 |
| 0 NETWORK MANAGEMENT TRUNK GROUP CONTROLS INTERFACE  | AF0056 NTX060AB11 |
| 0 REORG.                                             |                   |
| 0 NETWORK MANAGEMENT TRUNK GROUP DATA REORGANIZATION | BC1722 NTX060AB11 |
| 0 NETWORK NAME DISPLAY                               | AG0980 NTXA80AA02 |
| 0 NETWORK NAME DISPLAY FOR ATTENDANT CONSOLES        | AG1104 NTXA80AA02 |
| 0 NETWORK NAME DISPLAY ON PRA                        | AD2245 NTX792AA01 |
| 0 NETWORK PACKET HANDLER                             | AJ1340 NTXF95AA03 |
| 0 NETWORK PATH TEST TOOL                             | AL0154 NTX885AA02 |
| 0 NETWORK PATH TEST TOOL                             | AL0154 NTX885AB04 |
| 0 NETWORK RESOURCE SELECTOR OVERRIDE                 | AC0194 NTX251AA06 |
| 0 NETWORK RING AGAIN ON AUTOVON                      | AD1528 NTXA05AA03 |
| 0 NETWORK WIDE RING AGAIN                            | AC0262 NTXA36AA01 |
| 0 NETWORKED ACD - ALGORITHM IMPLEMENTATION           | AD2257 NTXE22AA02 |
| 0 NETWORKED ACD - MIS ENHANCEMENTS                   | AD2259 NTXE22AA02 |
| 0 NETWORKED ACD - RLM ENHANCEMENTS                   | AD2258 NTXE22AA02 |
| 0 NETWORKED EBS DISPLAY                              | AC0263 NTXA35AA03 |
| 0 NEW AMA CALL CODES - ATT FORMAT                    | BR0615 NTX165AA06 |
| 0 NEW CARD AGENCY EXEC FOR REMOTE MAKE BUSY          | BC1546 NTX001AA29 |
| 0 NEW CELL CONFIGURATION TABLE CONTROL               | AD2221 NTXG52AA04 |
| 0 NEW CELL CONFIGURATION TABLE CONTROL               | AD2221 NTXG80AA03 |
| 0 NEW CELL DATALINK MAINTENANCE                      | AD2211 NTXG52AA04 |

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| 0 NEW CPM EXTENSION SHELF AND DS60 PACK SUPPORT FOR | AF2792                | NTXP92AA01        |
| 0 CPM                                               |                       |                   |
| 0 NEW CPM EXTENSION SHELF AND DS60 PACK SUPPORT FOR | AF2792                | NTXP92AB01        |
| 0 CPM                                               |                       |                   |
| 0 NEW LEN NUMBERING CLEANUP                         | BC0749                | NTXZ02AA01        |
| 0 NEW LEN NUMBERING CLEANUP                         | BC0749                | NTX901AA24        |
| 0 NEW LTP LEVEL FOR DATA LINES                      | AL0166                | NTX750AC02        |
| 0 NEW LTP LEVEL FOR DATA LINES                      | AL0166                | NTX750AD01        |
| 0 NEW MAINTENANCE PROCESSING - CLLIMTCE             | BV1572                | NTX272AA02        |
| 0 NEW MAINTENANCE PROCESSING - LINEMTCE             | BV1573                | NTX272AA02        |
| 0 NEW MESSAGING ON INTL PLGC                        | AE0275                | NTX968AA01        |
| 0 NEW MODEM POOL                                    | AF0144                | NTX030CC16        |
| 0 NEW NETWORK                                       | BR0302                | NTX001AA29        |
| 0 NEW OUTGOING IDLE SUPERVISION FOR TRUNKS          | BC0820                | NTX001AA29        |
| 0 NEW PERIPHERAL POTS LINE BOARD TO BOARD TESTING   | BC0896                | NTX057AB05        |
| 0 NEW PERIPHERAL POTS LINE CUTOVER SUPPORT          | BC0895                | NTX057AC03        |
| 0 NEW PERIPHERAL POTS LINE CUTOVER SUPPORT          | BC0895                | NTX057DA01        |
| 0 NEW PERIPHERAL POTS LINE CUTOVER SUPPORT          | BC0895                | NTX057EA04        |
| 0 NEW PTM PM TYPE REQUIRED FOR PACKAGED SWITCHES    | BC1514                | NTX220AA13        |
| 0 NEW PTM PM TYPE REQUIRED FOR PACKAGED SWITCHES    | BC1514                | NTX220BA06        |
| 0 NEW PTM PM TYPE REQUIRED FOR PACKAGED SWITCHES    | BC1514                | NTX220CA08        |
| 0 NEW TONES AND TEST LINE CIRCUITS FOR CEP          | AE0005                | NTX483AA03        |
| 0 NEW TONES AND TEST LINE CIRCUITS FOR CEP          | AE0005                | NTX483AB01        |
| 0 NEW TRUNK GROUP PARAMETERS FOR US SPRINT REL 2.1  | AD0836                | NTX222AB04        |
| 0 NEW TRUNK GROUP PARAMETERS FOR US SPRINT REL 2.1  | AD0836                | NTX222BA07        |
| 0 NEW 3WC INTERACTIONS I                            | AC0016                | NTX808AA01        |
| 0 NEW 3WC INTERACTIONS I                            | AC0016                | NTX820AA01        |
| 0 NEW 3WC INTERACTIONS II                           | AC0017                | NTX808AA01        |
| 0 NEW 3WC INTERACTIONS II                           | AC0017                | NTX820AA01        |
| 0 NIGHT SERVICE                                     | TRUNK ANSWER FROM ANY | BV0445 NTXZ00AA01 |
| 0 STATION                                           |                       |                   |
| 0 NIGHT SERVICE                                     | TRUNK ANSWER FROM ANY | BV0505 NTXZ00AA01 |
| 0 STATION                                           |                       |                   |
| 0 NIGHT SERVICE                                     | TRUNK ANSWER FROM ANY | BV0445 NTX100AA27 |
| 0 STATION                                           |                       |                   |
| 0 NIGHT SERVICE                                     | TRUNK ANSWER FROM ANY | BV0505 NTX100AA27 |
| 0 STATION                                           |                       |                   |
| 0 NIGHT SERVICE - FLEXIBLE                          | BV0688                | NTXZ00AA01        |
| 0 NIGHT SERVICE - FLEXIBLE                          | BV0688                | NTX100AA27        |
| 0 NIGHT SERVICE RECORDED ANNOUNCEMENT & FORWARD     | AD1607                | NTX416AF01        |
| 0 NIGHT SERVICE RECORDED ANNOUNCEMENT & FORWARD     | AD1607                | NTX416AG01        |
| 0 NIGHT SERVICE RECORDED ANNOUNCEMENT & FORWARD     | AD1607                | NTX416AH01        |
| 0 NIGHT SERVICE RECORDED ANNOUNCEMENT & FORWARD     | AD1607                | NTX416AI01        |
| 0 NIGHT SERVICE RECORDED ANNOUNCEMENT & FORWARD     | AD1607                | NTX416AJ01        |
| 0 NIMS                                              | AD1684                | NTX222CA09        |
| 0 NMP - BUFFERING & ALARMS FOR LINES                | BC1289                | NTX272AA02        |
| 0 NMP - LINEMTCE TABLE CONTROL                      | BC1288                | NTX272AA02        |

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0 NMP - LSTAT  
0 NMP CUSTOMER SCREENING  
0 NO REVERTIVE RING  
0 NO REVERTIVE RING  
0 NO TEST TRUNK ACCESS FOR ISDN LINES  
0 NO TEST TRUNK ACCESS FOR ISDN LINES  
0 NO. 2 SCC INTERFACE  
0 NO.14 LOCAL TEST DESK  
0 NO.14 LOCAL TEST DESK  
0 NO.2 SCC CRITICAL INDICATOR ENHANCEMENT  
0 NO.3 LTC I/F AT RLM)  
0 NO-CALL-PROCESSING ALARM  
0 NODE TYPE EXTENSION FOR NEW PERIPHERALS  
0 NON METERED COIN LINE TRANSACTOR AND CP  
0 NON METERED COIN LINE TRANSACTOR AND CP  
0 NON-COIN 0+, 0-  
0 NON-COIN 0+, 0-  
0 NON-DATA LINK CONSOLE CALL EXTENSION  
0 NON-DATA LINK CONSOLE CALL EXTENSION  
0 NORTH ELECTRIC ANI (RECEIPT AND REGENERATION)  
0 NORTH ELECTRIC FORMAT  
0 NOTIFY  
0 NOTIFY  
0 NOTIS FORMAT FOR TROUBLE REPORT  
0 NPA ON 0+ SEVEN DIGIT LOCAL CALLS  
0 NPA USAGE BY NPA AND EXCHANGE CODE  
0 NPA USAGE BY NPA AND EXCHANGE CODE  
0 NPA USAGE BY NPA AND EXCHANGE CODE  
0 NPA USAGE BY NPA AND EXCHANGE CODE  
0 NPE - BASIC PM LOADER (SEE F0095, F0089)  
0 NPE - BASIC T1 MTCE FOR DTC, LGC  
0 NPE - DIGIT COLLECTION DATA DOWN LOADING  
0 NPE - DIGIT COLLECTION DATA DOWN LOADING  
0 NPE - LCM MTCE ENHANCEMENTS II  
0 NPE - LGC/DTC MTCE ENHANCEMENTS II  
0 NPE - LOADER FOR LGC  
0 NPE - OMS FOR LCM  
0 NPE - OMS FOR LCM  
0 NPE - OMS FOR LGC/DTC  
0 NPE - PM LOAD FILE PATCHER  
0 NPE ENHANCED NPE LOADER  
0 NPE-LCM BASIC MTCE - DEV S/W (SEE F0079, F0077)  
0 NPE-LCM MTCE ENCHANCEMENTS  
0 NPE-LGC MTCE ENHANCEMENTS  
0 NPE-LGC/DTC BASIC MTCE - DEV S/W  
0 NPE-MSB BASIC MTCE - DEV S/W  
0 NPE-REWORK OF PM MAP DISPLAYS

BC1290 NTX272AA02  
BC2054 NTX427AA04  
BR0063 NTXZ02AA01  
BR0063 NTX901AA24  
AL1316 NTX750AC02  
AL1316 NTX750AD01  
BR0495 NTX210AA03  
BT0039 NTXZ02AA01  
BT0039 NTX901AA24  
BR0693 NTX210AA03  
BR0198 NTX023AB03  
BC2246 NTX001AA29  
AL0130 NTX001AA29  
BF0675 NTX472AA03  
BF0675 NTX472AB08  
BV0153 NTX030CC16  
BV0341 NTX030CC16  
AL0537 NTX877AA01  
AL0537 NTX877AB01  
BR0003 NTX193AA01  
BR0298 NTX030CC16  
BV0156 NTX030CC16  
BV0308 NTX030CC16  
BR0374 NTX096AA01  
AF0171 NTX030CC16  
BV1011 NTX228AA02  
BV1011 NTX232AA01  
BV1011 NTX232BA01  
BV1011 NTX232CA01  
BC0499 NTX270AA19  
BC0498 NTX270AA19  
BC0731 NTXZ02AA01  
BC0731 NTX901AA24  
BC0669 NTX270AA19  
BC0670 NTX270AA19  
BC0671 NTX270AA19  
BV1109 NTXZ02AA01  
BV1109 NTX901AA24  
BV1111 NTX270AA19  
BC0883 NTX270AA19  
BC0712 NTX270AA19  
BC0476 NTX270AA19  
BC0482 NTX270AA19  
BC0617 NTX270AA19  
BC0477 NTX270AA19  
BC0475 NTX270AA19  
BC0485 NTX001AA29

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| 0 NRAG ON DMS-250 PRA/ISUP                         | AD1539 NTXG11AA01 |
| 0 NRAG ON PRA CC SUPPORT                           | AD1317 NTX791AA02 |
| 0 NRAG ON PRA XPM SUPPORT                          | AD1316 NTX791AA02 |
| 0 NSDB - MAINTENANCE OF DVI NODE                   | AG0186 NTXA56AA02 |
| 0 NSDB - PROVIDE HOOKS FOR NEW NODE TYPE - DVI     | AG0187 NTXA56AA02 |
| 0 NSDB - ROUTING TABLE CAPABILITY                  | AG0237 NTXA55AA01 |
| 0 NSGDBDEV TESTPLAN                                | BT0446 NTX220AA13 |
| 0 NSGDBDEV TESTPLAN                                | BT0446 NTX220BA06 |
| 0 NSGDBDEV TESTPLAN                                | BT0446 NTX220CA08 |
| 0 NSS ANI DELIVERY                                 | AD2468 NTXE78AA04 |
| 0 NSS BILLING PLATFORM                             | AD2859 NTXN71AA01 |
| 0 NSS BILLING PLATFORM I                           | AM0144 NTXP03AA01 |
| 0 NSS BILLING PLATFORM II                          | AM0143 NTXP03AA01 |
| 0 NSS DBCP SYNC                                    | AD3467 NTXJ57AA02 |
| 0 NSS DESTINATION DIALING ENHANCEMENT              | AM0237 NTXE75AA05 |
| 0 NSS DESTINATION DIALING ENHANCEMENT              | AM0237 NTXE75AB01 |
| 0 NSS FGD ANI SCREENING DATABASE                   | AD2857 NTXE75AA05 |
| 0 NSS FGD ANI SCREENING DATABASE                   | AD2857 NTXE75AB01 |
| 0 NSS FGD ID DIGIT AND CASUAL CALLER SCREENING     | AD2858 NTXE75AA05 |
| 0 NSS FGD ID DIGIT AND CASUAL CALLER SCREENING     | AD2858 NTXE75AB01 |
| 0 NSS OFFNET ACCESS DIALING PLAN DRIVER            | AD2471 NTXE75AA05 |
| 0 NSS OFFNET ACCESS DIALING PLAN DRIVER            | AD2471 NTXE75AB01 |
| 0 NSS PROPAGATE ANSWER BACK VIA ATDS               | AD3492 NTX100AA27 |
| 0 NSS TRAVER ENHANCEMENTS                          | AD2470 NTXE75AA05 |
| 0 NSS TRAVER ENHANCEMENTS                          | AD2470 NTXE75AB01 |
| 0 NSS VALIDATED ACCOUNT CODES AND AUTHCODE LAST    | AD2854 NTXE75AA05 |
| 0 DIALING PLAN                                     |                   |
| 0 NSS VALIDATED ACCOUNT CODES AND AUTHCODE LAST    | AD2854 NTXE78AA04 |
| 0 DIALING PLAN                                     |                   |
| 0 NSS VALIDATED ACCOUNT CODES AND AUTHCODE LAST    | AD2854 NTXQ75AA01 |
| 0 DIALING PLAN                                     |                   |
| 0 NSS-DBCP BASE                                    | AD2472 NTXJ57AA02 |
| 0 NSS-DBCP TRAVEL CARD NUMBER VALIDATION           | AD2856 NTXN33AA01 |
| 0 NSS: PIN COLLECTION ON CENTREX ORIGINATIONS      | AM0145 NTXE78AA04 |
| 0 NT APPLICATION CHANGES FOR CURRENT VS RECOVERY   | AD0223 NTX222AB04 |
| 0 NT APPLICATION CHANGES FOR CURRENT VS RECOVERY   | AD0223 NTX222BA07 |
| 0 NT-40 CMC RTS IMPROVEMENTS (DIAGNOSTICS)         | AG1925 NTX001AA29 |
| 0 NT-40 EIOC SOFTWARE PACKAGING                    | AD1147 NTXG06AA02 |
| 0 NT-40 MEMORY HANDLING IMPROVEMENTS               | AG1923 NTX057EA04 |
| 0 NT-40 MISMATCH HANDLER REFINEMENTS               | AG1924 NTX001AA29 |
| 0 NTRS05 ENHANCEMENTS - II                         | AJ0498 NTXB11AA02 |
| 0 NTT-NCCI #7 ISUP XPM SOFTWARE                    | AD1837 NTXG60AA02 |
| 0 NTWK MGNT - SELECT TRK RESERVATION/ALT OUT OF CH | BR0018 NTX060AA02 |
| 0 RTNG                                             |                   |
| 0 NTWK MGNT - SELECT TRK RESERVATION/ALT OUT OF CH | BR0018 NTX060AE03 |
| 0 RTNG                                             |                   |
| 0 NTWK MGNT - SELECT TRK RESERVATION/ALT OUT OF CH | BR0018 NTX060BA02 |

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| 0 RTNG                                             |                   |
| 0 NTWK MGNT - SELECT TRK RESERVATION/ALT OUT OF CH | BR0018 NTX060BB01 |
| 0 RTNG                                             |                   |
| 0 NTX222AB CALL PROCESSING ENHANCEMENTS            | AD0812 NTX222AB04 |
| 0 NTX222AB CALL PROCESSING ENHANCEMENTS            | AD0812 NTX222BA07 |
| 0 NT40 SUPPORT SYSTEM - DELIVERABLE                | AD0798 NTX369AA01 |
| 0 NT6X44EA TIMESWITCH ON BDTC AND MSB7             | AE0449 NTXB81AA01 |
| 0 NT6X50EC DSP FIRMWARE                            | AD2411 NTXG24AA03 |
| 0 NT6X50EC DSP FIRMWARE                            | AM0123 NTXG24AA03 |
| 0 NT6X50EC DSP FIRMWARE                            | AM0122 NTXG24AA03 |
| 0 NT6X81 FIRMWARE ROBUSTNESS                       | AF2341 NTX213AC01 |
| 0 NT6X93 LINE CARD DIAG                            | BC1337 NTX482AB03 |
| 0 NT6X93 LINE CARD DIAG                            | BC1337 NTX913AA04 |
| 0 NT6X94BB MAINTENANCE                             | AE0278 NTX482BA02 |
| 0 NT9X12AC SOFTWARE SUPPORT                        | AL1753 NTX941AA12 |
| 0 NT9X45 MMI                                       | AL2162 NTXE01AA06 |
| 0 NT9X62BA 0D1 SUPPORT                             | AL1782 NTX941AA12 |
| 0 NUMBER 7 AISUP TRK MTCE FOR AUSTRALIA            | AJ1247 NTXH78AA02 |
| 0 NUMBER 7 AISUP TRK MTCE FOR AUSTRALIA            | AJ1247 NTXH78AB01 |
| 0 NUMBER 7 TUP AND ATUP TRK MTCE FOR AUSTRALIA     | AJ0568 NTXH40AA03 |
| 0 NWM AUDIT INTERFACE                              | AF0183 NTX455AB01 |
| 0 NWM COMMAND INTERFACE                            | AF0182 NTX455AB01 |
| 0 NWM NOTIFICATION TO SRCF                         | AD0858 NTXA53AA01 |
| 0 NWM NOTIFICATION TO SRCF                         | AD0858 NTX716AA05 |
| 0 NWMSD TABLE REWRITE                              | AF2087 NTX060AB11 |
| 0 NXX DIALING                                      | AD2382 NTX222BA07 |
| 0 NXX-XXXX DATABASE FOR INWATS                     | AD0132 NTX222AB04 |
| 0 NXX-XXXX DATABASE FOR INWATS                     | AD0132 NTX222BA07 |
| 0 NXX-XXXX DATABASE FOR INWATS                     | AD0132 NTX362AA01 |
| 0 NX25 & L3 MTCE FOR VPN & NEMAS                   | BV1870 NTX353AA04 |
| 0 NX25 & L3 MTCE FOR VPN & NEMAS                   | BV1870 NTX353CA05 |
| 0 NX25 LEVEL 3 (PACKET LAYER) ENHANCEMENTS         | BV2063 NTXG83AA02 |
| 0 NX25 LEVEL 3 (PACKET LAYER) ENHANCEMENTS         | BV2063 NTX322AA18 |
| 0 NX25 LEVEL 3 (PACKET LAYER) ENHANCEMENTS         | BV2063 NTX376AA05 |
| 0 NX25 REAL TIME ENHANCEMENTS AND NX25 CLEANUP     | AD0490 NTX347AA06 |
| 0 NX25 TIMER ENHANCEMENTS                          | AD0721 NTX347AA06 |
| 0 NX64 NAILED UP CONNECTIONS                       | AE0811 NTX304AA01 |
| 0 N11 SERVICE CODE CALLS TERMINATING TO LINES      | BR0154 NTXZ02AA01 |
| 0 N11 SERVICE CODE CALLS TERMINATING TO LINES      | BR0154 NTX901AA24 |
| 0 O.C. NIGHT CLOSEDOWN                             | AF0040 NTXA60AA02 |
| 0 O.M. ENHANCEMENTS                                | AD0954 NTX220BA06 |
| 0 O.M. ENHANCEMENTS                                | AD0954 NTX220CA08 |
| 0 O+ LOCAL CALLS ON DMS-200 TOPS                   | BR0776 NTX030CC16 |
| 0 O/G MESSAGE FLOW CONTROL - FOLLOW-UP             | AG1262 NTX001AA29 |
| 0 O/G TRUNK PULSING CONTROL - DELAY DIAL           | BT0172 NTX001AA29 |
| 0 O/G TRUNK PULSING CONTROL - IMMEDIATE DIAL       | BT0170 NTX001AA29 |
| 0 O/G TRUNK PULSING CONTROL - WINK START           | BT0171 NTX001AA29 |



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| 0 O/G TRUNK PULSING CONTROL STOP-GO OPERATION     | BT0174 NTX001AA29 |
| 0 O/G TRUNK PULSING CONTROL VAR.INTERDIGITAL TIME | BT0175 NTX001AA29 |
| 0 O/G TRUNK SIGNALLING - EM                       | BT0167 NTX001AA29 |
| 0 O/G TRUNK SIGNALLING - RB                       | BT0166 NTX001AA29 |
| 0 O/G TRUNK SIGNALLING - SF                       | BT0168 NTX001AA29 |
| 0 O/G TRUNK SUPERVISION - REVERSE MB              | BT0178 NTX001AA29 |
| 0 O/G TRUNK SUPERVISION - RING FORWARD            | BT0179 NTX001AA29 |
| 0 O/G TTSTL SYNCHRONOUS                           | BT0150 NTXZ02AA01 |
| 0 O/G TTSTL SYNCHRONOUS                           | BT0150 NTX801AA01 |
| 0 O/G TTSTL SYNCHRONOUS                           | BT0150 NTX901AA24 |
| 0 O/G TTSTL 100                                   | BT0145 NTX001AA29 |
| 0 O/G TTSTL 101                                   | BT0146 NTX001AA29 |
| 0 O/G TTSTL 102                                   | BT0147 NTX001AA29 |
| 0 O/G TTSTL 103                                   | BT0148 NTX001AA29 |
| 0 O/G TTSTL 104                                   | BT0149 NTXZ03AA01 |
| 0 O/G TTSTL 104                                   | BT0149 NTX203AA01 |
| 0 O/G TTSTL 104                                   | BT0149 NTX802AA04 |
| 0 O/G TTSTL 104                                   | BT0149 NTX902AA07 |
| 0 OBSERVE AGENT ON SCAI - ACD TRUNKS              | AD2888 NTXJ55AA02 |
| 0 OBSOLETE PACKAGING                              | AF2532 NTX001AA29 |
| 0 OC DATA LINK CALL PROCESSING ASPECT             | BC0695 NTXA60AA02 |
| 0 OC DATA LINK CALL PROCESSING ASPECT             | BC0695 NTX039AA01 |
| 0 OC DATA LINK CALL PROCESSING ASPECT             | BC0695 NTX134BA02 |
| 0 OC DATA LINK MESSAGING UTILITY                  | BV1125 NTX039AA01 |
| 0 OC DATA LINK TABLE CONTROL                      | BC0696 NTXA60AA02 |
| 0 OC DATA LINK TABLE CONTROL                      | BC0696 NTX039AA01 |
| 0 OC DATA LINK TABLE CONTROL                      | BC0696 NTX134BA02 |
| 0 OC DATA LINK UTILITY INTERFACE                  | BC0694 NTXA60AA02 |
| 0 OC DATA LINK UTILITY INTERFACE                  | BC0694 NTX039AA01 |
| 0 OC DATA LINK UTILITY INTERFACE                  | BC0694 NTX134BA02 |
| 0 OC FEATURE CROSS PROCESSOR                      | BV1126 NTX039AA01 |
| 0 OC FEATURE STARTER                              | BV1129 NTX039AA01 |
| 0 OC HOOKS FOR ASSISTANCE POSITIONS               | BC0700 NTX039AA01 |
| 0 OC MESSAGE DEFINITION INTERFACE                 | BC0699 NTXA60AA02 |
| 0 OC MESSAGE DEFINITION INTERFACE                 | BC0699 NTX039AA01 |
| 0 OC MESSAGE DEFINITION INTERFACE                 | BC0699 NTX134BA02 |
| 0 OC OFFICE TABLE CONTROL                         | BC0743 NTX039AA01 |
| 0 OC OPERATIONAL MEASUREMENTS                     | BV1130 NTX039AA01 |
| 0 OC REMOTE TOPS TERMINATOR                       | BV1128 NTXA60AA02 |
| 0 OC REMOTE TOPS TERMINATOR                       | BV1128 NTX134BA02 |
| 0 OC SHORT THREADED FUNCTIONS                     | BC0698 NTX039AA01 |
| 0 OC VOICE LINK TRUNK UTILITY                     | BV1127 NTX039AA01 |
| 0 OFF-HOOK QUEUEING                               | BT0430 NTX220AA13 |
| 0 OFF-HOOK QUEUEING                               | BT0430 NTX220BA06 |
| 0 OFF-HOOK QUEUEING                               | BT0430 NTX220CA08 |
| 0 OFF-HOOK QUEUEING                               | BV0507 NTX105AA03 |
| 0 OFF-HOOK QUEUEING(V-2)                          | BV0730 NTX233AA01 |

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| 0 OFF-HOOK QUEUING(V-2)                                              | BV0730 NTX233BA01 |
| 0 OFF-HOOK QUEUING(V-2)                                              | BV0730 NTX233CA01 |
| 0 OFF-HOOK SUBSCRIBER                                                | BV0249 NTX701DA03 |
| 0 OFFHOOK QUEUING WITH NEW PROMPT TONE                               | BV1214 NTXZ00AA01 |
| 0 OFFHOOK QUEUING WITH NEW PROMPT TONE                               | BV1214 NTX100AA27 |
| 0 OFFICE COMMUNICATION SYSTEM                                        | BV0106 NTX701BA08 |
| 0 OFFICE HARDWARE INVENTORY TABLE                                    | BC0276 NTX120AA01 |
| 0 OFFICE ID IN TTY OUTPUT HEADER LABEL                               | BR0365 NTX001AA29 |
| 0 OFFICE LINE TOTALS/QNCOS                                           | AD0943 NTXZ02AA01 |
| 0 OFFICE LINE TOTALS/QNCOS                                           | AD0943 NTX901AA24 |
| 0 OFFICE PARMS FOR CONTROL OF ANSWER ON ATD RESULTS                  | BV1334 NTX220AA13 |
| 0 OFFICE PARMS FOR CONTROL OF ANSWER ON ATD RESULTS                  | BV1334 NTX220BA06 |
| 0 OFFICE PARMS FOR CONTROL OF ANSWER ON ATD RESULTS                  | BV1334 NTX220CA08 |
| 0 OFFICE RECORD REPORT OF WORKING SPARE TRUNK/LINES/<br>0 LINE CARDS | BC0275 NTX176AA05 |
| 0 OFFICE ROUTES CAPACITY INCREASE                                    | AF2013 NTX001AA29 |
| 0 OFFICE WIDE ACTIVATION OF CNDB FOR POTS                            | NC0292 NTXP73AA01 |
| 0 OHQ, CBQ FOR OUTWATS VFG                                           | BV0967 NTX112AB03 |
| 0 OIA (ORDB) ENHANCEMENTS FOR AUTOMATIC SESSION START                | AF2703 NTXN84AA01 |
| 0 OLD TABLE CONTROL ENHANCEMENTS                                     | AF0788 NTX184AA11 |
| 0 OLD TABLE CONTROL ENHANCEMENTS                                     | AF0788 NTX184AB02 |
| 0 OM - ACT. CALL DISP OFZ                                            | BR0666 NTX001AA29 |
| 0 OM - DMO SELECTIVE SLU SCAN INTERVAL                               | BR0361 NTX082AA01 |
| 0 OM - GROUP TOTALS (LMD, TRK, CARR, SLU)                            | BR0664 NTX445AB01 |
| 0 OM - MANAGEMENT                                                    | BT0243 NTX001AA29 |
| 0 OM - OUTSIDE PLANT MEASUREMENTS - PHASE I                          | BC1241 NTX001AA29 |
| 0 OM - PC OF POTS FEATURE ACTIVATION                                 | BR0708 NTX020AC01 |
| 0 OM - SBU & MBU ON PER LINE PM BASIS                                | BR0667 NTX001AA29 |
| 0 OM CALL PROCESSING RESTART PEGS (XREF 0382)                        | BC0506 NTX001AA29 |
| 0 OM ENHANCEMENT FOR N00 SERVICE                                     | AD3336 NTXL89AA01 |
| 0 OM FOR ATB PER NPA                                                 | BV0885 NTX220AA13 |
| 0 OM FOR ATB PER NPA                                                 | BV0885 NTX226AA01 |
| 0 OM FOR ATB PER NPA                                                 | BV0885 NTX226BA01 |
| 0 OM FOR ATB PER NPA                                                 | BV0885 NTX226CA01 |
| 0 OM GROUP DEFINITION AND COLLECTION FOR MPCFAST                     | AF1153 NTX892AA04 |
| 0 SUBSYSTEM                                                          |                   |
| 0 OM OUTPUT ROBUSTNESS                                               | AG0355 NTX001AA29 |
| 0 OM PRINT - SUPPRESSION OF ZERO DATA                                | BC0938 NTX001AA29 |
| 0 OM SELECTIVE HOLDING REGISTER CLASS                                | BC0383 NTX001AA29 |
| 0 OM SELECTIVE PRINTOUT                                              | BR0578 NTX445AA01 |
| 0 OM SELECTIVE PRINTOUT                                              | BR0578 NTX445AB01 |
| 0 OM TAPE - SUPPRESSION OF ZERO DATA                                 | BC0937 NTX001AA29 |
| 0 OM THRESHOLDING & ALARMING                                         | BR0576 NTX385AA01 |
| 0 OM TRANSFER PERIODAND HISTORY CLASS EHANCEMENTS                    | BR0382 NTX099AA01 |
| 0 OM USAGE SAMPLES TO EADAS (CC)                                     | BC1370 NTX218AA03 |
| 0 OM XFER SPEEDUP                                                    | BC1735 NTX001AA29 |
| 0 OM-COMMON (MANAGEMENT)                                             | BT0345 NTXZ03AA01 |

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| 0 OM-COMMON (MANAGEMENT)                    | BT0345 NTX202AA01 |
| 0 OM-COMMON (MANAGEMENT)                    | BT0345 NTX470AA13 |
| 0 OM-COMMON (MANAGEMENT)                    | BT0345 NTX802AA04 |
| 0 OM-COMMON (MANAGEMENT)                    | BT0345 NTX902AA07 |
| 0 OM-COMMON (PEGS & USAGE)                  | BT0346 NTX001AA29 |
| 0 OM-LOCAL (PEGS & USAGE)                   | BT0347 NTXZ02AA01 |
| 0 OM-LOCAL (PEGS & USAGE)                   | BT0347 NTX901AA24 |
| 0 OM'S AND LOGS FOR THE STP LIM             | AI0039 NTXF20AA02 |
| 0 OM'S AND LOGS FOR THE STP LIM             | AI0039 NTX833AB01 |
| 0 OM'S FOR INTL SUBSCRIBER FEATURES         | AC0137 NTX472AB08 |
| 0 OM'S IN ERLANGS                           | BC2060 NTX001AA29 |
| 0 OM'S IN ERLANGS                           | BC2060 NTX664AA02 |
| 0 OM'S IN ERLANGS - EXTENDED                | AE0033 NTX664AA02 |
| 0 OMPRT OUTPUT BUFFERING                    | AL0205 NTX001AA29 |
| 0 OMS ACTIVE IN ERLANGS                     | AE0943 NTX664AA02 |
| 0 OMS FOR CONNECTIONLESS SIGNALLING ON PRA  | AD1508 NTX791AA02 |
| 0 OMS FOR METERING                          | AJ0866 NTX474AA07 |
| 0 OMS FOR 3000 LINE REMOTE                  | BV1108 NTX145AA06 |
| 0 OMS-PIC AND NON-PIC CALLS PER IC/INC      | BC1395 NTX186AA08 |
| 0 OMS-PIC AND NON-PIC CALLS PER IC/INC      | BC1395 NTX186AB02 |
| 0 OMS, LOGS, AND ALARMS FOR VPN TRANSACTION | BV1976 NTX353AA04 |
| 0 PROCESSING                                |                   |
| 0 OMS, LOGS, AND ALARMS FOR VPN TRANSACTION | BV1976 NTX353CA05 |
| 0 PROCESSING                                |                   |
| 0 ON-NET DIALING DATABASE (INTERIM)         | BV0870 NTX220AA13 |
| 0 ON-NET DIALING DATABASE (INTERIM)         | BV0870 NTX220BA06 |
| 0 ON-NET DIALING DATABASE (INTERIM)         | BV0870 NTX220CA08 |
| 0 ONAL/DAL TABLE CONTROL                    | BV1194 NTX220AA13 |
| 0 ONAL/DAL TABLE CONTROL                    | BV1194 NTX220BA06 |
| 0 ONAL/DAL TABLE CONTROL                    | BV1194 NTX220CA08 |
| 0 ONAT TABLE CONTROL                        | BV1195 NTX220AA13 |
| 0 ONAT TABLE CONTROL                        | BV1195 NTX220BA06 |
| 0 ONAT TABLE CONTROL                        | BV1195 NTX220CA08 |
| 0 ONE-LINE E911 CALL RECORD                 | NC0317 NTXP99AA01 |
| 0 ONE-LINE E911 CALL RECORD                 | NC0317 NTXP99AB01 |
| 0 ONI SERVICE FROM DMS-100 LAMA             | BR0216 NTX042AA04 |
| 0 ONI SERVICE FROM DMS-100 LAMA             | BR0216 NTX044AA04 |
| 0 ONI TO NORTH ELECTRIC TSD                 | BR0005 NTX001AA29 |
| 0 OPART EXPANSION                           | AD0765 NTX222AB04 |
| 0 OPART EXPANSION                           | AD0765 NTX222BA07 |
| 0 OPART EXPANSION TO 1000                   | AD2673 NTX222BA07 |
| 0 OPEN NUMBER TRANSLATIONS                  | AE0276 NTXB57AA02 |
| 0 OPEN NUMBERING                            | NC0284 NTXH38AA03 |
| 0 OPEN NUMBERING PLAN PHASE I               | AJ1224 NTX901AA24 |
| 0 OPERATIONAL MEASUREMENTS - IBN            | BC0203 NTXZ00AA01 |
| 0 OPERATIONAL MEASUREMENTS - IBN            | BV0460 NTXZ00AA01 |
| 0 OPERATIONAL MEASUREMENTS - IBN            | BV0461 NTXZ00AA01 |

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| 0 OPERATIONAL MEASUREMENTS                            | - IBN       | BC0203 | NTX100AA27 |
| 0 OPERATIONAL MEASUREMENTS                            | - IBN       | BV0460 | NTX100AA27 |
| 0 OPERATIONAL MEASUREMENTS                            | - IBN       | BV0461 | NTX100AA27 |
| 0 OPERATIONAL MEASUREMENTS                            | ANA REPORTS | BV0114 | NTX701CA07 |
| 0 OPERATIONAL MEASUREMENTS (BASIC TOLL)               |             | BT0348 | NTX001AA29 |
| 0 OPERATIONAL MEASUREMENTS (BASIC TOLL)               |             | BT0348 | NTX801AA01 |
| 0 OPERATOR CENTRALIZATION - HOST (ETOF)               |             | BV0775 | NTX039AA01 |
| 0 OPERATOR CENTRALIZATION - REMOTE (ETOF)             |             | BV0776 | NTXA60AA02 |
| 0 OPERATOR CENTRALIZATION - REMOTE (ETOF)             |             | BV0776 | NTX134BA02 |
| 0 OPERATOR FLEXIBLE ROUTING                           |             | BR0619 | NTX187AA03 |
| 0 OPERATOR HAND-OFF TO AABS                           |             | NC0013 | NTXJ10AA01 |
| 0 OPERATOR LOGON PASSWORD FOR TOPS_MP                 |             | AF1463 | NTXA90AA07 |
| 0 OPERATOR LOGON PASSWORD FOR TOPS_MP                 |             | AF1463 | NTX731AA06 |
| 0 OPERATOR NUMBER IDENTIFICATION (ONI) CALLS          |             | BV0152 | NTX030BA03 |
| 0 OPERATOR NUMBER IDENTIFICATION (ONI) CALLS          |             | BV0152 | NTX030CC16 |
| 0 OPERATOR NUMBER IDENTIFICATION (ONI) CALLS          |             | BV0278 | NTX030CC16 |
| 0 OPERATOR SERVICE INTERWORKING WITH LEC CARD FOR MCI |             | AD3131 | NTXG78AA02 |
| 0 OPERATOR SERVICES - PHASE III                       |             | AD0339 | NTXG41BA05 |
| 0 OPERATOR SERVICES - PHASE III                       |             | AD0339 | NTX341BA01 |
| 0 OPERATOR SERVICES BILLING AND CDR HOOKS             |             | AD0135 | NTXG41BA05 |
| 0 OPERATOR SERVICES BILLING AND CDR HOOKS             |             | AD0135 | NTX341BA01 |
| 0 OPERATOR SERVICES BRIDGING                          |             | AD0817 | NTXG41BA05 |
| 0 OPERATOR SERVICES BRIDGING                          |             | AD0817 | NTX341BA01 |
| 0 OPERATOR SERVICES GATEWAY SWITCH SIMULATOR          |             | AD0159 | NTXG41BA05 |
| 0 OPERATOR SERVICES GATEWAY SWITCH SIMULATOR          |             | AD0159 | NTX341BA01 |
| 0 OPERATOR VERIFICATION FOR RCU LINES                 |             | AF0055 | NTX387AB04 |
| 0 OPERATOR VERIFICATION FOR RCU LINES                 |             | AF0055 | NTX387AC02 |
| 0 OPERATOR VERIFICATION FOR RCU LINES                 |             | AF0055 | NTX387AD01 |
| 0 OPERATOR VERIFICATION FOR SMR                       |             | BV1171 | NTX213AC01 |
| 0 OPERATOR VERIFICATION FOR SMR                       |             | BV1171 | NTX398AA12 |
| 0 OPERATOR VERIFICATION TRUNK (DP/MF)(A/D)            |             | BT0064 | NTXZ02AA01 |
| 0 OPERATOR VERIFICATION TRUNK (DP/MF)(A/D)            |             | BT0064 | NTX801AA01 |
| 0 OPERATOR VERIFICATION TRUNK (DP/MF)(A/D)            |             | BT0064 | NTX901AA24 |
| 0 OPM BATTERY MAINTENANCE AUDITS                      |             | BR0811 | NTX147AB01 |
| 0 OPP BASE TOPS CHANGES                               |             | AF3191 | NTX030CC16 |
| 0 OPT. SW ANS. DIALTONE PROCEED TO SEND ON IMTS       |             | BV2054 | NTX222AB04 |
| 0 OPT. SW ANS. DIALTONE PROCEED TO SEND ON IMTS       |             | BV2054 | NTX222BA07 |
| 0 OPTICAL BRA LINE CARD MAINTENANCE                   |             | AL0735 | NTX750AC02 |
| 0 OPTICAL BRA LINE CARD MAINTENANCE                   |             | AL0735 | NTX750AD01 |
| 0 OPTIMIZE MTCCLASS TASKS                             |             | BC2300 | NTX000AA19 |
| 0 OPTIMIZE TABLES CSCINV AND HDLC                     |             | AD1449 | NTX322AA18 |
| 0 OPTIMIZED MTC CLASS TASKS                           |             | AD0748 | NTX322AA18 |
| 0 OPTIONAL ANSWER SUPERVISION FROM ATTENDANT QUEUE    |             | AL0213 | NTXZ00AA01 |
| 0 OPTIONAL ANSWER SUPERVISION FROM ATTENDANT QUEUE    |             | AL0213 | NTX100AA27 |
| 0 OPTIONAL PARAMETER FOR DMOPRO TO SUPPRESS SUMMARY   |             | BC1488 | NTX056AA05 |
| 0 MESSAGE                                             |             |        |            |
| 0 OPTIONAL PRIVACY ON MADN'S                          |             | BR0837 | NTX878AB02 |

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| 0 OPTIONAL PRIVACY ON MADN'S                     | BR0837 NTX878AC01 |
| 0 OPTIONAL PRIVACY ON MADN'S                     | BR0837 NTX878AD01 |
| 0 OPTIONAL PRIVACY ON MADN'S                     | BR0837 NTX878AE01 |
| 0 OPTIONAL RINGBACK ON T1 DAL                    | AD0453 NTX222CA09 |
| 0 OPTIONAL USE OF MPC BY NOS RO SERVICE          | AG0055 NTX560AB03 |
| 0 OP250 COIN CONTROL                             | AD2603 NTXG36AA01 |
| 0 ORDB ACCESS VIA TMS/TOPS - LTCI                | AF2070 NTXA83AA02 |
| 0 ORIG AND TERM VPN CP & TC                      | BV1878 NTX353AA04 |
| 0 ORIG AND TERM VPN CP & TC                      | BV1878 NTX353CA05 |
| 0 ORIG 3J/3L MEL CP AND TRKGRP TC                | BC1912 NTX222AM05 |
| 0 ORIG. 3J/3L/MEL CALL PROCESSING AND TRKGRP TC  | BV1941 NTX222AM05 |
| 0 ORIGINATING ARTER TRUNK TESTING                | BC1193 NTX475AA01 |
| 0 ORIGINATING ATMS TESTING                       | BT0449 NTX220AA13 |
| 0 ORIGINATING ATMS TESTING                       | BT0449 NTX220BA06 |
| 0 ORIGINATING ATMS TESTING                       | BT0449 NTX220CA08 |
| 0 ORIGINATING BILLING                            | BC1704 NTX710AA02 |
| 0 ORIGINATING BILLING                            | BC1704 NTX710AB01 |
| 0 ORIGINATING LINE RESTRICTIONS                  | BC2079 NTX472AA03 |
| 0 ORIGINATING LINE RESTRICTIONS                  | BC2079 NTX472AB08 |
| 0 ORIGINATING QUIET TERMINATION AND LOOPAROUND   | BC2078 NTX483AA03 |
| 0 TESTLINES                                      |                   |
| 0 ORIGINATING QUIET TERMINATION AND LOOPAROUND   | BC2078 NTX483AB01 |
| 0 TESTLINES                                      |                   |
| 0 ORIGINATING/TERMINATING LINE SELECT            | AD1514 NTX878AB02 |
| 0 ORIGINATING/TERMINATING LINE SELECT            | AD1514 NTX878AC01 |
| 0 ORIGINATING/TERMINATING LINE SELECT            | AD1514 NTX878AD01 |
| 0 ORIGINATING/TERMINATING LINE SELECT            | AD1514 NTX878AE01 |
| 0 OSR BILLING ON EIOC                            | AD1725 NTXG12AA06 |
| 0 OUTAGE FOOTPRINT - PHASE II                    | AL0044 NTX001AA29 |
| 0 OUTAGE FOOTPRINT FACILITY                      | AL0046 NTX001AA29 |
| 0 OUTGOING AMR5 (TRUNKS)                         | BC0133 NTX049AE01 |
| 0 OUTGOING AMR5 (TRUNKS)                         | BC0133 NTX193AA01 |
| 0 OUTGOING OPER. SERV. TRUNK CALL PROCESSING AND | AD0139 NTXG41BA05 |
| 0 TABLE CONTROL                                  |                   |
| 0 OUTGOING OPER. SERV. TRUNK CALL PROCESSING AND | AD0139 NTX341BA01 |
| 0 TABLE CONTROL                                  |                   |
| 0 OUTGOING RESTRICTION CONTROL                   | AF1276 NTXA74AA01 |
| 0 OUTGOING TRUNK SELECTION                       | BT0324 NTX001AA29 |
| 0 OUTGOING TRUNK TO 3CL SWITCHBOARD (2X85)       | BR0045 NTX001AA29 |
| 0 OUTPUT MORE THAN 15 DIGITS (SEE C0368)         | BV0679 NTX220AA13 |
| 0 OUTPUT MORE THAN 15 DIGITS (SEE C0368)         | BV0679 NTX220BA06 |
| 0 OUTPUT MORE THAN 15 DIGITS (SEE C0368)         | BV0679 NTX220CA08 |
| 0 OUTPUT 18 DIGITS (MF;DTMF)                     | BF0874 NTX470AA13 |
| 0 OUTPUTING VERIFICATION USING DMIS              | BC0689 NTXZ01AA01 |
| 0 OUTPUTING VERIFICATION USING DMIS              | BC0689 NTX101AA14 |
| 0 OUTPUT ROUTING AND REPORTING                   | BV0001 NTX001AA29 |
| 0 OUTWATS                                        | BT0053 NTX006AA04 |

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0 OUTWATS  
0 OUTWATS OPERATOR (SPECIAL TREATMENT)  
0 OUTWATS TWO DIGIT ZONE SUPPORT  
0 OUTWATS USA  
0 OVERFLOW CALL ROUTING FOR 800+  
0 OVERFLOW TREATMENT (LOD,LOR)  
0 OVERFLOW TREATMENT (LOD,LOR)  
0 OVERFLOW TREATMENT (LOD,LOR)  
0 OVERHEAD MESSAGE AND A/B STREAM GENERATION  
0 OVERHEAD MESSAGE AND A/B STREAM GENERATION  
0 OVERHEAD MESSAGE AND A/B STREAM GENERATION  
0 OVERHEAD MESSAGE AND A/B STREAM GENERATION  
0 OVERLAP CARRIER SELECTION  
0 OVERLAP CARRIER SELECTION  
0 OVERLAP CARRIER SELECTION  
0 OVERLAP OUTPULSING LINE TO TRUNK  
0 OVERLAP OUTPULSING LINE TO TRUNK  
0 OVERLAP OUTPULSING LINE TO TRUNK  
0 OVERLAP OUTPULSING LINE TO TRUNK  
0 OVERLAP OUTPULSING (TRUNK TO TRUNK)  
0 OVERLOAD CONTROL FOR IPE'S  
0 OVERRIDE ACR FOR CFU  
0 OVERRIDE ACR FOR CFU  
0 OVERSEAS RATING  
0 P-PHONE ADD ON MODULE SOFTWARE  
0 P-PHONE AUTO ANSWER BACK  
0 P-PHONE AUTOMATIC DIAL  
0 P-PHONE BUSY OVERRIDE  
0 P-PHONE CALL FORWARD ALL CALLS FEATURE KEY S/W  
0 P-PHONE CALL PARK  
0 P-PHONE CALL PICKUP FEATURE KEY S/W  
0 P-PHONE CALL WAITING  
0 P-PHONE DISPLAY CALLED NUMBER  
0 P-PHONE DISPLAY CALLING NUMBER  
0 P-PHONE DISPLAY CALLING NUMBER  
0 P-PHONE EBO AND UK RESTRICTIONS  
0 P-PHONE END TO END SIGNALLING  
0 P-PHONE HELD CALLS  
0 P-PHONE INDIVIDUAL BUSINESS LINE  
0 P-PHONE INTERCOM  
0 P-PHONE LINECARD  
0 P-PHONE LISTEN ON HOLD  
0 P-PHONE MADN MCA (ACROSS SWITCH)  
0 P-PHONE MADN SCA (ACROSS SWITCH)  
0 P-PHONE MAKE SET BUSY  
0 P-PHONE MALICIOUS CALL HOLD  
0 P-PHONE MESSAGE WAITING

BT0053 NTX802AA04  
BV0021 NTX802AA04  
BR0624 NTX006AA04  
BR0214 NTX006AA04  
AG2186 NTXQ40AA02  
BT0065 NTX007AA02  
BT0065 NTX007AB02  
BT0065 NTX804AA02  
BF0324 NTX220AA13  
BF0324 NTX220BA06  
BF0324 NTX220CA08  
BF0324 NTX322AA18  
BC1367 NTX186AA08  
BC1367 NTX186AB02  
BC1367 NTX189AA01  
BC0241 NTXZ03AA01  
BR0068 NTXZ03AA01  
BC0241 NTX902AA07  
BR0068 NTX902AA07  
BR0319 NTX121AA01  
AM0132 NTXN25AA02  
AD2810 NTXZ00AA01  
AD2810 NTX100AA27  
BV0179 NTX030CC16  
BV0993 NTX106AA10  
BV0934 NTX106AA10  
BV0834 NTX106AA10  
BV0949 NTX106AA10  
BV0820 NTX106AA10  
BV0938 NTX106AA10  
BV0821 NTX106AA10  
BV0939 NTX106AA10  
BV0987 NTX108AA05  
BV0989 NTX108AA05  
BV0989 NTX407AB01  
AE0402 NTX611AA07  
BV0940 NTX106AA10  
BV0818 NTX106AA10  
BV0819 NTX106AA10  
BV0937 NTX106AA10  
AE0226 NTX106AA10  
BV0950 NTX106AA10  
BV0956 NTX106AA10  
BV0954 NTX106AA10  
BV0936 NTX106AA10  
BV0836 NTX106AA10  
BC0816 NTX119AA05

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| 0 P-PHONE ONHOOK DIALING                              | BV0957 NTX106AA10 |
| 0 P-PHONE PRIVACY RELEASE (ACROSS SWITCH)             | BV0952 NTX106AA10 |
| 0 P-PHONE QUERY TIME KEY                              | BV0991 NTX108AA05 |
| 0 P-PHONE RING-AGAIN FEATURE KEY S/W                  | BV0813 NTX106AA10 |
| 0 P-PHONE SERVICE ORDER SYSTEM                        | BV0823 NTX106AA10 |
| 0 P-PHONE SPEED CALLING FEATURE KEY S/W               | BV0817 NTX106AA10 |
| 0 P-PHONE 3W CALLING/XFER                             | BV0941 NTX106AA10 |
| 0 P-PHONE 30-PORT CONFERENCE                          | BV0935 NTX106AA10 |
| 0 P_PHONE - IBN BASIC CALL                            | BV0968 NTX106AA10 |
| 0 P_PHONE - POTS BASIC CALL                           | BV0970 NTX106AA10 |
| 0 P_PHONE ADDONS & EXTENSION FACILITY MAINTENANCE     | BC1172 NTX106AA10 |
| 0 P_PHONE AUTOMATIC LINE                              | BC0932 NTX106AA10 |
| 0 P_PHONE CALL BACK QUEUING                           | BC0931 NTX106AA10 |
| 0 P_PHONE EXTENSION SETS                              | BF0371 NTX106AA10 |
| 0 P_PHONE FEATURE DISPLAY                             | BC1021 NTX108AA05 |
| 0 P_PHONE GROUP INTERCOM.                             | BC0930 NTX106AA10 |
| 0 P_PHONE TERMINATING LINE FEATURES                   | BC0933 NTX106AA10 |
| 0 PACKAGING OF SPMS AS TELCO OPTIONAL FEATURE         | AG0346 NTX738AB02 |
| 0 PACKAGING OF SPMS AS TELCO OPTIONAL FEATURE         | AG0346 NTX738AC02 |
| 0 PAD PROVISIONING SOFTWARE                           | AG0621 NTXA09AA01 |
| 0 PARALLEL STORAGE SIZE INCREASE AND MMI IMPROVEMENTS | AF2704 NTXP14AA01 |
| 0 PARMCALC - VERIFICATION OF OFFICE PARMS             | AG0821 NTX001AA29 |
| 0 PARMCALC - VERIFY OFFICE PARAMETERS (PHASE 2)       | AG0724 NTX001AA29 |
| 0 PARS OC REMOTE.                                     | AF2601 NTXN04AA01 |
| 0 PART 2 - BCS32 USSPRINT CDR CHANGES                 | AM0182 NTX221BA08 |
| 0 PARTIAL FILE TRANSFER                               | BV1596 NTX344CA06 |
| 0 PARTITION TO/FROM STS DATABASES FOR US TELECOM      | BV2043 NTX222AB04 |
| 0 PARTITION TO/FROM STS DATABASES FOR US TELECOM      | BV2043 NTX222BA07 |
| 0 PARTITIONED IDDD TRANSLATION                        | BV1896 NTX222CA09 |
| 0 PARTITIONED TABLE EDITOR                            | BC1459 NTX412CA04 |
| 0 PARTITIONED TABLE EDITOR                            | BC1459 NTX412CB01 |
| 0 PARTITIONED TRANSLATION SYSTEM                      | BV0610 NTX220AA13 |
| 0 PARTITIONED 6D CONVERSION TO BCS9                   | BV0869 NTX220AA13 |
| 0 PARTITIONED 6D CONVERSION TO BCS9                   | BV0869 NTX220BA06 |
| 0 PARTITIONED 6D CONVERSION TO BCS9                   | BV0869 NTX220CA08 |
| 0 PARTRAN DATABASE ENHANCEMENTS FOR INTERWORKING      | AD0063 NTX222AB04 |
| 0 PARTRAN DATABASE ENHANCEMENTS FOR INTERWORKING      | AD0063 NTX222BA07 |
| 0 PARTRANS FOR MCI AND USTS                           | BV0889 NTX220AA13 |
| 0 PARTRANS FOR MCI AND USTS                           | BV0889 NTX220BA06 |
| 0 PARTRANS FOR MCI AND USTS                           | BV0889 NTX220CA08 |
| 0 PARTRANS UPGRADE                                    | BV0886 NTX220AA13 |
| 0 PARTRANS UPGRADE                                    | BV0886 NTX220BA06 |
| 0 PARTRANS UPGRADE                                    | BV0886 NTX220CA08 |
| 0 PASSWORD COMMAND (SHOWPW)                           | BR0632 NTX001AA29 |
| 0 PASSWORD CONTROL                                    | BC0905 NTX292AA01 |
| 0 PASSWORD CONTROL                                    | BC0905 NTX292AB04 |
| 0 PASSWORD CONTROL                                    | BC0905 NTX292BA03 |

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| 0 PAT MATRIX OM ENHANCEMENTS                        | AD2067 NTX701CA07 |
| 0 PATCH ADMINISTRATION AND DOWNLOADING VIA NOP/X.25 | AG0814 NTXA11AA01 |
| 0 PATCH DOWNLOADING                                 | BC1823 NTX001AA29 |
| 0 PATCHER ENHANCEMENTS                              | AD1274 NTXG09AA03 |
| 0 PATCHER ENHANCEMENTS                              | AD1274 NTXG09CA01 |
| 0 PATCHER ENHANCEMENTS FOR REMOTE/DVIX              | AD1275 NTXG09AA03 |
| 0 PATCHER ENHANCEMENTS FOR REMOTE/DVIX              | AD1275 NTXG09CA01 |
| 0 PATH VERIFICATION AUTOMATION                      | AL1566 NTX885AB04 |
| 0 PATHEND EXPANSION FOR ENET                        | AL1229 NTXE01AA06 |
| 0 PBX ACCESS LINE INTERFACE WITH DTMF OUTPULSING    | BV0263 NTX701DA03 |
| 0 PBX ACCESS LINE INTERFACE WITH DTMF OUTPULSING    | BV0398 NTX701DA03 |
| 0 PBX ACCESS TRUNK AND 3J2/4 ON DMS100              | AE0684 NTXK03AA01 |
| 0 PBX FLAT RATE (DID)                               | BT0097 NTXZ02AA01 |
| 0 PBX FLAT RATE (DID)                               | BT0097 NTX008AA01 |
| 0 PBX FLAT RATE (DID)                               | BT0097 NTX008AB02 |
| 0 PBX FLAT RATE (DID)                               | BT0097 NTX901AA24 |
| 0 PBX FLAT RATE NON DID                             | BT0049 NTXZ02AA01 |
| 0 PBX FLAT RATE NON DID                             | BT0049 NTX901AA24 |
| 0 PBX MESSAGE RATE                                  | BT0054 NTXZ02AA01 |
| 0 PBX MESSAGE RATE                                  | BT0054 NTX901AA24 |
| 0 PCM CONVERSION DIAGNOSTIC                         | AE0596 NTX270AA19 |
| 0 PCM 30 I/F CARD DIAGNOSTIC                        | BF0433 NTX478AA04 |
| 0 PCM-30 REMOTE NETWORK SYNC                        | BF0978 NTX478AA04 |
| 0 PCM-30 ROBUSTNESS                                 | AC0109 NTX470AA13 |
| 0 PCM30 BIT ERROR RATE RECOVERY                     | AE0081 NTX222AM05 |
| 0 PCM30 IDLE CHANNEL BIT PATTERN                    | AE0084 NTX222AM05 |
| 0 PCM30 IDLE CHANNEL BIT PATTERN                    | AE0084 NTX270AA19 |
| 0 PCM30 LINE DRAWER                                 | AE0595 NTXK00AA02 |
| 0 PCM30 LINE DRAWER                                 | AE0595 NTXK00AB01 |
| 0 PCM30 MAINTENANCE ENHANCEMENTS FOR CCS            | AE0159 NTX270AA19 |
| 0 PCM30 ON LGC                                      | AE0749 NTXH51AA02 |
| 0 PCM30 PERIPHERALS FOR ISDN AND CCS7 - CC PORTION  | AJ1062 NTXH51AA02 |
| 0 PCM30 PERIPHERALS FOR ISDN AND CCS7 - XPM PORTION | AJ1033 NTXH51AA02 |
| 0 PCM30 RSC PM MAINTENANCE                          | AJ1122 NTXH52AA01 |
| 0 PCM30 RSC XPM SOFTWARE                            | AJ1123 NTXH52AA01 |
| 0 PCM30 TIMESLOT FLEXIBILITY                        | AE0551 NTXK56AA01 |
| 0 PCM30 TIMESLOT FLEXIBILITY                        | AE0551 NTXK96AA01 |
| 0 PCM30 TIMESLOT FLEXIBILITY                        | AE0551 NTX937AA06 |
| 0 PCM30 TIMESLOT FLEXIBILITY                        | AE0551 NTX937AB01 |
| 0 PCR, Q.791 AND QUASI ASSOCIATED BACKUP (DMS300)   | NC0073 NTXR40AA01 |
| 0 PCWT FOR EBS                                      | AD0932 NTX715AA02 |
| 0 PCWT FOR EBS                                      | AD0932 NTX715AB01 |
| 0 PDTC - METERING MAINTENANCE                       | BF0879 NTX612AA04 |
| 0 PDTC - METERING PULSE RECEIVER                    | BF0871 NTX612AA04 |
| 0 PDTC - SPANISH SOCOTEL SIGNALLING I               | BF0866 NTX612AA04 |
| 0 PDTC - SPANISH SOCOTEL SIGNALLING I               | BF0866 NTX913AA04 |
| 0 PDTC - SPANISH TONES MAINTENANCE                  | BF0873 NTX612AA04 |



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| 0 PDTC - SPANISH TONES MAINTENANCE            | BF0873 | NTX913AA04 |
| 0 PDTC - SPANISH TYPE-P2 LINE SIGNALLING      | AE0197 | NTX612AA04 |
| 0 PDTC-METERING CALL PROCESSING               | BF0865 | NTX612AA04 |
| 0 PEC CODE IN CONF6PR TABLE                   | AE0006 | NTX611AA07 |
| 0 PEG COUNT ON INWATS LINES                   | BR0082 | NTX006AA04 |
| 0 PEG COUNT ON TANDEM CALLS                   | BR0270 | NTXZ03AA01 |
| 0 PEG COUNT ON TANDEM CALLS                   | BR0270 | NTX902AA07 |
| 0 PEG COUNTS ON LDN'S ON ATTENDANT CONSOLES   | AD1439 | NTX856AA02 |
| 0 PENDING ORDER FILE DUE DATE                 | BC0162 | NTX056AA05 |
| 0 SPECIFICATION                               |        |            |
| 0 PENDING ORDER FILE RETRIEVAL BY SERVICE     | BV0195 | NTX056AA05 |
| 0 ORDER NO.                                   |        |            |
| 0 PENDING ORDER FILE (POF) ENHANCEMENTS.      | NC0120 | NTX412CB01 |
| 0 PENDING ORDER FILE ON DISK                  | BR0219 | NTXZ02AA01 |
| 0 PENDING ORDER FILE ON DISK                  | BR0219 | NTX074AA09 |
| 0 PENDING ORDER FILE ON DISK                  | BR0219 | NTX128AA01 |
| 0 PENDING ORDER FILE ON DISK                  | BR0219 | NTX901AA24 |
| 0 PER CALL CAPACITY ENHANCEMENT               | BV1139 | NTX001AA29 |
| 0 PER CALL LOOP TEST ON GROUND                | BR0450 | NTXZ02AA01 |
| 0 PER CALL LOOP TEST ON GROUND                | BR0450 | NTX901AA24 |
| 0 PER CALL TESTING (TOLL)                     | BT0242 | NTX001AA29 |
| 0 PERFORM ON PLGC/PDTC                        | AG2293 | NTXH62AA01 |
| 0 PERIODIC REPORTING ON TRUNKS                | BV0037 | NTX053AA05 |
| 0 PERIPHERAL LINE INTERSWITCH ENHANCEMENTS    | AF0725 | NTX380AA02 |
| 0 PERIPHERAL STATUS CHECK REPORT BEFORE SWACT | BC1501 | NTX001AA29 |
| 0 PERIPHERAL TRUNK INTERSWITCH                | AF0727 | NTX380AA02 |
| 0 PERMANENT HOLD (500/2500 SETS)              | BV0944 | NTXZ00AA01 |
| 0 PERMANENT HOLD (500/2500 SETS)              | BV0944 | NTX100AA27 |
| 0 PERMANENT SIGNAL TIME OUT - OPEN INTERVAL   | BR0670 | NTXZ02AA01 |
| 0 PERMANENT SIGNAL TIME OUT - OPEN INTERVAL   | BR0670 | NTX901AA24 |
| 0 PERSON TO PERSON                            | BV0363 | NTX030CC16 |
| 0 PERSON TO PERSON CALL BACK                  | BV0310 | NTX030CC16 |
| 0 PERSONAL IDENTIFICATION NUMBERS             | AD2146 | NTXE78AA04 |
| 0 PH DATA TABLE AND AUDIT PROCESS             | AJ0304 | NTXF93AA02 |
| 0 PHASE I - IMPLEMENTATION OF DAIS ON DMS     | AD1285 | NTXG13AA01 |
| 0 PHASE I CELLULAR CALL PROCESSING            | BV1021 | NTX220AA13 |
| 0 PHASE I CELLULAR CALL PROCESSING            | BV1021 | NTX220BA06 |
| 0 PHASE I CELLULAR CALL PROCESSING            | BV1021 | NTX220CA08 |
| 0 PHASE I CELLULAR CALL PROCESSING            | BV1021 | NTX322AA18 |
| 0 PHASE I CELLULAR TRANSLATIONS               | BV1023 | NTX220AA13 |
| 0 PHASE I CELLULAR TRANSLATIONS               | BV1023 | NTX220BA06 |
| 0 PHASE I CELLULAR TRANSLATIONS               | BV1023 | NTX220CA08 |
| 0 PHASE I CELLULAR TRANSLATIONS               | BV1023 | NTX322AA18 |
| 0 PHASE I DMS-250 EOPS COIN CONTROL           | AD2365 | NTXG31AA01 |
| 0 PHASE I TESTPLAN DEBUGGED WITH PHASE I S/W  | BT0419 | NTX220AA13 |
| 0 PHASE I TESTPLAN DEBUGGED WITH PHASE I S/W  | BT0419 | NTX220BA06 |
| 0 PHASE I TESTPLAN DEBUGGED WITH PHASE I S/W  | BT0419 | NTX220CA08 |

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0 PHASE I TESTPLAN DEBUGGED WITH PHASE I S/W  
0 PHASE II CELLULAR CALL PROCESSING  
0 PHASE II CELLULAR TRANSLATIONS  
0 PHASE II MCI 32 WORD SRB CDR  
0 PHASE II TEST PLAN  
0 PHASE II TEST PLAN  
0 PHASE II TEST PLAN  
0 PHASE II TEST PLAN  
0 PHASE 1 CELLSITE DATABASE  
0 PHASE 1 CELLSITE DATABASE  
0 PHASE 1 CELLSITE DATABASE  
0 PHASE 1 CELLSITE DATABASE  
0 PHASE 1 NX25 CALL PROCESSING ACCESS  
0 PHASE 1 NX25 CALL PROCESSING ACCESS  
0 PHASE 1 NX25 CALL PROCESSING ACCESS  
0 PHASE 1 NX25 CALL PROCESSING ACCESS  
0 PHASE 1 OF DU MAP  
0 PHASE 2 CDR  
0 PHASE 2 CELLSITE DATABASE  
0 PHASE 2 DU MAP  
0 PHASE 2 INTERIM MESSAGE ROUTER  
0 PHYSICAL LEVEL MAINTENANCE FOR FBUS  
0 PHYSICAL LEVEL MAINTENANCE FOR FBUS  
0 PM AISUP OVERLAP OUTPUTPULSING ON DMS100  
0 PM AISUP OVERLAP OUTPUTPULSING ON DMS100  
0 PM AUTOLOADING - PHASE I  
0 PM AUTOLOADING - PHASE II  
0 PM EXEC FOR GLARE RESOLUTION  
0 PM EXEC FOR GLARE RESOLUTION  
0 PM EXEC FOR GLARE RESOLUTION  
0 PM EXEC FOR STOP/GO SIGNALING  
0 PM EXEC FOR STOP/GO SIGNALING  
0 PM EXEC FOR STOP/GO SIGNALING  
0 PM EXEC FOR USTS DIALING FEATURES (PHASE 1)  
0 PM EXEC FOR USTS DIALING FEATURES (PHASE 1)  
0 PM EXEC FOR USTS DIALING FEATURES (PHASE 1)  
0 PM EXEC TABLE CONTROL RESTRICTIONS  
0 PM EXECs FOR AUDIO TONE DETECTION ON 3L.  
0 PM EXECs FOR AUTHCODE OVERRIDE  
0 PM EXECs FOR AUTHCODE OVERRIDE  
0 PM EXECs FOR CONFERENCE CALLING  
0 PM EXECs FOR CONFERENCE CALLING  
0 PM EXECs FOR EGRESS 3L LOOP CALLING TRUNKS  
0 PM EXECs FOR INGRESS 3L EARTH CALLING TRUNKS  
0 PM EXECs FOR LOOP START ONALS  
0 PM EXECs FOR LOOP START ONALS  
0 PM EXECs FOR LOOP START ONALS

BT0419 NTX322AA18  
BV1022 NTX322AA18  
BV1024 NTX322AA18  
BV1642 NTX221CA05  
BT0420 NTX220AA13  
BT0420 NTX220BA06  
BT0420 NTX220CA08  
BT0420 NTX322AA18  
BV1029 NTX220AA13  
BV1029 NTX220BA06  
BV1029 NTX220CA08  
BV1029 NTX322AA18  
BV2064 NTXG83AA02  
BV2064 NTX322AA18  
BV2064 NTX376AA05  
BV2064 NTX376AB01  
BV0895 NTX250AA15  
BV1154 NTX322AA18  
BV1146 NTX322AA18  
BV0896 NTX250AA15  
BV1155 NTX322AA18  
AI0086 NTXN18AA04  
AI0086 NTX833AB01  
AJ1492 NTXH78AA02  
AJ1492 NTXH78AB01  
BC0806 NTX001AA29  
AL0131 NTX001AA29  
BV0752 NTX220AA13  
BV0752 NTX220BA06  
BV0752 NTX220CA08  
BV1006 NTX220AA13  
BV1006 NTX220BA06  
BV1006 NTX220CA08  
BV0890 NTX220AA13  
BV0890 NTX220BA06  
BV0890 NTX220CA08  
BC1821 NTX001AA29  
BV1949 NTX222AM05  
BV0750 NTX222AB04  
BV0750 NTX222CA09  
BV0769 NTX220AA13  
BV0769 NTX238AA01  
BF0638 NTX222AM05  
BV1945 NTX222AM05  
BV0753 NTX220AA13  
BV0753 NTX220BA06  
BV0753 NTX220CA08

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| 0 PM EXECS FOR RECALL D/T & CALL SEQUENCING (REL2)    |                      | BV0763 NTX220AA13 |
| 0 PM EXECS FOR RECALL D/T & CALL SEQUENCING (REL2)    |                      | BV0763 NTX222AB04 |
| 0 PM EXECS FOR RECALL D/T & CALL SEQUENCING (REL2)    |                      | BV0763 NTX222CA09 |
| 0 PM EXECS FOR RESET DIGIT                            |                      | BV0749 NTX220AA13 |
| 0 PM EXECS FOR RESET DIGIT                            |                      | BV0749 NTX222AB04 |
| 0 PM EXECS FOR RESET DIGIT                            |                      | BV0749 NTX222CA09 |
| 0 PM EXECS FOR SPEED LINE                             |                      | BV0751 NTX230AA03 |
| 0 PM EXECS FOR SPEED LINE                             |                      | BV0751 NTX230BA01 |
| 0 PM EXECS FOR SPEED LINE                             |                      | BV0751 NTX230CA01 |
| 0 PM EXECS FOR TERMINATING DAL                        |                      | BV0766 NTX220AA13 |
| 0 PM EXECS FOR TERMINATING DAL                        |                      | BV0766 NTX220BA06 |
| 0 PM EXECS FOR TERMINATING DAL                        |                      | BV0766 NTX220CA08 |
| 0 PM EXECS FOR 3J LOOP DISCONNECT CALLING             |                      | BF0639 NTX222AM05 |
| 0 PM EXECS TO SUPPORT UTR ON DMS-250                  |                      | AD0287 NTX220AA13 |
| 0 PM EXECS TO SUPPORT UTR ON DMS-250                  |                      | AD0287 NTX220BA06 |
| 0 PM EXECS TO SUPPORT UTR ON DMS-250                  |                      | AD0287 NTX220CA08 |
| 0 PM FOR REMOTE DLM/DLM MAINT CARD                    |                      | AD0305 NTX640AA06 |
| 0 PM FOR REMOTE DLM/DLM MAINT CARD                    |                      | AD0305 NTX640AB04 |
| 0 PM LOADS IN MAIN MEMORY                             |                      | BR0331 NTX077AA01 |
| 0 PM MAINTENANCE COEXISTENCE                          |                      | AE0389 NTXB85AA01 |
| 0 PM MAINTENANCE ENHANCEMENTS                         |                      | BC1433 NTX001AA29 |
| 0 PM MAINTENANCE ENHANCEMENTS                         |                      | BC1433 NTX913AA04 |
| 0 PM MAP BASED UTILITY (SEE F0052 AND F0053)          |                      | BC0300 NTX184AA11 |
| 0 PM MAP BASED UTILITY (SEE F0052 AND F0053)          |                      | BC0300 NTX184AB02 |
| 0 PM MAP ENHANCEMENTS                                 |                      | AL0480 NTX001AA29 |
| 0 PM MAP/LOG ROBUSTNESS                               |                      | BC1184 NTX270AA19 |
| 0 PM METERING ROBUSTNESS                              |                      | BF0976 NTX494AA03 |
| 0 PM TEMPLATES AND EXECS FOR FAST INTERDIGITAL TIMING |                      | BV1013 NTX220AA13 |
| 0 PM TEMPLATES AND EXECS FOR FAST INTERDIGITAL TIMING |                      | BV1013 NTX220BA06 |
| 0 PM TEMPLATES AND EXECS FOR FAST INTERDIGITAL TIMING |                      | BV1013 NTX220CA08 |
| 0 PM TO FACILITY MAINTENANCE IMPROVEMENTS             |                      | BC1422 NTX001AA29 |
| 0 PMDEBUG INTERFACE TO XPEC MONITOR                   |                      | AM0135 NTXN25AA02 |
| 0 PMDEBUG TO INACTIVE UNIT OF CSC                     |                      | AD1183 NTX322AA18 |
| 0 PM180 CLEANUP                                       |                      | NC0322 NTX270AA19 |
| 0 PNID/PNOD ON P_PHONE                                |                      | BC1180 NTX601BA06 |
| 0 POINT TO POINT RATING                               |                      | BR0133 NTX030CC16 |
| 0 POLLING AMA DATA                                    | VIA DATAPAC -        | BR0263 NTX059AB04 |
| 0 AUTOMATIC                                           |                      |                   |
| 0 POLLING AMA DATA                                    | VIA DATAPAC - MANUAL | BC0083 NTX001AA29 |
| 0 POLLING AMA DATA                                    | VIA DATAPAC - MANUAL | BC0113 NTX001AA29 |
| 0 POLLING AMA DATA                                    | VIA DATAPAC - MANUAL | BC0083 NTX058AD02 |
| 0 POLLING AMA DATA                                    | VIA DATAPAC - MANUAL | BC0113 NTX058AD02 |
| 0 POLLING AMA DATA                                    | VIA DATAPAC - MANUAL | BR0016 NTX058AD02 |
| 0 POLLING AMA DATA                                    | VIA DATAPAC - MANUAL | BC0083 NTX059AB04 |
| 0 POLLING AMA DATA                                    | VIA DATAPAC - MANUAL | BC0113 NTX059AB04 |
| 0 POLLING AMA DATA                                    | VIA DATAPAC - MANUAL | BR0016 NTX059AB04 |
| 0 POLLING AMA DATA                                    | VIA DATAPAC - MANUAL | BC0083 NTX804AA02 |

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| 0 POLLING AMA DATA                                      | VIA DATAPAC - MANUAL | BC0113 | NTX804AA02 |
| 0 POLLING AMA DATA                                      | VIA DATAPAC - MANUAL | BR0016 | NTX804AA02 |
| 0 POLLING FOR OM DATA(UDC INTERFACE)                    |                      | BR0141 | NTX001AA29 |
| 0 POLLING OF AMA TAPE                                   |                      | BR0051 | NTX059AB04 |
| 0 POOLED ECHO CANCELLORS                                |                      | AD0140 | NTX222AB04 |
| 0 POOLED ECHO CANCELLORS                                |                      | AD0140 | NTX222BA07 |
| 0 PORT MTS AND TPS TO ENET PROCESSOR                    |                      | AL0457 | NTXE01AA06 |
| 0 PORTA SYSTEM LINE TEST INTERFACE                      |                      | BR0256 | NTXZ02AA01 |
| 0 PORTA SYSTEM LINE TEST INTERFACE                      |                      | BR0256 | NTX901AA24 |
| 0 PORTING DMS-CORE MAINTENANCE TO RUN ON RISC (PHASE I) |                      | AL1193 | NTX941AA12 |
| 0 PORTING MPC S/W TO TPC HSDA                           |                      | AF0721 | NTXA90AA07 |
| 0 POSITION BUSY                                         |                      | BV0560 | NTXZ00AA01 |
| 0 POSITION BUSY                                         |                      | BV0560 | NTX100AA27 |
| 0 POSITION OCCUPANCY MEASUREMENT                        |                      | BR0328 | NTX030BA03 |
| 0 POST BY LINE CLASS CODE (CSDDS)                       |                      | BC0263 | NTX061AA01 |
| 0 POST BY LINE CLASS CODE - CSDDS                       |                      | BR0352 | NTX061AA01 |
| 0 POTS MULTIPLE SIMULTANEOUS CALL FORWARDING            |                      | AL0362 | NTX806AA01 |
| 0 POTS/EBS/DATAPATH ON LCME                             |                      | AQ0696 | NTX750AC02 |
| 0 POTS/EBS/DATAPATH ON LCME                             |                      | AQ0696 | NTX750AD01 |
| 0 POWER - N*64 WIDEBAND OPTIONALITY                     |                      | AD3879 | NTXR65AA01 |
| 0 POWER : WIDE BAND CALL MACHINE & GLARE RECOVERY (XPM) |                      | AD3321 | NTXS25AA01 |
| 0 POWER : WIDE BAND CHANNEL MANAGEMENT (XPM)            |                      | AD3319 | NTXS25AA01 |
| 0 POWER : WIDE BAND INTEGRITY MANAGEMENT (PM)           |                      | AD3322 | NTXS25AA01 |
| 0 POWER : WIDE BAND TRUNK DATAFILL AND MAINTENANCE (CC) |                      | AD3318 | NTXS25AA01 |
| 0 POWER : WIDE BAND TRUNK SELECTION (CC)                |                      | AD3317 | NTXS25AA01 |
| 0 POWER : WIDEBAND ISUP AND MAINTENANCE IN DTC7 (XPM)   |                      | AD3320 | NTXS25AA01 |
| 0 POWER : WIDEBAND SWACT SUPPORT IN DTC7 (XPM)          |                      | AD3443 | NTXS25AA01 |
| 0 POWER CALL PROCESSING ARCHITECTURE ENHANCEMENTS       |                      | AD3257 | NTXP85AA02 |
| 0 POWER FEATURE ENHANCEMENTS & MAINTENANCE SUPPORT      |                      | AD3366 | NTXP85AA02 |
| 0 POWER PROJECT TEST TOOL SIMULATOR PHASE II            |                      | AD3261 | NTX184AA11 |
| 0 PP A BIT FACILITY                                     |                      | BC0763 | NTX213AC01 |
| 0 PP ABIT/BWORD FUNCTIONAL DIAGNOSTIC                   |                      | BC0755 | NTX213AC01 |
| 0 PP B WORD FACILITY                                    |                      | BC0753 | NTX213AC01 |
| 0 PP CALL PROCESSING FOR RCC WARM ESA: PHASE I          |                      | AF2700 | NTXN82AB01 |
| 0 PP CALL PROCESSING FOR RCC WARM ESA: PHASE I          |                      | AF2700 | NTXQ12AA01 |
| 0 PP COIN FUNCTIONS                                     |                      | BV1177 | NTX213AC01 |
| 0 PP DIGITAL TEST HEAD                                  |                      | BC0761 | NTX213AC01 |
| 0 PP DMS-1U(RT) MSG PROC SOFTWARE                       |                      | BF0585 | NTX387AB04 |
| 0 PP DMS-1U(RT) MSG PROC SOFTWARE                       |                      | BF0585 | NTX387AC02 |
| 0 PP DMS-1U(RT) MSG PROC SOFTWARE                       |                      | BF0585 | NTX387AD01 |
| 0 PP ESA MAINTENANCE                                    |                      | AF0952 | NTX380AA02 |
| 0 PP ESA MAINTENANCE ENTRY/EXIT                         |                      | AF0953 | NTX380AA02 |
| 0 PP FSR SUPPORT FOR SMU                                |                      | BF0593 | NTX387AB04 |
| 0 PP FSR SUPPORT FOR SMU                                |                      | BF0593 | NTX387AC02 |

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| 0 PP FSR SUPPORT FOR SMU                          | BF0593 NTX387AD01 |
| 0 PP IDT MAINTENANCE II                           | AF2442 NTXF46AA04 |
| 0 PP LINE DIAGNOSTIC ENHANCEMENTS FOR SMS         | AF0158 NTX398AA12 |
| 0 PP LINE INTERSWITCH                             | AF0564 NTX380AA02 |
| 0 PP MAINTENANCE FOR RCC WARM ESA: PHASE I        | AF2699 NTXN82AB01 |
| 0 PP MAINTENANCE FOR RCC WARM ESA: PHASE I        | AF2699 NTXQ12AA01 |
| 0 PP PAD/RING DIAGNOSTIC                          | BC0756 NTX213AC01 |
| 0 PP POTS CALL PROCESSING                         | BC0779 NTX213AC01 |
| 0 PP PROTECTION SWITCHING                         | BC1114 NTX213AC01 |
| 0 PP PSIDE CHANNEL ALLOCATION                     | BC0777 NTX213AC01 |
| 0 PP RCT CONTROL CIRCUIT MAINTENANCE              | BV1178 NTX213AC01 |
| 0 PP RINGING                                      | BC0778 NTX213AC01 |
| 0 PP SMR WARM SWACT                               | BF0572 NTX213AC01 |
| 0 PP SMS WARM SWACT                               | BF0574 NTX398AA12 |
| 0 PP SMU BASIC CALL PROCESSING                    | BF0588 NTX387AB04 |
| 0 PP SMU BASIC CALL PROCESSING                    | BF0588 NTX387AC02 |
| 0 PP SMU BASIC CALL PROCESSING                    | BF0588 NTX387AD01 |
| 0 PP SMU CHANNEL REASSIGNMENT                     | BF0592 NTX387AB04 |
| 0 PP SMU CHANNEL REASSIGNMENT                     | BF0592 NTX387AC02 |
| 0 PP SMU CHANNEL REASSIGNMENT                     | BF0592 NTX387AD01 |
| 0 PP SMU LOOP AND LINE-CARD TESTING               | BF0590 NTX387AB04 |
| 0 PP SMU LOOP AND LINE-CARD TESTING               | BF0590 NTX387AC02 |
| 0 PP SMU LOOP AND LINE-CARD TESTING               | BF0590 NTX387AD01 |
| 0 PP SMU PM MAINTENANCE                           | BF0586 NTX387AB04 |
| 0 PP SMU PM MAINTENANCE                           | BF0586 NTX387AC02 |
| 0 PP SMU PM MAINTENANCE                           | BF0586 NTX387AD01 |
| 0 PP SMU STATIC DATA(PM)                          | BF0587 NTX387AB04 |
| 0 PP SMU STATIC DATA(PM)                          | BF0587 NTX387AC02 |
| 0 PP SMU STATIC DATA(PM)                          | BF0587 NTX387AD01 |
| 0 PP 2 PYT ANI                                    | BV1176 NTX213AC01 |
| 0 PRA ANI DELIVERY - TEMPORY SIG. CONNECTIONS XPM | AM0085 NTXG73AA01 |
| 0 PRA CALL REDIRECTION (XPM)                      | AC0474 NTX790AC02 |
| 0 PRA CALL REDIRECTION SERVICE                    | AC0277 NTX790AC02 |
| 0 PRA D-CHANNEL BACKUP-CC                         | AM0071 NTXG33AA01 |
| 0 PRA D-CHANNEL BACKUP-CC                         | AM0071 NTXN53AA02 |
| 0 PRA DATABASES FOR MCI                           | AD1714 NTXG01CA07 |
| 0 PRA IAC WARM SWACT                              | AG1298 NTX790AC02 |
| 0 PRA INTERWORKING IN MDC                         | AG1300 NTX790AC02 |
| 0 PRA INTERWORKING WITH MSL-100 AGENCIES II       | AD1173 NTX790AC02 |
| 0 PRA INTERWORKING WITH MSL-100 AGENCIES III      | AD1942 NTX790AC02 |
| 0 PRA INTERWORKING WITH SL-100 AGENCIES I         | AD0881 NTX790AC02 |
| 0 PRA MAINTENANCE III                             | AD1294 NTX790AC02 |
| 0 PRA MAINTENANCE IV                              | AD1615 NTX790AC02 |
| 0 PRA OFF HOOK QUEUEING                           | AM0070 NTXG01AA06 |
| 0 PRA ON LTCI                                     | AJ0789 NTX790AC02 |
| 0 PRA VERSION CONTROL FOR INTEREXCHANGE CARRIER   | AD1800 NTXE64AA02 |
| 0 INTERWORKING                                    |                   |

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| 0 PRA VERSION CONTROL FOR INTEREXCHANGE CARRIER                  | AD1800 | NTX167AB11 |
| 0 INTERWORKING                                                   |        |            |
| 0 PRA VERSION CONTROL FOR INTEREXCHANGE CARRIER                  | AD1800 | NTX790AC02 |
| 0 INTERWORKING                                                   |        |            |
| 0 PRA-D CHANNEL BACKUP - XPM.                                    | AM0055 | NTXG33AA01 |
| 0 PRA-D CHANNEL BACKUP - XPM.                                    | AM0055 | NTXN53AA02 |
| 0 PRA/ CCS7 ISUP INTERWORKING FOR USSPRINT ON DMS-<br>0 250      | AD1172 | NTXG01AA06 |
| 0 PRA/ISUP INTERWORKING                                          | AC0339 | NTXV07AA01 |
| 0 PRA/ISUP INTERWORKING                                          | AC0339 | NTXV08AA01 |
| 0 PRA/ISUP INTERWORKING                                          | AC0339 | NTX794AA01 |
| 0 PRA/SMA PREP WORK FOR UKCENTREX                                | AE0744 | NTX790AC02 |
| 0 PRA/SS7 TCAP INTERWORKING                                      | AD1673 | NTX791AA02 |
| 0 PRA250 DEFAULT CALLTYPE                                        | AD2563 | NTXG01AA06 |
| 0 PRA250 DEFAULT CALLTYPE                                        | AD2563 | NTXG01CA07 |
| 0 PRA250 NETWORK TRANSPORT                                       | AD2564 | NTXG01AA06 |
| 0 PRA250 NETWORK TRANSPORT                                       | AD2564 | NTXG01CA07 |
| 0 PRCC ISDN - CC PORTION                                         | AJ1308 | NTXJ00AA03 |
| 0 PRCC ISDN - CC PORTION                                         | AJ1308 | NTXJ00AB01 |
| 0 PRCC ISDN - XPM PORTION                                        | AJ1260 | NTXJ00AA03 |
| 0 PRCC ISDN - XPM PORTION                                        | AJ1260 | NTXJ00AB01 |
| 0 PRE-EMPTION ACCESS LINES                                       | BF0056 | NTX701CA07 |
| 0 PRE-EMPTION ACCESS LINES                                       | BF0056 | NTX701DA03 |
| 0 PRE-EMPTION ACCESS LINES                                       | BV0120 | NTX701DA03 |
| 0 PRE-EMPTION ACCESS LINES                                       | BV0399 | NTX701DA03 |
| 0 PRE-EMPTION INTERSWITCH TRUNKS                                 | BV0104 | NTX701CA07 |
| 0 PRE-NCS 800 SERVICE                                            | AD0014 | NTX222CA09 |
| 0 PRECEDENCE ACCESS LINES                                        | BV0119 | NTX701DA03 |
| 0 PRECEDENCE INTERSWITCH TRUNKS                                  | BV0103 | NTX701CA07 |
| 0 PRECEDENCE DEFLECTION TO A ROUTE                               | BV1102 | NTX113AA01 |
| 0 PRECEDENCE PROGRESSIVE CONFERENCING.                           | AD2852 | NTXJ90AA01 |
| 0 PREEMPT SEARCH METHOD C & D                                    | BC1181 | NTX701BA08 |
| 0 PREEMPTION OF CALLS INVOLVING AC AND AUTOVON ISUP<br>0 TRUNKS. | AD0879 | NTXA05AA03 |
| 0 PREFIX CODE CONTROLS                                           | AF0582 | NTX060AB11 |
| 0 PREFIX DIGIT                                                   | BV0165 | NTX030CC16 |
| 0 PREP FOR BELLCORE AMA FOR ISDN CIRCUIT-MODE CALLS              | AF3268 | NTX159AA12 |
| 0 PREP FOR DMS-PACKET HANDLER (DMS-PH) BELLCORE AMA              | AF3269 | NTX755AB01 |
| 0 PREP FOR DMS-PACKET HANDLER (DMS-PH) BELLCORE AMA              | AF3269 | NTX755AC01 |
| 0 PREP FOR MULTIPLE DIRECTORY NUMBERS (DNS) PER LEN              | AF2860 | NTXE94AA02 |
| 0 PREP FOR NX64 CALL PROCESSING                                  | AD3643 | NTXL45AA03 |
| 0 PREP STP GATEWAY                                               | AC0432 | NTX840AA02 |
| 0 PREPAY COIN FIRST                                              | BR0242 | NTXZ02AA01 |
| 0 PREPAY COIN FIRST                                              | BR0242 | NTX901AA24 |
| 0 PREPAY COIN FIRST COIN LINE                                    | BV0087 | NTXZ02AA01 |
| 0 PREPAY COIN FIRST COIN LINE                                    | BV0087 | NTX901AA24 |
| 0 PRESCHEDULED IMAGE TAKING FOR IOC DISKS                        | AG1043 | NTX074AA09 |

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| 0 PRESCHEDULED IMAGE TAKING ON SLM                        | AG1385 NTX942AB02 |
| 0 PRESET CONFERENCE                                       | BC0708 NTX260AA02 |
| 0 PRESET CONFERENCE (LARGE)                               | AF2014 NTXE74AA01 |
| 0 PRESET CONFERENCE (UP TO 26 PORTS)                      | BV0596 NTX601BA06 |
| 0 PRESET CONFERENCE ADD-ON                                | BC1179 NTX701BA08 |
| 0 PRESET CONFERENCE PREEMPTION                            | BC1178 NTX701BA08 |
| 0 PRESET CONFERENCING                                     | BV0261 NTX701CA07 |
| 0 PRESET CONFERENCING                                     | BV0397 NTX701CA07 |
| 0 PRESUBSCRIPTION INDICATOR                               | AF0170 NTX711AB02 |
| 0 PRETRANSLATION AND CALL TYPING ENHANCEMENTS             | AD1688 NTXG76AA01 |
| 0 PRETRANSLATOR DRIVEN DIALING PLAN ON IMTS               | BV1330 NTX220AA13 |
| 0 PRETRANSLATOR DRIVEN DIALING PLAN ON IMTS               | BV1330 NTX220BA06 |
| 0 PRETRANSLATOR DRIVEN DIALING PLAN ON IMTS               | BV1330 NTX220CA08 |
| 0 PRETRANSLATOR DRIVEN DIALING PLAN ON ONALS, DALS, ONATS | BV1329 NTX220AA13 |
| 0 PRETRANSLATOR DRIVEN DIALING PLAN ON ONALS, DALS, ONATS | BV1329 NTX220BA06 |
| 0 PRETRANSLATOR DRIVEN DIALING PLAN ON ONALS, DALS, ONATS | BV1329 NTX220CA08 |
| 0 PRETRANSLATOR DRIVEN DIALING PLANS                      | BV1197 NTX220AA13 |
| 0 PRETRANSLATOR DRIVEN DIALING PLANS                      | BV1197 NTX220BA06 |
| 0 PRETRANSLATOR DRIVEN DIALING PLANS                      | BV1197 NTX220CA08 |
| 0 PRETRANSLATOR SELECTOR FOR CONFERENCE CALLING           | BV1305 NTX220AA13 |
| 0 PRETRANSLATOR SELECTOR FOR CONFERENCE CALLING           | BV1305 NTX220BA06 |
| 0 PRETRANSLATOR SELECTOR FOR CONFERENCE CALLING           | BV1305 NTX220CA08 |
| 0 PRI/ESA INTERWORKING FOR BILLING NUMBER DELIVERY        | NC0032 NTX790AC02 |
| 0 PRINTED METER CHECK                                     | AE0055 NTX667AA01 |
| 0 PRINTER SUPPORT ON COAX ELIMINATOR                      | AC0546 NTX250AA15 |
| 0 PRINTOUT ON ANI FAILURE                                 | BR0081 NTX044AA04 |
| 0 PRIORITY MAP TERMINAL                                   | BC0667 NTX001AA29 |
| 0 PRIVACY RELEASE CONFERENCE CONTROL                      | AL0207 NTX878AB02 |
| 0 PRIVACY RELEASE CONFERENCE CONTROL                      | AL0207 NTX878AC01 |
| 0 PRIVACY RELEASE CONFERENCE CONTROL                      | AL0207 NTX878AD01 |
| 0 PRIVACY RELEASE CONFERENCE CONTROL                      | AL0207 NTX878AE01 |
| 0 PRIVATE NETWORK ENHANCEMENTS FOR SCAI                   | AM0160 NTXL32AA01 |
| 0 PRIVATE SPEED CALLING AND HOTLINE DIALING               | AD2186 NTXE78AA04 |
| 0 PRIVATE SPEEDS DATABASE REWRITE                         | BC1004 NTX230AA03 |
| 0 PRIVATE SPEEDS DATABASE REWRITE                         | BC1004 NTX230BA01 |
| 0 PRIVATE SPEEDS DATABASE REWRITE                         | BC1004 NTX230CA01 |
| 0 PRIVATE VIRTUAL NETWORK ENHANCEMENTS                    | AG0925 NTX983AB02 |
| 0 PRIVATE VIRTUAL NETWORKING DELIVERABLE                  | AG0829 NTX983AB02 |
| 0 PRLCM ESA AND INTRA SWITCHING                           | AE0267 NTX963AA01 |
| 0 PROGRAM STORE-OPTIMIZED OPCODES                         | BC0333 NTX184AA11 |
| 0 PROGRAM STORE-OPTIMIZED OPCODES                         | BC0333 NTX184AB02 |
| 0 PROGRAMMABLE CP FILTER AND QUEUING TIMERS               | BC1561 NTX220AA13 |
| 0 PROGRAMMABLE CP FILTER AND QUEUING TIMERS               | BC1561 NTX220BA06 |
| 0 PROGRAMMABLE CP FILTER AND QUEUING TIMERS               | BC1561 NTX220CA08 |

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| 0 PROGRAMMABLE POWER/MISC ALARM                       | AL0230 | NTX398AA12 |
| 0 PROGRAMMABLE SPARE ALARMS FOR RCU                   | AF0450 | NTX387AB04 |
| 0 PROGRAMMABLE SPARE ALARMS FOR RCU                   | AF0450 | NTX387AC02 |
| 0 PROGRAMMABLE SPARE ALARMS FOR RCU                   | AF0450 | NTX387AD01 |
| 0 PROPAGATE DIRECT ACCESS TO EOPS FOR DS1SIG          | AD1199 | NTXG12AA06 |
| 0 PROPAGATION OF TOPS FAST FEATURES TO BCS27.         | AD1132 | NTXG12AA06 |
| 0 PROTECTION OF UNEXPIRED TAPES                       | BR0817 | NTX001AA29 |
| 0 PROTOCOL SUPPORT - BX.25                            | BC1334 | NTX273AA07 |
| 0 PROVIDE ACCESS TO C.P. F.O., PAY PHONE, AND MOBILE  | AD2205 | NTXG60AA02 |
| 0 PHONE                                               |        |            |
| 0 PROVIDE CC WARM SWACT RESIDENCY IN ALL LOADS        | AG1868 | NTX001AA29 |
| 0 PROVIDE OPTIONALITY HOOKS ON DCMS                   | BC1090 | NTX001AA29 |
| 0 PROVIDE REQUIRED NM CONTROLS FOR INTERNATIONAL DMS- | AD1963 | NTXG60AA02 |
| 0 250                                                 |        |            |
| 0 PROVIDE REQUIRED NM CONTROLS FOR INTERNATIONAL DMS- | AD1963 | NTXH88AA01 |
| 0 250                                                 |        |            |
| 0 PROVISION OF 1024 ROUTE REF INDICES IN ROUTE        | BR0325 | NTX001AA29 |
| 0 REF.TABLE                                           |        |            |
| 0 PS/PD TREATMENT                                     | BT0069 | NTXZ02AA01 |
| 0 PS/PD TREATMENT                                     | BT0069 | NTX901AA24 |
| 0 PSEUDO ANI FOR 800 SERVICES                         | AD1686 | NTX343CA02 |
| 0 PSEUDO HOTEL NXX TABLES                             | BR0700 | NTX030CC16 |
| 0 PUBLIC SPEED DIALING DATABASE FOR MULTI CUST        | BV1288 | NTX230AA03 |
| 0 PUBLIC SPEED DIALING DATABASE FOR MULTI CUST        | BV1288 | NTX230BA01 |
| 0 PUBLIC SPEED DIALING DATABASE FOR MULTI CUST        | BV1288 | NTX230CA01 |
| 0 PUBLIC SPEED NUMBERS                                | BT0407 | NTX220AA13 |
| 0 PUBLIC SPEED NUMBERS                                | BT0407 | NTX220BA06 |
| 0 PUBLIC SPEED NUMBERS                                | BT0407 | NTX220CA08 |
| 0 PUBLIC SPEED NUMBERS                                | BV1361 | NTX222AB04 |
| 0 PUBLIC SPEED NUMBERS                                | BV1361 | NTX222CA09 |
| 0 PUBLIC SPEED NUMBERS                                | BV0723 | NTX230AA03 |
| 0 PUBLIC SPEED NUMBERS                                | BV0723 | NTX230BA01 |
| 0 PUBLIC SPEED NUMBERS                                | BV0723 | NTX230CA01 |
| 0 PUBLIC SPEEDS, PRIVATE SPEEDS, INCOMING EXCLUSION   | BV1188 | NTX220AA13 |
| 0 PULSING CONTROL DD                                  | BT0308 | NTX001AA29 |
| 0 PULSING CONTROL IM                                  | BT0306 | NTX001AA29 |
| 0 PULSING CONTROL STOP GO (SG)                        | BT0311 | NTX001AA29 |
| 0 PULSING CONTROL VIDT                                | BT0313 | NTX001AA29 |
| 0 PULSING CONTROL WK                                  | BT0307 | NTX001AA29 |
| 0 PULSING CONTROL XDD (OUTGOING)                      | BT0309 | NTX001AA29 |
| 0 PULSING CONTROL XSG                                 | BT0312 | NTX001AA29 |
| 0 PULSING DP                                          | BT0305 | NTX001AA29 |
| 0 PULSING MF                                          | BT0304 | NTX001AA29 |
| 0 PURPLE BOX WIRE TAP                                 | BT0045 | NTXZ02AA01 |
| 0 PURPLE BOX WIRE TAP                                 | BT0045 | NTX901AA24 |
| 0 PVN ATTENDANT SERVICES                              | AG1555 | NTX984AA01 |
| 0 Q.932 FACILITY INTERFACE TO RO SERVICE IN LTCI      | AJ0908 | NTXJ59AB03 |



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| 0 Q.932 FACILITY INTERFACE TO RO SERVICE IN LTCI   | AJ0908 NTXJ59AC01 |
| 0 QCUST CONSOLIDATION AND QUERY CALL FORWARD       | AJ1266 NTXN31AA02 |
| 0 SEQUENCES                                        |                   |
| 0 QCUST UPLOAD ENHANCEMENTS FOR CDC                | AJ0901 NTX563AA05 |
| 0 QUERY COMMAND ENHANCEMENTS                       | BC1925 NTX001AA29 |
| 0 QUERY FUNCTIONAL STATION GROUPINGS               | BR0795 NTXZ00AA01 |
| 0 QUERY FUNCTIONAL STATION GROUPINGS               | BR0795 NTX100AA27 |
| 0 QUEUE SELECTION ON TRUNK GROUP BASE              | BR0775 NTX030CC16 |
| 0 QUEUEING OM'S PER ROUTE                          | BR0735 NTX105AA03 |
| 0 QUIET TERMINATION TEST LINE                      | AJ0837 NTX470AA13 |
| 0 Q791 MTP PERFORMANCE ENHANCEMENTS.               | AE0775 NTXR72AA01 |
| 0 Q791 MTP PERFORMANCE ENHANCEMENTS.               | AE0775 NTX041AB09 |
| 0 RACK MOUNT HIGH SPEED DU                         | BF0795 NTX250AA15 |
| 0 RACK MOUNT LOW SPEED DU                          | BF0796 NTX250AA15 |
| 0 RACKMOUNT HIGH SPEED DU (AV)                     | AC0030 NTX250AA15 |
| 0 RACKMOUNT LOW SPEED DU (4X25CH) FIRMWARE         | AC0032 NTX250AA15 |
| 0 RADR FOR UTR                                     | BF0959 NTX269AA07 |
| 0 RAG FOLDBACK                                     | AG0962 NTX499AA10 |
| 0 RANDOM CONDITIONAL ROUTING                       | BC1101 NTX437AA01 |
| 0 RASL ENHANCEMENTS FOR GENERIC SERVICES           | AD0664 NTX347AA06 |
| 0 RASL TO MPC MULTI-APPLICATION INTERFACE          | AD0589 NTX347AA06 |
| 0 RATE ADAPTER DIAGNOSTICS FOR THE STP LIM         | AI0059 NTXN18AA04 |
| 0 RATE ADAPTER DIAGNOSTICS FOR THE STP LIM         | AI0059 NTX833AB01 |
| 0 RATE ADAPTER FIRMWARE                            | AI0060 NTXN18AA04 |
| 0 RATE ADAPTER FIRMWARE                            | AI0060 NTX833AB01 |
| 0 RATE PERIOD SPECIFIC BILLING                     | BR0373 NTX030CC16 |
| 0 RATING MASS DMO                                  | BV0178 NTX030CC16 |
| 0 RCC C-SIDE NON-CONSECUTIVE LINKS                 | AF0566 NTX145AA06 |
| 0 RCC CSIDE LINK DIAGNOSTIC                        | AL0096 NTX145AA06 |
| 0 RCC LINE INTRASWITCHING PADS                     | AG0318 NTX150AA04 |
| 0 RCC MISCELLANEOUS DOCUMENTATION                  | AG0319 NTX145AA06 |
| 0 RCC TRUNK PATHEND SUPPORT                        | BC1363 NTX152AB01 |
| 0 RCC TRUNKS - DYNAMIC CHANNELS AND INTRASWITCHING | BC1281 NTX152AB01 |
| 0 RCC WARM ESA HIGH LEVEL DESIGN                   | AF2659 NTXN82AB01 |
| 0 RCC WARM ESA HIGH LEVEL DESIGN                   | AF2659 NTXQ12AA01 |
| 0 RCC/LCM LOADING ENHANCEMENTS I                   | AJ0192 NTX001AA29 |
| 0 RCCI BCS SWACT, BERP SUPPORT AND PERFORM TOOLS   | AF2267 NTXJ00AA03 |
| 0 RCCI BCS SWACT, BERP SUPPORT AND PERFORM TOOLS   | AF2267 NTXJ00AB01 |
| 0 RCCI DUAL SUPPORT AND ISDN ESA TRUNK INTEGRATION | AF2452 NTXJ00AA03 |
| 0 RCCI DUAL SUPPORT AND ISDN ESA TRUNK INTEGRATION | AF2452 NTXJ00AB01 |
| 0 RCCI INTRASWITCHING                              | AF2118 NTXJ00AA03 |
| 0 RCCI INTRASWITCHING                              | AF2118 NTXJ00AB01 |
| 0 RCCI ISDN ESA FUNCTIONAL CALL PROCESSING         | AF2276 NTXJ00AA03 |
| 0 RCCI ISDN ESA FUNCTIONAL CALL PROCESSING         | AF2276 NTXJ00AB01 |
| 0 RCCI ISDN ESA LINE INTEGRATION                   | AF2450 NTXJ00AA03 |
| 0 RCCI ISDN ESA LINE INTEGRATION                   | AF2450 NTXJ00AB01 |
| 0 RCCI ISDN ESA STATIC DATA                        | AF2273 NTXJ00AA03 |

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| 0 RCCI ISDN ESA STATIC DATA                           | AF2273 NTXJ00AB01 |
| 0 RCCI ISDN ESA SWACT                                 | AF2454 NTXJ00AA03 |
| 0 RCCI ISDN ESA SWACT                                 | AF2454 NTXJ00AB01 |
| 0 RCCI NON-ISDN ESA SUPPORT                           | AF2271 NTXJ00AA03 |
| 0 RCCI NON-ISDN ESA SUPPORT                           | AF2271 NTXJ00AB01 |
| 0 RCCI WARMSWACT                                      | AF2270 NTXJ00AA03 |
| 0 RCCI WARMSWACT                                      | AF2270 NTXJ00AB01 |
| 0 RCCI 2B1Q MAINTENANCE AND CALL PROCESSING           | AF2476 NTXJ00AA03 |
| 0 INTEGRATION.                                        |                   |
| 0 RCCI 2B1Q MAINTENANCE AND CALL PROCESSING           | AF2476 NTXJ00AB01 |
| 0 INTEGRATION.                                        |                   |
| 0 RCF ENHANCEMENTS                                    | BR0505 NTX021AA04 |
| 0 RCT & RCS INVENTORY CLEANUP                         | BC1138 NTX398AA12 |
| 0 RCT SUBSCRIBER LOOP TEST DIGITAL (SLTD) ROBUSTNESS. | AF2345 NTX213AC01 |
| 0 RCU BASIC PM MAINTENANCE(CC)                        | BC1685 NTX387AB04 |
| 0 RCU BASIC PM MAINTENANCE(CC)                        | BC1685 NTX387AC02 |
| 0 RCU BASIC PM MAINTENANCE(CC)                        | BC1685 NTX387AD01 |
| 0 RCU CARRIER MAINTENANCE ENHANCEMENTS                | AF0232 NTX387AB04 |
| 0 RCU CARRIER MAINTENANCE ENHANCEMENTS                | AF0232 NTX387AC02 |
| 0 RCU CARRIER MAINTENANCE ENHANCEMENTS                | AF0232 NTX387AD01 |
| 0 RCU EXCEPTION REPORT HANDLING                       | BF0619 NTX322AA18 |
| 0 RCU EXCEPTION REPORT HANDLING                       | BV1724 NTX322AA18 |
| 0 RCU INVENTORY BASIC TABLE CONTROL(CC)               | BC1724 NTX387AB04 |
| 0 RCU INVENTORY BASIC TABLE CONTROL(CC)               | BC1724 NTX387AC02 |
| 0 RCU INVENTORY BASIC TABLE CONTROL(CC)               | BC1724 NTX387AD01 |
| 0 RCU LINE TEST PROCESSOR                             | AF2672 NTX387AB04 |
| 0 RCU LINE TEST PROCESSOR                             | AF2672 NTX387AC02 |
| 0 RCU LINE TEST PROCESSOR                             | AF2672 NTX387AD01 |
| 0 RCU LINES INVENTORY(CC)                             | BC1726 NTX387AB04 |
| 0 RCU LINES INVENTORY(CC)                             | BC1726 NTX387AC02 |
| 0 RCU LINES INVENTORY(CC)                             | BC1726 NTX387AD01 |
| 0 RCU LINES MAINTENANCE                               | BC2154 NTX387AB04 |
| 0 RCU LINES MAINTENANCE                               | BC2154 NTX387AC02 |
| 0 RCU LINES MAINTENANCE                               | BC2154 NTX387AD01 |
| 0 RCU MAINTENANCE ENHANCEMENTS                        | BC2156 NTX387AB04 |
| 0 RCU MAINTENANCE ENHANCEMENTS                        | BC2156 NTX387AC02 |
| 0 RCU MAINTENANCE ENHANCEMENTS                        | BC2156 NTX387AD01 |
| 0 RCU MAP SUPPORT(CC)                                 | BC1728 NTX387AB04 |
| 0 RCU MAP SUPPORT(CC)                                 | BC1728 NTX387AC02 |
| 0 RCU MAP SUPPORT(CC)                                 | BC1728 NTX387AD01 |
| 0 RCU OFFICE PARAMETER                                | AF0530 NTX387AB04 |
| 0 RCU OFFICE PARAMETER                                | AF0530 NTX387AC02 |
| 0 RCU OFFICE PARAMETER                                | AF0530 NTX387AD01 |
| 0 RCU SYSTEM AUDITS/24-HR SWITCHOVER                  | BC2155 NTX387AB04 |
| 0 RCU SYSTEM AUDITS/24-HR SWITCHOVER                  | BC2155 NTX387AC02 |
| 0 RCU SYSTEM AUDITS/24-HR SWITCHOVER                  | BC2155 NTX387AD01 |
| 0 RCU TABLE CONTROL ENHANCEMENTS                      | BC2160 NTX387AB04 |

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| 0 RCU TABLE CONTROL ENHANCEMENTS                         | BC2160 | NTX387AC02 |
| 0 RCU TABLE CONTROL ENHANCEMENTS                         | BC2160 | NTX387AD01 |
| 0 RCU UNSOLICITED MESSAGE HANDLING                       | BC2161 | NTX387AB04 |
| 0 RCU UNSOLICITED MESSAGE HANDLING                       | BC2161 | NTX387AC02 |
| 0 RCU UNSOLICITED MESSAGE HANDLING                       | BC2161 | NTX387AD01 |
| 0 RDLM ESA                                               | AD0641 | NTXA03AA02 |
| 0 REA REVERTIVE CALLING                                  | BR0050 | NTX049AD01 |
| 0 REAL TIME BILLING TRANSMISSION                         | BV1594 | NTX344CA06 |
| 0 REAL TIME IMPROVEMENTS TO MLP AND NX25 MAINTENANCE     | AD0489 | NTX347AA06 |
| 0 REAL TIME ROUTE STATUS                                 | NC0273 | NTXK61AA02 |
| 0 REAL TIME STUDY OF CURRENT DMSNOS I/F FOR LBR (PART I) | AG0329 | NTX001AA29 |
| 0 REALTIME INPUT OM                                      | AF1749 | NTX001AA29 |
| 0 RECALL D/T & SEQUENCING FOR USTS                       | BT0458 | NTX220AA13 |
| 0 RECALL D/T & SEQUENCING FOR USTS                       | BT0458 | NTX220BA06 |
| 0 RECALL D/T & SEQUENCING FOR USTS                       | BT0458 | NTX220CA08 |
| 0 RECEIVER ATTACHEMENT DELAY RECORDER                    | AD0193 | NTX716AA05 |
| 0 RECEIVER DIAGNOSTIC FOR A-LAW ATD                      | BV2008 | NTX222AM05 |
| 0 RECEIVER OFF HOOK TRUNK                                | BT0068 | NTXZ02AA01 |
| 0 RECEIVER OFF HOOK TRUNK                                | BT0068 | NTX901AA24 |
| 0 RECORDING COMPLETING TRUNK (DIGITAL)                   | BT0037 | NTX001AA29 |
| 0 RECORDING DATA TIMER DUMP                              | AF1456 | NTXA89AA01 |
| 0 RECOVERY/NORMAL MODE NEGOTIATION FOR CHIPS             | AD0184 | NTX222AB04 |
| 0 RECOVERY/NORMAL MODE NEGOTIATION FOR CHIPS             | AD0184 | NTX222BA07 |
| 0 REDUCED SILC GAPPING INTERVAL                          | BC1398 | NTX060BA02 |
| 0 REDUCED SILC GAPPING INTERVAL                          | BC1398 | NTX060BB01 |
| 0 REGENERATIVE ANI BELL FORMAT                           | BR0139 | NTX192AA01 |
| 0 REGISTER SIGNALLING PROCESSORS                         | BF0398 | NTX470AA13 |
| 0 REGISTRATION CONTROL AND LOAD BALANCING                | BV1164 | NTX322AA18 |
| 0 REGRESSION OF 24MB MEMORY CARDS                        | AD1218 | NTX220AA13 |
| 0 REGRESSION OF 24MB MEMORY CARDS                        | AD1218 | NTX220BA06 |
| 0 REGRESSION OF 24MB MEMORY CARDS                        | AD1218 | NTX220CA08 |
| 0 RELEASE 18 MCI OSR ENHANCEMENTS                        | AD2652 | NTX221CA05 |
| 0 RELOAD RESTART IN RESTART PROGRESSION                  | AL1274 | NTX000AA19 |
| 0 REMOTE ACD LOAD MANAGEMENT                             | AD0826 | NTXA52AB01 |
| 0 REMOTE ACD SHOW                                        | AD0825 | NTXA52AB01 |
| 0 REMOTE CALL FORWARDING - LAMA MODE                     | BC0351 | NTX021AA04 |
| 0 REMOTE CALL FORWARDING - LAMA MODE                     | BR0323 | NTX021AA04 |
| 0 REMOTE CALL FORWARDING - LAMA MODE                     | BR0323 | NTX044AA04 |
| 0 REMOTE CALL FORWARDING - LAMA MODE                     | BR0323 | NTX093AA01 |
| 0 REMOTE CALL FORWARDING WITHOUT UNIQUE PIN              | NC0192 | NTXN75AA01 |
| 0 REMOTE DLM SOFTWARE                                    | AD0304 | NTX725AA03 |
| 0 REMOTE FILE SYSTEM IMPROVEMENTS                        | AL0914 | NTX001AA29 |
| 0 REMOTE INTRASWITCHING OM'S                             | BC1154 | NTX150AA04 |
| 0 REMOTE INTRASWITCHING OM'S                             | BC1154 | NTX156AA02 |
| 0 REMOTE LINES WITH HOST OFFICE FEATURES                 | BV0206 | NTX023AB03 |
| 0 REMOTE LINES WITH HOST OFFICE FEATURES                 | BV0237 | NTX023AB03 |

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| 0 REMOTE LINES WITH                                  | HOST OFFICE FEATURES | BV0388 | NTX023AB03 |
| 0 REMOTE LOGIN                                       |                      | BC1932 | NTXF70AA01 |
| 0 REMOTE LOGIN                                       |                      | BC1932 | NTX941AA12 |
| 0 REMOTE MAINTENANCE AND CONTROL                     |                      | BR0513 | NTX210AA03 |
| 0 REMOTE MAKE BUSY FOR 2X86                          |                      | BR0085 | NTX001AA29 |
| 0 REMOTE MAKE BUSY ON 2 WAY TRUNKS                   |                      | BR0396 | NTX001AA29 |
| 0 REMOTE MAKE BUSY VIA SCAN POINT                    |                      | BR0565 | NTX395AA01 |
| 0 REMOTE MAP VIA DDN BASIC X.25                      |                      | AD0776 | NTX716AA05 |
| 0 REMOTE MAP VIA DDN PROTOCOL SPECIFICATION          |                      | AD0778 | NTX716AA05 |
| 0 REMOTE OFFICE TEST LINE (ROTL)                     |                      | BR0069 | NTX052AB02 |
| 0 REMOTE ONI TO SP-1 TOPS                            |                      | BR0001 | NTX042AA04 |
| 0 REMOTE ONI TO SP-1 TOPS                            |                      | BR0001 | NTX044AA04 |
| 0 REMOTE ONI TO WE TSPS                              |                      | BR0008 | NTX042AA04 |
| 0 REMOTE ONI TO WE TSPS                              |                      | BR0008 | NTX044AA04 |
| 0 REMOTE ONI VIA O.C.                                |                      | BR0602 | NTXA60AA02 |
| 0 REMOTE ONI VIA O.C.                                |                      | BR0602 | NTX035AA03 |
| 0 REMOTE ONI VIA O.C.                                |                      | BR0602 | NTX134BA02 |
| 0 REMOTE ONI VIA O.C.                                |                      | BR0602 | NTX871AA01 |
| 0 REMOTE SERVICE BUREAU LINE MAINTENANCE             |                      | BV1172 | NTX213AC01 |
| 0 REMOTE SONALERT FOR TOPS_MP                        |                      | AF1509 | NTXA90AA07 |
| 0 REMOTE SONALERT FOR TOPS_MP                        |                      | AF1509 | NTX731AA06 |
| 0 REMOTE TOPS MAINTENANCE                            |                      | BV0190 | NTX030BA03 |
| 0 REMOTE TOPS MP O.C. - DATA LINK HANDLING           |                      | AF0807 | NTXA60AA02 |
| 0 REMOTE TOPS MP O.C. - DATA LINK HANDLING           |                      | AF0807 | NTX871AA01 |
| 0 REMOVAL OF CLLI FROM CCS7 RTESET AND LINKSET       |                      | AL1496 | NTXR72AA01 |
| 0 REMOVAL OF CLLI FROM CCS7 RTESET AND LINKSET       |                      | AL1496 | NTX041AB09 |
| 0 REMOVAL OF UNIVSL OPTION OF THE ES SELECTOR        |                      | AD0970 | NTX222CA09 |
| 0 REMOVE TABLE CLICDR1 AND CP HOOKS                  |                      | AD0543 | NTX222CA09 |
| 0 REMOVE TIMEOUT BETWEEN AUTHCODE AND SECONDARY DIAL |                      | BR0524 | NTX103AA12 |
| 0 TONE                                               |                      |        |            |
| 0 REMOVE TPS FROM TOD                                |                      | AG1466 | NTXH22AA01 |
| 0 REMOVE TPS FROM TOD                                |                      | AG1466 | NTX474AA07 |
| 0 RENAME ATT AMA TO BC AMA                           |                      | BC1393 | NTX159AA12 |
| 0 REORIGINATION DIALING ENHANCEMENT                  |                      | AM0238 | NTXF17AA02 |
| 0 REPACKAGE OF UK-ONLY FEATURES                      |                      | AE0290 | NTX964AA01 |
| 0 REPACKAGING AREA COMMON FOR EIOC                   |                      | AD2546 | NTXG21AA06 |
| 0 REPAIR SERVICE                                     |                      | BC1498 | NTX488AA01 |
| 0 REPEAT OF INBAND COIN CTRL SIGNALS FROM TSPS TO    |                      | BR0027 | NTX049AJ01 |
| 0 TRIBS                                              |                      |        |            |
| 0 REPEAT TWO TEST                                    |                      | BR0019 | NTX802AA04 |
| 0 REPEATED ALERT FOR MBS                             |                      | NC0164 | NTX878AE01 |
| 0 RES FEATURE SET EXPANSION 1                        |                      | AG0967 | NTXA64AA05 |
| 0 RES FEATURE SET EXPANSION 1                        |                      | AG0967 | NTXA94AA01 |
| 0 RES FEATURE SET EXPANSION 2                        |                      | AG0968 | NTXA64AA05 |
| 0 RES/CLASS SERVICE ORDER SIMPLIFICATION AND OA&M    |                      | AG1246 | NTXA64AA05 |
| 0 RES: SERVICE ORDER SIMPLIFICATION FOR HUNT GROUPS  |                      | AG1542 | NTXA64AA05 |
| 0 RES: TOLL DENIED                                   |                      | AG1543 | NTXA64AA05 |

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| 0 RES: 1MR SERVICE IN RES                          | AG1544 NTXA64AA05 |
| 0 RESET CHARACTER                                  | BV1262 NTX220AA13 |
| 0 RESET CHARACTER                                  | BV1262 NTX220BA06 |
| 0 RESET CHARACTER                                  | BV1262 NTX220CA08 |
| 0 RESIDENTIAL CALL HOLD                            | NC0028 NTXJ69AA01 |
| 0 RESIDENTIAL ENHANCED SERVICES                    | AG0508 NTXA64AA05 |
| 0 RESTORATION OF PROMPT TONE ON TCN CALLS          | AD1391 NTX360BA02 |
| 0 RESTORATION OF PROMPT TONE ON TCN CALLS          | AD1391 NTX364BA02 |
| 0 RESTRICT REORIGINATION TO STRS                   | AD0141 NTX222BA07 |
| 0 RESTRICTED USAGE BY DATE & TIME                  | BT0410 NTX220AA13 |
| 0 RESTRICTED USAGE BY DATE & TIME                  | BT0410 NTX220BA06 |
| 0 RESTRICTED USAGE BY DATE & TIME                  | BT0410 NTX220CA08 |
| 0 RESTRICTED USAGE BY DATE/TIME                    | BV0859 NTX235AA02 |
| 0 RESTRICTED USAGE BY DATE/TIME                    | BV0859 NTX235BA02 |
| 0 RESTRICTED USAGE BY DATE/TIME                    | BV0859 NTX235CA01 |
| 0 RESTRICTED USAGE CLASS IN AUTHCODE DATABASE      | BV1381 NTX222CA09 |
| 0 RETENTION TEST OF ALLOCATED MEMORY               | BC1357 NTX001AA29 |
| 0 RETRANSLATIONS FROM EOPS                         | AD2482 NTXG12AA06 |
| 0 RETRANSLATIONS FROM EOPS                         | AD2482 NTXG12CA06 |
| 0 REVERTIVE CALL ANNC.                             | BR0100 NTX049AD01 |
| 0 REVERTIVE CALL PEG COUNT REGISTER                | BR0269 NTXZ02AA01 |
| 0 REVERTIVE CALL PEG COUNT REGISTER                | BR0269 NTX901AA24 |
| 0 REVERTIVE CALLING - RINGING TO BOTH PARTIES ON 4 | BR0606 NTXZ02AA01 |
| 0 PARTY ON                                         |                   |
| 0 REVERTIVE CALLING - RINGING TO BOTH PARTIES ON 4 | BR0606 NTX901AA24 |
| 0 PARTY ON                                         |                   |
| 0 REVERTIVE CALLS - SELECTIVE ANNOUNCEMENTS        | BR0394 NTX001AA29 |
| 0 REVERTIVE PULSING FACILITY MAINTENANCE           | BF0210 NTX001AA29 |
| 0 REVERTIVE PULSING SIGNALLING ON DTC (REF: F0201) | BR0420 NTX139AA01 |
| 0 REVERTIVE RINGING                                | BT0047 NTXZ02AA01 |
| 0 REVERTIVE RINGING                                | BT0047 NTX901AA24 |
| 0 REVERTIVE RINGING FOR PARTIES ON DIFFERENT SIDES | BF0556 NTXZ02AA01 |
| 0 REVERTIVE RINGING FOR PARTIES ON DIFFERENT SIDES | BF0556 NTX901AA24 |
| 0 REWRITE STORE ALLOCATOR                          | AL0720 NTX940AA13 |
| 0 REX TEST ON LPP                                  | AL1271 NTXF20AA02 |
| 0 REX TEST ON LPP                                  | AL1271 NTX833AB01 |
| 0 RFT EVENT HANDLER                                | AF2687 NTXF46AA04 |
| 0 RFT EXTERNAL ALARM INTERFACE                     | AF2444 NTXF46AA04 |
| 0 RFT IMC REMOTE ACCESS/ TEST BYPASS PAIR ACCESS   | AF2969 NTXF46AA04 |
| 0 RFT LINE PROVISIONING                            | AF2614 NTXF46AA04 |
| 0 RFT LINE TEST POSITION I                         | AF2688 NTXF46AA04 |
| 0 RFT LINE TEST POSITION II                        | AF2967 NTXF46AA04 |
| 0 RFT LINES TABLE CONTROL II                       | AF2530 NTXF46AA04 |
| 0 RFT SUBSCRIBER PREMISES TESTS                    | AF2970 NTXF46AA04 |
| 0 RING AGAIN                                       | BV0533 NTXZ00AA01 |
| 0 RING AGAIN                                       | BV0533 NTX100AA27 |
| 0 RING AGAIN CANCELLATION TIMER                    | AD2851 NTXZ00AA01 |

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| 0 RING AGAIN CANCELLATION TIMER                | AD2851 NTX100AA27 |
| 0 RING BACK PRICE CAPABILITY                   | AJ1447 NTXH89AA01 |
| 0 RING DOWN TRUNK FOR 911 SERVICE              | BC0123 NTXZ02AA01 |
| 0 RING DOWN TRUNK FOR 911 SERVICE              | BC0123 NTX019AA02 |
| 0 RING DOWN TRUNK FOR 911 SERVICE              | BC0169 NTX019AA02 |
| 0 RING DOWN TRUNK FOR 911 SERVICE              | BV0079 NTX019AA02 |
| 0 RING DOWN TRUNK FOR 911 SERVICE              | BC0123 NTX901AA24 |
| 0 RING FORWARD                                 | BV0251 NTX701CA07 |
| 0 RING REMINDER OFF/ON OPTION PER LINE         | NC0053 NTXJ84AA02 |
| 0 RINGBACK                                     | BR0330 NTX019AA02 |
| 0 RINGING)                                     |                   |
| 0 RINGBACK TO 911 CALLERS (ON-HOOK/OFF-HOOK)   | NC0030 NTXN59AA02 |
| 0 RINGDOWN TRUNK FOR 911 SERVICE               | BR0136 NTX019AA02 |
| 0 RLCM - ESA - MESSAGING                       | BF0262 NTX154AA03 |
| 0 RLCM - ESA - MESSAGING                       | BF0262 NTX913AA04 |
| 0 RLCM - ESA - SINGLE PROCESSOR CONFIGURATIONS | BF0265 NTX154AA03 |
| 0 RLCM - ESA SUPPORT                           | BC0990 NTX154AA03 |
| 0 RLCM - ESA SUPPORT                           | BC0990 NTX913AA04 |
| 0 RLCM - LCM - ESA TRANSITIONS                 | BF0271 NTX154AA03 |
| 0 RLCM - LCM - ESA TRANSITIONS                 | BF0271 NTX913AA04 |
| 0 RLCM - LCM - TONES                           | BF0269 NTX146AA03 |
| 0 RLCM - LCM - T1 SUPPORT                      | BF0270 NTX146AA03 |
| 0 RLCM - LTC - PM MTC                          | BF0267 NTX146AA03 |
| 0 RLCM - LTC - RMM CONTROL                     | BF0259 NTX146AA03 |
| 0 RLCM - LTC - RMM CONTROL                     | BF0259 NTX913AA04 |
| 0 RLCM - LTC - SPCH PATH DIAG ENHANCEMENT      | BF0427 NTX146AA03 |
| 0 RLCM ESA - CALL CONTROL                      | BF0493 NTX154AA03 |
| 0 RLCM ESA ENTRY/EXIT                          | BF0497 NTX154AA03 |
| 0 RLCM ESA MESSAGING AND CHANNEL CONTROL       | BT1081 NTX154AA03 |
| 0 RLCM ESA SYNC                                | BF1028 NTX154AA03 |
| 0 RLCM ESA SYNC                                | BF1028 NTX913AA04 |
| 0 RLCM ESA TONE AND CHANNEL CONTROL            | BF0496 NTX154AA03 |
| 0 RLCM ESA TRANSLATION                         | BF0494 NTX154AA03 |
| 0 RLCM FEATURE INTRASWITCHING                  | BF0914 NTX156AA02 |
| 0 RLCM INTRASWITCHED END TO END SIGNALLING     | AG0067 NTX156AA02 |
| 0 RLCM OFF RCC                                 | AG0327 NTX381AA01 |
| 0 RLCM-ESA-NT6X75 DIAGNOSTIC                   | BF0546 NTX154AA03 |
| 0 RLCM-ESA-NT6X75 DIAGNOSTIC                   | BF0546 NTX913AA04 |
| 0 RLCM-ESA-STATIC DATA HANDLING                | BF0495 NTX154AA03 |
| 0 RLCM/RCC ESA CHANNEL CAPACITY INCREASE       | AG0344 NTX149AA03 |
| 0 RLCM/RCC ESA CHANNEL CAPACITY INCREASE       | AG0344 NTX149AB03 |
| 0 RLCM/RCC ESA CHANNEL CAPACITY INCREASE       | AG0344 NTX154AA03 |
| 0 RLM - INTERFACE WITH                         | BV0223 NTX023AB03 |
| 0 RLM - INTERFACE WITH                         | BV0224 NTX023AB03 |
| 0 RLM INTRASWITCHING FEATURE                   | BV0547 NTX024AA01 |
| 0 RLM MAINTENANCE                              | BC0150 NTX023AB03 |
| 0 RLM MAINTENANCE                              | BC0151 NTX023AB03 |

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| 0 RLM MAINTENANCE                            | BC0289 NTX023AB03 |
| 0 RLM MAINTENANCE                            | BV0208 NTX023AB03 |
| 0 RLM MAINTENANCE                            | BV0213 NTX023AB03 |
| 0 RLM SP STORE SAVING                        | BF0792 NTX001AA29 |
| 0 RLM-INTRA CALLING FOR POTS CALLS           | BC0171 NTX024AA01 |
| 0 RLM-INTRA CALLING FOR POTS CALLS           | BC0172 NTX024AA01 |
| 0 RLM-INTRA CALLING FOR POTS CALLS           | BC0173 NTX024AA01 |
| 0 RLM-INTRA CALLING FOR POTS CALLS           | BC0174 NTX024AA01 |
| 0 RLM-INTRA CALLING FOR POTS CALLS           | BC0175 NTX024AA01 |
| 0 RLM-INTRA CALLING FOR POTS CALLS           | BC0176 NTX024AA01 |
| 0 RLM-INTRA CALLING FOR POTS CALLS           | BF0029 NTX024AA01 |
| 0 RLM-INTRA CALLING FOR POTS CALLS           | BF0030 NTX024AA01 |
| 0 RLM-INTRA CALLING FOR POTS CALLS           | BF0031 NTX024AA01 |
| 0 RLM-INTRA CALLING FOR POTS CALLS           | BF0032 NTX024AA01 |
| 0 RLM: EMERGENCY STANDALONE OPTIONAL FEATURE | BR0213 NTX025AA02 |
| 0 RLM: INTRA SWITCHING OPTIONAL FEATURE      | BR0212 NTX024AA01 |
| 0 RLT WITH NO THIRD PARTY INTERACTION        | AG2329 NTXQ65AB01 |
| 0 RLT WITH NO THIRD PARTY INTERACTION        | AG2329 NTXR45AA01 |
| 0 RMM BOOSTRAP MONITOR & LOADER              | BF0231 NTX146AA03 |
| 0 RMM BOOSTRAP MONITOR & LOADER              | BF0231 NTX913AA04 |
| 0 RMM DATA TERMINAL PROCESSING               | BF0237 NTX146AA03 |
| 0 RMM DATA TERMINAL PROCESSING               | BF0237 NTX913AA04 |
| 0 RMM DP DIGIT COLLECTION                    | BF0238 NTX146AA03 |
| 0 RMM DP DIGIT COLLECTION                    | BF0238 NTX913AA04 |
| 0 RMM DP OUTPUTSING                          | BF0240 NTX146AA03 |
| 0 RMM DP OUTPUTSING                          | BF0240 NTX913AA04 |
| 0 RMM DT/MF DIGIT COLLECTION (SEE BF0254)    | BF0239 NTX146AA03 |
| 0 RMM DT/MF DIGIT COLLECTION (SEE BF0254)    | BF0239 NTX913AA04 |
| 0 RMM FOR REMOTE DLM                         | AD0469 NTX725AA03 |
| 0 RMM MAINTENANCE & DIAGNOSTICS              | BF0235 NTX146AA03 |
| 0 RMM MAINTENANCE & DIAGNOSTICS              | BF0235 NTX913AA04 |
| 0 RMM SCAN MONITORING                        | BF0236 NTX146AA03 |
| 0 RMM SCAN MONITORING                        | BF0236 NTX913AA04 |
| 0 ROBUSTIFICATION OF CC MAINTENANCE          | BC2021 NTX001AA29 |
| 0 ROBUSTIFICATION OF CMC MAINTENANCE         | BC2020 NTX001AA29 |
| 0 ROBUSTIFICATION OF LM/RLM MAINTENANCE      | BC2015 NTX001AA29 |
| 0 ROBUSTIFICATION OF NETWORK MAINTENANCE     | BC2018 NTX001AA29 |
| 0 ROBUSTIFY TM MTCE                          | BC0637 NTX001AA29 |
| 0 ROLM CBX INTERFACE                         | BV0778 NTX601CA03 |
| 0 RONI /CKO FUNCTION                         | BR0172 NTX035AA03 |
| 0 RONI TRUNK TESTING                         | BR0431 NTX055BA01 |
| 0 ROTARY MAJOR CREDIT CARD TO EOPS           | AD2384 NTXG12CA06 |
| 0 ROTL ON DMS250                             | BV1889 NTX221AB04 |
| 0 ROTL TRUNK NUMBER TABLE                    | BC1146 NTX052AB02 |
| 0 ROUTE TRANSFER                             | BR0240 NTXZ03AA01 |
| 0 ROUTE TRANSFER                             | BV0033 NTXZ03AA01 |
| 0 ROUTE TRANSFER                             | BR0240 NTX902AA07 |

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| 0 ROUTE TRANSFER                                   | BV0033 NTX902AA07 |
| 0 ROUTE TRANSFER RONI/CAMA POSITIONS               | BR0160 NTX044AA04 |
| 0 ROUTESET - BASIC ROUTING CONTROL - MSB           | BC1798 NTXR72AA01 |
| 0 ROUTESET - BASIC ROUTING CONTROL - MSB           | BC1798 NTX041AB09 |
| 0 ROUTESET - DISTRIBUTER - MSB                     | BC1800 NTXR72AA01 |
| 0 ROUTESET - DISTRIBUTER - MSB                     | BC1800 NTX041AB09 |
| 0 ROUTESET - MAN MACHINE INTERFACE - CC            | BC1803 NTXR72AA01 |
| 0 ROUTESET - MAN MACHINE INTERFACE - CC            | BC1803 NTX041AB09 |
| 0 ROUTESET - ROUTER - MSB                          | BC1799 NTXR72AA01 |
| 0 ROUTESET - ROUTER - MSB                          | BC1799 NTX041AB09 |
| 0 ROUTESET - TABLE CONTROL - CC                    | BC1804 NTXR72AA01 |
| 0 ROUTESET - TABLE CONTROL - CC                    | BC1804 NTX041AB09 |
| 0 ROUTESET-CHANGEOVER/CHANGEBACK-MSB               | BF0941 NTXR72AA01 |
| 0 ROUTESET-CHANGEOVER/CHANGEBACK-MSB               | BF0941 NTX041AB09 |
| 0 ROUTING OF INCOMPLETE CALL TRANSFER              | AE0070 NTX611AA07 |
| 0 RSC - ESA - PM MAINTENANCE                       | BF0266 NTX149AA03 |
| 0 RSC - ESA - PM MAINTENANCE                       | BF0266 NTX149AB03 |
| 0 RSC - ESA TRANSLATION VERIFICATION DOCUMENTATION | AG0374 NTX149AB03 |
| 0 RSC - ESA TRUNK STATIC DATA HANDLING             | AC0055 NTX149AB03 |
| 0 RSC - ESA TRUNK TRANSLATIONS                     | AC0057 NTX149AB03 |
| 0 RSC - FAST COLD EXIT DRIVER AND INSTANT RTS OF   | AF2701 NTXN82AB01 |
| 0 LINES                                            |                   |
| 0 RSC - FAST COLD EXIT DRIVER AND INSTANT RTS OF   | AF2701 NTXQ12AA01 |
| 0 LINES                                            |                   |
| 0 RSC - INSTANT RTS OF LINKS FOR FAST COLD EXIT    | AF2702 NTXN82AB01 |
| 0 RSC - INSTANT RTS OF LINKS FOR FAST COLD EXIT    | AF2702 NTXQ12AA01 |
| 0 RSC - INSTANT RTS OF NODES FOR FAST COLD EXIT    | AF2865 NTXN82AB01 |
| 0 RSC - INSTANT RTS OF NODES FOR FAST COLD EXIT    | AF2865 NTXQ12AA01 |
| 0 RSC - LTC - LINE CALL PROCESSING                 | BF0242 NTX145AA06 |
| 0 RSC - RCC - BASIC MTC                            | BF0247 NTX145AA06 |
| 0 RSC - RCC - BASIC MTC                            | BF0247 NTX913AA04 |
| 0 RSC - RCC - DS1 MTC                              | BF0246 NTX145AA06 |
| 0 RSC - RCC - ESA TRUNK CALL PROCESSING            | BF0532 NTX149AB03 |
| 0 RSC - RCC - LINE INTRASWITCHING                  | BF0256 NTX150AA04 |
| 0 RSC - RCC - 6X72 FORMATTER DIAGNOSTIC            | BF0249 NTX145AA06 |
| 0 RSC - RCC - 6X72 FORMATTER DIAGNOSTIC            | BF0249 NTX913AA04 |
| 0 RSC - ROUTING CONTROL                            | BC1279 NTX152AA02 |
| 0 RSC - ROUTING CONTROL                            | BC1279 NTX152AB01 |
| 0 RSC - TRUNK INTEGRATION                          | AC0056 NTX149AB03 |
| 0 RSC ALT                                          | BC0894 NTX145AA06 |
| 0 RSC CSM INTERFACE                                | BF0244 NTX145AA06 |
| 0 RSC EMER. STAND ALONE OPERATION-POTS SUBSCRIB.   | BF0254 NTX149AA03 |
| 0 BASIC SERVICE                                    |                   |
| 0 RSC EMER. STAND ALONE OPERATION-POTS SUBSCRIB.   | BF0254 NTX149AB03 |
| 0 BASIC SERVICE                                    |                   |
| 0 RSC ESA - AUTO UPDATE OF SUBSCRIBER/TRANSLATION  | BV0975 NTX149AA03 |
| 0 DATA VIA DOW                                     |                   |



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| 0 RSC ESA - AUTO UPDATE OF SUBSCRIBER/TRANSLATION | BV0975 NTX149AB03 |
| 0 DATA VIA DOW                                    |                   |
| 0 RSC ESA WARM ENTRY FOR TRUNKS                   | AF3374 NTXN82AB01 |
| 0 RSC INTRASWITCHED END TO END SIGNALLING         | AG0068 NTX150AA04 |
| 0 RSC INTRASWITCHING OM'S                         | BC1794 NTX150AA04 |
| 0 RSC TRUNK WARM SWACT                            | BF0963 NTX145AA06 |
| 0 RSC-DLM BASIC                                   | AD0640 NTX726AA02 |
| 0 RSC-DLM ESA AND INTRASWITCHING                  | AD0902 NTXA50AA01 |
| 0 RSC-ESA ENTRY & EXIT                            | BF0616 NTX149AA03 |
| 0 RSC-ESA ENTRY & EXIT                            | BF0616 NTX149AB03 |
| 0 RSC-ESA-STATIC DATA HANDLING                    | BF0615 NTX149AA03 |
| 0 RSC-ESA-STATIC DATA HANDLING                    | BF0615 NTX149AB03 |
| 0 RSC-ESA-STATIC DATA HANDLING IN XPM             | BF0940 NTX149AA03 |
| 0 RSC-ESA-STATIC DATA HANDLING IN XPM             | BF0940 NTX149AB03 |
| 0 RSC-ESA-STATIC DATA HANDLING IN XPM             | BF0940 NTX950AA06 |
| 0 RSC-ESA-TRANSLATION                             | BF0614 NTX149AA03 |
| 0 RSC-ESA-TRANSLATION                             | BF0614 NTX149AB03 |
| 0 RSC-RCC-TRUNK CALL PROCESSING                   | BF0482 NTX152AA02 |
| 0 RSC-RCC-TRUNK CALL PROCESSING                   | BF0482 NTX152AB01 |
| 0 RTT MMI ENHANCEMENTS                            | BV2034 NTX222CA09 |
| 0 RUN-TIME SYSTEM DATA CHECKSUM                   | AL2236 NTXR46AA01 |
| 0 R1 AND R1 MODIFIED SIGNALLING FOR DMS100I       | AE0034 NTX650AA02 |
| 0 R2 ACTIVITY TABLES                              | AG1220 NTX904AA04 |
| 0 R2 AND SOCOTEL TANDEM OPERATION                 | AE0897 NTXH05AA03 |
| 0 R2 AND SOCOTEL TANDEM OPERATION                 | AE0897 NTXH06AA03 |
| 0 R2 BASE ENHANCEMENTS                            | AJ0159 NTX904AA04 |
| 0 R2 CALL PROCESSING                              | AG1217 NTX904AA04 |
| 0 R2 FOR DMS100 INTL - CC DESCRIPTION             | AE0140 NTXB69AA04 |
| 0 R2 PROTOCOL ENHANCEMENTS                        | AJ0205 NTXH05AA03 |
| 0 R2 PROTOCOL ENHANCEMENTS                        | AJ0205 NTXH06AA03 |
| 0 R2 PROTOCOL ENHANCEMENTS                        | AJ0205 NTX904AA04 |
| 0 R2 REGISTER SIGNALLING                          | AG1218 NTX904AA04 |
| 0 S.A. INCREASED SAMPLE RATE                      | BR0579 NTX065AA12 |
| 0 S/T LINE CARD DIAGNOSTIC                        | AL0955 NTX750AC02 |
| 0 S/T LINE CARD DIAGNOSTIC                        | AL0955 NTX750AD01 |
| 0 S/T LINE CARD XPM INTERFACE                     | AL0942 NTX750AC02 |
| 0 S/T LINE CARD XPM INTERFACE                     | AL0942 NTX750AD01 |
| 0 S/T-ISLC MAINTENANCE FIRMWARE                   | AC0441 NTX750AC02 |
| 0 S/T-ISLC MAINTENANCE FIRMWARE                   | AC0441 NTX750AD01 |
| 0 S/W DEFINITION OF NEW 6X76AC AIM LINE CARDS     | AC0534 NTX250AA15 |
| 0 S/W PROTECTION FOR NON-RES TAPES                | BR0423 NTX184AA11 |
| 0 S/W PROTECTION FOR NON-RES TAPES                | BR0423 NTX184AB02 |
| 0 SA DIALBACK ON ATC TRUNKS                       | AF2310 NTX065AA12 |
| 0 SA LOGON                                        | AF2372 NTX030CC16 |
| 0 SA SELECTION PER RFF248                         | BC0304 NTX065AA12 |
| 0 SAC NETWORK MANAGEMENT & CODE CONTROLS          | AD2361 NTX222CA09 |
| 0 SAC WITH NCS                                    | AD0144 NTX222CA09 |

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| 0 SAFE STORE TAP                                  | AD1604 NTXG18AA02 |
| 0 SAFE STORE TAP                                  | AD1604 NTXG18BA01 |
| 0 SANITY CHECK OUT                                | BC0786 NTX000AA19 |
| 0 SAS VIA X.25                                    | AD0299 NTX716AA05 |
| 0 SATELLITE SCREENING FOR MCI TOPS                | BV1386 NTX222CA09 |
| 0 SBS PRIORITY SCREENING                          | BV0737 NTX229AA01 |
| 0 SBS/MCI CALL PROCESSING & TABLE CONTROL         | BV2027 NTX222CA09 |
| 0 INTERGRATION                                    |                   |
| 0 SBS/MCI CDR ENHANCEMENTS                        | BV2028 NTX221CA05 |
| 0 SCAI - CC STATIC DATA                           | AD2594 NTXJ55AA02 |
| 0 SCAI - CONSULTATION XFER/3WC                    | AG2481 NTXJ62AB   |
| 0 SCAI - SS7 RELEASE LINK TRUNK (RLT)             | AD2587 NTXN13AA01 |
| 0 SCAI - XPM STATIC DATA                          | AD2593 NTXJ55AA02 |
| 0 SCAI PROTOCOL SUPPORT FOR ACD BASED BOC CALLING | AM0167 NTXL30AA01 |
| 0 CARD                                            |                   |
| 0 SCAI TABLE CONTROL                              | AD2592 NTXJ55AA02 |
| 0 SCAI WARM SWACT                                 | AD2892 NTXJ55AA02 |
| 0 SCCP - AUDITS AND ENHANCEMENTS                  | AC0107 NTXR72AA01 |
| 0 SCCP - AUDITS AND ENHANCEMENTS                  | AC0107 NTX041AB09 |
| 0 SCCP - DATA DISTRIBUTION                        | AC0141 NTXR72AA01 |
| 0 SCCP - DATA DISTRIBUTION                        | AC0141 NTX041AB09 |
| 0 SCCP - FOR DMS-SCP                              | AC0143 NTXR72AA01 |
| 0 SCCP - FOR DMS-SCP                              | AC0143 NTX041AB09 |
| 0 SCCP - MANAGEMENT CHANGES                       | AC0142 NTXR72AA01 |
| 0 SCCP - MANAGEMENT CHANGES                       | AC0142 NTX041AB09 |
| 0 SCCP - MMI CHANGES                              | AC0144 NTXR72AA01 |
| 0 SCCP - MMI CHANGES                              | AC0144 NTX041AB09 |
| 0 SCCP - MMI EVOLUTION FOR STP                    | AC0306 NTXR72AA01 |
| 0 SCCP - MMI EVOLUTION FOR STP                    | AC0306 NTX041AB09 |
| 0 SCCP - ROUTING CONTROL                          | AC0140 NTXR72AA01 |
| 0 SCCP - ROUTING CONTROL                          | AC0140 NTX041AB09 |
| 0 SCCP MAN MACHINE INTERFACE                      | BC1749 NTXR72AA01 |
| 0 SCCP MAN MACHINE INTERFACE                      | BC1749 NTX041AB09 |
| 0 SCCP MANAGEMENT ROBUSTNESS                      | AC0431 NTXR72AA01 |
| 0 SCCP MANAGEMENT ROBUSTNESS                      | AC0431 NTX041AB09 |
| 0 SCCP TABLE CONTROL                              | BC1750 NTXR72AA01 |
| 0 SCCP TABLE CONTROL                              | BC1750 NTX041AB09 |
| 0 SCCP-CONNECTIONLESS CONTROL                     | BC2046 NTXR72AA01 |
| 0 SCCP-CONNECTIONLESS CONTROL                     | BC2046 NTX041AB09 |
| 0 SCCP-MANAGEMENT-PC MGMT                         | BC2047 NTXR72AA01 |
| 0 SCCP-MANAGEMENT-PC MGMT                         | BC2047 NTX041AB09 |
| 0 SCCP-MANAGEMENT-SUBSYSTEM                       | BC2048 NTXR72AA01 |
| 0 SCCP-MANAGEMENT-SUBSYSTEM                       | BC2048 NTX041AB09 |
| 0 SCCP-ROUTING CONTROL                            | BC2045 NTXR72AA01 |
| 0 SCCP-ROUTING CONTROL                            | BC2045 NTX041AB09 |
| 0 SCHEDULED CC/CM PATCH APPLICATION/IMAGE         | AG1007 NTX001AA29 |
| 0 SCHEDULED TESTING OF DMS NETWORK                | AL0153 NTX885AB04 |

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| 0 SCHEDULED XPM PATCH APPLICATION                         | AG1006 | NTX001AA29 |
| 0 SCM LINE MONITOR ACCESS                                 | AF0529 | NTX195AA05 |
| 0 SCM-100S-FREQUENCY SELECTIVE RINGING                    | AL0419 | NTX398AA12 |
| 0 SCOPEDIAL (SPAIN) PRODUCT SPECIFICATION                 | AE0052 | NTX612AA04 |
| 0 SCOPEDIAL LINE AND ISUP AVINSW TRUNK INTERWORK-II       | AD1155 | NTXA05AA03 |
| 0 SCOPEDIAL NETWORK MANAGEMENT                            | BV0965 | NTX601CA03 |
| 0 SCOPEDIAL TRAVER                                        | BC2056 | NTX601BA06 |
| 0 SCOPEDIAL TRAVER                                        | BC2056 | NTX612AA04 |
| 0 SCOPEDIAL TRUNK USAGE DATA - KILLER TRUNKS              | BC1539 | NTX601BA06 |
| 0 SEAS - ENHANCED CCS7 OM'S                               | AL1071 | NTX835AA03 |
| 0 SEAS - LOG REPORTING SUPPORT FOR SEAS RELEASE 2.0       | AL0991 | NTXE55AB01 |
| 0 SEAS - OM DATA COLLECTION PHASE II                      | AL0986 | NTX835AA03 |
| 0 SEAS - RC&V COMMAND IMPLEMENTATION FOR SEAS RELEASE 2.0 | AL0990 | NTXE55AB01 |
| 0 SEAS - RELEASE 1.1 CAPABILITIES                         | AC0318 | NTX835AA03 |
| 0 SEAS - TABLE CONTROL REPORTING                          | AC0167 | NTX835AA03 |
| 0 SEAS DELAYED ACTIVATION COMMANDS                        | AC0175 | NTX835AA03 |
| 0 SEAS SWACT                                              | AL1126 | NTX835AA03 |
| 0 SEAS 1.1 - ENHANCEMENTS                                 | AL1334 | NTX835AA03 |
| 0 SEAS 3.0 - APPLICATION CONTROL MESSAGES                 | AL1428 | NTXE24AB01 |
| 0 SEAS 3.0 - AUTONOMOUS MESSAGE REPORTING                 | AL1426 | NTXE24AB01 |
| 0 SEAS 3.0 - DATA COLLECTION                              | AL1427 | NTXE24AB01 |
| 0 SECOND AND THIRD DELAY ANNOUNCEMENTS.                   | AD1128 | NTXZ01AA01 |
| 0 SECOND AND THIRD DELAY ANNOUNCEMENTS.                   | AD1128 | NTX101AA14 |
| 0 SECOND DIAL TONE ON DDD/IDDD CALLS                      | BR0149 | NTX049AM01 |
| 0 SECOND DIAL TONE ON DDD/IDDD CALLS                      | BR0149 | NTX049AP01 |
| 0 SECOND DIAL-TONE OVER TRUNKS                            | AE0898 | NTXH05AA03 |
| 0 SECOND DIAL-TONE OVER TRUNKS                            | AE0898 | NTXH06AA03 |
| 0 SECRECY                                                 | BV0449 | NTXZ00AA01 |
| 0 SECRECY                                                 | BV0449 | NTX100AA27 |
| 0 SECRETARIAL HUNT                                        | AF1085 | NTXJ82AA02 |
| 0 SECURITY CODES FOR STATION FEATURES                     | BV2009 | NTX573AA01 |
| 0 SECURITY CODES FOR STATION FEATURES                     | BV2009 | NTX574AA01 |
| 0 SECURITY TABLE ENHANCEMENT.                             | BC1305 | NTX292AB04 |
| 0 SEI SUPERVISOR                                          | AF0100 | NTX215AA02 |
| 0 SEI VOICE LINK MAINTENANCE                              | AF0076 | NTX215AA02 |
| 0 SEIZE PROTOCOL - USTS                                   | BV1152 | NTX220AA13 |
| 0 SEIZE PROTOCOL - USTS                                   | BV1152 | NTX220BA06 |
| 0 SEIZE PROTOCOL - USTS                                   | BV1152 | NTX220CA08 |
| 0 SELECTIVE CALL SCREENING ANI ID-7                       | BR0348 | NTX030CC16 |
| 0 SELECTIVE DYNAMIC OVERLOAD CONTROL (SDOC) TRANSMIT MC3  | BR0379 | NTX060AE03 |
| 0 SELECTIVE DYNAMIC OVERLOAD CONTROL (SDOC) TRANSMIT MC3  | BR0379 | NTX060BA02 |
| 0 SELECTIVE DYNAMIC OVERLOAD CONTROL (SDOC) TRANSMIT MC3  | BR0379 | NTX060BB01 |
| 0 SELECTIVE EBI FOR CCS                                   | AE0644 | NTXB74AA03 |

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| 0 SELECTIVE SUPPRESSION OF SMDR/MCDR                |              | AD2063 | NTX701BA08 |
| 0 SELECTIVE TRUNK RESERVATION                       |              | AD0288 | NTX716AA05 |
| 0 SEMI AUTOMATIC ZENITH                             | TOPS         | BR0332 | NTX030CC16 |
| 0 SEMI PERMANENT CONNECTIONS                        |              | AC0256 | NTX665AA02 |
| 0 SEMI PERMANENT CONNECTIONS                        |              | AC0256 | NTX666AA02 |
| 0 SEMI-AUTOMATIC DIRP DISK TO TAPE COPY             |              | BC1123 | NTX074AA09 |
| 0 SEMI-PERMANENT CONNECTIONS - LOCAL                |              | BC2080 | NTX665AA02 |
| 0 SEMI-PERMANENT CONNECTIONS - LOCAL                |              | BC2080 | NTX666AA02 |
| 0 SEMI-POST PAY COIN LINE                           |              | BV0088 | NTXZ02AA01 |
| 0 SEMI-POST PAY COIN LINE                           |              | BV0088 | NTX901AA24 |
| 0 SEMI-RESTRICTED INCOMING LINES CALL INTERCEPT     |              | NC0083 | NTX100AA27 |
| 0 SEPARATE MEL EARTH AND LOOP SIGNALLING            |              | AE0075 | NTX222AM05 |
| 0 SEPARATE MMI FROM CONTROL                         |              | AI0037 | NTXF71AA01 |
| 0 SEPARATE MMI FROM CONTROL                         |              | AI0037 | NTX833AB01 |
| 0 SEPARATE OUTPUT FILE FOR DEX/SMDR DATA            |              | BR0368 | NTX103AA12 |
| 0 SEPARATE SMDR OUTPUT FILES BY CUST GROUP          |              | BR0399 | NTX103AA12 |
| 0 SEQUENTIAL TRUNK SELECTION                        |              | BR0515 | NTX244AA02 |
| 0 SEQUENTIAL TRUNK SELECTION                        |              | BR0515 | NTX244AB02 |
| 0 SEQUENTIAL TRUNK SELECTION REAL-TIME IMPROVEMENTS |              | BC1438 | NTX244AA02 |
| 0 SEQUENTIAL TRUNK SELECTION REAL-TIME IMPROVEMENTS |              | BC1438 | NTX244AB02 |
| 0 SERIES COMPLETIONS ENHANCEMENTS                   |              | AF2859 | NTXJ82AA02 |
| 0 SERVICE ANALYSIS                                  |              | BV0009 | NTX065AA12 |
| 0 SERVICE ANALYSIS                                  |              | BT0432 | NTX220AA13 |
| 0 SERVICE ANALYSIS                                  |              | BV0727 | NTX220AA13 |
| 0 SERVICE ANALYSIS                                  |              | BT0432 | NTX220BA06 |
| 0 SERVICE ANALYSIS                                  |              | BT0432 | NTX220CA08 |
| 0 SERVICE ANALYSIS                                  |              | BV0727 | NTX320AA01 |
| 0 SERVICE ANALYSIS                                  | LINES        | BV0070 | NTX065AA12 |
| 0 SERVICE ANALYSIS                                  | TOPS         | BC0309 | NTX065AA12 |
| 0 SERVICE ANALYSIS                                  | TOPS         | BC0345 | NTX065AA12 |
| 0 SERVICE ANALYSIS                                  | TOPS         | BC0346 | NTX065AA12 |
| 0 SERVICE ANALYSIS                                  | TOPS         | BC0347 | NTX065AA12 |
| 0 SERVICE ANALYSIS                                  | TOPS         | BV0231 | NTX065AA12 |
| 0 SERVICE ANALYSIS                                  | TRUNKS       | BV0075 | NTX065AA12 |
| 0 SERVICE ANALYSIS - LOCAL                          |              | BR0248 | NTX065AA12 |
| 0 SERVICE ANALYSIS FOR ATC TRUNKS                   |              | AF1253 | NTX065AA12 |
| 0 SERVICE ANALYSIS FOR IBN                          |              | BV1408 | NTX418AA01 |
| 0 SERVICE ANALYSIS MONITOR LINK DIAL-BACK           |              | BR0309 | NTX065AA12 |
| 0 SERVICE CODE                                      | 1150         | BV0327 | NTX030CC16 |
| 0 SERVICE CODE                                      | 1155         | BV0328 | NTX030CC16 |
| 0 SERVICE CODE                                      | 1156         | BV0329 | NTX030CC16 |
| 0 SERVICE CODE                                      | 1158         | BV0407 | NTX030CC16 |
| 0 SERVICE CODE                                      | 1159         | BV0408 | NTX030CC16 |
| 0 SERVICE CODE                                      | 121 (INWARD) | BV0158 | NTX030CC16 |
| 0 SERVICE CODE                                      | 121 (INWARD) | BV0325 | NTX030CC16 |
| 0 SERVICE CODE                                      | 181          | BV0326 | NTX030CC16 |
| 0 SERVICE CODES 112/123                             |              | BR0322 | NTX049AP01 |

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| 0 SERVICE ORDER ECHOING OF DMO-S (CABLE PAIR)       | BR0065 NTX056AA05 |
| 0 SERVICE ORDER ENHANCEMENTS FOR BRA FUNCTIONAL     | AJ0162 NTX753AA06 |
| 0 SIGNALLING                                        |                   |
| 0 SERVICE ORDER ENHANCEMENTS FOR BRA FUNCTIONAL     | AJ0162 NTX753AB01 |
| 0 SIGNALLING                                        |                   |
| 0 SERVICE ORDER FOR REMOTE CFW                      | BC0514 NTX021AA04 |
| 0 SERVICE ORDER SIMPLIFICATION FOR HUNT GROUPS      | NC0077 NTXJ93AA01 |
| 0 SERVICE ORDER SYSTEM                              | BV0462 NTXZ00AA01 |
| 0 SERVICE ORDER SYSTEM                              | BV0462 NTX100AA27 |
| 0 SERVICE ORDERS FOR ISDN TERMINALS                 | AC0098 NTX750AC02 |
| 0 SERVICE ORDERS FOR ISDN TERMINALS                 | AC0098 NTX750AD01 |
| 0 SERVICE PARAMETERS FOR PRA                        | AC0269 NTX750AC02 |
| 0 SERVICE PARAMETERS FOR PRA                        | AC0269 NTX750AD01 |
| 0 SERVICE PROFILE CONFIGURATION FOR BRA FUNCTIONAL  | AC0451 NTX753AA06 |
| 0 SIGNALLING                                        |                   |
| 0 SERVICE PROFILE CONFIGURATION FOR BRA FUNCTIONAL  | AC0451 NTX753AB01 |
| 0 SIGNALLING                                        |                   |
| 0 SERVORD CLEANUP FOR PPHONE                        | BC2041 NTX106AA10 |
| 0 SERVORD ENHANCEMENTS FO RISDN OAM                 | AJ0305 NTXF93AA02 |
| 0 SERVORD INTERFACE FOR NOS                         | AC0023 NTX563AA05 |
| 0 SES CALL DETAILS                                  | AF0099 NTX215AA02 |
| 0 SES FEATURE GROUP B EVALUATION                    | AF1257 NTX215AA02 |
| 0 SES TRAFFIC DATA COLLECTION                       | AF0092 NTX215AA02 |
| 0 SES VOICE LINK BRIDGING AND RELEASE - CALL        | AF0077 NTX215AA02 |
| 0 PROCESSING                                        |                   |
| 0 SHARED METALLIC TEST ACCESS                       | AF0148 NTX387AB04 |
| 0 SHARED METALLIC TEST ACCESS                       | AF0148 NTX387AC02 |
| 0 SHARED METALLIC TEST ACCESS                       | AF0148 NTX387AD01 |
| 0 SHORT HUNT ON P_PHONE                             | BR0720 NTX106AA10 |
| 0 SIGNALING CONVERSION                              | BC1703 NTX710AA02 |
| 0 SIGNALING CONVERSION                              | BC1703 NTX710AB01 |
| 0 SIGNALLING LINK MARGINAL PERFORMANCE REPORT       | AL1330 NTXR72AA01 |
| 0 SIGNALLING LINK MARGINAL PERFORMANCE REPORT       | AL1330 NTX041AB09 |
| 0 SIGNALLING MANAGER ENHANCEMENTS FOR ISDN PRA      | AC0444 NTX790AC02 |
| 0 SIGNALLING MANAGER FOR ISDN FUNCTIONAL SIGNALLING | AC0271 NTX790AC02 |
| 0 SIGNALLING UNIT ERROR LPP/MSB7 DOWNLOADING        | AM0183 NTX361BA05 |
| 0 SILC DATABASE ROBUSTNESS                          | AF0081 NTX060BA02 |
| 0 SILC DATABASE ROBUSTNESS                          | AF0081 NTX060BB01 |
| 0 SILENT SWITCHMAN                                  | BR0210 NTX053AA05 |
| 0 SILENT SWITCHMAN                                  | AE0249 NTX499AA10 |
| 0 SILENT SWITCHMAN                                  | AE0249 NTX663AA03 |
| 0 SIMPLIFIED DIALING                                | BV0509 NTXZ00AA01 |
| 0 SIMPLIFIED DIALING                                | BV0509 NTX100AA27 |
| 0 SIMPLIFIED MESSAGE DESK INTERFACE (SMDI)          | AL0156 NTX732AA06 |
| 0 SIMULATION CSC                                    | BF0319 NTX322AA18 |
| 0 SINGING POINT TEST                                | BR0200 NTX055AC02 |
| 0 SINGING POINT TEST                                | BR0200 NTX980AA01 |

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| 0 SINGLE LINE VARIETY                           | AF2307 NTXF82AA01 |
| 0 SINGLE PARTY REVERTIVE CALLING (INTERCOM)     | BR0033 NTX049AD01 |
| 0 SINGLE TRAFFIC OFF. OPERATION BASIC OPERATOR  | BV0382 NTX030BA03 |
| 0 FEEDBACK                                      |                   |
| 0 SL-100 MODEM POOL INTERGRATION                | AD0253 NTX831AA02 |
| 0 SL-100 4X25AA TO SL-1 QMT-8                   | AD0113 NTX831AA02 |
| 0 SLE ENHANCEMENTS                              | AF2384 NTXE56AA02 |
| 0 SLEEVE LEAD CONTROL ORIGINATING AND           | BR0264 NTXZ03AA01 |
| 0 TERMINATING                                   |                   |
| 0 SLEEVE LEAD CONTROL ORIGINATING AND           | BR0264 NTX902AA07 |
| 0 TERMINATING                                   |                   |
| 0 SLEEVE LEADS FOR PUBLIC FIRE REPORTING SYSTEM | BR0044 NTXZ03AA01 |
| 0 SLEEVE LEADS FOR PUBLIC FIRE REPORTING SYSTEM | BR0044 NTX902AA07 |
| 0 SLM CONTROL SOFTWARE, PHASE 2                 | AL0731 NTX942AB02 |
| 0 SLM DIAGNOSTIC ENHANCEMENTS                   | AL0840 NTX942AB02 |
| 0 SLM FILE SYSTEM ENHANCEMENTS                  | AL1062 NTXJ44AA01 |
| 0 SLM FILE SYSTEM PHASE 2                       | AG0874 NTX942AB02 |
| 0 SLM FS ENHANCEMENT - PHASE 2                  | AL1298 NTX942AB02 |
| 0 SLM MAINTENANCE ENHANCEMENTS                  | AL1166 NTX942AB02 |
| 0 SLM PHASE II - DISK/TAPE REPLACEMENTS         | AL1060 NTX942AB02 |
| 0 SLM-II ENHANCEMENTS                           | AL1174 NTXE54AA01 |
| 0 SLU BASIC FILE SYSTEM - CI UTILITIES          | AG0367 NTX942AB02 |
| 0 SLU BASIC FILE SYSTEM - DEVICE MANAGEMENT     | AG0373 NTX942AB02 |
| 0 SLU BASIC FILE SYSTEM - FILE MANAGEMENT       | AG0369 NTX942AB02 |
| 0 SLU BASIC FILE SYSTEM - GENERAL UTILITIES     | AG0372 NTX942AB02 |
| 0 SLU INPUT OUTPUT SYSTEM                       | AL0437 NTX942AB02 |
| 0 SL1/SL100 INTERWORKING                        | BC1086 NTX250AA15 |
| 0 SL100 QMT-9 TO SL QMT-8                       | AD0114 NTX831AA02 |
| 0 SL100 QMT-9 TO SL1 QMT-9                      | AD0108 NTX831AA02 |
| 0 SL100 4X25 AN AND QMT-9 TO SL1 QMT-11         | AD0258 NTX831AA02 |
| 0 SL100 4X25 AN TO SL1 QMT-11 SYNCH             | AD0262 NTX831AA02 |
| 0 SL100 4X25 AN TO SL1 QMT-8 SYNCH              | AD0261 NTX831AA02 |
| 0 SL100 4X25 AX TO SL1 QMT-11 SYNCH             | AD0259 NTX831AA02 |
| 0 SL100 4X25 AX TO SL1 QMT-8 SYNCH              | AD0260 NTX831AA02 |
| 0 SL100 4X25AA TO SL1 QMT-9                     | AD0112 NTX831AA02 |
| 0 SL100 4X25AN TO SL1 QMT-8                     | AD0110 NTX831AA02 |
| 0 SL100 4X25AN TO SL1 QMT-9                     | AD0111 NTX831AA02 |
| 0 SMA AND IDT OMS                               | AF2686 NTXF46AA04 |
| 0 SMA BASE UPGRADE                              | AF2724 NTXF46AA04 |
| 0 SMA CC EOC/TMC/CSC PATH PROTECTION SWITCHING  | AF2651 NTXF46AA04 |
| 0 SMA CC IDT MAINTENANCE III                    | AF2998 NTXF46AA04 |
| 0 SMA CLASS CALL CONTROL                        | AF2650 NTXF46AA04 |
| 0 SMA COIN CALL CONTROL                         | AF2521 NTXF46AA04 |
| 0 SMA EBS CALL CONTROL                          | AF2522 NTXF46AA04 |
| 0 SMA ISDN & MADN CALL CONTROL                  | AF2726 NTXF46AA04 |
| 0 SMA MAINTENANCE AND TABLE CONTROL             | AF1966 NTXF46AA04 |
| 0 SMA MDC SERVICES VERIFICATION                 | AF2762 NTXF46AA04 |

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| 0 SMA PERIPHERAL IDT MAINTENANCE III            | AF2971 NTXF46AA04 |
| 0 SMA PERIPHERAL IDT MAINTENANCE IV             | AF2997 NTXF46AA04 |
| 0 SMA RFT TEST RESPONSE CIRCUIT SUPPORT         | AF2649 NTXF46AA04 |
| 0 SMALL REMOTE UNIT (SRU) CC SOFTWARE FOR BASIC | AE0820 NTXH96AA01 |
| 0 FUNCTIONALITY                                 |                   |
| 0 SMDI - PORT EXPANSION                         | AD1778 NTX732AA06 |
| 0 SMDI CALL RETRIEVAL BILLING.                  | AL0524 NTX732AA06 |
| 0 SMDI COVERSON TO USE MPC                      | AF2471 NTXN10AA01 |
| 0 SMDI DATA LINK INTERFACE                      | AD0369 NTX732AA06 |
| 0 SMDI ON HUNT GROUPS                           | AF2301 NTX732AA06 |
| 0 SMDI ON RES                                   | AL0532 NTX732AA06 |
| 0 SMDI: CALLED DN OPTION AND KSH SUPPORT        | NC0009 NTX732AA06 |
| 0 SMDR DERIVED FROM BELLCORE AMA RECORD         | AL0427 NTX851AA01 |
| 0 SMDR/MCDR POLLING VIA X.25                    | BV2035 NTX347AA06 |
| 0 SMR A-BIT FACILITY ROBUSTNESS.                | AF2348 NTX213AC01 |
| 0 SMR AUDIT ROBUSTNESS.                         | AF2344 NTX213AC01 |
| 0 SMR B-WORD FACILITY ROBUSTNESS.               | AF2342 NTX213AC01 |
| 0 SMR CALL PROCESSING ROBUSTNESS.               | AF2347 NTX213AC01 |
| 0 SMR DYNAMIC CHANNEL REASSIGNMENT              | AF0089 NTX213AC01 |
| 0 SMR MAINTENANCE ROBUSTNESS.                   | AF2343 NTX213AC01 |
| 0 SMR OVERLOAD CONTROL                          | BF0580 NTX213AC01 |
| 0 SMR PM MTC - PHASE II                         | BF0552 NTX213AC01 |
| 0 SMR PP OMS AND DTSR                           | BF0485 NTX213AC01 |
| 0 SMS A/B BOARD DIAGNOSTICS                     | BF0520 NTX398AA12 |
| 0 SMS ALARMS                                    | BF0514 NTX398AA12 |
| 0 SMS ANI AND COIN FUNCTIONS.                   | BF0517 NTX398AA12 |
| 0 SMS CALL CONTROL - MODE I, III                | BF0524 NTX398AA12 |
| 0 SMS DERIVED DATA LINK HANDLER - MODE I, III   | BF0516 NTX398AA12 |
| 0 SMS DS-1 BOARD DIAGNOSTICS.                   | BF0522 NTX398AA12 |
| 0 SMS MAINTENANCE-MODE II                       | BF0579 NTX398AA12 |
| 0 SMS MESSAGING - MODE I, III                   | BF0515 NTX398AA12 |
| 0 SMS NODE MAINTENANCE - MODE I, III            | BF0513 NTX398AA12 |
| 0 SMS PHASE 1 FOLDBACK                          | AG2198 NTXZ09AA02 |
| 0 SMS PHASE 1 FOLDBACK                          | AG2198 NTXZ11AA01 |
| 0 SMS PROTECTION SWITCHING                      | BF0521 NTX398AA12 |
| 0 SMS PROTECTION SWITCHING ROBUSTNESS:PHASE I   | AF0059 NTX398AA12 |
| 0 SMS PSIDE CHANNEL MANAGEMENT.                 | BF0518 NTX398AA12 |
| 0 SMS RINGING                                   | BF0510 NTX398AA12 |
| 0 SMS SPECIAL SERVICES                          | BF0519 NTX299AA02 |
| 0 SMS SPECIAL SERVICES                          | BF0519 NTX299AB01 |
| 0 SMS SUBSCRIBER LINE TEST.                     | BF0511 NTX398AA12 |
| 0 SMSR BASIC MTC I CC                           | BC2153 NTXA85AB02 |
| 0 SMSR BASIC MTC XPM                            | AF0164 NTXA85AB02 |
| 0 SMSR CALL PROCESSING I XPM                    | AF0163 NTXA85AB02 |
| 0 SMSR CALL PROCESSING II XPM                   | AF1794 NTXA85AB02 |
| 0 SMSR LINES SUPPORT XPM                        | AF1789 NTXA85AB02 |
| 0 SMSR OPERATOR VERIFICATION                    | AF2678 NTXA85AB02 |

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| 0 SMSR PROVISIONING AND MAP              | BC2150 NTXA85AB02 |
| 0 SMSR PRS RESOLUTION                    | AF3377 NTXA85AB02 |
| 0 SMSR SERVING LINES SUPPORT             | BC2147 NTXA85AB02 |
| 0 SMSR WARM SWACT - CC                   | AF2676 NTXA85AB02 |
| 0 SMSR WARM SWACT - XPM                  | AF2677 NTXA85AB02 |
| 0 SMSR-RCC ESA MTC CC                    | AF1791 NTXA85AB02 |
| 0 SMSR-RCC ESA MTC XPM                   | AF1790 NTXA85AB02 |
| 0 SMU (PP) AUDITS                        | BF0994 NTX387AB04 |
| 0 SMU (PP) AUDITS                        | BF0994 NTX387AC02 |
| 0 SMU (PP) AUDITS                        | BF0994 NTX387AD01 |
| 0 SMU ALARMS PROCESSING                  | BF0610 NTX387AB04 |
| 0 SMU ALARMS PROCESSING                  | BF0610 NTX387AC02 |
| 0 SMU ALARMS PROCESSING                  | BF0610 NTX387AD01 |
| 0 SMU ALARMS/CHANNEL REASSIGNMENT        | AF0086 NTX387AB04 |
| 0 SMU ALARMS/CHANNEL REASSIGNMENT        | AF0086 NTX387AC02 |
| 0 SMU ALARMS/CHANNEL REASSIGNMENT        | AF0086 NTX387AD01 |
| 0 SMU AUTOMATIC BOARD-TO-BOARD TEST      | AF0156 NTX387AB04 |
| 0 SMU AUTOMATIC BOARD-TO-BOARD TEST      | AF0156 NTX387AC02 |
| 0 SMU AUTOMATIC BOARD-TO-BOARD TEST      | AF0156 NTX387AD01 |
| 0 SMU BASIC RTS                          | AF0083 NTX387AB04 |
| 0 SMU BASIC RTS                          | AF0083 NTX387AC02 |
| 0 SMU BASIC RTS                          | AF0083 NTX387AD01 |
| 0 SMU CALL PROCESSING/NODE AND LINE MNTC | AF0084 NTX387AB04 |
| 0 SMU CALL PROCESSING/NODE AND LINE MNTC | AF0084 NTX387AC02 |
| 0 SMU CALL PROCESSING/NODE AND LINE MNTC | AF0084 NTX387AD01 |
| 0 SMU CC MMI                             | AF0082 NTX387AB04 |
| 0 SMU CC MMI                             | AF0082 NTX387AC02 |
| 0 SMU CC MMI                             | AF0082 NTX387AD01 |
| 0 SMU COIN CAPABILITY(PP)                | BF0597 NTX387AB04 |
| 0 SMU COIN CAPABILITY(PP)                | BF0597 NTX387AC02 |
| 0 SMU COIN CAPABILITY(PP)                | BF0597 NTX387AD01 |
| 0 SMU EXPANDED RCU CONNECTIONS(PP)       | AF0270 NTX387AB04 |
| 0 SMU EXPANDED RCU CONNECTIONS(PP)       | AF0270 NTX387AC02 |
| 0 SMU EXPANDED RCU CONNECTIONS(PP)       | AF0270 NTX387AD01 |
| 0 SMU FORWARD DISCONNECT(PP)             | AF0269 NTX387AB04 |
| 0 SMU FORWARD DISCONNECT(PP)             | AF0269 NTX387AC02 |
| 0 SMU FORWARD DISCONNECT(PP)             | AF0269 NTX387AD01 |
| 0 SMU FXB HAIRPIN SPECIAL SERVICES       | AF0265 NTX621AB02 |
| 0 SMU FXB HAIRPIN SPECIALS(CC)           | AF0264 NTX621AB02 |
| 0 SMU IBN                                | AF0179 NTX387AB04 |
| 0 SMU IBN                                | AF0179 NTX387AC02 |
| 0 SMU IBN                                | AF0179 NTX387AD01 |
| 0 SMU LINE MTCE - COIN,FXB(PP)           | AF0268 NTX387AB04 |
| 0 SMU LINE MTCE - COIN,FXB(PP)           | AF0268 NTX387AC02 |
| 0 SMU LINE MTCE - COIN,FXB(PP)           | AF0268 NTX387AD01 |
| 0 SMU LINK MAINTENANCE                   | BF0995 NTX387AB04 |
| 0 SMU LINK MAINTENANCE                   | BF0995 NTX387AC02 |



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| 0 SMU LINK MAINTENANCE                        | BF0995 NTX387AD01 |
| 0 SMU MAINTENANCE AND OMS                     | AF0085 NTX387AB04 |
| 0 SMU MAINTENANCE AND OMS                     | AF0085 NTX387AC02 |
| 0 SMU MAINTENANCE AND OMS                     | AF0085 NTX387AD01 |
| 0 SMU MAINTENANCE(CC)                         | BC1686 NTX387AB04 |
| 0 SMU MAINTENANCE(CC)                         | BC1686 NTX387AC02 |
| 0 SMU MAINTENANCE(CC)                         | BC1686 NTX387AD01 |
| 0 SMU MESSAGE CHANNEL MANAGEMENT              | BF0591 NTX387AB04 |
| 0 SMU MESSAGE CHANNEL MANAGEMENT              | BF0591 NTX387AC02 |
| 0 SMU MESSAGE CHANNEL MANAGEMENT              | BF0591 NTX387AD01 |
| 0 SMU MESSAGING HOOKS                         | BF0599 NTX387AB04 |
| 0 SMU MESSAGING HOOKS                         | BF0599 NTX387AC02 |
| 0 SMU MESSAGING HOOKS                         | BF0599 NTX387AD01 |
| 0 SMU NT6X44CA A/B BIT DIAGNOSTICS            | AF0147 NTX387AB04 |
| 0 SMU NT6X44CA A/B BIT DIAGNOSTICS            | AF0147 NTX387AC02 |
| 0 SMU NT6X44CA A/B BIT DIAGNOSTICS            | AF0147 NTX387AD01 |
| 0 SMU OAM ENHANCEMENTS                        | AF0088 NTX387AB04 |
| 0 SMU OAM ENHANCEMENTS                        | AF0088 NTX387AC02 |
| 0 SMU OAM ENHANCEMENTS                        | AF0088 NTX387AD01 |
| 0 SMU PP AST II                               | AF0915 NTX387AB04 |
| 0 SMU PP AST II                               | AF0915 NTX387AC02 |
| 0 SMU PP AST II                               | AF0915 NTX387AD01 |
| 0 SMU STATIC DATA(CC)                         | BC1725 NTX387AB04 |
| 0 SMU STATIC DATA(CC)                         | BC1725 NTX387AC02 |
| 0 SMU STATIC DATA(CC)                         | BC1725 NTX387AD01 |
| 0 SMU WARM SWACT(PP)                          | AF0233 NTX387AB04 |
| 0 SMU WARM SWACT(PP)                          | AF0233 NTX387AC02 |
| 0 SMU WARM SWACT(PP)                          | AF0233 NTX387AD01 |
| 0 SNS BILLING SERVER LOGS, OMS, ALARMS, MAPCI | AD0703 NTXG03AA02 |
| 0 SNS GENERIC CDR FORMATTER                   | AD0493 NTXG03AA02 |
| 0 SNSFTS DSESSION - DS30 TRANSPORT            | AD0983 NTXG09AA03 |
| 0 SO - SYSTEM RESPONSE TO QDN                 | BR0686 NTXZ02AA01 |
| 0 SO - SYSTEM RESPONSE TO QDN                 | BR0686 NTX901AA24 |
| 0 SOC FOR DMS-250 PTS TRUNKS                  | AD2137 NTX220BA06 |
| 0 SOC FOR DMS-250 PTS TRUNKS                  | AD2137 NTX220CA08 |
| 0 SOCOTEL - PDTC COMPELLER                    | BF0876 NTX612AA04 |
| 0 SOCOTEL - PDTC COMPELLER                    | BF0876 NTX913AA04 |
| 0 SOCOTEL - PDTC MAINTENANCE                  | BF0878 NTX612AA04 |
| 0 SOCOTEL - PDTC MAINTENANCE                  | BF0878 NTX913AA04 |
| 0 SOCOTEL - PDTC PRIMITIVE AND CONTROL        | BF0877 NTX612AA04 |
| 0 SOCOTEL - PDTC PRIMITIVE AND CONTROL        | BF0877 NTX913AA04 |
| 0 SOCOTEL - PDTC REGISTER CONTROLLER          | BF0875 NTX612AA04 |
| 0 SOCOTEL - PDTC REGISTER CONTROLLER          | BF0875 NTX913AA04 |
| 0 SOCOTEL CC MAINTENANCE (DID)                | BC2067 NTX612AA04 |
| 0 SOCOTEL CC MAINTENANCE (DID)                | BC2067 NTX913AA04 |
| 0 SOCOTEL CC MAINTENANCE (DOD)                | AE0045 NTX612AA04 |
| 0 SOCOTEL DIRECT INWARD DIAL                  | AE0035 NTX612AA04 |

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| 0 SOCOTEL DIRECT INWARD DIAL                          | AE0035 NTX913AA04 |
| 0 SOCOTEL DIRECT OUTWARD DIAL                         | AE0060 NTX612AA04 |
| 0 SOCOTEL INTERNATIONAL SIGNALLING                    | AD0206 NTX612AA04 |
| 0 SOCOTEL SIGNALLING                                  | AE0010 NTX612AA04 |
| 0 SOCOTEL SIGNALLING                                  | AE0010 NTX913AA04 |
| 0 SOCOTEL SIGNALLING UTR                              | AE0028 NTX612AA04 |
| 0 SOCOTEL SIGNALLING UTR                              | AE0028 NTX913AA04 |
| 0 SOCOTEL TO ITOPS INTERWORKING                       | AE0735 NTXH60AA01 |
| 0 SOCOTEL TRUNK EXECs (DID)                           | BC2066 NTX612AA04 |
| 0 SOCOTEL TRUNK EXECs (DID)                           | BC2066 NTX913AA04 |
| 0 SOCOTEL TRUNK EXECs (DOD)                           | AE0047 NTX612AA04 |
| 0 SOCOTEL TRUNK TO AUTOVON INTERFACE                  | BC2062 NTX612AA04 |
| 0 SOCOTEL TRUNK TO AUTOVON INTERFACE                  | BC2062 NTX913AA04 |
| 0 SOCOTEL TRUNK TO CONSOLE INTERFACE                  | BC2063 NTX612AA04 |
| 0 SOCOTEL TRUNK TO CONSOLE INTERFACE                  | BC2063 NTX913AA04 |
| 0 SOCOTEL TRUNK TO IBN LINE INTERFACE                 | BC2064 NTX612AA04 |
| 0 SOCOTEL TRUNK TO IBN LINE INTERFACE                 | BC2064 NTX913AA04 |
| 0 SOCOTEL TRUNK TO IBN TRUNK INTERFACE                | BC2065 NTX612AA04 |
| 0 SOCOTEL TRUNK TO IBN TRUNK INTERFACE                | BC2065 NTX913AA04 |
| 0 SOFTWARE ANSWER DISTINCTION ACROSS PTS IMTS         | AD0137 NTX222AB04 |
| 0 SOFTWARE ANSWER DISTINCTION ACROSS PTS IMTS         | AD0137 NTX222BA07 |
| 0 SOFTWARE ANSWER ON IMTS                             | AD0092 NTX222CA09 |
| 0 SOFTWARE METERS FOR TRUNK CC II                     | AJ0571 NTXH22AA01 |
| 0 SOFTWARE METERS FOR TRUNK CC II                     | AJ0571 NTX474AA07 |
| 0 SOFTWARE METERS FOR TRUNKS (CC)                     | AG1479 NTXH22AA01 |
| 0 SOFTWARE METERS FOR TRUNKS (CC)                     | AG1479 NTX474AA07 |
| 0 SOFTWARE METERS FOR TRUNKS (XPM)                    | AG1478 NTXH22AA01 |
| 0 SOFTWARE METERS FOR TRUNKS (XPM)                    | AG1478 NTX474AA07 |
| 0 SOFTWARE SUPPORT FOR 68030 AT 33 MHZ                | AL0934 NTXF15AA01 |
| 0 SOFTWARE SUPPORT FOR 68030 AT 40 MHZ                | AL1189 NTXF16AA01 |
| 0 SOFTWARE TO SUPPORT SIGNALLING CODE ENHANCEMENT FOR | AE0928 NTXK00AB01 |
| 0 PLD                                                 |                   |
| 0 SOS NUCLEUS SIZE REDUCTION                          | AL2042 NTX940AA13 |
| 0 SP DIGIT HANDLER AND MAINTENANCE TASK FOR UTRS      | BF0663 NTX145AA06 |
| 0 SP DIGIT HANDLER AND MAINTENANCE TASK FOR UTRS      | BF0663 NTX269AA07 |
| 0 SP MONITOR FOR STR                                  | BF0822 NTX220AA13 |
| 0 SP MONITOR FOR STR                                  | BF0822 NTX220BA06 |
| 0 SP MONITOR FOR STR                                  | BF0822 NTX220CA08 |
| 0 SP/FP TRANSACTION PROCESSING PART I                 | BF0436 NTX470AA13 |
| 0 SP/FP TRANSACTION PROCESSING PART II                | BF0437 NTX470AA13 |
| 0 SPANISH CAIA TRUNK CALL PROCESSING                  | BC2070 NTX612AA04 |
| 0 SPANISH CAIA TRUNK MAINTENANCE                      | BC2071 NTX612AA04 |
| 0 SPANISH JUSMAG TRUNK CALL PROCESSING                | BC2068 NTX612AA04 |
| 0 SPANISH JUSMAG TRUNK MAINTENANCE                    | BC2069 NTX612AA04 |
| 0 SPANISH METERING RECEPTION                          | AE0044 NTX612AA04 |
| 0 SPANISH SIGNALLING TABLE CONTROL                    | AE0198 NTX612AA04 |
| 0 SPANISH SOCOTEL FEATURE INTERACTIONS                | AE0170 NTX612AA04 |

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| 0 SPANISH SOCOTEL LINE SIGNALLING DEFINITION         | BZ0488 | NTX612AA04 |
| 0 SPANISH SOCOTEL REGISTER SIGNALLING DEFINITION     | BZ0490 | NTX612AA04 |
| 0 SPANISH SOCOTEL SIGNALLING DEFINITIONS             | AE0040 | NTX612AA04 |
| 0 SPANISH SOCOTEL TRANSLATIONS (DOD)                 | AE0046 | NTX612AA04 |
| 0 SPANISH TYPE-P2 LINE SIGNALLING                    | AE0189 | NTX612AA04 |
| 0 SPC-CMS: CALL PROCESSING                           | AG1553 | NTXE21AA01 |
| 0 SPC-CMS: DATA STRUCTURES                           | AG1499 | NTXE21AA01 |
| 0 SPC-CMS: LOGS AND OMS                              | AG1554 | NTXE21AA01 |
| 0 SPC-CMS: TABLE CONTROL                             | AG1501 | NTXE21AA01 |
| 0 SPC-CMS: TCAP APPLICATION                          | AG1537 | NTXE21AA01 |
| 0 SPECCONN NETWORK CONNECTIONS                       | AL1294 | NTX750AC02 |
| 0 SPECCONN NETWORK CONNECTIONS                       | AL1294 | NTX750AD01 |
| 0 SPECIAL APPLICATION PATCHING                       | AF2470 | NTX001AA29 |
| 0 SPECIAL FEATURE HOTLINE DIALING & EXECS            | BV2046 | NTX222AB04 |
| 0 SPECIAL FEATURE HOTLINE DIALING & EXECS            | BV2046 | NTX222BA07 |
| 0 SPECIAL INTERCEPT THROUGH SERVICE ORDERS           | BR0461 | NTXZ00AA01 |
| 0 SPECIAL INTERCEPT THROUGH SERVICE ORDERS           | BR0461 | NTX100AA27 |
| 0 SPECIAL VERIFY AWT ENHANCEMENT                     | AF1121 | NTXA28AA02 |
| 0 SPECIFIC KEY RINGBACK ON RING AGAIN REQUEST ON EBS | AD0637 | NTX878AB02 |
| 0 SPECIFIC KEY RINGBACK ON RING AGAIN REQUEST ON EBS | AD0637 | NTX878AC01 |
| 0 SPECIFIC KEY RINGBACK ON RING AGAIN REQUEST ON EBS | AD0637 | NTX878AD01 |
| 0 SPECIFIC KEY RINGBACK ON RING AGAIN REQUEST ON EBS | AD0637 | NTX878AE01 |
| 0 SPEED CALLING GROUP-LONG LIST                      | BV0459 | NTXZ00AA01 |
| 0 SPEED CALLING GROUP-LONG LIST                      | BV0459 | NTX100AA27 |
| 0 SPEED CALLING INDIVIDUAL-SHORT LIST                | BV0458 | NTXZ00AA01 |
| 0 SPEED CALLING INDIVIDUAL-SHORT LIST                | BV0458 | NTX100AA27 |
| 0 SPEED CALLING SHORT LIST                           | BC0273 | NTX020AA01 |
| 0 SPEED CALLING SHORT LIST                           | BV0067 | NTX020AA01 |
| 0 SPEED CALLING SHORT LIST                           | BC0273 | NTX020AB03 |
| 0 SPEED CALLING SHORT LIST                           | BV0067 | NTX020AB03 |
| 0 SPEED CALLING SHORT LIST                           | BC0273 | NTX020AC01 |
| 0 SPEED CALLING SHORT LIST                           | BV0067 | NTX020AC01 |
| 0 SPEED CALLING SHORT LIST                           | BC0273 | NTX804AA02 |
| 0 SPEED CALLING SHORT LIST                           | BV0067 | NTX804AA02 |
| 0 SPEED CALLING (LONG & SHORT LIST) (SEE C0273)      | BR0230 | NTX020AA01 |
| 0 SPEED CALLING (LONG & SHORT LIST) (SEE C0273)      | BR0230 | NTX020AB03 |
| 0 SPEED CALLING (LONG & SHORT LIST) (SEE C0273)      | BR0230 | NTX020AC01 |
| 0 SPEED CALLING (LONG & SHORT LIST) (SEE C0273)      | BR0230 | NTX804AA02 |
| 0 SPEEDUP CI DIRECTORIES                             | BC1486 | NTX001AA29 |
| 0 SPLASHBACK BY AUTHCODE ENHANCEMENTS                | BV2053 | NTX234AB02 |
| 0 SPLASHBACK BY AUTHCODE ENHANCEMENTS                | BV2053 | NTX234BA01 |
| 0 SPLASHBACK BY STS DATABASE                         | BV2023 | NTX359CA01 |
| 0 SPLIT LINE-OPTION PROMPTING FROM COMPATIBILITY     | BC1671 | NTXZ02AA01 |
| 0 CHECKING                                           |        |            |
| 0 SPLIT LINE-OPTION PROMPTING FROM COMPATIBILITY     | BC1671 | NTX901AA24 |
| 0 CHECKING                                           |        |            |
| 0 SPLIT TICKET BILLING                               | BV1726 | NTX322AA18 |

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| 0 SPMS AUTO REPORT GENERATION AND OUTAGE INDEX       | AG1494 NTX738AB02 |
| 0 SEPARATION                                         |                   |
| 0 SPMS AUTO REPORT GENERATION AND OUTAGE INDEX       | AG1494 NTX738AC02 |
| 0 SEPARATION                                         |                   |
| 0 SPMS ENHANCEMENT                                   | AG0469 NTX738AB02 |
| 0 SPMS ENHANCEMENT                                   | AG0469 NTX738AC02 |
| 0 SPONTANIOUS CALL WAITING ID XPM CHANGES            | AF2830 NTXN97AA01 |
| 0 SPRINT CHIPS I/F FROM DMS                          | AD0077 NTX358BA03 |
| 0 SRU MAINTENANCE ENHANCEMENTS                       | AE0907 NTXH96AA01 |
| 0 SSM HAIRPIN                                        | AF0238 NTX621AB02 |
| 0 SSM HAIRPIN (CC)                                   | AF0830 NTX621AB02 |
| 0 SSM HAIRPIN (PP)                                   | AF0938 NTX621AB02 |
| 0 SSP-BASED PVN FOR AUSTRALIA                        | AG2062 NTXH49AA02 |
| 0 SSP-BASED PVN FOR AUSTRALIA                        | AG2062 NTXH49AB01 |
| 0 SS7 FGD PHASE 1                                    | AD1848 NTXG20AA02 |
| 0 SS7 MASS TRUNK CONVERSION                          | AL0520 NTX875AA01 |
| 0 SS7 SERVICES ENHANCEMENTS                          | AG0489 NTXA08AA01 |
| 0 SS7 SERVICES ENHANCEMENTS                          | AG0489 NTX558AA01 |
| 0 SS7 SERVICES ENHANCEMENTS                          | AG0489 NTX559AA01 |
| 0 STANDARD CCS7 IMT TRUNK MAINTENANCE, PHASE 1       | AD0424 NTX361BA05 |
| 0 STANDARD CCS7 IMT TRUNK MAINTENANCE, PHASE 1       | AD0424 NTX361CA07 |
| 0 STANDARD PRETRANSLATION EXPANSION                  | NC0086 NTX001AA29 |
| 0 STANDARD PRETRANSLATION EXPANSION - PHASE II.      | NC0196 NTX001AA29 |
| 0 STANDARDIZED TRAFFIC STATISTICS (STS)              | AD0460 NTX344CA06 |
| 0 STARNET COS OVERRIDE BY AUTHCODE                   | BV1254 NTX220AA13 |
| 0 STARNET COS OVERRIDE BY AUTHCODE                   | BV1254 NTX220BA06 |
| 0 STARNET COS OVERRIDE BY AUTHCODE                   | BV1254 NTX220CA08 |
| 0 STATIC DATA FOR RCS(SLC-96)                        | BF0523 NTX398AA12 |
| 0 STATION ACTIVATED DND WITH FEATURE ACTIVE REMINDER | BC1200 NTX435AA03 |
| 0 STATION ACTIVATION OF CFB/CFD                      | AL0656 NTX413AB01 |
| 0 STATION CAMP ON FOR MERIDIAN BUSINESS SET          | NC0080 NTXJ98AA01 |
| 0 STATION MESSAGE DETAIL RECORDING                   | BV0463 NTX102AA05 |
| 0 STATION MESSAGE WAITING                            | BC0815 NTX119AA05 |
| 0 STATION RINGER                                     | BT0063 NTXZ02AA01 |
| 0 STATION RINGER                                     | BT0063 NTX901AA24 |
| 0 STATION RINGER TEST - 3 DIGIT ACCESS CODE          | BR0623 NTXZ02AA01 |
| 0 STATION RINGER TEST - 3 DIGIT ACCESS CODE          | BR0623 NTX901AA24 |
| 0 STATION RINGER TEST NUMBER FOR DMS-100             | BR0283 NTXZ02AA01 |
| 0 STATION RINGER TEST NUMBER FOR DMS-100             | BR0283 NTX901AA24 |
| 0 STATION SPECIFIC AUTH CODES                        | BR0725 NTX103BA02 |
| 0 STATION SPECIFIC AUTHCODE - CDC ENHANCEMENT        | AD0938 NTX103BA02 |
| 0 STATION TO STATION                                 | BV0291 NTX030CC16 |
| 0 STATION TO STATION CALLING                         | BV0412 NTXZ00AA01 |
| 0 STATION TO STATION CALLING                         | BV0412 NTX100AA27 |
| 0 STATUS ASSEMBLY SYSTEM (SAS) CONUS                 | BV0109 NTX070AE01 |
| 0 STATUS ASSEMBLY SYSTEM (SAS) CONUS                 | BV0401 NTX070AE01 |
| 0 STATUS ENQUIRY SUPPORT                             | AJ0425 NTX753AA06 |

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| 0 STATUS ENQUIRY SUPPORT                          | AJ0425 NTX753AB01 |
| 0 STC ENHANCED MTCE                               | BC0678 NTX204AA02 |
| 0 STC LOADER                                      | BC0679 NTX204AA02 |
| 0 STORING OF 24 DIALED DIGITS                     | BC1027 NTXZ00AA01 |
| 0 STORING OF 24 DIALED DIGITS                     | BC1027 NTX100AA27 |
| 0 STP LIM CLOCK DIAGNOSTIC                        | AI0103 NTXF20AA02 |
| 0 STP LIM CLOCK DIAGNOSTIC                        | AI0103 NTX833AB01 |
| 0 STP LIM LOCAL MTC                               | AI0117 NTXF20AA02 |
| 0 STP LIM LOCAL MTC                               | AI0117 NTX833AB01 |
| 0 STP ROBUSTNESS                                  | AL1893 NTXR72AA01 |
| 0 STP ROBUSTNESS                                  | AL1893 NTX041AB09 |
| 0 STP V.35 CAPABILITY FOR STP                     | AC0425 NTXN19AA02 |
| 0 STP V.35 CAPABILITY FOR STP                     | AC0425 NTX833AB01 |
| 0 STP- V.35 SUBRATE LINKS FOR STP                 | AC0428 NTX836AA01 |
| 0 STR AFFECT ON BILLING FOR MCI                   | AD1381 NTX220CA08 |
| 0 STR AFFECT ON BILLING FOR US SPRINT             | AD1382 NTX222BA07 |
| 0 STR CALL PROCESSING IN DTC                      | BF0826 NTX220AA13 |
| 0 STR CALL PROCESSING IN DTC                      | BF0826 NTX220BA06 |
| 0 STR CALL PROCESSING IN DTC                      | BF0826 NTX220CA08 |
| 0 STR DIAGNOSTIC FIRMWARE                         | BF0823 NTX220AA13 |
| 0 STR DIAGNOSTIC FIRMWARE                         | BF0823 NTX220BA06 |
| 0 STR DIAGNOSTIC FIRMWARE                         | BF0823 NTX220CA08 |
| 0 STR DSP MICROCODE                               | BF0830 NTX220AA13 |
| 0 STR DSP MICROCODE                               | BF0830 NTX220BA06 |
| 0 STR DSP MICROCODE                               | BF0830 NTX220CA08 |
| 0 STR LP FIRMWARE FOR LOOPAROUND DIAGNOSTICS      | AD0331 NTX220AA13 |
| 0 STR LP FIRMWARE FOR LOOPAROUND DIAGNOSTICS      | AD0331 NTX220BA06 |
| 0 STR LP FIRMWARE FOR LOOPAROUND DIAGNOSTICS      | AD0331 NTX220CA08 |
| 0 STR STATIC DATA AND MTC IN DTC                  | BF0827 NTX220AA13 |
| 0 STR STATIC DATA AND MTC IN DTC                  | BF0827 NTX220BA06 |
| 0 STR STATIC DATA AND MTC IN DTC                  | BF0827 NTX220CA08 |
| 0 STR SWACT CONTROL IN DTC                        | BF0829 NTX220AA13 |
| 0 STR SWACT CONTROL IN DTC                        | BF0829 NTX220BA06 |
| 0 STR SWACT CONTROL IN DTC                        | BF0829 NTX220CA08 |
| 0 STRAIGHTFORWARD OUTWARD COMPLETION              | BV0432 NTXZ00AA01 |
| 0 STRAIGHTFORWARD OUTWARD COMPLETION              | BV0432 NTX100AA27 |
| 0 STRATACOM-RLCM-DATA                             | AD0320 NTX831AA02 |
| 0 STRATEGIC DMS-250 EOPS BILLING ENHANCEMENTS     | AM0153 NTXG12AA06 |
| 0 STRATEGIC DMS-250 EOPS BILLING ENHANCEMENTS     | AM0153 NTXG12CA06 |
| 0 STRATEGIC DMS250 EOPS START/END OF CALL MESSAGE | AM0155 NTXG12AA06 |
| 0 INDICATORS                                      |                   |
| 0 STRATEGIC DMS250 EOPS START/END OF CALL MESSAGE | AM0155 NTXG12CA06 |
| 0 INDICATORS                                      |                   |
| 0 STRATEGIC HLD DMS-250 ISUP IMT TO EOPS          | AD2367 NTXG12AA06 |
| 0 STRATEGIC HLD DMS-250 ISUP IMT TO EOPS          | AD2367 NTXG12CA06 |
| 0 STRATUM II - DRIFT INDICATION                   | BR0828 NTX048CA02 |
| 0 STRATUM-2 CLOCK (SLAVE OFFICE) SYNCHRONIZATION  | AL0422 NTX048AA06 |

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| 0 STRATUM-3 CLOCK SYNCHRONIZATION                    | AL0158 NTX048BA02 |
| 0 STS CONVERSION                                     | BC0858 NTX055AB03 |
| 0 STS CONVERSION                                     | BC0858 NTX980AA01 |
| 0 STS DATA PEG-COUNTS                                | AD1685 NTX222CA09 |
| 0 STS OMS 3.0 FOR MCI                                | AD2642 NTX222CA09 |
| 0 STS TO COUNTRY CODE TRANSLATOR NAME DATABASE       | BV1955 NTX222CA09 |
| 0 STUCK SENDER CALL TRACING                          | BV0039 NTX055AA03 |
| 0 STUTTERED DIAL TONE FOR MESSAGE WAITING            | BC0953 NTX119AA05 |
| 0 SUBSCRIBER ACTIVATION                              | BC2286 NTX660AA01 |
| 0 SUBSCRIBER ACTIVATED OUTGOING RESTRICTIONS         | AC0134 NTX499AA10 |
| 0 SUBSCRIBER CONTROL OF ATCP                         | BV1602 NTX610AA03 |
| 0 SUBSCRIBER CONTROL OF ATCP                         | BV1602 NTX701CA07 |
| 0 SUBSCRIBER CONTROLLED TOLL RESTRICTION             | AF1094 NTXA18AA01 |
| 0 SUBSCRIBER DIALING PLAN FOR FGA,FGD AND DAL TRUNKS | BV2049 NTX222AB04 |
| 0 SUBSCRIBER DIALING PLAN FOR FGA,FGD AND DAL TRUNKS | BV2049 NTX222BA07 |
| 0 SUBSCRIBER LINE PEG COUNT MEASUREMENT              | BR0268 NTX082AA01 |
| 0 SUBSCRIBER LINE USAGE REGISTERS                    | BV0064 NTX082AA01 |
| 0 SUBSCRIBER LINE USAGE REGISTERS                    | BV0064 NTX082AB01 |
| 0 SUBSCRIBER TRANSFER APPLIQUE CIRCUIT               | BR0215 NTX020AA01 |
| 0 SUBSCRIBER TRANSFER APPLIQUE CIRCUIT               | BR0215 NTX020AB03 |
| 0 SUBSCRIBER TRANSFER APPLIQUE CIRCUIT               | BR0215 NTX020AC01 |
| 0 SUBSCRIBER TRANSFER APPLIQUE CIRCUIT               | BR0215 NTX804AA02 |
| 0 SUPER CC SYNC AND LDMATE                           | AG0089 NTX000AA19 |
| 0 SUPERCAMA TRAVER HANDLING                          | AF0306 NTX710AA02 |
| 0 SUPERCAMA TRAVER HANDLING                          | AF0306 NTX710AB01 |
| 0 SUPERIMPOSED RINGING                               | BV0071 NTXZ02AA01 |
| 0 SUPERIMPOSED RINGING                               | BV0071 NTX901AA24 |
| 0 SUPERNODE STUDY AND SRAM ENHANCEMENTS              | AD2379 NTX322AA18 |
| 0 SUPERVISION ANSWER                                 | BT0316 NTX001AA29 |
| 0 SUPERVISION DISCONNECT                             | BT0315 NTX001AA29 |
| 0 SUPERVISION GLARE                                  | BT0323 NTX001AA29 |
| 0 SUPERVISION GUARD TIMING                           | BT0321 NTX001AA29 |
| 0 SUPERVISION HIT                                    | BT0319 NTX001AA29 |
| 0 SUPERVISION RING BACK                              | BT0318 NTX001AA29 |
| 0 SUPERVISION RING FORWARD                           | BT0317 NTX001AA29 |
| 0 SUPERVISION RMB                                    | BT0320 NTX001AA29 |
| 0 SUPPORT FOR A-LAW CARDS (TTT, TTU, RCVRMF & DRA)   | BC1060 NTX001AA29 |
| 0 SUPPORT FOR A-LAW CARDS (TTT, TTU, RCVRMF & DRA)   | BC1060 NTX470AA13 |
| 0 SUPPORT FOR A-LAW CARDS (TTT, TTU, RCVRMF & DRA)   | BC1060 NTX471AA01 |
| 0 SUPPORT FOR EEPROM CARDS IN DRA                    | BC0980 NTX001AA29 |
| 0 SUPPORT FOR RMM ON SRU                             | AE0906 NTXH96AA01 |
| 0 SUPPORT FOR WARM SWACT RECOVERY TIME REDUCTION     | AL2260 NTXE01AA06 |
| 0 FEATURE                                            |                   |
| 0 SUPPORT OF NOTIFICATION BUSY LIMIT PARAMETER       | AQ0779 NTX755AB01 |
| 0 SUPPORT OF NOTIFICATION BUSY LIMIT PARAMETER       | AQ0779 NTX755AC01 |
| 0 SUPPRESSION OF USERNAME ON LOGIN                   | AD2087 NTX292AB04 |
| 0 SUPPRESSION OF USERNAME ON LOGIN                   | AD2087 NTX292BA03 |

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| 0 SUSPEND AND RESTORE REMOTE CALL FORWARD LINES      | AF1564 NTX733AD01 |
| 0 SUSPEND AND RESTORE REMOTE CALL FORWARD LINES      | AF1564 NTX733AE01 |
| 0 SWACT OPERATION ROBUSTNESS                         | AJ1038 NTX270AA19 |
| 0 SWATS                                              | AD0160 NTX343CA02 |
| 0 SWITCH BIT ERROR RATE INDICATOR                    | AG0360 NTX881AA01 |
| 0 SWITCH BIT ERROR RATE INDICATOR                    | AG0360 NTX881AB02 |
| 0 SWITCH BIT ERROR RATE INDICATOR                    | AG0360 NTX881AC03 |
| 0 SWITCH BIT ERROR RATE INDICATOR FOR TRUNKS         | AG0521 NTX881AB02 |
| 0 SWITCH BIT ERROR RATE INDICATOR FOR TRUNKS         | AG0521 NTX881AC03 |
| 0 SWITCH BIT ERROR RATE INDICATOR FOR TRUNKS         | AG0521 NTX882AA04 |
| 0 SWITCH PERFORMANCE MONITORING SYSTEM (SPMS)        | AG1495 NTX738AB02 |
| 0 ENHANCEMENTS II                                    |                   |
| 0 SWITCH PERFORMANCE MONITORING SYSTEM (SPMS)        | AG1495 NTX738AC02 |
| 0 ENHANCEMENTS II                                    |                   |
| 0 SWITCHED ACCESS TWO-WAY OPERATOR OFFICE TRKS       | BR0207 NTX129AA02 |
| 0 (TWOOT)(PHIII)                                     |                   |
| 0 SYNCHRONISATION                                    | BR0013 NTX048AA06 |
| 0 SYNCHRONISATION AND SYNCHRONISABLE CLOSE (SLAVE)   | BR0012 NTX048AA06 |
| 0 SYNCHRONIZABLE CLOCK MAINTENANCE                   | BC2296 NTX048AA06 |
| 0 SYNCHRONIZATION - STRATUM 2                        | BR0557 NTX048CA02 |
| 0 SYNCHRONIZATION STRATUM 2                          | BC1221 NTX048CA02 |
| 0 SYSTEM AUDIT PACKAGE - VERSION 1                   | BC0075 NTX184AA11 |
| 0 SYSTEM AUDIT PACKAGE - VERSION 1                   | BC0075 NTX184AB02 |
| 0 SYSTEM LOAD MODULE CONTROL SOFTWARE                | AL0436 NTX942AB02 |
| 0 SYSTEM MONITOR DISPLAY                             | BC0084 NTX001AA29 |
| 0 SYSTEM RECOVERY CONTROLLER INTERFACES              | AL1570 NTX941AA12 |
| 0 SYSTEM REX TEST CONTROLLER                         | AL2030 NTX941AA12 |
| 0 SYSTEM SPEEDUP                                     | BC1219 NTX001AA29 |
| 0 T 101 CALL PROCESSING AND TABLE CONTROL            | BV2015 NTX222AM05 |
| 0 TABLE CHECKSUM DELTA                               | AG1506 NTXE29AA03 |
| 0 TABLE CONTROL FOR AUTOVON INTERSWITCH PRA TRUNKS   | AD2084 NTXF40AA01 |
| 0 TABLE CONTROL FOR ISDN BRA FUNCTIONAL SIGNALLING   | AC0380 NTX750AC02 |
| 0 TABLE CONTROL FOR ISDN BRA FUNCTIONAL SIGNALLING   | AC0380 NTX750AD01 |
| 0 TABLE CONTROL FOR ISI SERVICES                     | AG1945 NTXJ59AB03 |
| 0 TABLE CONTROL FOR ISI SERVICES                     | AG1945 NTXJ59AC01 |
| 0 TABLE CONTROL FOR NAILED-UP SPECIALS ON SMS        | BC1409 NTX299AA02 |
| 0 TABLE CONTROL FOR NAILED-UP SPECIALS ON SMS        | BC1409 NTX299AB01 |
| 0 TABLE CONTROL FOR SES SYSTEM TABLE SEILINKS        | AF0078 NTX215AA02 |
| 0 TABLE CONTROL FOR STP LIM                          | AI0040 NTXF20AA02 |
| 0 TABLE CONTROL FOR STP LIM                          | AI0040 NTX833AB01 |
| 0 TABLE CONTROL FOR TRUNKS AS SCAI ACD AGENTS        | AD2889 NTXN14AA01 |
| 0 TABLE DMO                                          | BT0075 NTX001AA29 |
| 0 TABLE DNATTRS SUPPORT FOR ISDN TR-COMPLIANCE       | AG2002 NTX753AA06 |
| 0 TABLE DNATTRS SUPPORT FOR ISDN TR-COMPLIANCE       | AG2002 NTX753AB01 |
| 0 TABLE EDITOR                                       | BC0131 NTX001AA29 |
| 0 TABLE EDITOR                                       | BT0258 NTX001AA29 |
| 0 TABLE EDITOR -GROUP/MEMBER & COUNT COMMAND QUERIES | BC0077 NTX001AA29 |

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| 0 TABLE EXTENSION IMPROVEMENTS FOR DATA EXTENSIONS    | BC0551 NTX001AA29 |
| 0 TABLE FOR DUMP/RESTORE OF LOGIN CONTROL DATA        | AG0114 NTX001AA29 |
| 0 TABLE OPERATIONS FOR ILGC AND ILTC                  | BC1730 NTX472AA03 |
| 0 TABLE OPERATIONS FOR ILGC AND ILTC                  | BC1730 NTX472AB08 |
| 0 TABLE OPERATIONS FOR ILGC AND ILTC                  | BC1730 NTX913AA04 |
| 0 TABLE REFORMATS AT LOGICAL LEVEL                    | AG1858 NTXE29AA03 |
| 0 TABLES, MAINTENANCE, I/O, FILE SYSTEM               | BC1335 NTX273AA07 |
| 0 TABS CALL DISTRIBUTOR                               | AG1221 NTG230AA01 |
| 0 TABS CONTROL LINK INTERFACE TO DMS                  | AG1223 NTG230AA01 |
| 0 TABS OA&M                                           | AG1222 NTG230AA01 |
| 0 TANDEM NRAG ON PRA                                  | AD1315 NTX791AA02 |
| 0 TANDEM PBX DIALING                                  | BV2051 NTX222BA07 |
| 0 TANDEM SWITCHING                                    | BV0419 NTXZ03AA01 |
| 0 TANDEM SWITCHING                                    | BV0419 NTX802AA04 |
| 0 TANDEM SWITCHING                                    | BV0419 NTX902AA07 |
| 0 TANDEM SWITCHING - NO DIGITS INCOMING               | BR0164 NTXZ03AA01 |
| 0 TANDEM SWITCHING - NO DIGITS INCOMING               | BR0164 NTX802AA04 |
| 0 TANDEM SWITCHING - NO DIGITS INCOMING               | BR0164 NTX902AA07 |
| 0 TANDEM SWITCHING- NO DIGITS INCOMING (2WAY TRUNKS)  | BR0191 NTXZ03AA01 |
| 0 TANDEM SWITCHING- NO DIGITS INCOMING (2WAY TRUNKS)  | BR0191 NTX802AA04 |
| 0 TANDEM SWITCHING- NO DIGITS INCOMING (2WAY TRUNKS)  | BR0191 NTX902AA07 |
| 0 TANDEMING/SUPERVISION & TREATMENT UPON ATB          | BR0533 NTX290AA01 |
| 0 TAPE COPY ENHANCEMENT                               | AD3140 NTXG18AA02 |
| 0 TAPE DIRECTORY PRESERVATION UTILITY                 | BC0233 NTX177AA01 |
| 0 TASK NEEDS A TITLE                                  | AF2668 NTXZ02AA01 |
| 0 TASK NEEDS A TITLE                                  | AF2255 NTX387AB04 |
| 0 TASK NEEDS A TITLE                                  | AF2251 NTX387AB04 |
| 0 TASK NEEDS A TITLE                                  | AF2254 NTX387AB04 |
| 0 TASK NEEDS A TITLE                                  | AF2255 NTX387AC02 |
| 0 TASK NEEDS A TITLE                                  | AF2251 NTX387AC02 |
| 0 TASK NEEDS A TITLE                                  | AF2254 NTX387AC02 |
| 0 TASK NEEDS A TITLE                                  | AF2255 NTX387AD01 |
| 0 TASK NEEDS A TITLE                                  | AF2251 NTX387AD01 |
| 0 TASK NEEDS A TITLE                                  | AF2254 NTX387AD01 |
| 0 TASK NEEDS A TITLE                                  | AF2256 NTX621AB02 |
| 0 TASK NEEDS A TITLE                                  | AF2668 NTX901AA24 |
| 0 TATS CRTSIM                                         | BC0187 NTX184AA11 |
| 0 TATS CRTSIM                                         | BC0187 NTX184AB02 |
| 0 TATS TRAFSIM                                        | BC0188 NTX184AA11 |
| 0 TATS TRAFSIM                                        | BC0188 NTX184AB02 |
| 0 TAU PHASE 2                                         | BV1861 NTX322AA18 |
| 0 TAU PROCESSING (PHASE 2)                            | BF0618 NTX322AA18 |
| 0 TAU PROCESSING FOR ALARMS, TEST CALLS AND TRUNK     | BF0309 NTX322AA18 |
| 0 TESTING                                             |                   |
| 0 TCAP CP UTILITIES                                   | BC2284 NTX550AA02 |
| 0 TCAP ID MANAGEMENT                                  | BC2282 NTX550AA02 |
| 0 TCAP LINE INFORMATION DATABASE (LIDB) FOR BONG TONE | AM0188 NTXG47AA02 |



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| 0 TCAP PROTOCOL TO NCS/DAP FOR MCI                   | AD3135 NTXL39AA02 |
| 0 TCAP QUERY/RESPONSE & TESTSS FOR AUTHCODE          | AD0693 NTX367BA01 |
| 0 TCM SYNC LOSS ROBUSTNESS                           | AC0617 NTX250AA15 |
| 0 TCN CALL PROCESSING AND EXECs                      | BV2060 NTX360AA03 |
| 0 TCN CALL PROCESSING AND EXECs                      | BV2060 NTX360BA02 |
| 0 TCN LOG ENHANCEMENT                                | AD2351 NTXG23AA01 |
| 0 TCN ON FGD/FGC UNIVERSAL ACCESS                    | AD0133 NTX222AB04 |
| 0 TCN ON FGD/FGC UNIVERSAL ACCESS                    | AD0133 NTX222BA07 |
| 0 TCP/IP AND FTP ENHANCEMENTS                        | AL2276 NTXF05AA03 |
| 0 TCP/IP AND FTP ENHANCEMENTS                        | AL2276 NTXF19AA02 |
| 0 TDC MAINTENANCE FOR TMS                            | AF2161 NTXA83AA02 |
| 0 TEEN SERVICE - SELECTIVE CFW                       | AF0815 NTX219AB03 |
| 0 TEEN SERVICE ENHANCEMENT                           | AF1256 NTX219AB03 |
| 0 TEEN SERVICE ON MDC                                | NC0019 NTXJ47AA01 |
| 0 TEEN SERVICE ON RES                                | AF1442 NTXA64AA05 |
| 0 TEEN SERVICE(ENHANCED RINGING)                     | BR0547 NTX219AB03 |
| 0 TELMEX DELVS                                       | AF4222 NTXH38AA03 |
| 0 TELMEX DELVS                                       | AF4222 NTXR51AA02 |
| 0 TELMEX DELVS                                       | AF4222 NTXR58AA01 |
| 0 TELPORT & CALL PROCESSING ASPECT FOR MAINTENANCE   | AE0391 NTXB85AA01 |
| 0 COEXISTENCE                                        |                   |
| 0 TEN DIGIT GTT FOR CLASS FEATURES                   | AG2035 NTXN11AA01 |
| 0 TERM. DELIMITER SCREENING ON INCOMING IMTS         | BV1963 NTX222CA09 |
| 0 TERM. MEL CALL PROCESSING                          | BV1944 NTX222AM05 |
| 0 TERM. 3J CALL PROCESSING                           | BV1942 NTX222AM05 |
| 0 TERM. 3L CALL PROCESSING                           | BV1943 NTX222AM05 |
| 0 TERMINAL APPLICATION PROCESSORS                    | BF0399 NTX470AA13 |
| 0 TERMINAL APPLICATION PROCESSORS                    | BF0399 NTX485AA03 |
| 0 TERMINAL HANDLING SOFTWARE FOR TOPS MP             | BC2139 NTXA90AA07 |
| 0 TERMINAL HANDLING SOFTWARE FOR TOPS MP             | BC2139 NTX731AA06 |
| 0 TERMINAL TYPES EXTENSION                           | BC1605 NTX001AA29 |
| 0 TERMINAL TYPES EXTENSION                           | BC1605 NTX913AA04 |
| 0 TERMINALS - EVALUTION & STANDARDIZATION            | BR0608 NTX001AA29 |
| 0 TERMINATING ARTER TRUNK TESTING                    | BC1192 NTX475AA01 |
| 0 TERMINATING BILLING OPTION                         | AF1922 NTXE43AA01 |
| 0 TERMINATING CALL PROCESSING SUPERVISION CLEANUP    | AD0501 NTX220AA13 |
| 0 TERMINATING CALL PROCESSING SUPERVISION CLEANUP    | AD0501 NTX220BA06 |
| 0 TERMINATING CALL PROCESSING SUPERVISION CLEANUP    | AD0501 NTX220CA08 |
| 0 TERMINATING DAL CALL PROCESSING                    | BV0764 NTX220AA13 |
| 0 TERMINATING DAL CALL PROCESSING                    | BV0764 NTX220BA06 |
| 0 TERMINATING DAL CALL PROCESSING                    | BV0764 NTX220CA08 |
| 0 TERMINATING LOOP START ONAL                        | BV0765 NTX220AA13 |
| 0 TERMINATING LOOP START ONAL                        | BV0765 NTX220BA06 |
| 0 TERMINATING LOOP START ONAL                        | BV0765 NTX220CA08 |
| 0 TERMINATING NPA IN AMA RECORDS                     | BC0991 NTX001AA29 |
| 0 TERMINATING QUIET TERMINATION AND LOOP AROUND TEST | BC2076 NTX483AA03 |
| 0 LINES                                              |                   |

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| 0 TERMINATING QUIET TERMINATION AND LOOP AROUND TEST  | BC2076 | NTX483AB01 |
| 0 LINES                                               |        |            |
| 0 TERMINATING TRUNK GROUP USAGE                       | NC0248 | NTXP08AA01 |
| 0 TEST ACCESS NETWORK                                 | BT0040 | NTX001AA29 |
| 0 TEST ACCESS OF INDIVIDUAL LINES IN A HUNT GROUP     | BR0585 | NTXZ02AA01 |
| 0 TEST ACCESS OF INDIVIDUAL LINES IN A HUNT GROUP     | BR0585 | NTX901AA24 |
| 0 TEST ASSIGNED/UNASSIGNED LEN (HOST & RLM)           | BR0493 | NTXZ02AA01 |
| 0 TEST ASSIGNED/UNASSIGNED LEN (HOST & RLM)           | BR0493 | NTX901AA24 |
| 0 TEST DESK ROBUSTNESS.                               | AF2599 | NTXZ02AA01 |
| 0 TEST DESK ROBUSTNESS.                               | AF2599 | NTX901AA24 |
| 0 TEST HEADS MULTIPLE BADGER                          | BR0128 | NTXZ02AA01 |
| 0 TEST HEADS MULTIPLE BADGER                          | BR0128 | NTX901AA24 |
| 0 TEST LINES: LOOP AROUND                             | BR0281 | NTXZ02AA01 |
| 0 TEST LINES: LOOP AROUND                             | BR0281 | NTX801AA01 |
| 0 TEST LINES: LOOP AROUND                             | BR0281 | NTX901AA24 |
| 0 TEST TERMINATIONS FOR ATR                           | BV1706 | NTX351BA02 |
| 0 TEST TERMINATIONS FOR ATR                           | BV1706 | NTX351CA02 |
| 0 TESTING POF WITH TABLE AUTHCODE                     | BT0404 | NTX220AA13 |
| 0 TESTING POF WITH TABLE AUTHCODE                     | BT0404 | NTX220BA06 |
| 0 TESTING POF WITH TABLE AUTHCODE                     | BT0404 | NTX220CA08 |
| 0 TESTLINES FOR BTUP, TUP+, AND TUPE                  | AE0748 | NTXH40AA03 |
| 0 TESTLINES FOR THE COEXISTENCE SWITCH                | AE0481 | NTXB21AA01 |
| 0 TEXT EDITOR FOR SOS                                 | BS0007 | NTX183AA05 |
| 0 TGB/TAC ACCESS THRU SPECIAL KEY                     | BC0510 | NTXZ00AA01 |
| 0 TGB/TAC ACCESS THRU SPECIAL KEY                     | BC0510 | NTX100AA27 |
| 0 THREE WAY CALLING                                   | AD2599 | NTXG43AA05 |
| 0 THREE WAY CALLING                                   | BC0180 | NTX020AA01 |
| 0 THREE WAY CALLING                                   | BV0066 | NTX020AA01 |
| 0 THREE WAY CALLING                                   | BC0180 | NTX020AB03 |
| 0 THREE WAY CALLING                                   | BV0066 | NTX020AB03 |
| 0 THREE WAY CALLING                                   | BC0180 | NTX020AC01 |
| 0 THREE WAY CALLING                                   | BV0066 | NTX020AC01 |
| 0 THREE WAY CALLING                                   | BC0180 | NTX804AA02 |
| 0 THREE WAY CALLING                                   | BV0066 | NTX804AA02 |
| 0 THREE WAY CALLING (SEE C0181)                       | BR0231 | NTX020AA01 |
| 0 THREE WAY CALLING (SEE C0181)                       | BR0231 | NTX020AB03 |
| 0 THREE WAY CALLING (SEE C0181)                       | BR0231 | NTX020AC01 |
| 0 THREE WAY CALLING (SEE C0181)                       | BR0231 | NTX804AA02 |
| 0 THRESHOLD ON PERMANENT SIGNALS(LINE CABLE FAILURES) | BR0235 | NTXZ02AA01 |
| 0 THRESHOLD ON PERMANENT SIGNALS(LINE CABLE FAILURES) | BV0076 | NTXZ02AA01 |
| 0 THRESHOLD ON PERMANENT SIGNALS(LINE CABLE FAILURES) | BR0235 | NTX901AA24 |
| 0 THRESHOLD ON PERMANENT SIGNALS(LINE CABLE FAILURES) | BV0076 | NTX901AA24 |
| 0 THRESHOLDING & EXCEPTION REPORTING (15MIN)          | BC0104 | NTX053AA05 |
| 0 THRESHOLDING AND EXCEPTION REPORTING                | BV0002 | NTX053AA05 |
| 0 THRESHOLDING OF CRITICAL RESOURCES (MFR,DTR,LINES)  | BV0022 | NTX001AA29 |
| 0 THROUGH DIALLING                                    | BV0491 | NTXZ00AA01 |
| 0 THROUGH DIALLING                                    | BV0491 | NTX100AA27 |

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| 0 TIME & CHARGE MODIFICATIONS                 | AD2893 | NTXJ55AA02 |
| 0 TIME AND CHARGE SUBS LINE CLASS             | BR0189 | NTX049AE01 |
| 0 TIME AND CHARGES                            | BV0163 | NTX030CC16 |
| 0 TIME AND CHARGES                            | BV0297 | NTX030CC16 |
| 0 TIME AND CHARGES                            | BV0335 | NTX030CC16 |
| 0 TIME AND CHARGES                            | BR0334 | NTX030CC16 |
| 0 TIME AND CHARGES SUBSCRIBER LINE CLASS      | BR0078 | NTX049AE01 |
| 0 TIME OF DAY ( TOD ) ROUTING                 | BV0644 | NTX227AA01 |
| 0 TIME OF DAY ( TOD ) ROUTING                 | BV0644 | NTX227BA01 |
| 0 TIME OF DAY ( TOD ) ROUTING                 | BV0644 | NTX227CA01 |
| 0 TIME OF DAY ( TOD ) ROUTING                 | BV0644 | NTX322AA18 |
| 0 TIME OF DAY FOR MESSAGE SWITCH              | BC2308 | NTX951AA08 |
| 0 TIME OF DAY NCOS                            | BV0791 | NTX434AA01 |
| 0 TIME OF DAY ROUTING                         | BV1136 | NTXP55AA01 |
| 0 TIME OF DAY ROUTING                         | BV1136 | NTXP55AB01 |
| 0 TIME OF DAY ROUTING                         | BV1136 | NTX022AB01 |
| 0 TIME OF DAY ROUTING                         | BV1136 | NTX022AC01 |
| 0 TIME OF DAY ROUTING                         | BV1136 | NTX433AA01 |
| 0 TIME OF DAY ROUTING                         | BV1136 | NTX488AA01 |
| 0 TIME OF DAY SUPPORT FOR ENHANCED CORE       | BC1909 | NTXF70AA01 |
| 0 TIME OF DAY SUPPORT FOR ENHANCED CORE       | BC1909 | NTX941AA12 |
| 0 TIP AND RING COIN CONTROL                   | BR0236 | NTXZ02AA01 |
| 0 TIP AND RING COIN CONTROL                   | BR0236 | NTX901AA24 |
| 0 TMS BASE CHANGES FOR TMS NETWORKING.        | AF2597 | NTXA83AA02 |
| 0 TMS BASE MAINTENANCE (PP)                   | AF1472 | NTXA83AA02 |
| 0 TMS DA/ORDB PRODUCT VERIFICATION            | AF2394 | NTXA83AA02 |
| 0 TMS DATAFILL FOR INTRA TMS NETWORKING.      | AF2592 | NTXN55AA01 |
| 0 TMS ISP ROUTER (PP)                         | AF2110 | NTXA83AA02 |
| 0 TMS MAINTENANCE HOOKS (CC)                  | AF1652 | NTXA83AA02 |
| 0 TMS OM                                      | AF2409 | NTXA83AA02 |
| 0 TMS PROTOCOL ADMIN/ROUTER (PP)              | AF1473 | NTXA83AA02 |
| 0 TMS ROUTE TABLE LOADER (PP)                 | AF1581 | NTXA83AA02 |
| 0 TMS STATIC DATA(CC)                         | AF1728 | NTXA83AA02 |
| 0 TMS STATIC DATA/ROUTE TABLE MANAGEMENT (PP) | AF1474 | NTXA83AA02 |
| 0 TMS SWACT/DCH MEMORY MAINTENANCE (PP)       | AF1993 | NTXA83AA02 |
| 0 TMS TDC MAINTENANCE (PP)                    | AF1214 | NTXA83AA02 |
| 0 TMS X.25 BASE (PP)                          | AF1471 | NTXA83AA02 |
| 0 TOLL BREAK IN - BACKGROUND TONE             | AE0244 | NTX492AA03 |
| 0 TOLL BREAK IN FOR CHINA - DMS-100           | AG0710 | NTXB14AA02 |
| 0 TOLL BREAK-IN MAP SIGNALLING COMMAND        | AE0245 | NTX492AA03 |
| 0 TOLL CALL FORWARDING ENHANCEMENTS           | BR0469 | NTX020AB03 |
| 0 TOLL CALL FORWARDING ENHANCEMENTS           | BR0469 | NTX020AC01 |
| 0 TOLL CALL FORWARDING ENHANCEMENTS           | BR0469 | NTX804AA02 |
| 0 TOLL CALL RECORDING                         | BC2050 | NTX494AA03 |
| 0 TOLL COMPLETING TRUNK (DP/MF) (A/D)         | BT0033 | NTX801AA01 |
| 0 TOLL CONNECTING TRUNK (DP/MF) (A/D)         | BT0032 | NTX001AA29 |
| 0 TOLL CONNECTING TRUNK (DP/MF) (A/D)         | BT0032 | NTX801AA01 |

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| 0 TOLL DENIAL                                             | BT0055 NTX007AA02 |
| 0 TOLL DENIAL                                             | BT0055 NTX007AB02 |
| 0 TOLL DENIAL                                             | BT0055 NTX804AA02 |
| 0 TOLL DIVERSION ENHANCEMENTS                             | BR0519 NTXZ02AA01 |
| 0 TOLL DIVERSION ENHANCEMENTS                             | BR0519 NTX901AA24 |
| 0 TOLL DIVERT                                             | BT0056 NTXZ02AA01 |
| 0 TOLL DIVERT                                             | BT0056 NTX007AA02 |
| 0 TOLL DIVERT                                             | BT0056 NTX901AA24 |
| 0 TOLL FREE CALLS                                         | BV0553 NTX030CC16 |
| 0 TOLL NETWORK PROTECTION                                 | BV0030 NTXZ03AA01 |
| 0 TOLL NETWORK PROTECTION                                 | BV0030 NTX902AA07 |
| 0 TOLL TRANSLATION AND SCREENING                          | BT0183 NTX001AA29 |
| 0 TOLL TRANSLATION AND SCREENING                          | BT0183 NTX801AA01 |
| 0 TONE TO PULSE CONVERTER DISABLE FOR UNIVERSAL ACCESS    | AD0129 NTX222AB04 |
| 0 TONE TO PULSE CONVERTER DISABLE FOR UNIVERSAL ACCESS    | AD0129 NTX222BA07 |
| 0 TONES                                                   | BT0029 NTX001AA29 |
| 0 TONES AND ANNOUNCEMENTS                                 | BT0326 NTX001AA29 |
| 0 TONES FOR JAPAN SMS LINE CALL PROCESSING                | AG2197 NTXH86AA01 |
| 0 TONES FOR JAPAN SMS LINE CALL PROCESSING                | AG2197 NTXH86AB01 |
| 0 TONES OPTIONALITY                                       | AE0200 NTX270AA19 |
| 0 TONES OPTIONALITY                                       | AE0200 NTX612AA04 |
| 0 TOPS - ADMINISTRATION - 1200 BAUD PRINTERS              | AJ0388 NTX030CC16 |
| 0 TOPS - AMA RECORDS OF VERIFICATION                      | BV1345 NTX030CC16 |
| 0 TOPS - COLLECT ONLY ORIGINATING CLASS                   | BR0527 NTX030CC16 |
| 0 TOPS - CREDIT CARD DIGIT CHECK                          | BR0581 NTX394AA01 |
| 0 TOPS - EXCHANGE ACCESS OPERATOR SERVICES SIGNALLING     | AF0719 NTX891AA02 |
| 0 TOPS - EXPANDED INBAND COIN CONTROL                     | BC1147 NTX030CC16 |
| 0 TOPS - KEY FUNCTION CHANGES TO MINIMIZE MISBILLED CALLS | BV1343 NTX030CC16 |
| 0 TOPS - VERIFICATION SCRAMBLING & TONE OPTIONS           | BV1347 NTX030CC16 |
| 0 TOPS ACCS ANNOUNCEMENT VOICEMAIL                        | AG0722 NTX552AB03 |
| 0 TOPS ACCS ANNOUNCEMENT VOICEMAIL                        | AG0722 NTX552AC02 |
| 0 TOPS ACCS ANNOUNCEMENT VOICEMAIL                        | AG0722 NTX552AD01 |
| 0 TOPS ALTERNATE MCCS ANNOUNCEMENT                        | AL0417 NTX850AA01 |
| 0 TOPS ALTERNATE MCCS ANNOUNCEMENT                        | AL0417 NTX850AB01 |
| 0 TOPS AMA ON OPERATOR SEQUENCE CALLS                     | AF1103 NTXA28AA02 |
| 0 TOPS AUXILIARY OPERATOR SERVICES SYSTEM (AOSS)          | BV1131 NTX131AA01 |
| 0 TOPS BASE CHANGES                                       | AF1784 NTX030CC16 |
| 0 TOPS BASE MMI CHANGES                                   | AF1076 NTX030CC16 |
| 0 TOPS BASE MMI MODIFICATIONS                             | AF1427 NTX030CC16 |
| 0 TOPS BILINGUAL MMI FOR DEVICES                          | AG0721 NTX030BA03 |
| 0 TOPS CALL CODE 009 FOR DA                               | AL0420 NTX188AA02 |
| 0 TOPS CC CALLP TMS INTERFACE                             | AF1785 NTX030CC16 |
| 0 TOPS COIN TIMING                                        | AF0073 NTX030CC16 |
| 0 TOPS CROSSBAR SIGNALLING                                | AF0720 NTX030CC16 |

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| 0 TOPS DATA AND VOICE LINK UTILITIES                  | AF1527 | NTX030CC16 |
| 0 TOPS EA 4X OPERATION                                | BR0635 | NTX187AA03 |
| 0 TOPS EXPANDED BELLCORE AMA FORMAT                   | AF1726 | NTXE20AA01 |
| 0 TOPS EXPANDED BELLCORE AMA FORMAT (EBAF) EXTENSIONS | AF1715 | NTXE18AA01 |
| 0 TOPS EXPANDED CALLING CARD FORMAT -- CSS7           | AF2020 | NTXE72AA01 |
| 0 VALIDATION                                          |        |            |
| 0 TOPS FGB CALL CODE 134                              | AF1100 | NTX187AA03 |
| 0 TOPS GLOBALIZATION AMA                              | AF4166 | NTXH38AA03 |
| 0 TOPS HANDLING 6000C ANI ASSIST CALLS                | BC1890 | NTX241AA01 |
| 0 TOPS INCOMING FEATURE GROUP D SIGNALLING            | AF1102 | NTXA26AA01 |
| 0 TOPS INTERLATA CARRIER SERVICE                      | AF0072 | NTX714AA01 |
| 0 TOPS INTERNATIONAL TELEPHONE CREDIT CARD (CC        | AG1447 | NTXE68AA01 |
| 0 TOPS OC CROSS PROCESSOR CHANGES                     | BC0564 | NTXA60AA02 |
| 0 TOPS OC CROSS PROCESSOR CHANGES                     | BC0564 | NTX039AA01 |
| 0 TOPS OC CROSS PROCESSOR CHANGES                     | BC0564 | NTX134BA02 |
| 0 TOPS OC SETUP PROCESSOR CHANGES                     | BC0565 | NTXA60AA02 |
| 0 TOPS OC SETUP PROCESSOR CHANGES                     | BC0565 | NTX030CC16 |
| 0 TOPS OC SETUP PROCESSOR CHANGES                     | BC0565 | NTX039AA01 |
| 0 TOPS OC SETUP PROCESSOR CHANGES                     | BC0565 | NTX134BA02 |
| 0 TOPS OM ENHANCEMENTS-PHASE II                       | AF0145 | NTX030CC16 |
| 0 TOPS OPEN INFORMATION ACCESS (OIA)                  | AF1095 | NTXA20AA01 |
| 0 TOPS OPEN NUMBERING PLAN II                         | AF4167 | NTXH38AA03 |
| 0 TOPS OPERATIONAL MEASUREMENTS ENHANCEMENTS          | AF0075 | NTX030CC16 |
| 0 TOPS OPERATOR PASSWORD                              | AG0931 | NTXE00AA01 |
| 0 TOPS PERSONAL AUDIO RESPONSE SYSTEM (CC)            | NC0003 | NTXJ37AA01 |
| 0 TOPS REALTIME ENHANCEMENTS                          | AF0146 | NTX030CC16 |
| 0 TOPS SCREEN AND BELLCORE AMA EXPANDED CALLING CARD  | AF2017 | NTXE68AA01 |
| 0 TOPS SERVICE ANALYSIS ENHANCEMENTS                  | NC0052 | NTX065AA12 |
| 0 TOPS SERVICE BILLING                                | BR0622 | NTX645AA01 |
| 0 TOPS SERVICE NUMBER ROUTING                         | AJ0167 | NTXE04AA02 |
| 0 TOPS SERVICE NUMBER ROUTING - PREP                  | AG0933 | NTXE04AA02 |
| 0 TOPS SERVICE NUMBER ROUTING ON MP                   | AF3023 | NTXE04AA02 |
| 0 TOPS TRUNKS INTERWORKING WITH CCS7 TRUNKS.          | AF2331 | NTXE14AB03 |
| 0 TOPS V INTERFACE-INCHARGE,ASSISTANT,FORCE MGNT      | BC2144 | NTX724AA02 |
| 0 POSITIONS                                           |        |            |
| 0 TOPS V OPERATOR POSITION INTERFACE                  | BC2143 | NTX724AA02 |
| 0 TOPS-MP: INTERNAL VOICE RESPONSE CAPABILITY         | AJ1130 | NTXN51AA01 |
| 0 TOPS/SSP INTERWORKING FOR 800+ CALLS                | AL0668 | NTX555AB01 |
| 0 TOPS/250 EQUAL ACCESS (PHASE 1)                     | BV1387 | NTX222CA09 |
| 0 TOPS/250 MULTI-TENANT TRUNK OMS                     | BV1400 | NTX222CA09 |
| 0 TOPS_MP FOLDBACK:DA QUEUEING                        | AF0476 | NTX030CC16 |
| 0 TOPS_MP FOLDBACK:FORCE MANAGEMENT                   | AF0477 | NTX030CC16 |
| 0 TOPS_MP FOLDBACK:KEY FUNCTIONS AND SCREEN UPDATES   | AF0482 | NTX030CC16 |
| 0 TOPS_MP FOLDBACK:OGT KEYS/XFR KEYS                  | AF0479 | NTX030CC16 |
| 0 TOPS_MP FOLDBACK:TRUNKING                           | AF0478 | NTX030CC16 |
| 0 TOPS: TERMINATING CODE SCREENING                    | NC0021 | NTX552AB03 |
| 0 TOPS: TERMINATING CODE SCREENING                    | NC0021 | NTX552AC02 |

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| 0 TOPS: TERMINATING CODE SCREENING                    | NC0021 NTX552AD01 |
| 0 TOPSMPVR FOLDBACK: ARU & DATALINK                   | AF0739 NTXA62AA01 |
| 0 TOPSMPVR FOLDBACK: ARU CALLP                        | AF0742 NTXA62AA01 |
| 0 TOPSMPVR FOLDBACK: CALL PROCESSING                  | AF0741 NTXA62AA01 |
| 0 TOPSMPVR FOLDBACK: FORCE MANAGEMENT                 | AF0740 NTXA62AA01 |
| 0 TOPSMPVR FOLDBACK: HOOKS, SIMULATOR, & CCI PROTOCOL | AF0738 NTXA63AA01 |
| 0 TOTAL CALLS SUMMARY ON AMA RECORD                   | BR0080 NTX042AA04 |
| 0 TOTAL CALLS SUMMARY ON AMA RECORD                   | BR0080 NTX044AA04 |
| 0 TOUCH TONE TESTING - EXTERNAL FACILITIES            | BV0034 NTXZ02AA01 |
| 0 TOUCH TONE TESTING - EXTERNAL FACILITIES            | BV0034 NTX901AA24 |
| 0 TPC ADMINISTRATION                                  | BC2158 NTXA90AA07 |
| 0 TPC ADMINISTRATION                                  | BC2158 NTX731AA06 |
| 0 TPC CCI DA APPLICATION MESSAGING                    | AF0970 NTXA91AA02 |
| 0 TPC DEBUG TERMINAL HANDLER                          | BC2146 NTXA90AA07 |
| 0 TPC DEBUG TERMINAL HANDLER                          | BC2146 NTX731AA06 |
| 0 TPC DIAGNOSTIC ENHANCEMENTS                         | AF0744 NTXA90AA07 |
| 0 TPC DIAGNOSTIC ENHANCEMENTS                         | AF0744 NTX731AA06 |
| 0 TPC DIAGNOSTICS                                     | BC2141 NTXA90AA07 |
| 0 TPC DIAGNOSTICS                                     | BC2141 NTX731AA06 |
| 0 TPC DIRECTORY ASSISTANCE APPLICATION                | AF0540 NTXA91AA02 |
| 0 TPC DRIVERS                                         | BC2142 NTXA90AA07 |
| 0 TPC DRIVERS                                         | BC2142 NTX731AA06 |
| 0 TPC ENHANCEMENT FOR GLOBALIZATION                   | AF4168 NTXA90AA07 |
| 0 TPC HSDA DIAGNOSTICS                                | AF1723 NTXA90AA07 |
| 0 TPC HSDA DOWNLOAD SERVER                            | AF0534 NTXA90AA07 |
| 0 TPC HSDA DRIVER                                     | AF0535 NTXA90AA07 |
| 0 TPC HSDA MAINTENANCE SERVER                         | AF0536 NTXA90AA07 |
| 0 TPC HSDA MMI                                        | AF1318 NTXA90AA07 |
| 0 TPC HSDA MTC ENHANCEMENTS                           | AF1998 NTXA90AA07 |
| 0 TPC HSDA MTC ENHANCEMENTS                           | AF1998 NTX731AA06 |
| 0 TPC HSLI SOFTWARE ENHANCEMENTS                      | AF1426 NTXA90AA07 |
| 0 TPC HSLI SOFTWARE ENHANCEMENTS                      | AF1426 NTX731AA06 |
| 0 TPC IBM DA APPLICATION                              | AF2261 NTXN29AA01 |
| 0 TPC IBM DA APPLICATION MESSAGING                    | AF2262 NTXN29AA01 |
| 0 TPC INTEGRATED MAINTENANCE                          | AF1802 NTXA90AA07 |
| 0 TPC INTEGRATED MP DIAGNOSTICS                       | AF1975 NTXA90AA07 |
| 0 TPC INTEGRATED TAMI ENHANCEMENTS                    | AF1974 NTXA90AA07 |
| 0 TPC INTEGRATED TAMI ENHANCEMENTS                    | AF1974 NTX731AA06 |
| 0 TPC MASS STORAGE SCSI SUPPORT                       | AF1563 NTXA90AA07 |
| 0 TPC MASS STORAGE SCSI SUPPORT                       | AF1563 NTX731AA06 |
| 0 TPC MESSAGE HANDLER                                 | AF1319 NTXA90AA07 |
| 0 TPC MESSAGING SYSTEM                                | AF0746 NTXA90AA07 |
| 0 TPC MP GREY SCALE ENHANCEMENTS                      | AF2085 NTXA90AA07 |
| 0 TPC MP GREY SCALE ENHANCEMENTS                      | AF2085 NTX731AA06 |
| 0 TPC MP SERVICES INTERWORKING                        | AF0547 NTXA90AA07 |
| 0 TPC OPERATOR HANDOFF TO AABS                        | AF2378 NTXA90AA07 |
| 0 TPC OPERATOR HANDOFF TO AABS                        | AF2378 NTX731AA06 |

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| 0 TPC SA LOGON ENHANCEMENTS                                  | AF2374 NTXA90AA07 |
| 0 TPC SA LOGON ENHANCEMENTS                                  | AF2374 NTX731AA06 |
| 0 TPC SYSTEM SUPPORT                                         | BC2157 NTXA90AA07 |
| 0 TPC SYSTEM SUPPORT                                         | BC2157 NTX731AA06 |
| 0 TPC TAMI ENHANCEMENTS                                      | AF1317 NTXA90AA07 |
| 0 TPC TAMI ENHANCEMENTS                                      | AF1909 NTXA90AA07 |
| 0 TPC TAMI ENHANCEMENTS                                      | AF1909 NTX731AA06 |
| 0 TPC TUTOR INTERFACE                                        | BC2145 NTXA90AA07 |
| 0 TPC TUTOR INTERFACE                                        | BC2145 NTX731AA06 |
| 0 TPC-CC MESSAGING VIA HSDA                                  | AF1699 NTXA90AA07 |
| 0 TPC/MP DATAFILL FOR TMS                                    | AF1687 NTXA83AA02 |
| 0 TPS ROBUSTNESS AND PERFORMANCE IMPROVEMENTS                | AI0126 NTXF71AA01 |
| 0 TPS ROBUSTNESS AND PERFORMANCE IMPROVEMENTS                | AI0126 NTX833AB01 |
| 0 TPS 3.5 (SOS)                                              | AI0051 NTXF71AA01 |
| 0 TPS 3.5 (SOS)                                              | AI0051 NTX833AB01 |
| 0 TR-444 COMPLIANCE (PART 2)                                 | AG2211 NTX757AA02 |
| 0 TR-444 COMPLIANCE (PART 2)                                 | AG2211 NTX769AA01 |
| 0 TR-448 COMPLIANCE (PART 2)                                 | AG2210 NTX767AA03 |
| 0 TR-448 COMPLIANCE (PART 2)                                 | AG2210 NTX768AA02 |
| 0 TR-82 OM COMPLIANCE                                        | AL1794 NTX833AB01 |
| 0 TR-860 TERMINAL PORTABILITY                                | AF3243 NTX755AB01 |
| 0 TR-860 TERMINAL PORTABILITY                                | AF3243 NTX755AC01 |
| 0 TRAF SEP DESTINATION DATA                                  | BC0393 NTX001AA29 |
| 0 TRAF SEP DESTINATION DATA                                  | BC0393 NTX085AA05 |
| 0 TRAFFIC SAMPLING                                           | BV0290 NTX030BA03 |
| 0 TRANSACTOR AND CALL PROCESSING FOR METERED COIN<br>0 LINES | BF0677 NTXH22AA01 |
| 0 TRANSACTOR AND CALL PROCESSING FOR METERED COIN<br>0 LINES | BF0677 NTX474AA07 |
| 0 TRANSFER CALLS TO RESTRICTED STATION                       | AF1935 NTX100AA27 |
| 0 TRANSIENT ROAMERS                                          | BV1187 NTX220AA13 |
| 0 TRANSIENT ROAMERS                                          | BV1187 NTX220BA06 |
| 0 TRANSIENT ROAMERS                                          | BV1187 NTX220CA08 |
| 0 TRANSIENT ROAMERS                                          | BV1187 NTX322AA18 |
| 0 TRANSITING BT7 OPERATOR MESSAGES                           | AE0729 NTXK96AA01 |
| 0 TRANSITING BT7 OPERATOR MESSAGES                           | AE0729 NTX937AA06 |
| 0 TRANSITING BT7 OPERATOR MESSAGES                           | AE0729 NTX937AB01 |
| 0 TRANSLATION AND ROUTING                                    | BC1702 NTX710AA02 |
| 0 TRANSLATION AND ROUTING                                    | BC1702 NTX710AB01 |
| 0 TRANSLATION AND SCREENING                                  | BT0030 NTXZ02AA01 |
| 0 TRANSLATION AND SCREENING                                  | BT0030 NTX001AA29 |
| 0 TRANSLATION AND SCREENING                                  | BT0030 NTX801AA01 |
| 0 TRANSLATION AND SCREENING                                  | BT0030 NTX901AA24 |
| 0 TRANSLATION NAME TO AND FROM PARTITION DATABASE            | BV1936 NTX222AM05 |
| 0 TRANSLATION VERIFICATION                                   | BV0724 NTX055AB03 |
| 0 TRANSLATION VERIFICATION                                   | BV1191 NTX055AB03 |
| 0 TRANSLATION VERIFICATION                                   | BV0724 NTX239AA02 |

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| 0 TRANSLATION VERIFICATION                       | BV1191 NTX239AA02 |
| 0 TRANSLATION VERIFICATION                       | BV0724 NTX239BA02 |
| 0 TRANSLATION VERIFICATION                       | BV1191 NTX239BA02 |
| 0 TRANSLATION VERIFICATION                       | BV0724 NTX239CA01 |
| 0 TRANSLATION VERIFICATION                       | BV1191 NTX239CA01 |
| 0 TRANSLATION VERIFICATION - TRUNKS              | BR0223 NTX055AB03 |
| 0 TRANSLATION VERIFICATION - TRUNKS              | BR0223 NTX980AA01 |
| 0 TRANSLATION VERIFICATION ENHANCEMENT           | BV1303 NTX239AA02 |
| 0 TRANSLATION VERIFICATION ENHANCEMENT           | BV1303 NTX239BA02 |
| 0 TRANSLATION VERIFICATION ENHANCEMENT           | BV1303 NTX239CA01 |
| 0 TRANSLATION VERIFICATION FOR TOD ROUTES        | BC1825 NTX488AA01 |
| 0 TRANSLATION VERIFICATION FOR USTS              | BV1215 NTX055AB03 |
| 0 TRANSLATION VERIFICATION FOR USTS              | BV1215 NTX239AA02 |
| 0 TRANSLATION VERIFICATION FOR USTS              | BV1215 NTX239BA02 |
| 0 TRANSLATION VERIFICATION FOR USTS              | BV1215 NTX239CA01 |
| 0 TRANSLATIONS FOR CEP                           | BC2059 NTX496AA03 |
| 0 TRANSLATIONS FOR MCI'S VIRTUAL PRIVATE NETWORK | BV1869 NTX353AA04 |
| 0 TRANSLATIONS FOR MCI'S VIRTUAL PRIVATE NETWORK | BV1869 NTX353CA05 |
| 0 TRANSLATIONS FOR TERMINATING VPN CALLS         | BV1931 NTX353AA04 |
| 0 TRANSLATIONS FOR TERMINATING VPN CALLS         | BV1931 NTX353CA05 |
| 0 TRANSLATIONS FOR TWO STAGE OUTPUTS             | BV1989 NTX496AA03 |
| 0 TRANSPORT LAYER - DVS                          | AD1273 NTXG09AA03 |
| 0 TRANSPORT LAYER - DVS                          | AD1273 NTXG09CA01 |
| 0 TRAP & RESTART COUNTER MANAGEMENT              | BC1446 NTX001AA29 |
| 0 TRAPINFO ENHANCEMENT                           | AG0695 NTX001AA29 |
| 0 TRAVEL CARD ENHANCEMENTS FOR 2.3               | AD1174 NTX364BA02 |
| 0 TRAVEL CARD REORIGINATING USING STR            | AD0061 NTX360AA03 |
| 0 TRAVEL CARD REORIGINATING USING STR            | AD0061 NTX360BA02 |
| 0 TRAVELCARD CALL PROCESSING UPGRADE FOR CAC I/F | AD0084 NTX360AA03 |
| 0 TRAVELCARD CALL PROCESSING UPGRADE FOR CAC I/F | AD0084 NTX360BA02 |
| 0 TRAVER ENHANCEMENT                             | BC0693 NTX055AB03 |
| 0 TRAVER ENHANCEMENT                             | BC0693 NTX980AA01 |
| 0 TRAVER ENHANCEMENTS - PHASE 1                  | AD2353 NTX239BA02 |
| 0 TRAVER ENHANCEMENTS TYPE XIII                  | BV1957 NTX222AM05 |
| 0 TREATMENT AFTER ATD DEFAULT TIMING EXPIRES     | BV2062 NTX222AB04 |
| 0 TREATMENT AFTER ATD DEFAULT TIMING EXPIRES     | BV2062 NTX222BA07 |
| 0 TREATMENT AND LOG ENHANCEMENTS                 | AD3334 NTXL84AA01 |
| 0 TREATMENT ENHANCEMENTS FOR THE DMS-250         | AD0309 NTX222AB04 |
| 0 TREATMENT ENHANCEMENTS FOR THE DMS-250         | AD0309 NTX222BA07 |
| 0 TREATMENT OMS - SEPARATE CATEGORIES            | BR0660 NTX001AA29 |
| 0 TRUNK ACCESS MEASUREMENTS                      | AG0917 NTX270AA19 |
| 0 TRUNK AND CALLATTR TABLE ROBUSTNESS            | AM0187 NTX222BA07 |
| 0 TRUNK ASPECT FOR DATA LINK                     | BV1727 NTX322AA18 |
| 0 TRUNK BUSY VERIFY TONE                         | BC1246 NTXZ00AA01 |
| 0 TRUNK BUSY VERIFY TONE                         | BC1246 NTX100AA27 |
| 0 TRUNK DATA BASE QUERIES                        | BR0221 NTX001AA29 |
| 0 TRUNK DATA INVENTORY QUERIES                   | BV0038 NTX001AA29 |



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| 0 TRUNK DATA MODIFICATIONS                           | BC1190 NTX470AA13 |
| 0 TRUNK GROUP AND CLLI NAME ANALYSIS TOOL            | AD2632 NTXG34AA01 |
| 0 TRUNK GROUP BUSY THRESHOLD INDICATORS              | BV1550 NTX601BA06 |
| 0 TRUNK GROUP CONTROL IDENTIFIERS                    | AF0180 NTX455AB01 |
| 0 TRUNK GROUP EXPANSION TO 8K                        | AD2997 NTX001AA29 |
| 0 TRUNK GROUP PROGRAMMABLE TIMERS - GENERAL          | AD0083 NTX220AA13 |
| 0 TRUNK GROUP PROGRAMMABLE TIMERS - GENERAL          | AD0083 NTX220BA06 |
| 0 TRUNK GROUP PROGRAMMABLE TIMERS - GENERAL          | AD0083 NTX220CA08 |
| 0 TRUNK GROUP TABLE ENHANCEMENTS AND CLEANUP FOR MCI | AD2021 NTX222CA09 |
| 0 TRUNK GROUP TABLES FOR PRA                         | AC0268 NTX790AC02 |
| 0 TRUNK GROUP UTILIZATION ENHANCEMENTS               | AD2236 NTXG40AA02 |
| 0 TRUNK GROUP/SUBGROUP DB FOR INTERNATIONAL DMS250   | AD1820 NTXG60AA02 |
| 0 TRUNK GRP DATA BASE                                | BV1281 NTX220AA13 |
| 0 TRUNK GRP DATA BASE                                | BV1281 NTX220BA06 |
| 0 TRUNK GRP DATA BASE                                | BV1281 NTX220CA08 |
| 0 TRUNK I/F TO AE NO. 31 SWITCHBOARD                 | BR0135 NTX001AA29 |
| 0 TRUNK IDENTIFIER IN AMA/SMDR RECORD                | BR0156 NTX076AA01 |
| 0 TRUNK IDENTIFIER IN AMA/SMDR RECORD                | BR0156 NTX102AA05 |
| 0 TRUNK IDLE PRIMITIVE FOR DTCEX LINE-UP             | AG0126 NTX001AA29 |
| 0 TRUNK IRREGULARITIES                               | BT0334 NTX001AA29 |
| 0 TRUNK IRREGULARITIES                               | BT0334 NTX053AA05 |
| 0 TRUNK MAINTENANCE                                  | BF0560 NTX470AA13 |
| 0 TRUNK MAINTENANCE COEXISTENCE                      | AE0390 NTXB85AA01 |
| 0 TRUNK MONITOR (CONFERENCE CIRCUIT)                 | BR0245 NTX055AA03 |
| 0 TRUNK OOS FOR DATA CHANGE                          | BR0377 NTX001AA29 |
| 0 TRUNK RTS ENHANCEMENT                              | AL0479 NTX001AA29 |
| 0 TRUNK RTS ENHANCEMENTS II                          | AJ0729 NTX001AA29 |
| 0 TRUNK RTS SPEED UP-PHASE I                         | BF0938 NTX001AA29 |
| 0 TRUNK RTS SPEED UP-PHASE II                        | BF0939 NTX001AA29 |
| 0 TRUNK SELECTION IN DMS250 SA                       | BV1153 NTX220AA13 |
| 0 TRUNK SELECTION IN DMS250 SA                       | BV1153 NTX320AA01 |
| 0 TRUNK SIGNAL TIMING CHANGES                        | BC0821 NTX001AA29 |
| 0 TRUNK SUPERVISION OVER DTC SWACT                   | AG0079 NTX001AA29 |
| 0 TRUNK SUPERVISION OVER DTC SWACT - PREPATORY       | BC2330 NTX001AA29 |
| 0 TRUNK TEST CALL (LOOP RF)                          | BV1234 NTX220AA13 |
| 0 TRUNK TEST CALL (LOOP RF)                          | BV1234 NTX220BA06 |
| 0 TRUNK TEST CALL (LOOP RF)                          | BV1234 NTX220CA08 |
| 0 TRUNK TEST CALL (LOOP RF)                          | BV1234 NTX322AA18 |
| 0 TRUNK TESTING                                      | BV0107 NTX701BA08 |
| 0 TRUNK TESTS FOR BST VOICE CHANNEL                  | AD2212 NTXG52AA04 |
| 0 TRUNK TESTS FOR BST VOICE CHANNEL                  | AD2212 NTXG80AA03 |
| 0 TRUNK VERIFICATION FROM DESIGNATED STATION         | BR0727 NTX717AA01 |
| 0 TRUNK VERIFICATION FROM DESIGNATED STATION         | BR0727 NTX717AB01 |
| 0 TRUNKS WITH MCT (1 SYSTEM)                         | BC1496 NTX484AA01 |
| 0 TR268 ADDRESS INFORMATION COMPLIANCE               | AJ0814 NTX753AA06 |
| 0 TR268 ADDRESS INFORMATION COMPLIANCE               | AJ0814 NTX753AB01 |
| 0 TR268 CHANNEL IDENTIFICATION (CID) COMPREHENSIVE   | AJ0810 NTX753AA06 |

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| 0 COMPLIANCE                                                  |                   |
| 0 TR268 CHANNEL IDENTIFICATION (CID) COMPREHENSIVE COMPLIANCE | AJ0810 NTX753AB01 |
| 0 TR268 PI/CSE/SIG AND ERROR RECOVERY COMPLIANCE              | AJ0812 NTX753AA06 |
| 0 TR268 PI/CSE/SIG AND ERROR RECOVERY COMPLIANCE              | AJ0812 NTX753AB01 |
| 0 TR268 TERMINAL PORTABILITY COMPLIANCE I                     | AF3245 NTX755AB01 |
| 0 TR268 TERMINAL PORTABILITY COMPLIANCE I                     | AF3245 NTX755AC01 |
| 0 TR444 COMPREHENSIVE COMPLIANCE                              | AG2001 NTX757AA02 |
| 0 TR448 COMPLIANCE ACTIVITY                                   | AJ0811 NTX767AA03 |
| 0 TR448 COMPLIANCE ACTIVITY                                   | AJ0811 NTX768AA02 |
| 0 TSMS PDAB/PDTP PEG COUNT                                    | BR0484 NTX085AA05 |
| 0 TSMS PDAB/PDTP USAGE                                        | BR0485 NTX087AA04 |
| 0 TSMS PEG COUNT ON IBN                                       | BR0464 NTX085AA05 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0385 NTX001AA29 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0386 NTX001AA29 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0387 NTX001AA29 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0388 NTX001AA29 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0390 NTX001AA29 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0391 NTX001AA29 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0392 NTX001AA29 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0398 NTX001AA29 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0401 NTX001AA29 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0385 NTX085AA05 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0386 NTX085AA05 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0387 NTX085AA05 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0388 NTX085AA05 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0390 NTX085AA05 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0391 NTX085AA05 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0392 NTX085AA05 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0398 NTX085AA05 |
| 0 TSMS PEG COUNT SOURCE AND DISPOSITION UP TO 16              | BC0401 NTX085AA05 |
| 0 TSMS REPORT SUMMARIZED                                      | BC0399 NTX088AA04 |
| 0 TSMS REPORT SUMMARIZED FOR PDAB/PDTP                        | BR0486 NTX088AA04 |
| 0 TSMS REPORT SUMMARIZED ON IBN                               | BR0466 NTX088AA04 |
| 0 TSMS USAGE ON IBN                                           | BR0465 NTX087AA04 |
| 0 TSMS USAGE SOURCE AND DISPOSITION UP TO 128                 | BC0394 NTX087AA04 |
| 0 TSMS USAGE SOURCE AND DISPOSITION UP TO 128                 | BC0395 NTX087AA04 |
| 0 TSMS USAGE SOURCE AND DISPOSITION UP TO 128                 | BC0396 NTX087AA04 |
| 0 TSMS USAGE SOURCE AND DISPOSITION UP TO 128                 | BC0397 NTX087AA04 |
| 0 TSPS INTERFACE                                              | BR0111 NTXZ03AA01 |
| 0 TSPS INTERFACE                                              | BR0111 NTX902AA07 |
| 0 TS13 TO AISUP INTERWORKING II                               | AJ1536 NTXH57AB01 |
| 0 TTL2 AGENCY REWORK TO TTLMWBL                               | BC0049 NTX001AA29 |
| 0 TTP CALL TRANSFER                                           | BV0041 NTX055AA03 |
| 0 TTP CALL TRANSFER                                           | BV0041 NTX980AA01 |
| 0 TTP CALL TRANSFER (LOCAL)                                   | BR0196 NTX055AA03 |
| 0 TTP CALL TRANSFER (LOCAL)                                   | BR0196 NTX980AA01 |

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0 TTP CKTMON TESTING  
0 TTP CKTMON TESTING  
0 TTP CKTMON TESTING  
0 TTP DETACHED USER  
0 TTP ENHANCEMENTS  
0 TTP ENHANCEMENTS  
0 TTP SUPPORT FOR 3X09 MTA  
0 TTP SUPPORT FOR 3X09 MTA  
0 TTT ENHANCEMENT FOR TURKISH TONES  
0 TURKISH AUDIBLE TONES  
0 TURKISH FEATURE DATA REQUIREMENTS  
0 TURKISH FEATURE DATA REQUIREMENTS  
0 TVDS - II  
0 TWO DIGIT ANI - TOPS OFFICE  
0 TWO DIGIT ANI I.D. - END OFFICE  
0 TWO DIGIT ANI I.D. - END OFFICE  
0 TWO DIGIT ANI I.D. - END OFFICE  
0 TWO PARTY ANI  
0 TWO PARTY ANI  
0 TWO PARTY FLAT RATE  
0 TWO PARTY FLAT RATE  
0 TWO TERMINAL DIRECTORY ASSISTANCE/INTERCEPT  
0 TWO WAY OPERATOR OFFICE TRUNKS(BELL AND AMR-5)  
0 TWO WAY OPERATOR OFFICE TRUNKS(BELL AND AMR-5)  
0 TWO WAY OPERATOR OFFICE TRUNKS(BELL AND AMR-5)  
0 TWO WAY OPERATOR OFFICE TRUNKS(BELL AND AMR-5)  
0 TWO WAY WATS LINE  
0 TWO-WAY INTERNATIONAL R2  
0 TWO-WAY SEIZE PROTOCOL  
0 TWO-WAY SPLITTING  
0 TWO-WAY SPLITTING  
0 TWO-WIRE 16-BUTTON DTMF KEY PAD  
0 TWX LINES  
0 TYPE AND DATA EXTENSIONS FOR SLC96  
0 TYPE B LINE CARD MAINTENANCE  
0 TYPE B LINE CARD MAINTENANCE  
0 TYPE I DIALING PLAN ENHANCEMENT  
0 TYPE XIII CDR AND CDR SEARCH  
0 TYPE XIII CONFERENCE CALLING ENHANCEMENTS  
0 TYPE XIII IMT CALL PROCESSING AND TRKGRP TC  
0 TYPE XIII TOPS UNIVERSAL TRANSLATIONS  
0 TYPE XIII TRANSLATIONS AND ROUTING ENHANCEMENTS  
0 T1 MAINTENANCE LEVEL  
0 T1 RESOURCE MANAGER & VOICE CONNECTION MANAGER  
0 T101 AGENCY REWORK TO COMTRUNK  
0 T101 TESTLINES FOR DMS100/200I R2 TRUNKS  
0 T103 AGENCY REWORK TO TTLSUPV

BT0448 NTX220AA13  
BT0448 NTX220BA06  
BT0448 NTX220CA08  
AG1240 NTX055AA03  
BR0021 NTX055AA03  
BR0021 NTX980AA01  
BC0890 NTXZ02AA01  
BC0890 NTX901AA24  
AG0085 NTX472AB08  
BC1186 NTX480AA02  
BC1500 NTX472AA03  
BC1500 NTX472AB08  
AD0440 NTX717AB01  
NC0149 NTXN52AA01  
NC0199 NTXN81AA01  
NC0199 NTXP56AA01  
NC0199 NTXQ79AA01  
BR0102 NTXZ02AA01  
BR0102 NTX901AA24  
BT0046 NTXZ02AA01  
BT0046 NTX901AA24  
AF2018 NTXE70AA01  
BC0384 NTXZ03AA01  
BR0344 NTXZ03AA01  
BC0384 NTX902AA07  
BR0344 NTX902AA07  
BR0411 NTX006AA04  
AE0893 NTXB69AA04  
BV1196 NTX222CA09  
BV0450 NTXZ00AA01  
BV0450 NTX100AA27  
AD1961 NTX601BA06  
BT0051 NTX006AA04  
BC1164 NTX398AA12  
BC1155 NTXZ02AA01  
BC1155 NTX901AA24  
BV1981 NTX222CA09  
BV1939 NTX222AM05  
BV1938 NTX222AM05  
BV1940 NTX222AM05  
BV1953 NTX341AM02  
BV1935 NTX222AM05  
BC0050 NTX001AA29  
AG1250 NTG230AA01  
BC0046 NTX001AA29  
AJ1031 NTX483AB01  
BC0047 NTX001AA29

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| 0 T104 AGENCY REWORK TO TTLXMS                              | BC0048 NTXZ03AA01 |
| 0 T104 AGENCY REWORK TO TTLXMS                              | BC0048 NTX203AA01 |
| 0 T104 AGENCY REWORK TO TTLXMS                              | BC0048 NTX802AA04 |
| 0 T104 AGENCY REWORK TO TTLXMS                              | BC0048 NTX902AA07 |
| 0 T104 CALL PROCESSING                                      | BV1151 NTX220AA13 |
| 0 T104 CALL PROCESSING                                      | BV1151 NTX220BA06 |
| 0 T104 CALL PROCESSING                                      | BV1151 NTX220CA08 |
| 0 UCD ON EBS AND UCD SD POINT                               | AL0818 NTXA77AA01 |
| 0 UCD QUEUE STATUS LAMP.                                    | AD0236 NTXZ01AA01 |
| 0 UCD QUEUE STATUS LAMP.                                    | AD0236 NTX101AA14 |
| 0 UCS CDR BILLING ON NSS                                    | AM0142 NTXP04AA01 |
| 0 UCS CDR ENHANCEMENTS                                      | AM0113 NTXL02AA03 |
| 0 UCS DIALING PLAN ENHANCEMENTS                             | AD2618 NTXL02AA03 |
| 0 UCS DMS-250 EOPS ROUTING TO OPERATOR QUEUE BY TRUNK GROUP | AM0154 NTXG12AA06 |
| 0 UCS DMS-250 INTERNATIONAL PARTITION ROUTING               | AM0152 NTXL14AA01 |
| 0 UCS DMS-250 OSR UPGRADES FOR ISUP IMT WITH RLT            | AD2869 NTXG12AA06 |
| 0 UCS DMS-250 OSR/CDR ON OST                                | AD2428 NTXG12AA06 |
| 0 UCS EOPS FEATURE ENHANCEMENTS                             | AD1717 NTXG12AA06 |
| 0 UCS FGD ROUTING ENHANCEMENTS                              | AD2771 NTXL06AA01 |
| 0 UCS OPERATOR SERVICES RELEASE LINK TRUNK PHASE II         | AD2865 NTXG30AA02 |
| 0 UCS OPERATOR SERVICES RELEASE LINK TRUNK PHASE II         | AD2865 NTXG49AA03 |
| 0 UCS SPEED NUMBERS AND MCCS LOG                            | AD2621 NTXL02AA03 |
| 0 UCS SS7 FGD AND I/W WITH DEX VIA ISUP IMT                 | AM0112 NTXL04AA02 |
| 0 UDP/IP DEVELOPMENT TO SUPPORT NFS DELIVERY                | AL1917 NTXF19AA02 |
| 0 UK - DDI TRUNK RESTRICTIONS                               | BC1621 NTX611AA07 |
| 0 UK - RETURN ANSWER ON DRAM                                | BC1622 NTX611AA07 |
| 0 UK BT TONES II                                            | BC1612 NTX611AA07 |
| 0 UK BT TRUNK AND LINE MAINTENANCE                          | BC1618 NTX611AA07 |
| 0 UK BT TRUNK AND LINE MAINTENANCE II                       | BC1613 NTX611AA07 |
| 0 UK BT TRUNK SIGNALLING II                                 | BC1624 NTX611AA07 |
| 0 UK CENTREX REGRESSION TESTING                             | AE0346 NTX430AA02 |
| 0 UK CUSTOMER GROUP DATA                                    | AE0289 NTX611AA07 |
| 0 UK LINE DIGIT COLLECTION OPTIMIZATION                     | AE0539 NTX611AA07 |
| 0 UK STANDARD CALL DETAIL RECORD FOR 100 BYTES.             | NC0044 NTXK02AA01 |
| 0 UK TRUNK CONNECTION PROHIBITIONS I                        | BC1617 NTX611AA07 |
| 0 UK TRUNK CONNECTION PROHIBITIONS II                       | BC1616 NTX611AA07 |
| 0 UK TRUNK DATA CHANGES                                     | BC1615 NTX611AA07 |
| 0 UK TRUNK RESTRICTIONS IN NEW 3WC                          | AE0368 NTX611AA07 |
| 0 UMCD INDICATOR IN AMA RECORD                              | AF1665 NTX159AA12 |
| 0 UNANSWERED CALL DURATION TIMING                           | AE0113 NTX222AM05 |
| 0 UNAUTHORIZED DIGITONE SERVICE DETECTION                   | BR0482 NTX206AA02 |
| 0 UNIFORM CALL DISTRIBUTION (TO 500/2500 TELEPHONE SETS)    | BV0601 NTXZ01AA01 |
| 0 UNIFORM CALL DISTRIBUTION (TO 500/2500 TELEPHONE SETS)    | BV0601 NTX101AA14 |
| 0 UNIFORM CALL DISTRIBUTION FROM QUEUE                      | BV0433 NTXZ00AA01 |

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| 0 UNIFORM CALL DISTRIBUTION FROM QUEUE                | BV0433 NTX100AA27 |
| 0 UNIFORM NUMBERING PLAN CAPABILITY                   | BV0417 NTXZ00AA01 |
| 0 UNIFORM NUMBERING PLAN CAPABILITY                   | BV0417 NTX100AA27 |
| 0 UNIVERSAL MTX DIALING PLAN                          | AD2903 NTXG83AA02 |
| 0 UNIVERSAL MTX DIALING PLAN                          | AD2903 NTXG84AA01 |
| 0 UNIVERSAL MTX DIALING PLAN                          | AD2903 NTXG85AA01 |
| 0 UNIVERSAL PUBLIC SPEEDS                             | BV0878 NTX230AA03 |
| 0 UNIVERSAL PUBLIC SPEEDS                             | BV0878 NTX230BA01 |
| 0 UNIVERSAL PUBLIC SPEEDS                             | BV0878 NTX230CA01 |
| 0 UNIVERSAL TONE RECEIVERS                            | AE0220 NTX961AA01 |
| 0 UNIVERSAL TRANSLATION ENHANCEMENT FOR INTERNATIONAL | AD1825 NTXG60AA02 |
| 0 DMS-250                                             |                   |
| 0 UNIVERSAL TRANSLATION VERIFICATION TOOL             | AJ1126 NTX470AA13 |
| 0 UNREGISTERD MOBILE HANDOFF                          | BV1617 NTX322AA18 |
| 0 UPDATE ACD FM PRODUCT SPEC FOR BCS32                | AD3490 NTXG97BA01 |
| 0 UPLOAD OF CUSTOMER LINE DATA TO DNC                 | AG0092 NTX563AA05 |
| 0 URT DIGIT COLLECTION OF MF DMS-250 TRUNKS           | BC1560 NTX220AA13 |
| 0 URT DIGIT COLLECTION OF MF DMS-250 TRUNKS           | BC1560 NTX220BA06 |
| 0 URT DIGIT COLLECTION OF MF DMS-250 TRUNKS           | BC1560 NTX220CA08 |
| 0 US SPRINT OPERATOR SERVICES, PHASE 1.               | AD0220 NTXG41BA05 |
| 0 US SPRINT OPERATOR SERVICES, PHASE 1.               | AD0220 NTX341BA01 |
| 0 US SPRINT PTS IMT CALL PROCESSING                   | AD0097 NTX222AB04 |
| 0 US SPRINT PTS IMT CALL PROCESSING                   | AD0097 NTX222BA07 |
| 0 US SPRINT REL 1.3 ENHANCED ORIG CP                  | AD0470 NTX222AB04 |
| 0 US SPRINT REL 1.3 ENHANCED ORIG CP                  | AD0470 NTX222BA07 |
| 0 US SPRINT REL 1.3 FGD ANI DATABASE                  | AD0404 NTX343AB03 |
| 0 US SPRINT REL 1.3 FGD ANI DATABASE                  | AD0404 NTX343BA01 |
| 0 US SPRINT REL 1.3 RESTRICTED USAGE DB & CP.         | AD0368 NTX222AB04 |
| 0 US SPRINT REL 1.3 RESTRICTED USAGE DB & CP.         | AD0368 NTX222BA07 |
| 0 US SPRINT REL1.3 FAST AUTH & ANI UPGRADE            | AD0435 NTX222AB04 |
| 0 US SPRINT REL1.3 FAST AUTH & ANI UPGRADE            | AD0435 NTX222BA07 |
| 0 US SPRINT 700 SERVICE                               | AD2602 NTX365BA03 |
| 0 US TELECOM CDR HOOKS AND FORMATTER                  | BV2048 NTX221AB04 |
| 0 US TELECOM CDR HOOKS AND FORMATTER                  | BV2048 NTX221BA08 |
| 0 US TELECOM CDR SEARCH ON DISK                       | BV2047 NTX221AB04 |
| 0 US TELECOM CDR SEARCH ON DISK                       | BV2047 NTX221BA08 |
| 0 USER PASSWORDS SURVIVABILITY OVER BCS APPLICATION   | AL1149 NTX001AA29 |
| 0 USER PROGRAMMABLE LTP LEVELS                        | AL1518 NTX001AA29 |
| 0 USER SPECIFIED COT ANNOUNCEMENT                     | NC0117 NTXN35AA01 |
| 0 USS EOPS TO TERMINATING SS7 IMTS                    | AD1538 NTX361BA05 |
| 0 USS REAL-TIME CALLING NUMBER DELIVERY               | AD1537 NTX361BA05 |
| 0 USSPRINT CAC CP I/F AND MESSAGING                   | AD0076 NTX363BA01 |
| 0 USSPRINT CAC CP I/F AND MESSAGING                   | AD0076 NTX363CA01 |
| 0 USSPRINT CDR ENHANCEMENTS FOR BCS32                 | AM0179 NTX221BA08 |
| 0 USSPRINT CDR FOR 1.3                                | AD0500 NTX221AB04 |
| 0 USSPRINT CDR FOR 1.3                                | AD0500 NTX221BA08 |
| 0 USSPRINT CONDITIONAL CDR LOG ENHANCEMENTS           | AJ1292 NTXL43AA01 |

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| 0 USSPRINT CONDITIONAL CDR LOG ENHANCEMENTS         | AJ1292 NTXL44AA01 |
| 0 USSPRINT FRAME RELAY BILLING                      | AJ1481 NTXL94AA01 |
| 0 USSPRINT PRA250 TO TCAP INTERWORKING              | AD2567 NTXG01AA06 |
| 0 USSPRINT REL 1.3 AUTHCODE DATABASE                | AD0086 NTX234AB02 |
| 0 USSPRINT REL 1.3 AUTHCODE DATABASE                | AD0086 NTX234BA01 |
| 0 USSPRINT 56K/B ENHANCEMENTS                       | AJ1293 NTXG74AA02 |
| 0 USTS PHASE I AUTHCODES                            | BV0887 NTX220AA13 |
| 0 USTS PHASE I AUTHCODES                            | BV0887 NTX220BA06 |
| 0 USTS PHASE I AUTHCODES                            | BV0887 NTX220CA08 |
| 0 UTILITIES FOR INTL CC FEATURE METERING            | AC0053 NTXH22AA01 |
| 0 UTILITIES FOR INTL CC FEATURE METERING            | AC0053 NTX474AA07 |
| 0 UTILITIES FOR 3X09 MTA                            | BC0884 NTXZ02AA01 |
| 0 UTILITIES FOR 3X09 MTA                            | BC0884 NTX901AA24 |
| 0 UTR BASE ENHANCEMENTS                             | AC0127 NTX269AA07 |
| 0 UTR DIGIT COLLECTION ON MCI PRA250                | AD2566 NTXG01CA07 |
| 0 UTR DIGIT COLLECTION ON USSPRINT PRA250           | AD1799 NTXG01AA06 |
| 0 UTR ENHANCEMENT'S                                 | AD0686 NTX220AA13 |
| 0 UTR ENHANCEMENT'S                                 | AD0686 NTX220BA06 |
| 0 UTR ENHANCEMENT'S                                 | AD0686 NTX220CA08 |
| 0 UTR HOOKS FOR SL-100                              | AD0065 NTX269AA07 |
| 0 UTR SENSITIVITY OPTIONALITY                       | AE0288 NTX269AA07 |
| 0 V AND H LATA RATE ENHANCEMENT                     | BR0627 NTX030CC16 |
| 0 V-H CO-ORDINATES CHARGE CALCULATION               | BV0174 NTX030CC16 |
| 0 V-H CO-ORDINATES CHARGE CALCULATION               | BV0177 NTX030CC16 |
| 0 V-H CO-ORDINATES CHARGE CALCULATION               | BV0352 NTX030CC16 |
| 0 VACANT SPEED NUMBER TREATMENT                     | BV1256 NTX220AA13 |
| 0 VACANT SPEED NUMBER TREATMENT                     | BV1256 NTX220BA06 |
| 0 VACANT SPEED NUMBER TREATMENT                     | BV1256 NTX220CA08 |
| 0 VALIDATED 3 DIGIT ACCT CODE BY TRK GRP            | BV1260 NTX220AA13 |
| 0 VALIDATED 3 DIGIT ACCT CODE BY TRK GRP            | BV1260 NTX220BA06 |
| 0 VALIDATED 3 DIGIT ACCT CODE BY TRK GRP            | BV1260 NTX220CA08 |
| 0 VARIABLE DP RECEPTION PARAMETERS ON TM'S          | BF0697 NTX610AA03 |
| 0 VARIABLE DP RECEPTION PARAMETERS ON TM'S          | BF0697 NTX611AA07 |
| 0 VARIABLE H/W PAD SETTING FOR NT6X98AA LINE CARD   | AE0183 NTXB70AA01 |
| 0 VARIABLE LCM PARMS AND EARTH CALLING FEATURE      | BC1626 NTX611AA07 |
| 0 INTERACTIONS                                      |                   |
| 0 VARIABLE LENGTH CALLING CARD                      | AM0060 NTXG48AA02 |
| 0 VARIABLE LENGTH CALLING CARD ENHANCEMENTS         | AD3337 NTXG48AA02 |
| 0 VARIABLE LENGTH CALLING CARD ENHANCEMENTS         | AD3337 NTXL88AA01 |
| 0 VARIABLE LENGTH CALLING CARD TABLE CONTROL & MMI  | AM0121 NTXG48AA02 |
| 0 VARIABLE LENGTH/SAME LEADING DIGIT(S) TRANSLATION | BR0740 NTXZ00AA01 |
| 0 VARIABLE LENGTH/SAME LEADING DIGIT(S) TRANSLATION | BR0740 NTX100AA27 |
| 0 VARIABLE LOCAL COIN CHARGE                        | BR0337 NTX030CC16 |
| 0 VARIABLE QUANTITIES OF T1 LINE                    | BC0107 NTX023AB03 |
| 0 VARIABLE QUANTITIES OF T1 LINE                    | BC0108 NTX023AB03 |
| 0 VARIABLE QUANTITIES OF T1 LINE                    | BF0012 NTX023AB03 |
| 0 VARIABLE SIGNAL RECEPTION PARAMETERS ON LCM'S     | BF0698 NTX611AA07 |

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| 0 VARIABLE SPEED CALL ACCESS CODE                   | BR0739 NTX898AA01 |
| 0 VARIABLE TIMING - ANALOGUE DP TRUNK RECEPTION &   | BC1078 NTX001AA29 |
| 0 OUTPUTSING                                        |                   |
| 0 VARIABLE TYPES OF OUTPUTSING ON SAME CALL         | BV0971 NTXZ01AA01 |
| 0 VARIABLE TYPES OF OUTPUTSING ON SAME CALL         | BV0971 NTX101AA14 |
| 0 VARIABLE-LENGTH DIRECTORY NUMBERS                 | BC1504 NTX472AA03 |
| 0 VARIABLE-LENGTH DIRECTORY NUMBERS                 | BC1504 NTX472AB08 |
| 0 VDU & PRINTER LINK TERMINAL CAPABILITY            | BR0120 NTX001AA29 |
| 0 VECTRON OSCILLATOR FOR SYNC. CLOCK                | BR0310 NTX048AA06 |
| 0 VERIFICATION                                      | BV0314 NTX030CC16 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 NTX416AD01 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 NTX416AE01 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 NTX416AF01 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 NTX416AG01 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 NTX416AH01 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 NTX416AI01 |
| 0 VERIFICATION OF TIME DELAYED OVERFLOW             | AD2238 NTX416AJ01 |
| 0 VERIFY AND/OR IMPLEMENT CP OM'S.                  | AD2191 NTXG60AA02 |
| 0 VERTICAL FEATURE HANDOFF ENHANCEMENTS             | AD1447 NTXG83AA02 |
| 0 VERTICAL FEATURE HANDOFF ENHANCEMENTS             | AD1447 NTX376AA05 |
| 0 VERTICAL FEATURE HANDOFF ENHANCEMENTS             | AD1447 NTX376AB01 |
| 0 VFG AMA SUPPORT FOR FX AND ETS CALLS              | AF1093 NTX098AA07 |
| 0 VFG AMA SUPPORT FOR FX AND ETS CALLS              | AF1093 NTX159AA12 |
| 0 VFG INWATS OVFL TOTALS TO AMA TAPE - IBN          | AL0603 NTX112AB03 |
| 0 VFG LOOK AHEAD                                    | AF1269 NTXA30AA01 |
| 0 VFG SUPPORT FOR INCOMING ISUP AND LOCAL CALLS TO  | NC0295 NTXP58AA01 |
| 0 E911                                              |                   |
| 0 VFG TGB ON A/C                                    | BV1409 NTX112AB03 |
| 0 VFG USAGE DATA                                    | BC1182 NTX112AB03 |
| 0 VIP SERVICE                                       | AG2159 NTXN38AA01 |
| 0 VIRTUAL ACCESS TO PRIVATE NETWORKS                | AG2286 NTXJ42AA02 |
| 0 VIRTUAL FACILITY GROUP DATA IN ACD MIS            | AD2131 NTX991AD01 |
| 0 VIRTUAL FACILITY GROUP DATA IN ACD MIS            | AD2131 NTX991AE01 |
| 0 VIRTUAL FACILITY GROUP DATA IN ACD MIS            | AD2131 NTX991AF01 |
| 0 VISA INTERFACE SYSTEMS                            | BF0680 NTX489AA01 |
| 0 VISA SYSTEMS TABLE OPERATIONS                     | BC1520 NTX489AA01 |
| 0 VMX INTERFACE                                     | BC1256 NTX411AA01 |
| 0 VNET & 800 SVC. ENHANCEMENTS FOR CONFLICT DIALING | AD1334 NTX353CA05 |
| 0 VNET & 800 SVC. HOTLINE                           | AD0974 NTX353AA04 |
| 0 VNET & 800 SVC. HOTLINE                           | AD0974 NTX353CA05 |
| 0 VNET & 800 SVC. VARIABLE LENGTH SUPP. CODES       | AD0976 NTX353AA04 |
| 0 VNET & 800 SVC. VARIABLE LENGTH SUPP. CODES       | AD0976 NTX353CA05 |
| 0 VNET APPLICATION TIMERS                           | AD0079 NTX353AA04 |
| 0 VNET APPLICATION TIMERS                           | AD0079 NTX353CA05 |
| 0 VNET CAMA                                         | AD1575 NTX353CA05 |
| 0 VNET CAMA ANI ENHANCEMENTS                        | AD3491 NTX353CA05 |
| 0 VNET CAMA ENHANCEMENTS                            | AD1585 NTX353CA05 |

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| 0 VNET CP UPGRADE OF DALS, FGA, & IMTS.              | AD0147 NTX353AA04 |
| 0 VNET CP UPGRADE OF DALS, FGA, & IMTS.              | AD0147 NTX353CA05 |
| 0 VNET PHASE II                                      | AD0680 NTX353AA04 |
| 0 VNET PHASE II                                      | AD0680 NTX353CA05 |
| 0 VNET-10 DIGIT CALL PROCESSING                      | AD0151 NTX353AA04 |
| 0 VNET-10 DIGIT CALL PROCESSING                      | AD0151 NTX353CA05 |
| 0 VOICE NUMBER VERIFICATION TRUNK                    | BT0062 NTXZ02AA01 |
| 0 VOICE NUMBER VERIFICATION TRUNK                    | BT0062 NTX901AA24 |
| 0 VOICE QUOTE OF CHARGES ON A CENTRAL TTY            | BV0332 NTX030CC16 |
| 0 VPN DARWIN - INTERACTIONS                          | AD3644 NTXL91AA03 |
| 0 VPN DARWIN - TCAP PREP.                            | AD3641 NTXL91AA03 |
| 0 VPN DARWIN ISUP AND ROUTING                        | AD3642 NTXL91AA03 |
| 0 VPN DARWIN TRIGGER TABLE (PREP)                    | AD3646 NTXL91AA03 |
| 0 VPN F/W INTERFACE AND IMPLEMENTATION               | BF0637 NTX353AA04 |
| 0 VPN F/W INTERFACE AND IMPLEMENTATION               | BF0637 NTX353CA05 |
| 0 VPN HOTLINE EXPANSION                              | AD3302 NTXL82AA01 |
| 0 VPN ON FONCARD                                     | AD2352 NTX364BA02 |
| 0 VPN TRANSACTION PROCESSING                         | BV1872 NTX353AA04 |
| 0 VPN TRANSACTION PROCESSING                         | BV1872 NTX353CA05 |
| 0 VPN 6 DIGIT DIALLING.                              | AM0056 NTXG45AA06 |
| 0 VPN/FTS OPERATOR SERVICES                          | AD0819 NTXG41BA05 |
| 0 VPN/FTS OPERATOR SERVICES                          | AD0819 NTX341BA01 |
| 0 VRE SERVICE & MAINTENANCE INTEGREATION             | AD2192 NTXG60AA02 |
| 0 WAKE-UP CALL                                       | AE0240 NTX499AA10 |
| 0 WAKEUP ENHANCEMENTS                                | AL1051 NTX001AA29 |
| 0 WARM LINE                                          | BR0400 NTX127AA01 |
| 0 WATS ON RES                                        | AF2244 NTXA64AA05 |
| 0 WATS USAGE ENHANCEMENT                             | BV1630 NTX220AA13 |
| 0 WATS USAGE ENHANCEMENT                             | BV1630 NTX220BA06 |
| 0 WATS USAGE ENHANCEMENT                             | BV1630 NTX220CA08 |
| 0 WILD CARD KEY                                      | BC0500 NTXZ00AA01 |
| 0 WILD CARD KEY                                      | BC0500 NTX100AA27 |
| 0 WLC TYPE A TEMPLATE FOR NORTH AMERICAN 900 +2      | AE0958 NTXW20AA01 |
| 0 APPLICATIONS                                       |                   |
| 0 WLC TYPE A TEMPLATE FOR UK PSTN APPLICATIONS       | AE0959 NTXW22AA01 |
| 0 WORLD LINE CARD IN THE LCM                         | AE0896 NTXW00AA02 |
| 0 WORLD LINE CARD SOFTWARE SUPPORT                   | AE0905 NTXW00AA02 |
| 0 WORLD-LC NEW HARDWARE DEPENDENCIES                 | AG2800 NTXW00AA02 |
| 0 WUTCO DIALING PLAN ON ONATS (ENFIA B & C)          | BT0447 NTX220AA13 |
| 0 WUTCO DIALING PLAN ON ONATS (ENFIA B & C)          | BT0447 NTX220BA06 |
| 0 WUTCO DIALING PLAN ON ONATS (ENFIA B & C)          | BT0447 NTX220CA08 |
| 0 WUTCO REL. 1 IMT CALL PROCESSING AND TABLE CONTROL | BV1150 NTX220AA13 |
| 0 WUTCO REL. 1 IMT CALL PROCESSING AND TABLE CONTROL | BV1150 NTX220BA06 |
| 0 WUTCO REL. 1 IMT CALL PROCESSING AND TABLE CONTROL | BV1150 NTX220CA08 |
| 0 WUTCO REL. 1 ONAL/DAL CP AND TABLE CONTROL         | BV1149 NTX220AA13 |
| 0 X.25 COMMUNICATION LINK FOR BILLING ON DMS300      | AE0730 NTXG62AA01 |
| 0 X.25 DATAPAC FOR TRANSMISSION OF BILLING DATA      | BT0426 NTX220AA13 |



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| 0 X.25 DATAPAC FOR TRANSMISSION OF BILLING DATA           | BT0434 NTX220AA13 |
| 0 X.25 DATAPAC FOR TRANSMISSION OF BILLING DATA           | BT0426 NTX220BA06 |
| 0 X.25 DATAPAC FOR TRANSMISSION OF BILLING DATA           | BT0434 NTX220BA06 |
| 0 X.25 DATAPAC FOR TRANSMISSION OF BILLING DATA           | BT0426 NTX220CA08 |
| 0 X.25 DATAPAC FOR TRANSMISSION OF BILLING DATA           | BT0434 NTX220CA08 |
| 0 X.25 LEVEL 3 UTILITY IN CC                              | BV1389 NTX347AA06 |
| 0 X.25 PACKAGING ENHANCEMENTS FOR NOP                     | AG0306 NTX560AB03 |
| 0 X.25 PACKET LAYER PVC TO CONNECT TO CHIP SAC            | BV2019 NTX358BA03 |
| 0 X.25 TRANSPORT FOR SCAI                                 | AR0004 NTXJ59AB03 |
| 0 X.25 TRANSPORT FOR SCAI                                 | AR0004 NTXJ59AC01 |
| 0 X.75 MULTILINK TO CONNECT TO DMS                        | BV2020 NTX358BA03 |
| 0 XFER SIMULTANEOUS POLLING                               | BC1691 NTX059AB04 |
| 0 XFER SUBSYSTEM TABLE                                    | AF1235 NTX562AA03 |
| 0 XLCM DIAGNOSTIC ENH.                                    | AF2988 NTX270AA19 |
| 0 XLCM DIAGS PHASE II - 6X54 RELAY, SCAN CHIP             | AF3086 NTX270AA19 |
| 0 XLCM REX RESULTS /FFI PH II                             | AF3234 NTX270AA19 |
| 0 XPE LINES MAINTENANCE - PHASE I                         | AM0040 NTXN25AA02 |
| 0 XPE LINK DIAGNOSTICS                                    | AM0127 NTXN25AA02 |
| 0 XPEC CALL PROCESSING - PHASE I                          | AM0032 NTXN25AA02 |
| 0 XPEC CALL PROCESSING - PHASE II                         | AM0130 NTXN25AA02 |
| 0 XPEC MAINTENANCE - PHASE I                              | AM0044 NTXN25AA02 |
| 0 XPEC MAINTENANCE- PHASE II                              | AM0124 NTXN25AA02 |
| 0 XPEC MESSAGE INTERFACE - PHASE II                       | AM0129 NTXN25AA02 |
| 0 XPEC MESSAGE TRANSLATION                                | AM0043 NTXN25AA02 |
| 0 XPEC MONITOR                                            | AM0042 NTXN25AA02 |
| 0 XPEC SELF TEST & DIAGNOSTICS FIRMWARE                   | AM0140 NTXN25AA02 |
| 0 XPM - CHANGEOVER CONTROL FOR METERING                   | BF0780 NTXH22AA01 |
| 0 XPM - CHANGEOVER CONTROL FOR METERING                   | BF0780 NTX474AA07 |
| 0 XPM - DELAY DIAL-1 LINE SIGNALLING SYSTEM               | BF0564 NTX477AA04 |
| 0 XPM - MAINTENANCE FOR METERING DATA TABLES              | BF0711 NTXH22AA01 |
| 0 XPM - MAINTENANCE FOR METERING DATA TABLES              | BF0711 NTX474AA07 |
| 0 XPM - OVERLAP SIGNALLING FOR ATUP                       | AJ1092 NTXH44AB02 |
| 0 XPM - WINK-1 LINE SIGNALLING SYSTEM                     | BF0565 NTX476AA01 |
| 0 XPM AUDIT FOR SCAI                                      | AD2891 NTXJ55AA02 |
| 0 XPM BIT ERROR RATE TEST                                 | AL0478 NTXP13AA02 |
| 0 XPM BIT ERROR RATE TEST                                 | AL0478 NTX885AA02 |
| 0 XPM BIT ERROR RATE TEST                                 | AL0478 NTX885AB04 |
| 0 XPM BOOTSTRAP IMC/IPML MESSAGING ENHANCEMENT FOR NT6X69 | AG0310 NTX270AA19 |
| 0 XPM CALL PROCESSING CHANGES FOR SCAI                    | AD2586 NTXJ55AA02 |
| 0 XPM COT ENHANCEMENTS FOR CUTOVER (2 WIRE TRUNKS)        | AJ1486 NTXP48AA01 |
| 0 XPM DATA MANAGEMENT ROBUSTNESS                          | AJ1039 NTX270AA19 |
| 0 XPM DATA STRUCTURES FOR ICP                             | AD2204 NTXG52AA04 |
| 0 XPM DATA STRUCTURES FOR ICP                             | AD2204 NTXG80AA03 |
| 0 XPM DIAG DRIVER ENHANCEMENTS                            | BF0969 NTX270AA19 |
| 0 XPM DTMF FOR TRUNKS WITH UTR                            | BF0961 NTX269AA07 |
| 0 XPM IMC DIAGNOSTICS                                     | AL0562 NTXA67AA01 |

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| 0 XPM IPML DATA DISTRIBUTION                      | AL0481 NTX001AA29 |
| 0 XPM IPML MESSAGING FOR OFFICE RECOVERY          | AG0309 NTX270AA19 |
| 0 XPM ISDN CALL CAPACITY EXPANSION                | AC0452 NTX750AC02 |
| 0 XPM ISDN CALL CAPACITY EXPANSION                | AC0452 NTX750AD01 |
| 0 XPM MATE DIAGNOSTIC                             | AL0476 NTXA67AA01 |
| 0 XPM MF-3 REGISTER SIGNALLING SYSTEM             | BF0567 NTX486AA01 |
| 0 XPM MTC FOR DMS-X PART 2                        | AL1460 NTX270AA19 |
| 0 XPM MTCE AND CP FOR STR BBF                     | AD1000 NTXG25AA01 |
| 0 XPM MTCE AND CP FOR STR BBF                     | AD1000 NTX220BA06 |
| 0 XPM MTCE AND CP FOR STR BBF                     | AD1000 NTX220CA08 |
| 0 XPM OUTGOING MESSAGE FLOW CONTROL               | AG0855 NTX001AA29 |
| 0 XPM OVERLOAD CONTROL - 1                        | BF0611 NTX001AA29 |
| 0 XPM OVERLOAD CONTROL - 1                        | BF0611 NTX913AA04 |
| 0 XPM PARITY AUDIT                                | AJ0338 NTX270AA19 |
| 0 XPM PATCHER INTEGRATION PHASE 1                 | AF2815 NTX001AA29 |
| 0 XPM PERFORM TOOL ROBUSTNESS                     | AG0485 NTX827AA02 |
| 0 XPM PLUS BASED ICP                              | AD4761 NTXX89AA01 |
| 0 XPM PSIDE DATA DISTRIBUTION                     | AL0482 NTX001AA29 |
| 0 XPM PSIDE DATA DISTRIBUTION ENHANCEMENTS        | AJ0474 NTX001AA29 |
| 0 XPM REAL TIME ENHANCEMENTS - BCS16              | BF0612 NTX001AA29 |
| 0 XPM REAL TIME ENHANCEMENTS - BCS16              | BF0612 NTX913AA04 |
| 0 XPM REALTIME AND PERFORMANCE TOOLS              | AC0024 NTX827AA02 |
| 0 XPM REALTIME ENHANCEMENTS                       | BF0954 NTX270AA19 |
| 0 XPM REX RESULTS /FFI PH II                      | AF3200 NTX270AA19 |
| 0 XPM REX/SWACT ROBUSTNESS                        | AF2989 NTX270AA19 |
| 0 XPM ROM DIAGNOSTIC IMPROVEMENTS                 | AL0474 NTX270AA19 |
| 0 XPM ROM DIAGNOSTIC MMI                          | AL0095 NTX270AA19 |
| 0 XPM ROUTINE EXERCISE TEST                       | BF0955 NTX270AA19 |
| 0 XPM RTS ENHANCEMENT                             | AL0335 NTX270AA19 |
| 0 XPM RTS ENHANCEMENTS                            | AF2583 NTX270AA19 |
| 0 XPM SOFTWARE FOR SCAI ACD TRUNK AGENTS          | AD2887 NTXN14AA01 |
| 0 XPM STATIC & DYNAMIC DATA FOR ICP               | AD2214 NTXG52AA04 |
| 0 XPM STATIC & DYNAMIC DATA FOR ICP               | AD2214 NTXG80AA03 |
| 0 XPM SUPPORT FOR CALLBACK ON ISUP                | AD2163 NTXG60AA02 |
| 0 XPM SUPPORT FOR CC METERING                     | AL0218 NTXH22AA01 |
| 0 XPM SUPPORT FOR CC METERING                     | AL0218 NTX474AA07 |
| 0 XPM SUPPORT FOR CSM                             | AD2210 NTXG52AA04 |
| 0 XPM SUPPORT FOR CSM                             | AD2210 NTXG80AA03 |
| 0 XPM SUPPORT FOR LCME POTS & 2B1Q L1 PERFORMANCE | AQ0695 NTX750AC02 |
| 0 MONITORING                                      |                   |
| 0 XPM SUPPORT FOR LCME POTS & 2B1Q L1 PERFORMANCE | AQ0695 NTX750AD01 |
| 0 MONITORING                                      |                   |
| 0 XPM SUPPORT OF IPE'S                            | AM0038 NTXN25AA02 |
| 0 XPM SYNC DIAGNOSTIC                             | AG0664 NTX270AA19 |
| 0 XPM TASK LEVEL UART IMC MESSAGING ENHANCEMENT   | AG0312 NTXA67AA01 |
| 0 XPM TONES OPTIONALITY                           | AE0223 NTX270AA19 |
| 0 XPM TONES OPTIONALITY                           | AE0223 NTX612AA04 |

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| 0 XPM TUP/ATUP/CTUP PROTOCOL CONVERTOR ENHANCEMENT  | AJ1250 NTXH40AA03 |
| 0 XPM 2B1Q LOOP MAINTENANCE INTERFACE               | AC0568 NTX750AC02 |
| 0 XPM 2B1Q LOOP MAINTENANCE INTERFACE               | AC0568 NTX750AD01 |
| 0 XPM 3 PROCESSOR IPC                               | BF0474 NTX470AA13 |
| 0 XPM 6X45BA MAINTENANCE ENHANCEMENTS               | AG0965 NTXA67AA01 |
| 0 XPM-INCOMING LOOP DISCONNECT SIGNALLING           | BF0881 NTX495AA01 |
| 0 XPM-IPE INTERFACE OPTIMIZATION                    | AM0131 NTXN25AA02 |
| 0 XPM-OUTGOING LD SIGNALLING                        | BF0867 NTX495AA01 |
| 0 XPM-SUPPORT FOR OUTGOING & INCOMING LD SIGNALLING | BV1987 NTX495AA01 |
| 0 XPM-TWO STAGE OUTPUTS                             | BF0870 NTX496AA03 |
| 0 ZONE INDICATOR                                    | AF1504 NTXE28AA02 |
| 0 ZONE INDICATOR                                    | AF1504 NTXP82AA01 |
| 0 ZONE RESTRICTION                                  | BV0253 NTX701CA07 |
| 0 0 + FG-D CALLING CARD                             | AD1687 NTX222CA09 |
| 0 0+ DA AND 0+ 800 PERMISSIVE DIALING               | BR0751 NTXZ02AA01 |
| 0 0+ DA AND 0+ 800 PERMISSIVE DIALING               | BR0751 NTX901AA24 |
| 0 0+ SERVICE TO TOPS                                | BR0243 NTXZ03AA01 |
| 0 0+ SERVICE TO TOPS                                | BR0243 NTX902AA07 |
| 0 0+ SERVICE TO TOPS (CLG DP)                       | BV0272 NTXZ03AA01 |
| 0 0+ SERVICE TO TOPS (CLG DP)                       | BV0272 NTX902AA07 |
| 0 0+ SERVICE TO TOPS (CLG MF)                       | BV0050 NTXZ03AA01 |
| 0 0+ SERVICE TO TOPS (CLG MF)                       | BV0050 NTX902AA07 |
| 0 0+ TANDEMED TO TSPS                               | BR0026 NTX049AJ01 |
| 0 0+-TRAFFIC TANDEMED TO NXID                       | BR0006 NTX049AJ01 |
| 0 00Y TO NPA TRANSLATIONS DATABASE                  | AD0131 NTX222AB04 |
| 0 00Y TO NPA TRANSLATIONS DATABASE                  | AD0131 NTX222BA07 |
| 0 010 SERVICE CODE                                  | BR0497 NTXZ02AA01 |
| 0 010 SERVICE CODE                                  | BR0497 NTX901AA24 |
| 0 1 + COIN TANDEMED TO NX1D FOR BILLING             | BR0004 NTX049AJ01 |
| 0 1+ PERMISSIVE AND NON PERMISSIVE DIALING          | BR0449 NTX001AA29 |
| 0 1+611 REPAIR TRANSLATED TO 7 DIGIT NUMBER AND     | BR0071 NTXZ03AA01 |
| 0 OUTPUTS                                           |                   |
| 0 1+611 REPAIR TRANSLATED TO 7 DIGIT NUMBER AND     | BR0071 NTX902AA07 |
| 0 OUTPUTS                                           |                   |
| 0 1A EADAS - BX.25 INTERFACE                        | BR0555 NTX218AA03 |
| 0 1X67 TERMINAL CONTROLLER IMPROVEMENTS             | BF0642 NTX001AA29 |
| 0 10-DIGIT ANI TO THE SCP                           | AD3511 NTX365BA03 |
| 0 1000 PARTITIONS, 3 & 6 DIGIT TRANSLATIONS         | BT0409 NTX220AA13 |
| 0 1000 PARTITIONS, 3 & 6 DIGIT TRANSLATIONS         | BT0409 NTX220BA06 |
| 0 1000 PARTITIONS, 3 & 6 DIGIT TRANSLATIONS         | BT0409 NTX220CA08 |
| 0 102 TEST LINE                                     | AE0250 NTX483AA03 |
| 0 102 TEST LINE                                     | AE0250 NTX483AB01 |
| 0 102 TEST LINE TERMINATION LEVEL (SEE H0271)       | BF0380 NTX001AA29 |
| 0 105 TESTLINE ERLSRL                               | BF0547 NTX136AA03 |
| 0 11X AND 410X SERVICE CODES                        | BR0251 NTXZ03AA01 |
| 0 11X AND 410X SERVICE CODES                        | BR0251 NTX902AA07 |
| 0 115 REPAIR SERVICE REGENERATED TO 7 DIGITS        | BR0092 NTX001AA29 |

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| 0 1200 BAUD DIAL UP DATA SET                         | BR0097 NTX001AA29 |
| 0 128KENET FXPM SUPPORT                              | AL1231 NTXE01AA06 |
| 0 14 INCH WINCHESTER DISK DRIVE                      | BC0284 NTX074AA09 |
| 0 14 INCH WINCHESTER DISK DRIVE                      | BR0279 NTX074AA09 |
| 0 15 MINUTE REPORTS FOR MFADS                        | BR0812 NTX030BA03 |
| 0 150 M BYTE DISK SUPPORT                            | BC0765 NTX074AA09 |
| 0 1984 MLP ENHANCEMENTS                              | AD0146 NTX222CA09 |
| 0 2 STAGE CALL SETUP WITH AUTHORISATION ON IBN TRUNK | NC0058 NTXK34AA01 |
| 0 2 WAY (LOCAL) EAS TRUNK                            | BC0156 NTX001AA29 |
| 0 2 WAY E/M                                          | BT0327 NTX001AA29 |
| 0 2 WAY TRUNK GLARE RESOLUTION                       | BT0181 NTX001AA29 |
| 0 2 WAY TRUNK GUARD TIMING                           | BT0182 NTX001AA29 |
| 0 2.75 MW PROGRAM STORE                              | BC1321 NTX000AA19 |
| 0 2-STAGE OUTPULSING TO GATEWAY (TOLL)               | BC0230 NTX029AA01 |
| 0 2-STAGE OUTPULSING TO GATEWAY (U.S)                | BR0053 NTX072AA01 |
| 0 2-WAY DIGITAL FX TRUNK - BUSINESS SERVICES         | BR0369 NTXZ00AA01 |
| 0 2-WAY DIGITAL FX TRUNK - BUSINESS SERVICES         | BR0369 NTX100AA27 |
| 0 2-WAY DIGITAL PBX TRUNKS (R0:459,483,430,502)      | BC0747 NTX007AA02 |
| 0 2-WAY DIGITAL PBX TRUNKS (R0:459,483,430,502)      | BC0747 NTX007AB02 |
| 0 2-WAY DIGITAL PBX TRUNKS (R0:459,483,430,502)      | BC0747 NTX008AB02 |
| 0 2-WAY DIGITAL PBX TRUNKS (R0:459,483,430,502)      | BC0747 NTX094AA01 |
| 0 2-WAY DIGITAL PBX TRUNKS (R0:459,483,430,502)      | BC0747 NTX804AA02 |
| 0 2-WAY FX SERVICE WITH DCM TERMINATION              | BV0482 NTXZ00AA01 |
| 0 2-WAY FX SERVICE WITH DCM TERMINATION              | BV0482 NTX100AA27 |
| 0 2-WIRE PREEMPTION                                  | AD0044 NTX715AA02 |
| 0 2-WIRE PREEMPTION                                  | AD0044 NTX715AB01 |
| 0 2B1Q DIAGNOSTIC AND PERFORMANCE REPORTING          | AL1589 NTX750AC02 |
| 0 2B1Q DIAGNOSTIC AND PERFORMANCE REPORTING          | AL1589 NTX750AD01 |
| 0 2B1Q LCME BASE LOAD DEVELOPMENT                    | AC0551 NTX750AC02 |
| 0 2B1Q LCME BASE LOAD DEVELOPMENT                    | AC0551 NTX750AD01 |
| 0 2B1Q LCME CC MAINTENANCE I                         | AC0552 NTX750AC02 |
| 0 2B1Q LCME CC MAINTENANCE I                         | AC0552 NTX750AD01 |
| 0 2B1Q LCME CC MAINTENANCE II                        | AC0570 NTX750AC02 |
| 0 2B1Q LCME CC MAINTENANCE II                        | AC0570 NTX750AD01 |
| 0 2B1Q LCME XPM SUPPORT                              | AC0553 NTX750AC02 |
| 0 2B1Q LCME XPM SUPPORT                              | AC0553 NTX750AD01 |
| 0 2B1Q LOOP AND TDM CONNECTION PROVISIONING          | AL1314 NTX750AC02 |
| 0 2B1Q LOOP AND TDM CONNECTION PROVISIONING          | AL1314 NTX750AD01 |
| 0 2B1Q LOOP MAINTENANCE BASE                         | AL1388 NTX750AC02 |
| 0 2B1Q LOOP MAINTENANCE BASE                         | AL1388 NTX750AD01 |
| 0 2B1Q XPM TDM CONNECTION SUPPORT                    | AC0571 NTX750AC02 |
| 0 2B1Q XPM TDM CONNECTION SUPPORT                    | AC0571 NTX750AD01 |
| 0 200 MS DISCONNECT TIMING                           | AG1854 NTXZ02AA01 |
| 0 200 MS DISCONNECT TIMING                           | AG1854 NTX901AA24 |
| 0 24MB MEMORY CM SW (PHASE I)                        | AL0706 NTX940AA13 |
| 0 24MB MEMORY CM SW (PHASE II)                       | AL0707 NTX941AA12 |
| 0 256K MEMORY CARD                                   | BC0465 NTX001AA29 |

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| 0 256K WORD MEMORY SOFTWARE                                    | BC0340 NTX001AA29 |
| 0 3-DIGIT ACCOUNT CODE SCREENING                               | BV1221 NTX220AA13 |
| 0 3-PORT FLEXIBLE CALL CHAINING                                | AF3244 NTX755AB01 |
| 0 3-PORT FLEXIBLE CALL CHAINING                                | AF3244 NTX755AC01 |
| 0 3-WAY CALL CHAINING                                          | BR0800 NTX808AA01 |
| 0 3-WAY CALL CHAINING                                          | BR0800 NTX820AA01 |
| 0 3-WAY CALLING ON FONCARD (PREP)                              | AD2354 NTXG43AA05 |
| 0 3-WAY CONFERENCE/TRANSFER                                    | BV0454 NTXZ00AA01 |
| 0 3-WAY CONFERENCE/TRANSFER                                    | BV0454 NTX100AA27 |
| 0 3/6 DIGIT PARTITIONED TRANSLATIONS ( 1000 )                  | BV0647 NTX220AA13 |
| 0 3/6 DIGIT PARTITIONED TRANSLATIONS ( 1000 )                  | BV0647 NTX220BA06 |
| 0 3/6 DIGIT PARTITIONED TRANSLATIONS ( 1000 )                  | BV0647 NTX220CA08 |
| 0 3J TYPE II TRUNK AGENCY                                      | AE0027 NTX911AA01 |
| 0 3J.T1 AUTHCODE ACCESS                                        | AE0741 NTXK34AA01 |
| 0 3L COS INFORMATION ACROSS TOPS TRUNKS                        | BV2012 NTX341AM02 |
| 0 3RD WIRE COIN CONTROL                                        | BR0234 NTXZ02AA01 |
| 0 3RD WIRE COIN CONTROL                                        | BR0234 NTX901AA24 |
| 0 3WC CHAINING TO ACD INTERACTION                              | AD0613 NTX407AB01 |
| 0 3WC DIAL 0 FOR 608 CORD BOARD                                | BC1477 NTXZ00AA01 |
| 0 3WC DIAL 0 FOR 608 CORD BOARD                                | BC1477 NTX100AA27 |
| 0 3WC/CALL TRANSFER FOR UCD                                    | AF1277 NTXZ01AA01 |
| 0 3WC/CALL TRANSFER FOR UCD                                    | AF1277 NTX101AA14 |
| 0 3WC/CALL TRANSFER TO ACD                                     | BC1569 NTX407AB01 |
| 0 3WC/CXR TO 2500 SET CALL WAITING INTERACTIONS                | AL0664 NTXZ00AA01 |
| 0 3WC/CXR TO 2500 SET CALL WAITING INTERACTIONS                | AL0664 NTX100AA27 |
| 0 3X09BA MTA SWITCH                                            | BC1835 NTXZ02AA01 |
| 0 3X09BA MTA SWITCH                                            | BC1835 NTX901AA24 |
| 0 30 SECOND DISCRETES ENHANCEMENT                              | AF0153 NTX455AB01 |
| 0 380 MBYTE DISK FOR DPP                                       | AF1406 NTX243AA07 |
| 0 4 - SECOND TIMEOUT ON 0+ CALLS                               | BV0346 NTX030CC16 |
| 0 4 - WIRE SUBSCRIBER INTERFACE                                | BV0254 NTX701DA03 |
| 0 4 - WIRE SUBSCRIBER INTERFACE                                | BV0271 NTX701DA03 |
| 0 4 WIRE E TRUNK WITH ECHO SUPPRESSOR CONTROL(2X72AB/<br>0 AC) | BC0182 NTX063AA02 |
| 0 4,5 AND 6 DIGIT LOCAL DIALLING                               | BR0252 NTXZ03AA01 |
| 0 4,5 AND 6 DIGIT LOCAL DIALLING                               | BR0252 NTX902AA07 |
| 0 411 RECORDING ON MAGTAPE                                     | BR0181 NTXZ02AA01 |
| 0 411 RECORDING ON MAGTAPE                                     | BR0181 NTX801AA01 |
| 0 411 RECORDING ON MAGTAPE                                     | BR0181 NTX901AA24 |
| 0 5-MINUTE PACKET INTERFACE                                    | AF0184 NTX455AB01 |
| 0 6 DIGIT OUTWATS BAND SCREENING                               | BR0438 NTX006AA04 |
| 0 6 PORT CONFERENCE CIRCUIT USE CONTROL                        | BV1122 NTXZ00AA01 |
| 0 6 PORT CONFERENCE CIRCUIT USE CONTROL                        | BV1122 NTX100AA27 |
| 0 6 PVC'S ACCESSED FROM TOOLKIT                                | AD0073 NTX358BA03 |
| 0 6MB MEMORY (SYNC OVERRIDE)                                   | AL0710 NTX941AA12 |
| 0 6X17AA LINE CARD FACILITY MAINTENANCE                        | BV0948 NTXZ02AA01 |
| 0 6X17AA LINE CARD FACILITY MAINTENANCE                        | BV0948 NTX901AA24 |

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| 0 6X17AD LINE CARD MAINTENANCE SUPPORT               | AG0487 NTXZ02AA01 |
| 0 6X17AD LINE CARD MAINTENANCE SUPPORT               | AG0487 NTX901AA24 |
| 0 6X27 INTERFACE CONTROL                             | AE0777 NTXH10AA02 |
| 0 6X27 INTERFACE CONTROL                             | AE0777 NTX274AA04 |
| 0 6X27 INTERFACE CONTROL                             | AE0777 NTX478AA04 |
| 0 6X50 LOOP DIAGNOSTIC                               | AG1046 NTX270AA19 |
| 0 6X50AB DIAGNOSTIC                                  | AL0173 NTX270AA19 |
| 0 6X69 I/F FOR MTS                                   | BF0917 NTX470AA13 |
| 0 6X91 FIRMWARE FOR NEMAS MLP AND NON X.25 FEATURES  | BF0345 NTX347AA06 |
| 0 6X91 FIRMWARE IMPROVEMENT FOR 19.2 AND THROUGHPUT. | AD0519 NTX347AA06 |
| 0 6X93CA LINE CARD FOR AUSTRALIA                     | AJ0954 NTX482DA02 |
| 0 68030 AT 40MHZ IN DMS250 SUPERNODE                 | AD2469 NTX220BA06 |
| 0 68030 AT 40MHZ IN DMS250 SUPERNODE                 | AD2469 NTX220CA08 |
| 0 68030 VERIFICATION TESTING                         | AD2553 NTX322AA18 |
| 0 7 OR 10 DIGIT TOLL CALLS WITHOUT PREFIX 1          | BR0084 NTX001AA29 |
| 0 711 + 7D REVERTIVE CALLING                         | BR0090 NTX049AD01 |
| 0 800 CALL SCREENING DATABASE                        | AD0969 NTX222CA09 |
| 0 800 NXX EXPANSION                                  | AM0200 NTXL16AA01 |
| 0 800 SERVICE PRETRANSLATOR                          | AD0126 NTX222AB04 |
| 0 800 SERVICE PRETRANSLATOR                          | AD0126 NTX362AA01 |
| 0 800 SERVICE PRETRANSLATOR                          | AD0126 NTX362BA02 |
| 0 800 SERVICES REMOTE ACCESS TO VNET                 | AD0973 NTX353AA04 |
| 0 800 SERVICES REMOTE ACCESS TO VNET                 | AD0973 NTX353CA05 |
| 0 800+ CAPABILITY FOR BELL CANADA                    | AL0249 NTX555AB01 |
| 0 800+ SOUTH BOUND ENHANCEMENTS                      | AG1247 NTX169BA01 |
| 0 844 SERVICE CODE FOR TIME AND TEMPERATURE          | BR0262 NTX049AL01 |
| 0 ANNOUNCEMENT                                       |                   |
| 0 9X14BA 6M MEMORY MAINTENANCE S/W SUPPORT           | AL0269 NTX941AA12 |
| 0 9X73 OD1 ENHANCEMENTS                              | AI0115 NTXN18AA04 |
| 0 9X73 OD1 ENHANCEMENTS                              | AI0115 NTX833AB01 |
| 0 9X74 CARD ID FIRMWARE                              | AI0153 NTXN18AA04 |
| 0 9X74 CARD ID FIRMWARE                              | AI0153 NTX833AB01 |
| 0 900 FG-C ACCESS SIGNALING                          | AD2385 NTX222CA09 |
| 0 911 CALL HOLD AND RINGBACK WITH ANI OUTPULSING     | BR0056 NTX019AA02 |
| 0 911 CALLING CAPABILITY FOR UMOB                    | AD0018 NTX322AA18 |
| 0 911 FULL FEATURES                                  | BR0108 NTX019AA02 |
| 0 911 INTERFACE TO SP-1 2W TANDEM                    | BR0067 NTX019AA02 |
| 0 911 SERVICE (INCL. RINGBACK & ANI)                 | BR0038 NTX019AA02 |
| 0 958 990 660 SERVICE CODES - N.Y. TEL               | BR0442 NTXZ02AA01 |
| 0 958 990 660 SERVICE CODES - N.Y. TEL               | BR0442 NTX901AA24 |
| 0 9600 BAUD CSC HDLC LINK                            | BF0617 NTX322AA18 |

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0 1.5.3 Master Packages

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0 NTG167AA01 STATUS RTM  
0 DNC-500/BNM MASTER PACKAGE

0 NTG000AA01 DVS BASE  
0 NTG001AA01 DNC BASE  
0 NTG002AA01 DNC-500/BNM BASE  
0 NTG160AA01 ASCII COMMUNICATIONS  
0 NTG161AA01 COMMUNICATIONS - X.25  
0 NTG161AA01 COMMUNICATIONS - X.25  
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0 NTG161AA01 COMMUNICATIONS - X.25  
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0 NTG161AA01 COMMUNICATIONS - X.25  
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0 NTG167AA02 STATUS RTM  
0 DNC-500/BNM MASTER PACKAGE

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0 NTG000AA02 DVS BASE  
0 NTG001AA02 DNC BASE  
0 NTG002AA02 DNC-500/BNM BASE

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0 NTG160AA02 ASCII COMMUNICATIONS  
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0 NTG161AA01 COMMUNICATIONS - X.25  
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0 NTG160AA02 ASCII COMMUNICATIONS  
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0 NTG161AA01 COMMUNICATIONS - X.25  
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0 NTG168AA01 STATUS RTM  
0 DNC-100/BNM MASTER PACKAGE

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0 DNC-100/BNM MASTER PACKAGE

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0 NTG000AA02 DVS BASE  
0 NTG001AA02 DNC BASE  
0 NTG004AA02 DNC-100/BNM BASE  
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0 NTG161AA01 COMMUNICATIONS - X.25  
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0 NTG168AA03 STATUS LTD  
0 DNC-100/BNM MASTER PACKAGE

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0 NTG000AA02 DVS BASE  
0 NTG001AA03 DNC BASE  
0 NTG004AA03 DNC-100/BNM BASE  
0 NTG004AA03 DNC-100/BNM BASE  
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0 NTG168AA04 STATUS RTM  
0 DNC-100/BNM MASTER PACKAGE

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| 0 | NTG000AA02 | DVS         | BASE |
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| 0 | NTG004AA03 | DNC-100/BNM | BASE |
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| 0 | NTG004AA03 | DNC-100/BNM | BASE |
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| 0 | NTG004AA03 | DNC-100/BNM | BASE |
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0 NTG169AA01 STATUS RTM  
0 DNC-50/SDS MASTER PACKAGE

0 NTG000AA01 DVS BASE  
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0 NTG005AA01 DNC-50/SDS BASE  
0 NTG100AA01 SMDR COLLECTOR  
0 NTG109AA01 SMDR SPOOLING  
0 NTG160AA01 ASCII COMMUNICATIONS  
0 NTG161AA01 COMMUNICATIONS - X.25  
0 NTG161AA01 COMMUNICATIONS - X.25  
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0 NTG164AA01 LOG CONSOLE TASK  
0 NTG176AA02 XSRU APPLICATION  
0 NTG176AA02 XSRU APPLICATION  
0 NTG176AA02 XSRU APPLICATION  
0 NTG176AA02 XSRU APPLICATION  
0 NTG283AA01 OPERATIONAL MEASUREMENTS  
0 NTG283AA01 OPERATIONAL MEASUREMENTS  
0 NTG283AA01 OPERATIONAL MEASUREMENTS  
0 NTG283AA01 OPERATIONAL MEASUREMENTS  
0 NTG284AA01 GENERAL UTILITIES  
0 NTG284AA01 GENERAL UTILITIES  
0 NTG284AA01 GENERAL UTILITIES  
0 NTG284AA01 GENERAL UTILITIES

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0 NTG169AA04 STATUS RTM  
0 DNC-50/SDS MASTER PACKAGE

0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
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|---|------------|------------|----------------|
| 0 | NTG000AA02 | DVS        | BASE           |
| 0 | NTG000AA02 | DVS        | BASE           |
| 0 | NTG000AA02 | DVS        | BASE           |
| 0 | NTG000AA02 | DVS        | BASE           |
| 0 | NTG000AA02 | DVS        | BASE           |
| 0 | NTG001AA04 | DNC        | BASE           |
| 0 | NTG001AA04 | DNC        | BASE           |
| 0 | NTG001AA04 | DNC        | BASE           |
| 0 | NTG001AA04 | DNC        | BASE           |
| 0 | NTG001AA04 | DNC        | BASE           |
| 0 | NTG001AA04 | DNC        | BASE           |
| 0 | NTG001AA04 | DNC        | BASE           |
| 0 | NTG001AA04 | DNC        | BASE           |
| 0 | NTG001AA04 | DNC        | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG005AA03 | DNC-50/SDS | BASE           |
| 0 | NTG100AA03 | SMDR       | COLLECTOR      |
| 0 | NTG100AA03 | SMDR       | COLLECTOR      |
| 0 | NTG100AA03 | SMDR       | COLLECTOR      |
| 0 | NTG100AA03 | SMDR       | COLLECTOR      |
| 0 | NTG100AA03 | SMDR       | COLLECTOR      |
| 0 | NTG100AA03 | SMDR       | COLLECTOR      |
| 0 | NTG100AA03 | SMDR       | COLLECTOR      |
| 0 | NTG100AA03 | SMDR       | COLLECTOR      |
| 0 | NTG109AA03 | SMDR       | SPOOLING       |
| 0 | NTG109AA03 | SMDR       | SPOOLING       |
| 0 | NTG109AA03 | SMDR       | SPOOLING       |
| 0 | NTG109AA03 | SMDR       | SPOOLING       |
| 0 | NTG109AA03 | SMDR       | SPOOLING       |
| 0 | NTG109AA03 | SMDR       | SPOOLING       |
| 0 | NTG109AA03 | SMDR       | SPOOLING       |
| 0 | NTG109AA03 | SMDR       | SPOOLING       |
| 0 | NTG109AA03 | SMDR       | SPOOLING       |
| 0 | NTG160AA02 | ASCII      | COMMUNICATIONS |
| 0 | NTG160AA02 | ASCII      | COMMUNICATIONS |
| 0 | NTG160AA02 | ASCII      | COMMUNICATIONS |

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0 NTG164AA01 LOG CONSOLE TASK  
0 NTG176AA02 XSRU APPLICATION  
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0 NTG176AA02 XSRU APPLICATION  
0 NTG176AA02 XSRU APPLICATION  
0 NTG283AA01 OPERATIONAL MEASUREMENTS  
0 NTG283AA01 OPERATIONAL MEASUREMENTS  
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0 NTG283AA01 OPERATIONAL MEASUREMENTS  
0 NTG283AA01 OPERATIONAL MEASUREMENTS  
0 NTG283AA01 OPERATIONAL MEASUREMENTS  
0 NTG284AA01 GENERAL UTILITIES  
0 NTG284AA01 GENERAL UTILITIES  
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0 NTG170AA01 STATUS RTM  
0 COAM MASTER PACKAGE

0 NTG000AA01 DVS BASE  
0 NTG001AA01 DNC BASE  
0 NTG114AA01 DMS-100 MAP REACHTHROUGH  
0 NTG114AA01 DMS-100 MAP REACHTHROUGH  
0 NTG114AA01 DMS-100 MAP REACHTHROUGH  
0 NTG114AA01 DMS-100 MAP REACHTHROUGH  
0 NTG114AA01 DMS-100 MAP REACHTHROUGH  
0 NTG114AA01 DMS-100 MAP REACHTHROUGH  
0 NTG160AA01 ASCII COMMUNICATIONS  
0 NTG161AA01 COMMUNICATIONS - X.25  
0 NTG161AA01 COMMUNICATIONS - X.25  
0 NTG161AA01 COMMUNICATIONS - X.25  
0 NTG161AA01 COMMUNICATIONS - X.25  
0 NTG161AA01 COMMUNICATIONS - X.25  
0 NTG161AA01 COMMUNICATIONS - X.25  
0 NTG164AA01 LOG CONSOLE TASK  
0 NTG164AA01 LOG CONSOLE TASK  
0 NTG164AA01 LOG CONSOLE TASK  
0 NTG164AA01 LOG CONSOLE TASK  
0 NTG164AA01 LOG CONSOLE TASK  
0 NTG164AA01 LOG CONSOLE TASK  
0 NTG171AA01 CENTRALIZED ALARMS (COAM)  
0 NTG172AA01 CENTRALIZED AMA COLLECTION  
0 (COAM)

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0 NTG178AA01 STATUS RTM  
0 BASIC REPORTING PACKAGE - DNC-  
0 100

0 NTG179AA01 MAINTENANCE FIXED FORMAT  
0 REPORTS - DNC-100  
0 NTG179AA01 MAINTENANCE FIXED FORMAT  
0 REPORTS - DNC-100



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0 NTG180AA01 OM FIXED FORMAT REPORTS - DNC-  
0 100  
0 NTG180AA01 OM FIXED FORMAT REPORTS - DNC-  
0 100  
0 NTG180AA01 OM FIXED FORMAT REPORTS - DNC-  
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0 NTG180AA01 OM FIXED FORMAT REPORTS - DNC-  
0 100  
0 NTG180AA01 OM FIXED FORMAT REPORTS - DNC-  
0 100

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0 NTG290AA01 STATUS LTD  
0 STN ADMIN AND OSS I/F MASTER  
0 PKG

0 NTG102AE01 STATION ADMINISTRATION II  
0 (UPGRADE OF NTG102AD)  
0 NTG102AE01 STATION ADMINISTRATION II  
0 (UPGRADE OF NTG102AD)  
0 NTG102AE01 STATION ADMINISTRATION II  
0 (UPGRADE OF NTG102AD)  
0 NTG102AE01 STATION ADMINISTRATION II  
0 (UPGRADE OF NTG102AD)  
0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)  
0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)  
0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)  
0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)

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0 NTG248AB01 OSI MEDIATION I/F FOR BNM/  
0 COSMOS (UPGRADE OF NTG248AA)  
0 NTG248AB01 OSI MEDIATION I/F FOR BNM/  
0 COSMOS (UPGRADE OF NTG248AA)  
0 NTG248AB01 OSI MEDIATION I/F FOR BNM/  
0 COSMOS (UPGRADE OF NTG248AA)  
0 NTG248AB01 OSI MEDIATION I/F FOR BNM/  
0 COSMOS (UPGRADE OF NTG248AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN  
0 UPDATE (UPGRADE OF NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN  
0 UPDATE (UPGRADE OF NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN  
0 UPDATE (UPGRADE OF NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN  
0 UPDATE (UPGRADE OF NTG249AA)  
0 NTG275AA01 GENERIC OSI MEDIATION I/F FOR  
0 BNM/LMOS  
0 NTG275AA01 GENERIC OSI MEDIATION I/F FOR  
0 BNM/LMOS  
0 NTG275AA01 GENERIC OSI MEDIATION I/F FOR  
0 BNM/LMOS  
0 NTG275AA01 GENERIC OSI MEDIATION I/F FOR  
0 BNM/LMOS  
0 NTG287AA01 OSI MEDIATION I/F-BNM TO LMOS  
0 DIRECT LINK  
0 NTG287AA01 OSI MEDIATION I/F-BNM TO LMOS  
0 DIRECT LINK  
0 NTG287AA01 OSI MEDIATION I/F-BNM TO LMOS  
0 DIRECT LINK  
0 NTG287AA01 OSI MEDIATION I/F-BNM TO LMOS  
0 DIRECT LINK  
0 NTG288AA01 OSI MEDIATION I/F FOR BNM/  
0 COSMOS INTERACTIVE  
0 NTG288AA01 OSI MEDIATION I/F FOR BNM/  
0 COSMOS INTERACTIVE  
0 NTG288AA01 OSI MEDIATION I/F FOR BNM/  
0 COSMOS INTERACTIVE  
0 NTG288AA01 OSI MEDIATION I/F FOR BNM/  
0 COSMOS INTERACTIVE

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0 NTG291AA01 STATUS RTM
0 MAINTENANCE REPORTS MASTER PKG
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0 NTG292AA01 STATUS RTM
0 OM REPORTS MASTER PKG
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0 NTG104AB01 OM COLLECTOR (UPGRADE OF  
0 NTG104AA)  
0 NTG104AB01 OM COLLECTOR (UPGRADE OF  
0 NTG104AA)  
0 NTG104AB01 OM COLLECTOR  
0 NTG104AB01 OM COLLECTOR  
0 NTG104AB01 OM COLLECTOR  
0 NTG104AB01 OM COLLECTOR  
0 NTG104AB01 OM COLLECTOR  
0 NTG104AB01 OM COLLECTOR  
0 NTG105AA01 OM FIXED FORMAT REPORTS - DNC-  
0 500  
0 NTG105AA01 OM FIXED FORMAT REPORTS - DNC-  
0 500  
0 NTG105AA01 OM FIXED FORMAT REPORTS - DNC-  
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0 NTG105AA01 OM FIXED FORMAT REPORTS - DNC-  
0 500

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0 NTG293AA01 STATUS RTM  
0 SMDR TO PREMISES MASTER PKG

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0 NTG100AA03 SMDR COLLECTOR  
0 NTG100AA03 SMDR COLLECTOR  
0 NTG100AA03 SMDR COLLECTOR  
0 NTG100AA03 SMDR COLLECTOR  
0 NTG100AA03 SMDR COLLECTOR  
0 NTG100AA03 SMDR COLLECTOR  
0 NTG101AA01 SMDR MASKING  
0 NTG101AA01 SMDR MASKING  
0 NTG101AA01 SMDR MASKING  
0 NTG101AA01 SMDR MASKING  
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0 NTG101AA01 SMDR MASKING  
0 NTG101AA01 SMDR MASKING  
0 NTG101AA01 SMDR MASKING  
0 NTG101AA01 SMDR MASKING  
0 NTG109AA03 SMDR SPOOLING  
0 NTG109AA03 SMDR SPOOLING  
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0 NTG109AA03 SMDR SPOOLING  
0 NTG109AA03 SMDR SPOOLING

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0 NTXC00AA10 STATUS RTM  
0 MERIDIAN SERVICES SMALL  
0 BUSINESS PACKAGES - A

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX436AA01 IBN ENHANCED DIAL PLAN

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0 Software Features  
0 Appendix S

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0 NTXC01AA10 STATUS RTM  
0 MERIDIAN SERVICES SMALL  
0 BUSINESS PACKAGE - B

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX430AA02 ESN

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0 NTXC02AA10 STATUS A+M  
0 MERIDIAN SERVICES SMALL  
0 BUSINESS PACKAGE - C

0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE



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0 NTX299AA02 SPECIAL SERVICES - SCM(UPG BY  
0 NTX299AB)  
0 NTX436AA01 IBN ENHANCED DIAL PLAN

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0 NTXC02AB09 STATUS RTM  
0 MERIDIAN SERVICES SMALL  
0 BUSINESS PKG - C (UPG. OF  
0 NTXC02AA)

0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX436AA01 IBN ENHANCED DIAL PLAN

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0 NTXC03AA11 STATUS A+M  
0 MERIDIAN SERVICES SMALL  
0 BUSINESS PACKAGE - D(UPG. BY  
0 NTXC03

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)

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0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX430AA02 ESN  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN

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0 NTXC03AB02 STATUS RTM  
0 MERIDIAN SERVICES SMALL  
0 BUSINESS PACKAGE - D(UPG. FR  
0 NTXC03

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX430AA02 ESN  
0 NTX434AA01 TIME OF DAY NCOS

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0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN

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0 NTXC04AA11 STATUS A+M  
0 MERIDIAN SERVICES SMALL  
0 BUSINESS PACKAGE - E

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX412CA04 IBN - CUSTOMER DATA  
0 CHANGE(UPG. BY NTX412CB)  
0 NTX430AA02 ESN  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING

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0 NTXC04AB03 STATUS RTM  
0 MERIDIAN SERVICES SMALL  
0 BUSINESS PACKAGE - E

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX430AA02 ESN  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING

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0 NTXC07AF01 STATUS LTD TARGET SUPERNODE  
0 SMART MANAGEMENT SERIES 30  
0 (CND) (UPG OF C07AE)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE

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0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC

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0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE21AA01 CMS NAC INTERFACE  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS

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0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ57AA02 NSS DATABASE CONTROL POINT  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL       |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION   |
| 0 |            | FOR DMS ISI                    |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS  |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD          |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING   |
| 0 |            | CALLS                          |
| 0 | NTXJ78AA02 | CLASS II ON MDC                |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY  |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A            |
| 0 |            | TRANSPARENCY                   |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION   |
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS |
| 0 |            | (UPG OF NTXN01AA)              |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION  |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI   |
| 0 |            | ALI DATABASE                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN47AA01 | NETWORKED ACD ON PRA           |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN67AA01 | MERIDIAN AUTOMATIC ROUTE       |
| 0 |            | SELECTION                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |



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0 NTXN81AA01 TWO DIGIT ANI ID - END  
0 OFFICE(LAMA)  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN86AA01 E911 ACD PSAP MIS ENHANCEMENTS  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP55AB01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/LDR) (UPG OF P55AA)  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY

| 0 |            | BLOCKING FOR LINES             |
|---|------------|--------------------------------|
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ41AA01 | NB / SB ENHANCEMENT            |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ70AA01 | UNIVERSAL CLASS FEATURE ACCESS |
| 0 | NTXQ81AA01 | CLASS - NAME DISPLAY ON MADN   |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXQ90AB01 | ENHANCED RESIDENTIAL SERVICES  |
| 0 |            | (UPG OF NTXQ90AA)              |
| 0 | NTXQ95AA01 | LINE LOG REDUCTION             |
| 0 | NTXR25AA02 | NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR35AA01 | 800 DIALED NUMBER DISPLAY AND  |
| 0 |            | BCLID                          |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 | MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 | POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR45AA01 | AUTO ATTENDANT - RLT (DMS-100) |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 | DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 | CLASS: SPLIT NPA MANAGEMENT    |
| 0 | NTXR62AA01 | STUTTER DIALTONE ENHANCEMENT   |
| 0 | NTXR65AA01 | FLEXIBLE DWS ACCESS            |
| 0 | NTXR66AA01 | DWS ACCESS TO CARRIER (ACCESS  |
| 0 |            | TANDEM)                        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR71AA01 | RSC-S EXTENDED DISTANCE        |
| 0 |            | CAPABILITY                     |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXR74AA01 | ENABLING OF MBG FEATURE        |
| 0 |            | NETWORKING                     |
| 0 | NTXR75AA01 | VCN 1A BILLING                 |
| 0 | NTXR76AA01 | VCN 1A OM'S                    |
| 0 | NTXR78AA01 | MBG FEATURE NETWORKING CONTROL |
| 0 | NTXR80AA01 | CONTROL OF MULTIPLE CALL       |
| 0 |            | FORWARD                        |
| 0 | NTXR83AA01 | PER LINE FEATURE CONTROL       |
| 0 | NTXR88AA01 | NETWORK ACCESS REGISTERS FOR   |
| 0 |            | DMS100                         |

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0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS12AA01 DIGITAL TEST ACCESS FOR PRI  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXS81AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED NO. DISP - CMS  
0 NTXS82AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE

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0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057BA01 CUTOVER ASSISTANCE III (NON  
0 RESIDENT)  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX061AA01 CIRCUIT SWITCHED DIGITAL DATA  
0 SERVICE I  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX080BA01 | TERMINATING CALL BILLING(NT    |
| 0 |            | FORMAT)                        |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPULSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |

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0  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (   
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX181AA12 NON RES NT SUPPORT SOFTWARE  
0 (ORDERABLE BY TIA CUST. ONLY)  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)

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0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)

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0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX728AA02 SMDR DATA ACCESS  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)



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0 NTX734AA01 EAE0 - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.0.30)  
0 NTX750AD01 ISDN BASIC ACCESS (UPG FROM  
0 NTX750AC)  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS

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0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA

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0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC07BF01 STATUS NAP TARGET SUPERNODE  
0 SMART MANAGEMENT SERIES 30  
0 (REGRADE OF NTXC07AF)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE

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0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE21AA01 CMS NAC INTERFACE  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT

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0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXF94AB01 | ISDN INTEGRATED PH MAINTENANCE |
| 0 |            | W/O OAMP(REP NTXF94AA)         |
| 0 | NTXH70AA01 | C7 SUPPORT FOR CHANNELIZED     |
| 0 |            | ACCESS                         |
| 0 | NTXH77AA01 | CHANNELIZED ACCESS ON LPP/LIS  |
| 0 | NTXJ00AA03 | ISDN ON RSC (REP BY NTXJ00AB)  |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT    |
| 0 | NTXJ38AA01 | MDC WARM LINE                  |
| 0 | NTXJ39AA01 | CLASS VISUAL MESSAGE WAITING   |
| 0 |            | INDICATOR                      |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION      |
| 0 |            | TOOLS                          |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                |
| 0 | NTXJ47AA01 | TEEN SERVICE ON MDC            |
| 0 | NTXJ51AA02 | ISDN DIGITAL TEST ACCESS       |
| 0 | NTXJ57AA02 | NSS DATABASE CONTROL POINT     |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE   |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG  |
| 0 |            | OF NTXJ59AB)                   |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA |
| 0 |            | (UPG OF NTXJ60AA)              |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL       |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION   |
| 0 |            | FOR DMS ISI                    |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS  |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD          |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING   |
| 0 |            | CALLS                          |
| 0 | NTXJ78AA02 | CLASS II ON MDC                |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY  |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A            |
| 0 |            | TRANSPARENCY                   |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION   |
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS |
| 0 |            | (UPG OF NTXN01AA)              |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION  |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI   |
| 0 |            | ALI DATABASE                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |

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0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN47AA01 NETWORKED ACD ON PRA  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN67AA01 MERIDIAN AUTOMATIC ROUTE  
0 SELECTION  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN81AA01 TWO DIGIT ANI ID - END  
0 OFFICE(LAMA)  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN86AA01 E911 ACD PSAP MIS ENHANCEMENTS  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)

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0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP55AB01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/LDR) (UPG OF P55AA)  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR35AA01 800 DIALED NUMBER DISPLAY AND  
0 BCLID  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR45AA01 AUTO ATTENDANT - RLT (DMS-100)  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS



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0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR80AA01 CONTROL OF MULTIPLE CALL  
0 FORWARD  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS12AA01 DIGITAL TEST ACCESS FOR PRI  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)

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0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXS81AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED NO. DISP - CMS  
0 NTXS82AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT

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0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057BA01 CUTOVER ASSISTANCE III (NON  
0 RESIDENT)  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX061AA01 CIRCUIT SWITCHED DIGITAL DATA  
0 SERVICE I  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX080BA01 TERMINATING CALL BILLING(NT  
0 FORMAT)  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

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0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX181AA12 | NON RES NT SUPPORT SOFTWARE    |
| 0 |            | (ORDERABLE BY TIA CUST. ONLY)  |
| 0 | NTX186AB02 | EQUAL ACCESS END OFFICE (UPG   |
| 0 |            | OF NTX186AA)                   |
| 0 | NTX195AA05 | MECHANIZED LOOP TESTER (MLT)   |
| 0 |            | I/F                            |
| 0 | NTX196AA02 | CALLING NUMBER ANNOUNCEMENT    |
| 0 |            | (CNA)                          |
| 0 | NTX206AA02 | UNAUTHORIZED DIGITONE SERVICE  |
| 0 |            | DETECTION                      |
| 0 | NTX209AB01 | FEATURE GRP B AMA - END (ATT   |
| 0 |            | FORMAT)(UPG FR.NTX209AA)       |
| 0 | NTX213AC01 | SUBSCRIBER CARRIER             |
| 0 |            | MODULE(SCM)(REP. NTX213AB)     |
| 0 | NTX219AB03 | TEEN SERVICE                   |
| 0 | NTX243AA07 | AMA TELEPROCESSING             |
| 0 |            | SYSTEM(AMATPS)                 |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |
| 0 |            | HUNTING(UPG OF 244AA IN BCS23) |
| 0 | NTX250AA15 | DATAPATH - BASIC               |
| 0 | NTX251AA06 | DATAPATH - MODEM POOLING       |
| 0 | NTX255AA02 | DATAPATH PROVISIONING (CANADA) |
| 0 | NTX256AA04 | DATAPATH - LOOP EXTENSION      |
| 0 | NTX257AA01 | DATAPATH - CLOSED USER         |
| 0 |            | GROUPS(CUG)                    |
| 0 | NTX259AA03 | DATAPATH EXTENSION - DPX       |
| 0 | NTX260AA02 | IBN - PRESET CONFERENCE        |
| 0 | NTX262AA01 | IBN PRIORITY CONSOLE ALERTING  |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX274AA04 | DTC 30 CARRIER MAINTENANCE     |
| 0 | NTX277AA02 | DIALABLE LINE CIRCUIT          |
| 0 |            | IDENTIFICATION                 |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND      |
| 0 |            | TREATMENT                      |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX297AA01 | BRIDGES SERVICES               |
| 0 | NTX299AB01 | SPECIAL SERVICES - SCM(UPG OF  |
| 0 |            | NTX299AA)                      |

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0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX418AA01 IBN SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX558AA01 CCC END OFFICE DP/DTMF

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0 GENERATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX728AA02 SMDR DATA ACCESS  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAEO - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AD01 ISDN BASIC ACCESS (UPG FROM  
0 NTX750AC)  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |
| 0 | NTX796AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - BASIC RATE INTERFACE         |
| 0 | NTX797AB01 | PRI MESSAGE WAITING INDICATION |
| 0 |            | (UPG OF 797AA)                 |
| 0 | NTX804AA02 | OM POLLING & VERTICAL          |
| 0 |            | SERVICES(ORDER VIA MP NTX071BG |
| 0 |            | & UP)                          |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. FR. NTX878AD |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX888AA01 | EAOSS                          |
| 0 | NTX892AA04 | MPC MULTILINK MANAGEMENT       |
| 0 | NTX898AA01 | VARIABLE SPEED CALL ACCESS     |
| 0 |            | CODE - IBN                     |
| 0 | NTX899AA01 | CALL TRANSFER ENHANCEMENTS     |



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0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC08AF01 STATUS LTD TARGET SUPERNODE  
0 SMART MANAGEMENT SERIES 40  
0 (CDN)(UPG OF C08AE)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | AHEAD                          |
| 0 | NTXA31AA01 | DISA THIRD DIAL TONE - IBN     |
| 0 | NTXA32AA01 | DISTINCTIVE CALL WAITING       |
| 0 |            | RINGBACK                       |
| 0 | NTXA33AA01 | MADN RING FORWARD              |
| 0 | NTXA35AA03 | NETWORK NUMBER DISPLAY         |
| 0 | NTXA36AA01 | NETWORK WIDE RING AGAIN        |
| 0 | NTXA39AA02 | MERIDIAN NETWORK ATTENDANT     |
| 0 |            | SERVICE                        |
| 0 | NTXA41AA01 | CLASS: CALLING NUMBER DELIVERY |
| 0 |            | BLOCKING ADMINISTRATION        |
| 0 | NTXA42AA01 | CLASS DISTINCTIVE RINGING/CALL |
| 0 |            | WAITING                        |
| 0 | NTXA45AA01 | CLASS SELECTIVE CALL           |
| 0 |            | ACCEPTANCE                     |
| 0 | NTXA52AB01 | ACD REMOTE LOAD MANAGEMENT I   |
| 0 |            | (REP. NTXA52AA)                |
| 0 | NTXA64AA05 | RES(RESIDENTIAL ENHANCED       |
| 0 |            | SERVICES) BASE                 |
| 0 | NTXA67AA01 | EXTENDED XPM DIAGNOSTICS       |
| 0 | NTXA68AA01 | NETWORK MESSAGE SERVICE        |
| 0 | NTXA72AA01 | SECONDARY MADN CALL FORWARDING |
| 0 | NTXA73AA01 | LOUDSPEAKER PAGING ANSWER      |
| 0 | NTXA74AA01 | OUTGOING RESTRICTION CONTROL   |
| 0 | NTXA77AA01 | ENHANCED UCD                   |
| 0 | NTXA79AA03 | IBN TRUNKS WITH ISUP           |
| 0 |            | SIGNALLING                     |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY           |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES     |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA         |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD            |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/      |
| 0 |            | REMOTE (UPG OF NTXA85AA)       |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC- |
| 0 |            | 96/REMOTE: SPECIAL SERVICES    |
| 0 | NTXA87AA01 | CMS LONG DISTANCE INDICATOR    |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM             |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM         |
| 0 | NTXA94AA01 | RES FEATURES                   |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL           |
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |
| 0 |            | EAE0 (REP. NTXE13AA)           |

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0 NTXE21AA01 CMS NAC INTERFACE  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF16AA01 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS

|   |            |                                 |
|---|------------|---------------------------------|
| 0 |            | COMPOSITE MASTER                |
| 0 | NTXF27AA01 | SYNCHRONIZATION - CESIUM, LORAN |
| 0 |            | - C MASTER                      |
| 0 | NTXF46AA04 | SUBSCRIBER CARRIER MODULE-100   |
| 0 |            | ACCESS(SMA)                     |
| 0 | NTXF55AA02 | CLASS BULK CALLING LINE         |
| 0 |            | IDENTIFICATION                  |
| 0 | NTXF56AA01 | CLASS ON MDC (BASE)             |
| 0 | NTXF60AA01 | CLASS ON MVP II                 |
| 0 | NTXF61AA02 | DMS INTEGRATED E911 PSAP        |
| 0 |            | FUNCTIONALITY                   |
| 0 | NTXF71AB02 | SUPERNODE ENHANCED              |
| 0 |            | MESSAGING(UPG. OF NTXF71AA)     |
| 0 | NTXF72AB01 | CLASS ON MBS (UPG OF NTXF72AA)  |
| 0 | NTXF82AA01 | RES SINGLE LINE VARIETY         |
| 0 |            | PACKAGE                         |
| 0 | NTXF87AA02 | SERVICE ORDER SIMPLIFICATION    |
| 0 | NTXF88AB01 | MBS INTERACTIVE DISPLAYS (UPG   |
| 0 |            | OF NTXF88AA)                    |
| 0 | NTXF92AA02 | ISDN OAM BASE                   |
| 0 | NTXF93AA02 | ISDN PROVISIONING               |
| 0 | NTXF94AB01 | ISDN INTEGRATED PH MAINTENANCE  |
| 0 |            | W/O OAMP(REP NTXF94AA)          |
| 0 | NTXH70AA01 | C7 SUPPORT FOR CHANNELIZED      |
| 0 |            | ACCESS                          |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS  |
| 0 | NTXJ00AA03 | ISDN ON RSC (REP BY NTXJ00AB)   |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT     |
| 0 | NTXJ38AA01 | MDC WARM LINE                   |
| 0 | NTXJ39AA01 | CLASS VISUAL MESSAGE WAITING    |
| 0 |            | INDICATOR                       |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION       |
| 0 |            | TOOLS                           |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                 |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                 |
| 0 | NTXJ47AA01 | TEEN SERVICE ON MDC             |
| 0 | NTXJ51AA02 | ISDN DIGITAL TEST ACCESS        |
| 0 | NTXJ57AA02 | NSS DATABASE CONTROL POINT      |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE    |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG   |
| 0 |            | OF NTXJ59AB)                    |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA  |
| 0 |            | (UPG OF NTXJ60AA)               |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL        |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION    |
| 0 |            | FOR DMS ISI                     |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS   |

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0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN86AA01 E911 ACD PSAP MIS ENHANCEMENTS  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP55AB01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/LDR) (UPG OF P55AA)  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING

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0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR35AA01 800 DIALED NUMBER DISPLAY AND  
0 BCLID  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR45AA01 AUTO ATTENDANT - RLT (DMS-100)  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR80AA01 CONTROL OF MULTIPLE CALL  
0 FORWARD  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING

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0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS12AA01 DIGITAL TEST ACCESS FOR PRI  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXS81AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED NO. DISP - CMS  
0 NTXS82AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX025AA02 | EMERGENCY STAND-ALONE          |
| 0 |            | OPERATION                      |
| 0 | NTX028AA01 | DIRECT DIALLING OVERSEAS,      |
| 0 |            | LOCAL (CANADA)                 |
| 0 | NTX041AB09 | CCS7 - MTP/SCCP(SEE NTXR72AA   |
| 0 |            | FOR LPP APPLICATION)           |
| 0 | NTX042AA04 | LOCAL AUTOMATIC MESSAGE        |
| 0 |            | ACCOUNTING (LAMA)              |
| 0 | NTX043AA03 | LOCAL CALL DETAIL RECORDING    |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX049AD01 | SINGLE PARTY REVERTIVE CALLING |
| 0 | NTX049AL01 | TIME AND TEMPERATURE           |
| 0 |            | ANNOUNCEMENT                   |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX057AB05 | CUTOVER ASSISTANCE II (NON     |
| 0 |            | RESIDENT)                      |
| 0 | NTX057BA01 | CUTOVER ASSISTANCE III (NON    |
| 0 |            | RESIDENT)                      |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX061AA01 | CIRCUIT SWITCHED DIGITAL DATA  |
| 0 |            | SERVICE I                      |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX066AB01 | BILINGUAL INTERFACE(UPG FR.    |
| 0 |            | NTX066AA)                      |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX080BA01 | TERMINATING CALL BILLING(NT    |
| 0 |            | FORMAT)                        |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |

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0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX181AA12 NON RES NT SUPPORT SOFTWARE  
0 (ORDERABLE BY TIA CUST. ONLY)  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX259AA03 DATAPATH EXTENSION - DPX

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0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND

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0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX728AA02 SMDR DATA ACCESS  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAEO - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AD01 | ISDN BASIC ACCESS (UPG FROM    |
| 0 |            | NTX750AC)                      |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |
| 0 | NTX796AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - BASIC RATE INTERFACE         |
| 0 | NTX797AB01 | PRI MESSAGE WAITING INDICATION |
| 0 |            | (UPG OF 797AA)                 |
| 0 | NTX804AA02 | OM POLLING & VERTICAL          |
| 0 |            | SERVICES(ORDER VIA MP NTX071BG |
| 0 |            | & UP)                          |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |

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0 NTX851AA01 SMDR DERIVED FROM BCR AMA
0 NTX853AA01 IBN ALARM CALL STATUS ON
0 CONSOLES
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN
0 INDIVIDUAL CONSOLE BASIS
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION
0 NTX877AB01 INTERFACE TO NON-DATA LINK
0 CONSOLE(UPG. OF NTX877AA)
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS
0 SET SERVICES(UPG. FR. NTX878AD
0 NTX881AC03 SWITCH BIT ERROR RATE
0 MAINTENANCE(UPG. OF NTX881AB)
0 NTX883AA01 INTER OFFICE TRK BIT ERROR
0 RATE TESTING
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.
0 OF NTX885AA)
0 NTX888AA01 EA0SS
0 NTX892AA04 MPC MULTILINK MANAGEMENT
0 NTX898AA01 VARIABLE SPEED CALL ACCESS
0 CODE - IBN
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS
0 NTX901AA24 LOCAL FEATURES I
0 NTX902AA07 LOCAL FEATURES II
0 NTX903AA01 TRANSMISSION MEASUREMENTS
0 NTX940AA13 CM BILGE
0 NTX941AA12 CM COMMON
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD
0 MODULE(SLM)(UPG.FR. NTX942AB)
0 NTX944AA03 BASE NODE MAINTENANCE
0 NTX945AA03 MS BASE LINK MAINTENANCE
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF
0 NTX946AA IN BCS26)
0 NTX950AA06 MS BILGE
0 NTX951AA08 MS COMMON
0 NTX983AB02 SERVICE SWITCHING POINT
0 PRIVATE VIRTUAL NTWKG(REP
0 NTX983AA)
0 NTX984AA01 SERVICE SWITCHING POINT
0 PRIV.VIRTUAL NETWRKG-
0 ATT.SERVICES
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA
0 STREAM(UPG OF NTX991AE IN
0 BCS32)

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0 NTXC08BF01 STATUS NAP TARGET SUPERNODE  
0 SMART MANAGEMENT SERIES 40  
0 (REGRADE OF NTXC08AF)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXA77AA01 | ENHANCED UCD                   |
| 0 | NTXA79AA03 | IBN TRUNKS WITH ISUP           |
| 0 |            | SIGNALLING                     |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY           |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES     |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA         |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD            |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/      |
| 0 |            | REMOTE (UPG OF NTXA85AA)       |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC- |
| 0 |            | 96/REMOTE: SPECIAL SERVICES    |
| 0 | NTXA87AA01 | CMS LONG DISTANCE INDICATOR    |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM             |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM         |
| 0 | NTXA94AA01 | RES FEATURES                   |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL           |
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |
| 0 |            | EAE0 (REP. NTXE13AA)           |
| 0 | NTXE21AA01 | CMS NAC INTERFACE              |
| 0 | NTXE22AA02 | ACD SUPERGROUP                 |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM      |
| 0 |            | POOLING                        |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY |
| 0 | NTXE28AA02 | AMA MOD (LAMA MODULES)         |
| 0 | NTXE30AA01 | CCS7 SIGNALING LINK ENHANCED   |
| 0 |            | MAINTENANCE FOR MSB7           |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL     |
| 0 |            | RETRANSMISSION                 |
| 0 | NTXE33AA02 | IBN ATTENDANT CONSOLE          |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTXE38AB01 | CLASS: CND ON SCMS/SMR(UPG.OF  |
| 0 |            | NTXE38AA)                      |
| 0 | NTXE39AA01 | CALL FORWARD BUSY/DO NOT       |
| 0 |            | ANSWER SPLITS                  |
| 0 | NTXE40AB01 | MERIDIAN BUSINESS SET INSPECT  |
| 0 |            | KEY (UPG. FROM NTXE40AA)       |
| 0 | NTXE43AA01 | TERMINATING BILLING OPTION     |
| 0 | NTXE44AA01 | EXECUTIVE BUSY OVERRIDE        |
| 0 |            | ENHANCEMENT                    |
| 0 | NTXE46AA01 | CALLING NAME/NUMBER DELIVERY   |
| 0 |            | BLOCKING                       |
| 0 | NTXE47AA02 | MERIDIAN DISPLAY COMMUNICATION |

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0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF16AA01 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED

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|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN47AA01 | NETWORKED ACD ON PRA           |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN67AA01 | MERIDIAN AUTOMATIC ROUTE       |
| 0 |            | SELECTION                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |
| 0 | NTXN81AA01 | TWO DIGIT ANI ID - END         |
| 0 |            | OFFICE(LAMA)                   |
| 0 | NTXN82AB01 | RSC ENHANCED ESA (LINES &      |
| 0 |            | TRUNKS)(UPG FR NTXN82AA)       |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXN86AA01 | E911 ACD PSAP MIS ENHANCEMENTS |
| 0 | NTXN87AB01 | INTEGRATED TESTING BASE        |
| 0 | NTXN89AA01 | ISDN TESTING                   |
| 0 | NTXN91AA01 | TL 1 TESTING INTERFACE BASE    |
| 0 | NTXN93AA01 | TL-1 TESTING ENHANCED BUSINESS |
| 0 | NTXN99AA01 | ISDN INBOUND MODEM POOLING     |
| 0 | NTXP00AA01 | LINE CARD MONITOR              |
| 0 | NTXP01AA03 | INTELLIGENT NETWORK 0.0 BASE   |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP12AA01 | CLASS: ANONYMOUS CALLER        |
| 0 |            | REJECTION                      |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP38AA01 | BD CHANNEL LOOPBACK            |
| 0 | NTXP47AB01 | DMS PACKET HANDLER BASE (UPG   |
| 0 |            | OF NTXP47AA)                   |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP53AA01 | ACD ACCESS FEATURE GROUPING    |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXP55AB01 | DYNAMICALLY CONTROLLED ROUTING |
| 0 |            | (DCR/LDR) (UPG OF P55AA)       |
| 0 | NTXP57AA01 | CALL WAKE-UP SERVICE           |
| 0 | NTXP58AA01 | VFG SPPRT FOR E911(LOC &/OR    |
| 0 |            | INC ISUP/ANI CALL)             |
| 0 | NTXP73AA01 | CNDB OFFICE-WIDE ACTIVATION    |
| 0 | NTXP75AA01 | DMS PACKET HANDLER SERVORD     |
| 0 | NTXP80AA01 | TWO LEVEL AUTOMATIC RECALL     |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTXP81AA01 | REMOTE ACTIVATION OF LINE LOAD |
| 0 |            | CONTROL                        |
| 0 | NTXP92AB01 | RSC-S BASIC (UPG OF NTPX92AA)  |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXP99AB01 | E911 REMOTE CALL EVENT         |
| 0 |            | RECORD(UPG.OF NTPX99AA)        |
| 0 | NTXQ12AA01 | RSC ENHANCED ESA(LINES         |
| 0 |            | ONLY)(FOR BCS34 RELEASE)       |
| 0 | NTXQ18AA01 | SRDB MEMORY ADMINISTRATION     |
| 0 | NTXQ29AA01 | CLASS+ CALLING NAME DELIVERY   |
| 0 |            | BLOCKING FOR LINES             |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ41AA01 | NB / SB ENHANCEMENT            |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ70AA01 | UNIVERSAL CLASS FEATURE ACCESS |
| 0 | NTXQ81AA01 | CLASS - NAME DISPLAY ON MADN   |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXQ90AB01 | ENHANCED RESIDENTIAL SERVICES  |
| 0 |            | (UPG OF NTXQ90AA)              |
| 0 | NTXQ95AA01 | LINE LOG REDUCTION             |
| 0 | NTXR25AA02 | NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR35AA01 | 800 DIALED NUMBER DISPLAY AND  |
| 0 |            | BCLID                          |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 | MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 | POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR45AA01 | AUTO ATTENDANT - RLT (DMS-100) |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 | DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 | CLASS: SPLIT NPA MANAGEMENT    |

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0 & DIALED NO. DISP - CMS
0 NTXS82AA01 END OFFICE 800 PLUS CALLER ID
0 & DIALED
0 NTXV00AA01 DN SCREENING DATABASE - BASE
0 NTXW00AA02 WORLD LINE CARD BASE
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE
0 REPORT
0 NTXW20AA01 WORLD LINE CARD 900 +2
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2
0 NTXY97AA01 TCAP TRID EXPANSION
0 NTX000AA19 BILGE
0 NTX001AA29 COMMON BASIC
0 NTX006AA04 BUSINESS LINES
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF
0 NTX007AA)
0 NTX008AB02 PBX INTERFACE II(UPG. OF
0 NTX008AA)
0 NTX019AA02 CIVIC SERVICES
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE
0 FROM NTX020AB)
0 NTX021AA04 REMOTE CALL FORWARDING
0 NTX023AB03 REMOTE LINE MODULE (RLM)
0 NTX024AA01 RLM INTRA-RLM CALLING
0 NTX025AA02 RLM EMERGENCY STAND-ALONE
0 OPERATION
0 NTX028AA01 DIRECT DIALLING OVERSEAS,
0 LOCAL (CANADA)
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA
0 FOR LPP APPLICATION)
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE
0 ACCOUNTING (LAMA)
0 NTX043AA03 LOCAL CALL DETAIL RECORDING
0 NTX048AA06 SYNCHRONIZATION
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING
0 NTX049AL01 TIME AND TEMPERATURE
0 ANNOUNCEMENT
0 NTX051AA02 AUTOMATIC TRUNK TESTING
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE
0 NTX054AA05 LINE TEST POSITION (LTP)
0 NTX055AA03 TRUNK TEST POSITION (TTP)
0 NTX055AB03 TTP-DIGIT VERIFICATION
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT
0 NTX055BA01 RONI TRUNK TESTING
0 NTX056AA05 ENHANCED ADMINISTRATION
0 NTX057AB05 CUTOVER ASSISTANCE II (NON

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|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | RESIDENT)                      |
| 0 | NTX057BA01 | CUTOVER ASSISTANCE III (NON    |
| 0 |            | RESIDENT)                      |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX061AA01 | CIRCUIT SWITCHED DIGITAL DATA  |
| 0 |            | SERVICE I                      |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX066AB01 | BILINGUAL INTERFACE(UPG FR.    |
| 0 |            | NTX066AA)                      |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX080BA01 | TERMINATING CALL BILLING(NT    |
| 0 |            | FORMAT)                        |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |



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0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPULSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX181AA12 NON RES NT SUPPORT SOFTWARE  
0 (ORDERABLE BY TIA CUST. ONLY)  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG

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0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS

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0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP       |
| 0 |            | NTX621AA)                      |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX717AB01 | IBN TRK VERIFICATION           |
| 0 |            | DESIGNATED STN(UPGR.OF         |
| 0 |            | NTX717AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX728AA02 | SMDR DATA ACCESS               |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 | FLEXIBLE ANI                   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AD01 | ISDN BASIC ACCESS (UPG FROM    |
| 0 |            | NTX750AC)                      |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |

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0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS

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0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC09AA04 STATUS A+M  
0 BUSINESS NETWORK SERVICES(UPG.  
0 BY NTXC09AB)  
  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA43AA01 CALL FORWARD REMOTE ACTIVATION  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXE09AA01 ACD ON 2500 SET(UPG. BY

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0 NTXE09AB)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AA03 MBS INTERACTIVE DISPLAYS(UPG  
0 BY NTXF88AB)  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | BX.25                          |
| 0 | NTX399AA01 | IBN/ESB COMPATIBILITY          |
| 0 | NTX407AB01 | ACD - CALL PROCESSING          |
| 0 |            | (REP.NTX407AA)                 |
| 0 | NTX410AA02 | DYNAMIC ATTENDANT CONSOLE      |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX414AA01 | IBN - DIRECTED CALL PARK,      |
| 0 |            | BUSINESS SET AND 2500 SET      |
| 0 | NTX415AA07 | ACD BASIC                      |
| 0 | NTX416AG01 | ACD ENHANCED II(UPG. OF        |
| 0 |            | NTX416AF)                      |
| 0 | NTX426AA02 | ASYNCHRONOUS INTERFACE LINE    |
| 0 |            | CARD                           |
| 0 | NTX435AA03 | IBN SUPERSET                   |
| 0 | NTX436AA01 | IBN ENHANCED DIAL PLAN         |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX878AD01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. BY NTX878AE) |
| 0 | NTX898AA01 | VARIABLE SPEED CALL ACCESS     |
| 0 |            | CODE - IBN                     |
| 0 | NTX899AA01 | CALL TRANSFER ENHANCEMENTS     |
| 0 | NTX946AB01 | EBS - CALL NAME DISPLAY(UPG.OF |
| 0 |            | NTX946AA IN BCS26)             |
| 0 | NTX991AE01 | ACD-MGMT REP 2 WAY DATA        |
| 0 |            | STREAM(UPG.BY NTX991AF)        |



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0 NTXC09AB03 STATUS A+M  
0 BUSINESS NETWORK  
0 SERVICES(UPG.BY NTXC09AC)

0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA43AA01 CALL FORWARD REMOTE ACTIVATION  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AA03 MBS INTERACTIVE DISPLAYS(UPG  
0 BY NTXF88AB)  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)

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0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AH01 ACD ENHANCED II(UPG. OF  
0 NTX416AG IN BCS32)  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE

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0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX878AD01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. BY NTX878AE)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC09AC02 STATUS A+M  
0 BUSINESS NETWORK  
0 SERVICES(UPG.FR NTXC09AB)

0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA43AA01 CALL FORWARD REMOTE ACTIVATION  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS

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0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AA03 MBS INTERACTIVE DISPLAYS(UPG  
0 BY NTXF88AB)  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)

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0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE
0 MEASUREMENTS
0 NTX413AB01 IBN - ENHANCED CALL
0 FORWARDING(UPGR. OF NTX413AA)
0 NTX414AA01 IBN - DIRECTED CALL PARK,
0 BUSINESS SET AND 2500 SET
0 NTX415AA07 ACD BASIC
0 NTX416AI01 ACD ENHANCED II(UPG. OF
0 NTX416AH)
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE
0 CARD
0 NTX435AA03 IBN SUPERSET
0 NTX436AA01 IBN ENHANCED DIAL PLAN
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP
0 NTX560AA)
0 NTX719AA01 BUSINESS SET BUSY INDICATOR
0 NTX727AD01 ACD - LOAD MANAGEMENT III
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER
0 NTX732AA06 SIMPLIFIED MESSAGE DESK
0 INTERFACE(SMDI)
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF
0 NTX733AD IN BCS29)
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN
0 NTX822AA02 EBS AS MESSAGE CENTRE
0 NTX824AB01 ENHANCED CALL WAITING -
0 IBN(UPGR. OF NTX824AA)
0 NTX853AA01 IBN ALARM CALL STATUS ON
0 CONSOLES
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN
0 INDIVIDUAL CONSOLE BASIS
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS
0 SET SERVICES(UPG. FR. NTX878AD
0 NTX898AA01 VARIABLE SPEED CALL ACCESS
0 CODE - IBN
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF
0 NTX946AA IN BCS26)
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA
0 STREAM(UPG OF NTX991AE IN
0 BCS32)

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## 0 NTXC11AA03 STATUS RTM

0 BCTEL LOCAL UTILITY MASTER  
0 PACKAGE

0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX127AA01 WARM LINE  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTXC13AC01 STATUS A+M TARGET SUPERNODE  
0 ACD SERVER SERVICES(UPG.FR  
0 NTXC13AB)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES |
| 0 | NTX178AA01 | NON RESIDENT DIAGNOSTIC        |
| 0 |            | UTILITIES                      |
| 0 | NTX186AA08 | EQUAL ACCESS END OFFICE(UPG BY |
| 0 |            | NTX186AB)                      |
| 0 | NTX195AA05 | MECHANIZED LOOP TESTER (MLT)   |
| 0 |            | I/F                            |
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE            |
| 0 | NTX218AA03 | 1A/1B EADAS INTERFACE          |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX277AA02 | DIALABLE LINE CIRCUIT          |
| 0 |            | IDENTIFICATION                 |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT    |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX387AC02 | SMU - SUBSCRIBER MODULE        |
| 0 |            | URBAN(UPG.FR NTX387AB)         |
| 0 | NTX407AB01 | ACD - CALL PROCESSING          |
| 0 |            | (REP.NTX407AA)                 |
| 0 | NTX413AB01 | IBN - ENHANCED CALL            |
| 0 |            | FORWARDING(UPGR. OF NTX413AA)  |
| 0 | NTX415AA07 | ACD BASIC                      |
| 0 | NTX416AJ01 | ACD ENHANCED II (UPG. OF       |
| 0 |            | NTX416AI)                      |
| 0 | NTX455AB01 | 1A EADAS NETWORK MANAGEMENT    |
| 0 |            | (UPG. OF NTX455AA)             |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |



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0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC13AD01 STATUS RTM TARGET SUPERNODE  
0 ACD SERVER SERVICES(UPG.OF  
0 NTXC13AC)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS

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0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE

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0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX387AC02 SMU - SUBSCRIBER MODULE  
0 URBAN(UPG.FR NTX387AB)  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC14AA01 STATUS RTM  
0 TOPS OPEN INTERFACE TOLL AND  
0 ASSISTANCE (HOST)

0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXC15AA01 STATUS RTM  
0 TOPS OPEN INTERFACE TOLL AND  
0 ASSISTANCE (REMOTE)

0 NTP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK

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0 HANDLING  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXC16AA01 STATUS RTM  
0 TOPS OPEN INTERFACE TOLL/  
0 STANDARD DA (HOST)

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXC17AA01 STATUS RTM  
0 TOPS OPEN INTERFACE TOLL/  
0 STANDARD DA (REMOTE)

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0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXC18AA01 STATUS RTM  
0 TOPS OPEN INTERFACE TOLL/IBM  
0 DA (HOST)

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA

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0 MP NTX704,706,708 OR 709)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXC19AA01 STATUS RTM  
0 TOPS OPEN INTERFACE TOLL/IBM  
0 DA (REMOTE)

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXC21AA01 STATUS RTM TARGET SUPERNODE  
0 ENHANCED NETWORK 16K CHANNELS

0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXP72AA01 ENET 16K CONFIGURATION

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0 NTXC22BC01 STATUS NAP  
0 SMART MANAGEMENT SERIES 50-  
0 BRISC (REG OF NTXC08AF)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXA74AA01 | ENHANCED RESTRICTION CONTROL   |
| 0 | NTXA77AA01 | ENHANCED UCD                   |
| 0 | NTXA79AA03 | IBN TRUNKS WITH ISUP           |
| 0 |            | SIGNALLING                     |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY           |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES     |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA         |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD            |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/      |
| 0 |            | REMOTE (UPG OF NTXA85AA)       |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC- |
| 0 |            | 96/REMOTE: SPECIAL SERVICES    |
| 0 | NTXA87AA01 | CMS LONG DISTANCE INDICATOR    |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM             |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM         |
| 0 | NTXA94AA01 | RES FEATURES                   |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL           |
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |
| 0 |            | EAE0 (REP. NTXE13AA)           |
| 0 | NTXE21AA01 | CMS NAC INTERFACE              |
| 0 | NTXE22AA02 | ACD SUPERGROUP                 |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM      |
| 0 |            | POOLING                        |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY |
| 0 | NTXE28AA02 | AMA MOD (LAMA MODULES)         |
| 0 | NTXE30AA01 | CCS7 SIGNALING LINK ENHANCED   |
| 0 |            | MAINTENANCE FOR MSB7           |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL     |
| 0 |            | RETRANSMISSION                 |
| 0 | NTXE33AA02 | IBN ATTENDANT CONSOLE          |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTXE38AB01 | CLASS: CND ON SCMS/SMR(UPG.OF  |
| 0 |            | NTXE38AA)                      |
| 0 | NTXE39AA01 | CALL FORWARD BUSY/DO NOT       |
| 0 |            | ANSWER SPLITS                  |
| 0 | NTXE40AB01 | MERIDIAN BUSINESS SET INSPECT  |
| 0 |            | KEY (UPG. FROM NTXE40AA)       |
| 0 | NTXE43AA01 | TERMINATING BILLING OPTION     |
| 0 | NTXE44AA01 | EXECUTIVE BUSY OVERRIDE        |
| 0 |            | ENHANCEMENT                    |
| 0 | NTXE46AA01 | CALLING NAME/NUMBER DELIVERY   |
| 0 |            | BLOCKING                       |

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0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED

|   |            |                                                     |
|---|------------|-----------------------------------------------------|
| 0 |            | ACCESS                                              |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS                      |
| 0 | NTXJ00AA03 | ISDN ON RSC (REP BY NTXJ00AB)                       |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT                         |
| 0 | NTXJ38AA01 | MDC WARM LINE                                       |
| 0 | NTXJ39AA01 | CLASS VISUAL MESSAGE WAITING<br>INDICATOR           |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION<br>TOOLS                  |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                                     |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                                     |
| 0 | NTXJ47AA01 | TEEN SERVICE ON MDC                                 |
| 0 | NTXJ51AA02 | ISDN DIGITAL TEST ACCESS                            |
| 0 | NTXJ57AA02 | NSS DATABASE CONTROL POINT                          |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE                        |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG<br>OF NTXJ59AB)       |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA<br>(UPG OF NTXJ60AA) |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL                            |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION<br>FOR DMS ISI         |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS                       |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD                               |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING<br>CALLS               |
| 0 | NTXJ78AA02 | CLASS II ON MDC                                     |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY                       |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A<br>TRANSPARENCY                 |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION<br>FOR HUNT GROUPS     |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA                              |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY<br>LAMP FIELD FOR MBS |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON                       |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS<br>(UPG OF NTXN01AA) |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION                       |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                                     |
| 0 | NTXN16AA01 | ENHANCED DRAM                                       |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI<br>ALI DATABASE        |
| 0 | NTXN18AA04 | FBUS - LIU BASE                                     |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7<br>APPLICATIONS             |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS                          |

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0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN47AA01 NETWORKED ACD ON PRA  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN67AA01 MERIDIAN AUTOMATIC ROUTE  
0 SELECTION  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN81AA01 TWO DIGIT ANI ID - END  
0 OFFICE(LAMA)  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN86AA01 E911 ACD PSAP MIS ENHANCEMENTS  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING

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0 NTXP55AB01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/LDR) (UPG OF P55AA)  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR35AA01 800 DIALED NUMBER DISPLAY AND  
0 BCLID  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR45AA01 AUTO ATTENDANT - RLT (DMS-100)  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT

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0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR80AA01 CONTROL OF MULTIPLE CALL  
0 FORWARD  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS12AA01 DIGITAL TEST ACCESS FOR PRI  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXS81AA01 END OFFICE 800 PLUS CALLER ID

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0 & DIALED NO. DISP - CMS  
0 NTXS82AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | RESIDENT)                      |
| 0 | NTX057BA01 | CUTOVER ASSISTANCE III (NON    |
| 0 |            | RESIDENT)                      |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX061AA01 | CIRCUIT SWITCHED DIGITAL DATA  |
| 0 |            | SERVICE I                      |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX066AB01 | BILINGUAL INTERFACE(UPG FR.    |
| 0 |            | NTX066AA)                      |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX080BA01 | TERMINATING CALL BILLING(NT    |
| 0 |            | FORMAT)                        |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |



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0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPULSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX181AA12 NON RES NT SUPPORT SOFTWARE  
0 (ORDERABLE BY TIA CUST. ONLY)  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG

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0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS

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0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP       |
| 0 |            | NTX621AA)                      |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX717AB01 | IBN TRK VERIFICATION           |
| 0 |            | DESIGNATED STN(UPGR.OF         |
| 0 |            | NTX717AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX728AA02 | SMDR DATA ACCESS               |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 | FLEXIBLE ANI                   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AD01 | ISDN BASIC ACCESS (UPG FROM    |
| 0 |            | NTX750AC)                      |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |

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0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS

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0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC25BC01 STATUS NAP TARGET SUPERNODE  
0 UNIVERSAL S/W LOAD FOR TOLL  
0 (REGRADE OF NTXC25AC)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE

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0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP08AA01 TRUNK GROUP MEMBER USAGE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP56AA01 TWO DIGIT ANI - CAMA  
0 NTXP82AA01 AMA MOD (CAMA MODULES)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXQ38AA01 | SSP 800 CALLING AND DIALLED    |
| 0 |            | NUMBER DELIVERY                |
| 0 | NTXQ39AA01 | SSP 800 BILLING ENHANCEMENTS   |
| 0 | NTXQ40AA02 | SSP 800 OVERFLOW CALL ROUTING  |
| 0 | NTXQ41AA01 | NB / SB ENHANCEMENT            |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ65AB01 | CCS7 AUTO ATTENDANT RELEASE    |
| 0 |            | LINK TRUNK (UPG OF NTXQ65AA)   |
| 0 | NTXQ73AA01 | ISUP TO MF 2 STAGE             |
| 0 |            | OUTPULSING(CANADA)             |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH           |
| 0 | NTXS67AA01 | DCR MULTIPLE NETWORK ACCESS    |
| 0 |            | (MNA)                          |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM  |
| 0 |            | UPLOADING                      |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX022AC01 | DYNAMICALLY CONTROLLED ROUTING |
| 0 |            | (DCR/HPR) (UPG OF 022AB)       |
| 0 | NTX029AA01 | DIRECT DIALLING OVERSEAS, TOLL |
| 0 |            | (CANADA)                       |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |
| 0 |            | SIGNALLING - BASIC             |
| 0 | NTX041AB09 | CCS7 - MTP/SCCP(SEE NTXR72AA   |
| 0 |            | FOR LPP APPLICATION)           |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE      |
| 0 |            | ACCOUNTING (CAMA)              |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |



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0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK

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0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING

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0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXC30AA01 STATUS LTD  
0 NCS - CUSTOMER DATA CHANGE  
0 SUPERSET  
  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX563AA05 BNM - STATION ADMINISTRATION

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0 NTXC31AA01 STATUS A+M  
0 NCS - CUSTOMER ACTIVATED  
0 SERVICES SUPERSET

0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTX110AA01 IBN - HOSPITAL

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0 NTXC33AA01 STATUS A+M  
0 NATIONAL CENTREX SERVICE - ACD

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP. NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AI01 ACD ENHANCED II(UPG. OF  
0 NTX416AH)  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 Software Features  
0 Appendix S

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0 NTXC33AB01 STATUS LTD  
0 NATIONAL CENTREX SERVICE -  
0 ACD(UPG. FR NTXC33AA)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC35AA01 STATUS RTM  
0 CMS INTER-WORKING II

0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR

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0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY

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0 NTXC38AA01 STATUS RTM  
0 TOPS MPX STD DA TERMINAL  
0 (STANDALONE/HOST)

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTXJ67AA01 TOPS DA SUBTENDING TMS  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXC39AA01 STATUS RTM  
0 TOPS MPX STD DA TERMINAL  
0 (REMOTE)

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0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXC40AA01 STATUS LTD TARGET SUPERNODE  
0 DMS SUPERNODE SE (SERIES 60)  
0 BASE

0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXC41BD01 STATUS NAP TARGET SUPERNODE  
0 DMS-100 BCS36 S/W LOAD FOR  
0 SN20 ENET/DSN (UPG FOR C41AC)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS



|   |            |                                                               |
|---|------------|---------------------------------------------------------------|
| 0 | NTXA68AA01 | NETWORK MESSAGE SERVICE                                       |
| 0 | NTXA72AA01 | SECONDARY MADN CALL FORWARDING                                |
| 0 | NTXA73AA01 | LOUDSPEAKER PAGING ANSWER                                     |
| 0 | NTXA74AA01 | OUTGOING RESTRICTION CONTROL                                  |
| 0 | NTXA77AA01 | ENHANCED UCD                                                  |
| 0 | NTXA79AA03 | IBN TRUNKS WITH ISUP<br>SIGNALLING                            |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY                                          |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES                                    |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA                                        |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD                                           |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/<br>REMOTE (UPG OF NTXA85AA)         |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC-<br>96/REMOTE: SPECIAL SERVICES |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM                                            |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM                                        |
| 0 | NTXA94AA01 | RES FEATURES                                                  |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL<br>FORWARDING                            |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION                                |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC                                      |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF<br>NTXE09AA IN BCS32)                 |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION<br>EAE0 (REP. NTXE13AA)        |
| 0 | NTXE22AA02 | ACD SUPERGROUP                                                |
| 0 | NTXE23AA01 | CELLULAR INTERCONNECT - END<br>OFFICE                         |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM<br>POOLING                          |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY                                |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL<br>RETRANSMISSION                  |
| 0 | NTXE38AB01 | CLASS: CND ON SCMS/SMSR(UPG.OF<br>NTXE38AA)                   |
| 0 | NTXE39AA01 | CALL FORWARD BUSY/DO NOT<br>ANSWER SPLITS                     |
| 0 | NTXE40AB01 | MERIDIAN BUSINESS SET INSPECT<br>KEY (UPG. FROM NTXE40AA)     |
| 0 | NTXE43AA01 | TERMINATING BILLING OPTION                                    |
| 0 | NTXE44AA01 | EXECUTIVE BUSY OVERRIDE<br>ENHANCEMENT                        |
| 0 | NTXE46AA01 | CALLING NAME/NUMBER DELIVERY<br>BLOCKING                      |
| 0 | NTXE47AA02 | MERIDIAN DISPLAY COMMUNICATION                                |
| 0 | NTXE52AA01 | CALLING NAME DELIVERY SWITCH                                  |

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0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS

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0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK

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0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER

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0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2

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0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTTING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |



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0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK

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0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS

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0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)

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0 NTX734AA01 EAE0 - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS

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0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA

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0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

0

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0 NTXC43AD01 STATUS LTD TARGET SUPERNODE  
0 DMS-100 BCS36 S/W LOAD FOR  
0 SN30 ENET/DSN (UPG OF C43AC)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXA45AA01 | CLASS SELECTIVE CALL           |
| 0 |            | ACCEPTANCE                     |
| 0 | NTXA52AB01 | ACD REMOTE LOAD MANAGEMENT I   |
| 0 |            | (REP. NTXA52AA)                |
| 0 | NTXA64AA05 | RES(RESIDENTIAL ENHANCED       |
| 0 |            | SERVICES) BASE                 |
| 0 | NTXA67AA01 | EXTENDED XPM DIAGNOSTICS       |
| 0 | NTXA68AA01 | NETWORK MESSAGE SERVICE        |
| 0 | NTXA72AA01 | SECONDARY MADN CALL FORWARDING |
| 0 | NTXA73AA01 | LOUDSPEAKER PAGING ANSWER      |
| 0 | NTXA74AA01 | OUTGOING RESTRICTION CONTROL   |
| 0 | NTXA77AA01 | ENHANCED UCD                   |
| 0 | NTXA79AA03 | IBN TRUNKS WITH ISUP           |
| 0 |            | SIGNALLING                     |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY           |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES     |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA         |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD            |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/      |
| 0 |            | REMOTE (UPG OF NTXA85AA)       |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC- |
| 0 |            | 96/REMOTE: SPECIAL SERVICES    |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM             |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM         |
| 0 | NTXA94AA01 | RES FEATURES                   |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL           |
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |
| 0 |            | EAE0 (REP. NTXE13AA)           |
| 0 | NTXE22AA02 | ACD SUPERGROUP                 |
| 0 | NTXE23AA01 | CELLULAR INTERCONNECT - END    |
| 0 |            | OFFICE                         |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM      |
| 0 |            | POOLING                        |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL     |
| 0 |            | RETRANSMISSION                 |
| 0 | NTXE38AB01 | CLASS: CND ON SCMS/SMSR(UPG.OF |
| 0 |            | NTXE38AA)                      |
| 0 | NTXE39AA01 | CALL FORWARD BUSY/DO NOT       |
| 0 |            | ANSWER SPLITS                  |
| 0 | NTXE40AB01 | MERIDIAN BUSINESS SET INSPECT  |
| 0 |            | KEY (UPG. FROM NTXE40AA)       |

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0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)



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0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA

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0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE

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0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS

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0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE

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0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

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0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY

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0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX213AC01 | SUBSCRIBER CARRIER             |
| 0 |            | MODULE(SCM)(REP. NTX213AB)     |
| 0 | NTX215AA02 | SES NO.2 - INTERFACE           |
| 0 | NTX218AA03 | 1A/1B EADAS INTERFACE          |
| 0 | NTX219AB03 | TEEN SERVICE                   |
| 0 | NTX243AA07 | AMA TELEPROCESSING             |
| 0 |            | SYSTEM(AMATPS)                 |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |
| 0 |            | HUNTING(UPG OF 244AA IN BCS23) |
| 0 | NTX250AA15 | DATAPATH - BASIC               |
| 0 | NTX251AA06 | DATAPATH - MODEM POOLING       |
| 0 | NTX259AA03 | DATAPATH EXTENSION - DPX       |
| 0 | NTX260AA02 | IBN - PRESET CONFERENCE        |
| 0 | NTX262AA01 | IBN PRIORITY CONSOLE ALERTING  |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX277AA02 | DIALABLE LINE CIRCUIT          |
| 0 |            | IDENTIFICATION                 |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND      |
| 0 |            | TREATMENT                      |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX297AA01 | BRIDGES SERVICES               |
| 0 | NTX299AB01 | SPECIAL SERVICES - SCM(UPG OF  |
| 0 |            | NTX299AA)                      |
| 0 | NTX380AA02 | DUAL RCC                       |
| 0 | NTX381AA01 | RSC - REMOTE - OFF REMOTE      |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX387AD01 | SMU AND ISDN/MBS SMU           |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN      |
| 0 |            | POINT                          |
| 0 | NTX398AA12 | SCM - 100S                     |
| 0 | NTX399AA01 | IBN/ESB COMPATIBILITY          |
| 0 | NTX407AB01 | ACD - CALL PROCESSING          |
| 0 |            | (REP.NTX407AA)                 |
| 0 | NTX410AA02 | DYNAMIC ATTENDANT CONSOLE      |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX411AA01 | IBN - VOICE MESSAGING          |
| 0 | NTX412CB01 | IBN - CUSTOMER DATA CHANGE     |
| 0 |            | (UPG. OF NTX412CA)             |



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0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF

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0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE

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0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

0

0 -----

0 NTXC43BD01 STATUS NAP TARGET SUPERNODE  
0 DMS-100 BCS36 S/W LOAD FOR  
0 SN30 ENET/DSN (UPG OF C43AC)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXA35AA03 | NETWORK NUMBER DISPLAY         |
| 0 | NTXA36AA01 | NETWORK WIDE RING AGAIN        |
| 0 | NTXA39AA02 | MERIDIAN NETWORK ATTENDANT     |
| 0 |            | SERVICE                        |
| 0 | NTXA41AA01 | CLASS: CALLING NUMBER DELIVERY |
| 0 |            | BLOCKING ADMINISTRATION        |
| 0 | NTXA42AA01 | CLASS DISTINCTIVE RINGING/CALL |
| 0 |            | WAITING                        |
| 0 | NTXA45AA01 | CLASS SELECTIVE CALL           |
| 0 |            | ACCEPTANCE                     |
| 0 | NTXA52AB01 | ACD REMOTE LOAD MANAGEMENT I   |
| 0 |            | (REP. NTXA52AA)                |
| 0 | NTXA64AA05 | RES(RESIDENTIAL ENHANCED       |
| 0 |            | SERVICES) BASE                 |
| 0 | NTXA67AA01 | EXTENDED XPM DIAGNOSTICS       |
| 0 | NTXA68AA01 | NETWORK MESSAGE SERVICE        |
| 0 | NTXA72AA01 | SECONDARY MADN CALL FORWARDING |
| 0 | NTXA73AA01 | LOUDSPEAKER PAGING ANSWER      |
| 0 | NTXA74AA01 | OUTGOING RESTRICTION CONTROL   |
| 0 | NTXA77AA01 | ENHANCED UCD                   |
| 0 | NTXA79AA03 | IBN TRUNKS WITH ISUP           |
| 0 |            | SIGNALLING                     |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY           |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES     |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA         |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD            |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/      |
| 0 |            | REMOTE (UPG OF NTXA85AA)       |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC- |
| 0 |            | 96/REMOTE: SPECIAL SERVICES    |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM             |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM         |
| 0 | NTXA94AA01 | RES FEATURES                   |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL           |
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |
| 0 |            | EAE0 (REP. NTXE13AA)           |
| 0 | NTXE22AA02 | ACD SUPERGROUP                 |
| 0 | NTXE23AA01 | CELLULAR INTERCONNECT - END    |
| 0 |            | OFFICE                         |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM      |
| 0 |            | POOLING                        |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY |

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0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | IDENTIFICATION                 |
| 0 | NTXF56AA01 | CLASS ON MDC (BASE)            |
| 0 | NTXF60AA01 | CLASS ON MVP II                |
| 0 | NTXF61AA02 | DMS INTEGRATED E911 PSAP       |
| 0 |            | FUNCTIONALITY                  |
| 0 | NTXF71AB02 | SUPERNODE ENHANCED             |
| 0 |            | MESSAGING(UPG. OF NTXF71AA)    |
| 0 | NTXF72AB01 | CLASS ON MBS (UPG OF NTXF72AA) |
| 0 | NTXF82AA01 | RES SINGLE LINE VARIETY        |
| 0 |            | PACKAGE                        |
| 0 | NTXF87AA02 | SERVICE ORDER SIMPLIFICATION   |
| 0 | NTXF88AB01 | MBS INTERACTIVE DISPLAYS (UPG  |
| 0 |            | OF NTXF88AA)                   |
| 0 | NTXF92AA02 | ISDN OAM BASE                  |
| 0 | NTXF93AA02 | ISDN PROVISIONING              |
| 0 | NTXF94AB01 | ISDN INTEGRATED PH MAINTENANCE |
| 0 |            | W/O OAMP(REP NTXF94AA)         |
| 0 | NTXF95AA03 | ISDN OAM PROCESSOR             |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS |
| 0 | NTXJ00AA03 | ISDN ON RSC (REP BY NTXJ00AB)  |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT    |
| 0 | NTXJ38AA01 | MDC WARM LINE                  |
| 0 | NTXJ39AA01 | CLASS VISUAL MESSAGE WAITING   |
| 0 |            | INDICATOR                      |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION      |
| 0 |            | TOOLS                          |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                |
| 0 | NTXJ42AA02 | FEATURE GROUP D ON MDC         |
| 0 | NTXJ43AA02 | #5ESS AT&T INTERWORKING        |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                |
| 0 | NTXJ47AA01 | TEEN SERVICE ON MDC            |
| 0 | NTXJ48AA01 | ISDN INTEGRATED PH MAINTENANCE |
| 0 |            | WITH OAMP REQUIRED             |
| 0 | NTXJ51AA02 | ISDN DIGITAL TEST ACCESS       |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING  |
| 0 |            | OPTIONS                        |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE   |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG  |
| 0 |            | OF NTXJ59AB)                   |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA |
| 0 |            | (UPG OF NTXJ60AA)              |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL       |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION   |
| 0 |            | FOR DMS ISI                    |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS  |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD          |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING   |

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0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXQ90AB01 | ENHANCED RESIDENTIAL SERVICES  |
| 0 |            | (UPG OF NTXQ90AA)              |
| 0 | NTXQ95AA01 | LINE LOG REDUCTION             |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY       |
| 0 |            | CONTROL                        |
| 0 | NTXR25AA02 | NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 | MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 | POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 | DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 | CLASS: SPLIT NPA MANAGEMENT    |
| 0 | NTXR62AA01 | STUTTER DIALTONE ENHANCEMENT   |
| 0 | NTXR65AA01 | FLEXIBLE DWS ACCESS            |
| 0 | NTXR66AA01 | DWS ACCESS TO CARRIER (ACCESS  |
| 0 |            | TANDEM)                        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR71AA01 | RSC-S EXTENDED DISTANCE        |
| 0 |            | CAPABILITY                     |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXR74AA01 | ENABLING OF MBG FEATURE        |
| 0 |            | NETWORKING                     |
| 0 | NTXR75AA01 | VCN 1A BILLING                 |
| 0 | NTXR76AA01 | VCN 1A OM'S                    |
| 0 | NTXR78AA01 | MBG FEATURE NETWORKING CONTROL |
| 0 | NTXR83AA01 | PER LINE FEATURE CONTROL       |
| 0 | NTXR88AA01 | NETWORK ACCESS REGISTERS FOR   |
| 0 |            | DMS100                         |
| 0 | NTXR89AA01 | CENTREX COORDINATED VOICE AND  |
| 0 |            | DATA                           |
| 0 | NTXR94AA01 | DATAPATH (SLE) SCREEN LIST     |
| 0 |            | EDITING                        |
| 0 | NTXR95AA01 | NAME DISPLAY - TCAP            |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS01AA01 | ISDN MULTI-POINT LOOP          |
| 0 |            | MAINTENANCE                    |
| 0 | NTXS05AA01 | XPM PLUS IN RSC                |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH           |
| 0 | NTXS09AA01 | DIALABLE WIDEBAND SERVICE SS7  |
| 0 |            | TRKS                           |

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0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING

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0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE

|   |            |                               |
|---|------------|-------------------------------|
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS |
| 0 |            | (UPG FROM NTX112AA)           |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE           |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY     |
| 0 |            | PACKAGE                       |
| 0 | NTX121AA01 | OVERLAP OUTPULSING (TRK TO    |
| 0 |            | TRK)                          |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY    |
| 0 | NTX127AA01 | WARM LINE                     |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION        |
| 0 |            | MEASURING SYSTEM              |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL  |
| 0 |            | LINES                         |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR            |
| 0 | NTX143AA02 | DS-1 - ESF                    |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER       |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING     |
| 0 |            | MODULE (RLCM)                 |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE          |
| 0 |            | MAINTENANCE(UPGRADE OF        |
| 0 |            | NTX147AA)                     |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE     |
| 0 |            | OPERATION - LINES             |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND  |
| 0 |            | TRUNK                         |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING       |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF         |
| 0 |            | NTX152AA)                     |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE  |
| 0 |            | OPERATION                     |
| 0 | NTX156AA02 | INTRA RLCM CALLING            |
| 0 | NTX157AA01 | CCIS - INWATS OSO             |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT          |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE        |
| 0 |            | SERVICES                      |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL     |
| 0 |            | RECORDING                     |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (     |
| 0 |            | REP.OF NTX167AA)              |
| 0 | NTX174AA03 | AIOD(AUTO IDENTIFIED OUTWARD  |
| 0 |            | DIALING)                      |
| 0 | NTX175AA01 | IBN - MULTI BILINGUAL CONSOLE |
| 0 | NTX186AB02 | EQUAL ACCESS END OFFICE (UPG  |
| 0 |            | OF NTX186AA)                  |
| 0 | NTX195AA05 | MECHANIZED LOOP TESTER (MLT)  |
| 0 |            | I/F                           |
| 0 | NTX196AA02 | CALLING NUMBER ANNOUNCEMENT   |

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0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S

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0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP

|   |                                           |
|---|-------------------------------------------|
| 0 | NTX621AA)                                 |
| 0 | NTX711AB02 EQUAL ACCESS END OFFICE        |
| 0 | ENHANCEMENTS (UPG. OF                     |
| 0 | NTX711AA)                                 |
| 0 | NTX712AA01 CCS7 DATA PORT                 |
| 0 | NTX713AA01 LATA-WIDE CENTREX BILLING      |
| 0 | NTX717AB01 IBN TRK VERIFICATION           |
| 0 | DESIGNATED STN(UPGR.OF                    |
| 0 | NTX717AA)                                 |
| 0 | NTX719AA01 BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 ACD - LOAD MANAGEMENT III      |
| 0 | NTX730AA02 MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 SIMPLIFIED MESSAGE DESK        |
| 0 | INTERFACE(SMDI)                           |
| 0 | NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  |
| 0 | NTX733AD IN BCS29)                        |
| 0 | NTX734AA01 EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 FLEXIBLE ANI                   |
| 0 | NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 | NTX737AA)                                 |
| 0 | NTX738AC02 SWITCH PERFORMANCE MONITORING  |
| 0 | SYSTEM (UPG NTX738AB V.O.30)              |
| 0 | NTX750AC02 ISDN BASIC ACCESS(UPG. FROM    |
| 0 | NTX750AB                                  |
| 0 | NTX753AB01 ISDN FUNCTIONAL MODE BASIC     |
| 0 | RATE SERVICES (UPG OF                     |
| 0 | NTX753AA)                                 |
| 0 | NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  |
| 0 | SERVICE (UPG OF NTX754AA) (UP             |
| 0 | NTX755AC01 ISDN SUPPLEMENTARY SERVICES    |
| 0 | COMPLIANCE(UPG.FR. NTX755AB)              |
| 0 | NTX756AA01 ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 CLASS ON ISDN                  |
| 0 | NTX767AA03 TR-448 ISDN DIGIT ANALYSIS     |
| 0 | COMPLIANCE- END OFFICE                    |
| 0 | NTX790AC02 ISDN - PRIMARY RATE ACCESS     |
| 0 | BASE(UPG FR. NTX790AB)                    |
| 0 | NTX791AA02 ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY |
| 0 | - PRIMARY RATE INTERFACE                  |
| 0 | NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY |
| 0 | - BASIC RATE INTERFACE                    |
| 0 | NTX797AB01 PRI MESSAGE WAITING INDICATION |



|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | UPG OF 797AA)                  |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. FR. NTX878AD |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX888AA01 | EAOSS                          |
| 0 | NTX892AA04 | MPC MULTILINK MANAGEMENT       |
| 0 | NTX898AA01 | VARIABLE SPEED CALL ACCESS     |
| 0 |            | CODE - IBN                     |
| 0 | NTX899AA01 | CALL TRANSFER ENHANCEMENTS     |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX902AA07 | LOCAL FEATURES II              |
| 0 | NTX903AA01 | TRANSMISSION MEASUREMENTS      |
| 0 | NTX940AA13 | CM BILGE                       |

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0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC45AD01 STATUS LTD TARGET SUPERNODE  
0 DMS-100 BCS36 S/W LOAD FOR  
0 SN40 ENET/DSN (UPG OF C45AC)  
  
0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER

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0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)

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0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF16AA01 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR

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0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)

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0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA

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0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES

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0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP



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0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | BELLCORE FORMAT)               |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AC01 | CIRCLE DIGIT IDENTIFICATION    |
| 0 | NTX049AD01 | SINGLE PARTY REVERTIVE CALLING |
| 0 | NTX049AE01 | NORTH ELECTRIC ANI FORMAT      |
| 0 |            | GENERATION                     |
| 0 | NTX049AH01 | COME AGAIN SIGNALLING          |
| 0 | NTX049AL01 | TIME AND TEMPERATURE           |
| 0 |            | ANNOUNCEMENT                   |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |

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0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)

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0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF

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0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX571AA01 | IBN - DIRECTED CALL PARK,2500  |
| 0 |            | SET ONLY                       |
| 0 | NTX573AA01 | IBN SECURITY CODE - 2500 ONLY  |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP       |
| 0 |            | NTX621AA)                      |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX713AA01 | LATA-WIDE CENTREX BILLING      |
| 0 | NTX717AB01 | IBN TRK VERIFICATION           |
| 0 |            | DESIGNATED STN(UPGR.OF         |
| 0 |            | NTX717AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 | FLEXIBLE ANI                   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AC02 | ISDN BASIC ACCESS(UPG. FROM    |
| 0 |            | NTX750AB                       |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |
| 0 | NTX796AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - BASIC RATE INTERFACE         |
| 0 | NTX797AB01 | PRI MESSAGE WAITING INDICATION |
| 0 |            | (UPG OF 797AA)                 |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. FR. NTX878AD |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX888AA01 | EA0SS                          |

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0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC45BD01 STATUS NAP TARGET SUPERNODE  
0 DMS-100 BCS36 S/W LOAD FOR  
0 SN40 ENET/DSN (UPG OF C45AC)  
  
0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE



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0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM         |
| 0 | NTXA94AA01 | RES FEATURES                   |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL           |
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |
| 0 |            | EAE0 (REP. NTXE13AA)           |
| 0 | NTXE22AA02 | ACD SUPERGROUP                 |
| 0 | NTXE23AA01 | CELLULAR INTERCONNECT - END    |
| 0 |            | OFFICE                         |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM      |
| 0 |            | POOLING                        |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL     |
| 0 |            | RETRANSMISSION                 |
| 0 | NTXE38AB01 | CLASS: CND ON SCMS/SMSR(UPG.OF |
| 0 |            | NTXE38AA)                      |
| 0 | NTXE39AA01 | CALL FORWARD BUSY/DO NOT       |
| 0 |            | ANSWER SPLITS                  |
| 0 | NTXE40AB01 | MERIDIAN BUSINESS SET INSPECT  |
| 0 |            | KEY (UPG. FROM NTXE40AA)       |
| 0 | NTXE43AA01 | TERMINATING BILLING OPTION     |
| 0 | NTXE44AA01 | EXECUTIVE BUSY OVERRIDE        |
| 0 |            | ENHANCEMENT                    |
| 0 | NTXE46AA01 | CALLING NAME/NUMBER DELIVERY   |
| 0 |            | BLOCKING                       |
| 0 | NTXE47AA02 | MERIDIAN DISPLAY COMMUNICATION |
| 0 | NTXE52AA01 | CALLING NAME DELIVERY SWITCH   |
| 0 |            | BASED                          |
| 0 | NTXE54AA01 | SYSTEM LOAD MODULE II          |
| 0 | NTXE56AA02 | CLASS SCREENING LIST EDITING   |
| 0 | NTXE58AA01 | CLASS ON MVP                   |
| 0 | NTXE60AA01 | DATAPATH - CLOSED USER GROUPS  |
| 0 |            | (U.S.)                         |
| 0 | NTXE62AA01 | EBS CALL FORWARD UNIVERSAL PER |
| 0 |            | KEY                            |
| 0 | NTXE64AA02 | #4ESS AT&T INTERWORKING        |
| 0 | NTXE65AA01 | MPC X.25 INTERFACE             |
| 0 | NTXE66AA02 | CCS7 ISUP OPTION CONTROLS      |
| 0 | NTXE74AA01 | PRESET CONFERENCE - EXPANDED   |
| 0 |            | CAPACITY                       |
| 0 | NTXE94AA02 | SECONDARY DIRECTORY NUMBERS    |
| 0 |            | WITH OPTIONS                   |
| 0 | NTXE96AA01 | ENHANCED MDC WATS              |

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0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF16AA01 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC

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0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS

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0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXP99AB01 | E911 REMOTE CALL EVENT         |
| 0 |            | RECORD(UPG.OF NTPX99AA)        |
| 0 | NTXQ12AA01 | RSC ENHANCED ESA(LINES         |
| 0 |            | ONLY)(FOR BCS34 RELEASE)       |
| 0 | NTXQ18AA01 | SRDB MEMORY ADMINISTRATION     |
| 0 | NTXQ29AA01 | CLASS+ CALLING NAME DELIVERY   |
| 0 |            | BLOCKING FOR LINES             |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ70AA01 | UNIVERSAL CLASS FEATURE ACCESS |
| 0 | NTXQ81AA01 | CLASS - NAME DISPLAY ON MADN   |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXQ90AB01 | ENHANCED RESIDENTIAL SERVICES  |
| 0 |            | (UPG OF NTPX90AA)              |
| 0 | NTXQ95AA01 | LINE LOG REDUCTION             |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY       |
| 0 |            | CONTROL                        |
| 0 | NTXR25AA02 | NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 | MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 | POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 | DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 | CLASS: SPLIT NPA MANAGEMENT    |
| 0 | NTXR62AA01 | STUTTER DIALTONE ENHANCEMENT   |
| 0 | NTXR65AA01 | FLEXIBLE DWS ACCESS            |
| 0 | NTXR66AA01 | DWS ACCESS TO CARRIER (ACCESS  |
| 0 |            | TANDEM)                        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR71AA01 | RSC-S EXTENDED DISTANCE        |
| 0 |            | CAPABILITY                     |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXR74AA01 | ENABLING OF MBG FEATURE        |
| 0 |            | NETWORKING                     |
| 0 | NTXR75AA01 | VCN 1A BILLING                 |
| 0 | NTXR76AA01 | VCN 1A OM'S                    |
| 0 | NTXR78AA01 | MBG FEATURE NETWORKING CONTROL |

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0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING

|   |            |                                |                       |
|---|------------|--------------------------------|-----------------------|
| 0 | NTX025AA02 | RLM                            | EMERGENCY STAND-ALONE |
| 0 |            | OPERATION                      |                       |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |                       |
| 0 |            | SIGNALLING - BASIC             |                       |
| 0 | NTX042AA04 | LOCAL AUTOMATIC MESSAGE        |                       |
| 0 |            | ACCOUNTING (LAMA)              |                       |
| 0 | NTX043AA03 | LOCAL CALL DETAIL RECORDING    |                       |
| 0 | NTX045AA01 | USAGE SENSITIVE PRICING(USP    |                       |
| 0 |            | BELLCORE FORMAT)               |                       |
| 0 | NTX048AA06 | SYNCHRONIZATION                |                       |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |                       |
| 0 |            | MASTER CLOCK                   |                       |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |                       |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |                       |
| 0 | NTX049AC01 | CIRCLE DIGIT IDENTIFICATION    |                       |
| 0 | NTX049AD01 | SINGLE PARTY REVERTIVE CALLING |                       |
| 0 | NTX049AE01 | NORTH ELECTRIC ANI FORMAT      |                       |
| 0 |            | GENERATION                     |                       |
| 0 | NTX049AH01 | COME AGAIN SIGNALLING          |                       |
| 0 | NTX049AL01 | TIME AND TEMPERATURE           |                       |
| 0 |            | ANNOUNCEMENT                   |                       |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |                       |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |                       |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |                       |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |                       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |                       |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |                       |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |                       |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |                       |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |                       |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |                       |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |                       |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |                       |
| 0 |            | DIALLING (IDDD)                |                       |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |                       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |                       |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |                       |
| 0 | NTX080AA02 | LAMA ENHANCED                  |                       |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |                       |
| 0 | NTX083AA01 | FEATURE GROUP A                |                       |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |                       |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |                       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |                       |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |                       |
| 0 | NTX090AA01 | COIN SERVICES                  |                       |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |                       |



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0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING

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0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION

|   |            |                                                     |
|---|------------|-----------------------------------------------------|
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND TREATMENT                 |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR                        |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH PASSWORD ENCRYPTION        |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II                        |
| 0 | NTX297AA01 | BRIDGES SERVICES                                    |
| 0 | NTX299AB01 | SPECIAL SERVICES - SCM(UPG OF NTX299AA)             |
| 0 | NTX380AA02 | DUAL RCC                                            |
| 0 | NTX381AA01 | RSC - REMOTE - OFF REMOTE                           |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS                          |
| 0 | NTX387AD01 | SMU AND ISDN/MBS SMU                                |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN POINT                     |
| 0 | NTX398AA12 | SCM - 100S                                          |
| 0 | NTX399AA01 | IBN/ESB COMPATIBILITY                               |
| 0 | NTX407AB01 | ACD - CALL PROCESSING (REP.NTX407AA)                |
| 0 | NTX410AA02 | DYNAMIC ATTENDANT CONSOLE MEASUREMENTS              |
| 0 | NTX411AA01 | IBN - VOICE MESSAGING                               |
| 0 | NTX412CB01 | IBN - CUSTOMER DATA CHANGE (UPG. OF NTX412CA)       |
| 0 | NTX413AB01 | IBN - ENHANCED CALL FORWARDING(UPGR. OF NTX413AA)   |
| 0 | NTX414AA01 | IBN - DIRECTED CALL PARK, BUSINESS SET AND 2500 SET |
| 0 | NTX415AA07 | ACD BASIC                                           |
| 0 | NTX416AJ01 | ACD ENHANCED II (UPG. OF NTX416AI)                  |
| 0 | NTX418AA01 | IBN_SERVICE ANALYSIS                                |
| 0 | NTX419AA01 | MACD PIN CONFIGURATION AND CONTROL                  |
| 0 | NTX420AA01 | MACD NODAL SERVICE OBSERVING                        |
| 0 | NTX426AA02 | ASYNCHRONOUS INTERFACE LINE CARD                    |
| 0 | NTX427AA04 | END USER TESTING OF TRUNKS                          |
| 0 | NTX430AA02 | ESN                                                 |
| 0 | NTX431AA03 | IBN - CUT THROUGH DIALING                           |
| 0 | NTX432AA01 | NETWORK SPEED CALLING                               |
| 0 | NTX433AA01 | TIME OF DAY ROUTING                                 |
| 0 | NTX434AA01 | TIME OF DAY NCOS                                    |
| 0 | NTX435AA03 | IBN SUPERSET                                        |
| 0 | NTX436AA01 | IBN ENHANCED DIAL PLAN                              |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING                          |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE                      |

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0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAEO - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |
| 0 | NTX796AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - BASIC RATE INTERFACE         |
| 0 | NTX797AB01 | PRI MESSAGE WAITING INDICATION |
| 0 |            | (UPG OF 797AA)                 |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |

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0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC47AC01 STATUS LTD

0 DMS-100 BCS36 S/W LOAD FOR  
0 SN50 ENET/DSN (UPG OF C47AB)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD

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0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS



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0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT

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0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN66AA01 | E911 DIRECT ACCESS TO DATA     |
| 0 |            | MGT. SYSTEM ALI DATABASE       |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |
| 0 | NTXN82AB01 | RSC ENHANCED ESA (LINES &      |
| 0 |            | TRUNKS)(UPG FR NTXN82AA)       |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXN87AB01 | INTEGRATED TESTING BASE        |
| 0 | NTXN89AA01 | ISDN TESTING                   |
| 0 | NTXN91AA01 | TL 1 TESTING INTERFACE BASE    |
| 0 | NTXN93AA01 | TL-1 TESTING ENHANCED BUSINESS |
| 0 | NTXN99AA01 | ISDN INBOUND MODEM POOLING     |
| 0 | NTXP00AA01 | LINE CARD MONITOR              |
| 0 | NTXP01AA03 | INTELLIGENT NETWORK 0.0 BASE   |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP12AA01 | CLASS: ANONYMOUS CALLER        |
| 0 |            | REJECTION                      |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP38AA01 | BD CHANNEL LOOPBACK            |
| 0 | NTXP47AB01 | DMS PACKET HANDLER BASE (UPG   |
| 0 |            | OF NTXP47AA)                   |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP53AA01 | ACD ACCESS FEATURE GROUPING    |

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0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)

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0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX007AB02 | PBX INTERFACE I (UPGRADE OF    |
| 0 |            | NTX007AA)                      |
| 0 | NTX008AB02 | PBX INTERFACE II(UPG. OF       |
| 0 |            | NTX008AA)                      |
| 0 | NTX019AA02 | CIVIC SERVICES                 |
| 0 | NTX020AC01 | VERTICAL SERVICES I (UPGRADE   |
| 0 |            | FROM NTX020AB)                 |
| 0 | NTX021AA04 | REMOTE CALL FORWARDING         |
| 0 | NTX023AB03 | REMOTE LINE MODULE (RLM)       |
| 0 | NTX024AA01 | RLM INTRA-RLM CALLING          |
| 0 | NTX025AA02 | RLM EMERGENCY STAND-ALONE      |
| 0 |            | OPERATION                      |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |
| 0 |            | SIGNALLING - BASIC             |
| 0 | NTX042AA04 | LOCAL AUTOMATIC MESSAGE        |
| 0 |            | ACCOUNTING (LAMA)              |
| 0 | NTX043AA03 | LOCAL CALL DETAIL RECORDING    |
| 0 | NTX045AA01 | USAGE SENSITIVE PRICING(USP    |
| 0 |            | BELLCORE FORMAT)               |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AC01 | CIRCLE DIGIT IDENTIFICATION    |
| 0 | NTX049AD01 | SINGLE PARTY REVERTIVE CALLING |
| 0 | NTX049AE01 | NORTH ELECTRIC ANI FORMAT      |
| 0 |            | GENERATION                     |
| 0 | NTX049AH01 | COME AGAIN SIGNALLING          |
| 0 | NTX049AL01 | TIME AND TEMPERATURE           |
| 0 |            | ANNOUNCEMENT                   |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |

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0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)

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0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE



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0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD

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0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAE0 - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING

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0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF

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0 NTX843AA IN BCS27)
0 NTX851AA01 SMDR DERIVED FROM BCR AMA
0 NTX853AA01 IBN ALARM CALL STATUS ON
0 CONSOLES
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN
0 INDIVIDUAL CONSOLE BASIS
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION
0 NTX877AB01 INTERFACE TO NON-DATA LINK
0 CONSOLE(UPG. OF NTX877AA)
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS
0 SET SERVICES(UPG. FR. NTX878AD
0 NTX881AC03 SWITCH BIT ERROR RATE
0 MAINTENANCE(UPG. OF NTX881AB)
0 NTX883AA01 INTER OFFICE TRK BIT ERROR
0 RATE TESTING
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.
0 OF NTX885AA)
0 NTX888AA01 EA0SS
0 NTX892AA04 MPC MULTILINK MANAGEMENT
0 NTX898AA01 VARIABLE SPEED CALL ACCESS
0 CODE - IBN
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS
0 NTX901AA24 LOCAL FEATURES I
0 NTX902AA07 LOCAL FEATURES II
0 NTX903AA01 TRANSMISSION MEASUREMENTS
0 NTX940AA13 CM BILGE
0 NTX941AA12 CM COMMON
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD
0 MODULE(SLM)(UPG.FR. NTX942AB)
0 NTX944AA03 BASE NODE MAINTENANCE
0 NTX945AA03 MS BASE LINK MAINTENANCE
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF
0 NTX946AA IN BCS26)
0 NTX950AA06 MS BILGE
0 NTX951AA08 MS COMMON
0 NTX983AB02 SERVICE SWITCHING POINT
0 PRIVATE VIRTUAL NTWKG(REP
0 NTX983AA)
0 NTX984AA01 SERVICE SWITCHING POINT
0 PRIV.VIRTUAL NETWRKG-
0 ATT.SERVICES
0 NTX986AA01 ANI WITH AMA
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING
0 FOR IC/INC
0 NTX991AF01 ACD-MGMT REP 2WAY DATA

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0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC47BC01 STATUS NAP  
0 DMS-100 BCS36 S/W LOAD FOR  
0 SN50 ENET/DSN

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)

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0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY

|   |            |                                 |
|---|------------|---------------------------------|
| 0 |            | BLOCKING                        |
| 0 | NTXE47AA02 | MERIDIAN DISPLAY COMMUNICATION  |
| 0 | NTXE52AA01 | CALLING NAME DELIVERY SWITCH    |
| 0 |            | BASED                           |
| 0 | NTXE54AA01 | SYSTEM LOAD MODULE II           |
| 0 | NTXE56AA02 | CLASS SCREENING LIST EDITING    |
| 0 | NTXE58AA01 | CLASS ON MVP                    |
| 0 | NTXE60AA01 | DATAPATH - CLOSED USER GROUPS   |
| 0 |            | (U.S.)                          |
| 0 | NTXE62AA01 | EBS CALL FORWARD UNIVERSAL PER  |
| 0 |            | KEY                             |
| 0 | NTXE64AA02 | #4ESS AT&T INTERWORKING         |
| 0 | NTXE65AA01 | MPC X.25 INTERFACE              |
| 0 | NTXE66AA02 | CCS7 ISUP OPTION CONTROLS       |
| 0 | NTXE74AA01 | PRESET CONFERENCE - EXPANDED    |
| 0 |            | CAPACITY                        |
| 0 | NTXE94AA02 | SECONDARY DIRECTORY NUMBERS     |
| 0 |            | WITH OPTIONS                    |
| 0 | NTXE96AA01 | ENHANCED MDC WATS               |
| 0 | NTXE98AA02 | HIGH SPEED MPC                  |
| 0 | NTXF05AA03 | ETHERNET INTERFACE UNIT         |
| 0 | NTXF14AA01 | HIGH CAPACITY DPP               |
| 0 | NTXF19AA02 | TCP/IP PROTOCOLS                |
| 0 | NTXF20AA02 | LMS ON LPP                      |
| 0 | NTXF25AD01 | FRAME RELAY BASIC (UPG FR       |
| 0 |            | NTXF25AC)                       |
| 0 | NTXF26AA01 | SYNCHRONIZATION - BITS          |
| 0 |            | COMPOSITE MASTER                |
| 0 | NTXF27AA01 | SYNCHRONIZATION - CESIUM, LORAN |
| 0 |            | - C MASTER                      |
| 0 | NTXF46AA04 | SUBSCRIBER CARRIER MODULE-100   |
| 0 |            | ACCESS(SMA)                     |
| 0 | NTXF55AA02 | CLASS BULK CALLING LINE         |
| 0 |            | IDENTIFICATION                  |
| 0 | NTXF56AA01 | CLASS ON MDC (BASE)             |
| 0 | NTXF60AA01 | CLASS ON MVP II                 |
| 0 | NTXF61AA02 | DMS INTEGRATED E911 PSAP        |
| 0 |            | FUNCTIONALITY                   |
| 0 | NTXF71AB02 | SUPERNODE ENHANCED              |
| 0 |            | MESSAGING(UPG. OF NTXF71AA)     |
| 0 | NTXF72AB01 | CLASS ON MBS (UPG OF NTXF72AA)  |
| 0 | NTXF82AA01 | RES SINGLE LINE VARIETY         |
| 0 |            | PACKAGE                         |
| 0 | NTXF87AA02 | SERVICE ORDER SIMPLIFICATION    |
| 0 | NTXF88AB01 | MBS INTERACTIVE DISPLAYS (UPG   |
| 0 |            | OF NTXF88AA)                    |
| 0 | NTXF92AA02 | ISDN OAM BASE                   |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXF93AA02 | ISDN PROVISIONING              |
| 0 | NTXF94AB01 | ISDN INTEGRATED PH MAINTENANCE |
| 0 |            | W/O OAMP(REP NTXF94AA)         |
| 0 | NTXF95AA03 | ISDN OAM PROCESSOR             |
| 0 | NTXF97AA02 | BRISC SERIES SUPERNODE BASE    |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS |
| 0 | NTXJ00AA03 | ISDN ON RSC (REP BY NTXJ00AB)  |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT    |
| 0 | NTXJ38AA01 | MDC WARM LINE                  |
| 0 | NTXJ39AA01 | CLASS VISUAL MESSAGE WAITING   |
| 0 |            | INDICATOR                      |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION      |
| 0 |            | TOOLS                          |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                |
| 0 | NTXJ42AA02 | FEATURE GROUP D ON MDC         |
| 0 | NTXJ43AA02 | #5ESS AT&T INTERWORKING        |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                |
| 0 | NTXJ47AA01 | TEEN SERVICE ON MDC            |
| 0 | NTXJ48AA01 | ISDN INTEGRATED PH MAINTENANCE |
| 0 |            | WITH OAMP REQUIRED             |
| 0 | NTXJ51AA02 | ISDN DIGITAL TEST ACCESS       |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING  |
| 0 |            | OPTIONS                        |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE   |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG  |
| 0 |            | OF NTXJ59AB)                   |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA |
| 0 |            | (UPG OF NTXJ60AA)              |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL       |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION   |
| 0 |            | FOR DMS ISI                    |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS  |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD          |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING   |
| 0 |            | CALLS                          |



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0 NTXC47BC01 STATUS NAP

0 DMS-100 BCS36 S/W LOAD FOR  
0 SN50 ENET/DSN

0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING

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0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE

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0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP

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0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AC01 | CIRCLE DIGIT IDENTIFICATION    |
| 0 | NTX049AD01 | SINGLE PARTY REVERTIVE CALLING |
| 0 | NTX049AE01 | NORTH ELECTRIC ANI FORMAT      |
| 0 |            | GENERATION                     |
| 0 | NTX049AH01 | COME AGAIN SIGNALLING          |
| 0 | NTX049AL01 | TIME AND TEMPERATURE           |
| 0 |            | ANNOUNCEMENT                   |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |

|   |            | AUTHORIZATION CODES                                         |
|---|------------|-------------------------------------------------------------|
| 0 | NTX105AA03 | TRUNK QUEUING                                               |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET                              |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES                                      |
| 0 | NTX110AA01 | IBN - HOSPITAL                                              |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE                                      |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS<br>(UPG FROM NTX112AA)        |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE                                         |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY<br>PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO<br>TRK)                          |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY                                  |
| 0 | NTX127AA01 | WARM LINE                                                   |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION<br>MEASURING SYSTEM                  |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL<br>LINES                       |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR                                          |
| 0 | NTX143AA02 | DS-1 - ESF                                                  |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER                                     |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING<br>MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE<br>MAINTENANCE(UPGRADE OF<br>NTX147AA) |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE<br>OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND<br>TRUNK                       |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING                                     |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF<br>NTX152AA)                          |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE<br>OPERATION                   |
| 0 | NTX156AA02 | INTRA RLCM CALLING                                          |
| 0 | NTX157AA01 | CCIS - INWATS OSO                                           |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT                                        |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE<br>SERVICES                          |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL<br>RECORDING                      |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (<br>REP.OF NTX167AA)               |
| 0 | NTX174AA03 | AIOD(AUTO IDENTIFIED OUTWARD<br>DIALING)                    |

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0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC

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0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX571AA01 | IBN - DIRECTED CALL PARK, 2500 |
| 0 |            | SET ONLY                       |
| 0 | NTX573AA01 | IBN SECURITY CODE - 2500 ONLY  |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP       |
| 0 |            | NTX621AA)                      |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX713AA01 | LATA-WIDE CENTREX BILLING      |
| 0 | NTX717AB01 | IBN TRK VERIFICATION           |
| 0 |            | DESIGNATED STN(UPGR.OF         |
| 0 |            | NTX717AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 | FLEXIBLE ANI                   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AC02 | ISDN BASIC ACCESS(UPG. FROM    |
| 0 |            | NTX750AB                       |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |

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0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS

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0  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC48AB01 STATUS LTD TARGET SUPERNODE  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SN20 (UPG OF C48AA)  
  
0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25

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0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES

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0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS

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0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM

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0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT

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0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXP92AB01 | RSC-S BASIC (UPG OF NTXP92AA)  |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXP99AB01 | E911 REMOTE CALL EVENT         |
| 0 |            | RECORD(UPG.OF NTXP99AA)        |
| 0 | NTXQ12AA01 | RSC ENHANCED ESA(LINES         |
| 0 |            | ONLY)(FOR BCS34 RELEASE)       |
| 0 | NTXQ18AA01 | SRDB MEMORY ADMINISTRATION     |
| 0 | NTXQ29AA01 | CLASS+ CALLING NAME DELIVERY   |
| 0 |            | BLOCKING FOR LINES             |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ70AA01 | UNIVERSAL CLASS FEATURE ACCESS |
| 0 | NTXQ81AA01 | CLASS - NAME DISPLAY ON MADN   |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXQ90AB01 | ENHANCED RESIDENTIAL SERVICES  |
| 0 |            | (UPG OF NTXQ90AA)              |
| 0 | NTXQ95AA01 | LINE LOG REDUCTION             |
| 0 | NTXR21AA01 | EDAS HARDWARE INVENTORY        |
| 0 |            | CONTROL                        |
| 0 | NTXR25AA02 | NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 | MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 | POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 | DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 | CLASS: SPLIT NPA MANAGEMENT    |
| 0 | NTXR62AA01 | STUTTER DIALTONE ENHANCEMENT   |
| 0 | NTXR65AA01 | FLEXIBLE DWS ACCESS            |
| 0 | NTXR66AA01 | DWS ACCESS TO CARRIER (ACCESS  |
| 0 |            | TANDEM)                        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR71AA01 | RSC-S EXTENDED DISTANCE        |
| 0 |            | CAPABILITY                     |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXR74AA01 | ENABLING OF MBG FEATURE        |
| 0 |            | NETWORKING                     |
| 0 | NTXR75AA01 | VCN 1A BILLING                 |
| 0 | NTXR76AA01 | VCN 1A OM'S                    |

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0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)

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0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPULSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND

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0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING

|   |            |                               |
|---|------------|-------------------------------|
| 0 | NTX259AA03 | DATA PATH EXTENSION - DPX     |
| 0 | NTX260AA02 | IBN - PRESET CONFERENCE       |
| 0 | NTX262AA01 | IBN PRIORITY CONSOLE ALERTING |
| 0 | NTX269AA07 | UNIVERSAL TONE                |
| 0 |            | RECEIVER(DOMESTIC)            |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE    |
| 0 |            | PACKAGE                       |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE          |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER   |
| 0 |            | BX.25                         |
| 0 | NTX277AA02 | DIALABLE LINE CIRCUIT         |
| 0 |            | IDENTIFICATION                |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND     |
| 0 |            | TREATMENT                     |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR  |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH      |
| 0 |            | PASSWORD ENCRYPTION           |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II  |
| 0 | NTX297AA01 | BRIDGES SERVICES              |
| 0 | NTX299AB01 | SPECIAL SERVICES - SCM(UPG OF |
| 0 |            | NTX299AA)                     |
| 0 | NTX380AA02 | DUAL RCC                      |
| 0 | NTX381AA01 | RSC - REMOTE - OFF REMOTE     |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS    |
| 0 | NTX386AB02 | ACCESS TANDEM SWITCH (UPG OF  |
| 0 |            | NTX386AA)                     |
| 0 | NTX387AD01 | SMU AND ISDN/MBS SMU          |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN     |
| 0 |            | POINT                         |
| 0 | NTX398AA12 | SCM - 100S                    |
| 0 | NTX399AA01 | IBN/ESB COMPATIBILITY         |
| 0 | NTX407AB01 | ACD - CALL PROCESSING         |
| 0 |            | (REP.NTX407AA)                |
| 0 | NTX410AA02 | DYNAMIC ATTENDANT CONSOLE     |
| 0 |            | MEASUREMENTS                  |
| 0 | NTX411AA01 | IBN - VOICE MESSAGING         |
| 0 | NTX412CB01 | IBN - CUSTOMER DATA CHANGE    |
| 0 |            | (UPG. OF NTX412CA)            |
| 0 | NTX413AB01 | IBN - ENHANCED CALL           |
| 0 |            | FORWARDING(UPGR. OF NTX413AA) |
| 0 | NTX414AA01 | IBN - DIRECTED CALL PARK,     |
| 0 |            | BUSINESS SET AND 2500 SET     |
| 0 | NTX415AA07 | ACD BASIC                     |
| 0 | NTX416AJ01 | ACD ENHANCED II (UPG. OF      |
| 0 |            | NTX416AI)                     |
| 0 | NTX418AA01 | IBN_SERVICE ANALYSIS          |
| 0 | NTX419AA01 | MACD PIN CONFIGURATION AND    |

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0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF

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0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE

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0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC48BB01 STATUS NAP TARGET SUPERNODE  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SN20 ENET/DSN

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN

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0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAO (REP. NTXE13AA)  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE22AA02 ACD SUPERGROUP

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0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER

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0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)

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0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING

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0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE

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0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP



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0  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS

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0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES

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0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT

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0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET

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0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAEO - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF

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0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND

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0 BERT (REP. NTX839AA)
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF
0 NTX843AA IN BCS27)
0 NTX851AA01 SMDR DERIVED FROM BCR AMA
0 NTX853AA01 IBN ALARM CALL STATUS ON
0 CONSOLES
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN
0 INDIVIDUAL CONSOLE BASIS
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION
0 NTX877AB01 INTERFACE TO NON-DATA LINK
0 CONSOLE(UPG. OF NTX877AA)
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS
0 SET SERVICES(UPG. FR. NTX878AD
0 NTX881AC03 SWITCH BIT ERROR RATE
0 MAINTENANCE(UPG. OF NTX881AB)
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR
0 TOLL SWITCHES
0 NTX883AA01 INTER OFFICE TRK BIT ERROR
0 RATE TESTING
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.
0 OF NTX885AA)
0 NTX888AA01 EA0SS
0 NTX892AA04 MPC MULTILINK MANAGEMENT
0 NTX898AA01 VARIABLE SPEED CALL ACCESS
0 CODE - IBN
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS
0 NTX901AA24 LOCAL FEATURES I
0 NTX902AA07 LOCAL FEATURES II
0 NTX903AA01 TRANSMISSION MEASUREMENTS
0 NTX940AA13 CM BILGE
0 NTX941AA12 CM COMMON
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD
0 MODULE(SLM)(UPG.FR. NTX942AB)
0 NTX944AA03 BASE NODE MAINTENANCE
0 NTX945AA03 MS BASE LINK MAINTENANCE
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF
0 NTX946AA IN BCS26)
0 NTX950AA06 MS BILGE
0 NTX951AA08 MS COMMON
0 NTX983AB02 SERVICE SWITCHING POINT
0 PRIVATE VIRTUAL NTWKG(REP
0 NTX983AA)
0 NTX984AA01 SERVICE SWITCHING POINT
0 PRIV.VIRTUAL NETWRKG-
0 ATT.SERVICES
0 NTX986AA01 ANI WITH AMA

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0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC49AB01 STATUS LTD TARGET SUPERNODE  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SN30 (UPG OF C49AA)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING

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0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS

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0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP

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0  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A

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0  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE

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0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX049AG01 | ITT ANI FORMAT (RECEIPT)       |
| 0 | NTX049AH01 | COME AGAIN SIGNALLING          |
| 0 | NTX049AL01 | TIME AND TEMPERATURE           |
| 0 |            | ANNOUNCEMENT                   |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX063AA02 | ECHO SUPPRESSOR                |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT           |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTPULSING (TRK TO  |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX129AA02 | TWO WAY OPERATOR OFFICE TRUNK  |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT           |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE         |
| 0 |            | SERVICES                       |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL      |
| 0 |            | RECORDING                      |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX174AA03 | AIOD(AUTO IDENTIFIED OUTWARD   |
| 0 |            | DIALING)                       |
| 0 | NTX175AA01 | IBN - MULTI BILINGUAL CONSOLE  |
| 0 | NTX186AB02 | EQUAL ACCESS END OFFICE (UPG   |
| 0 |            | OF NTX186AA)                   |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |

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0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX380AA02 | DUAL RCC                       |
| 0 | NTX381AA01 | RSC - REMOTE - OFF REMOTE      |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX386AB02 | ACCESS TANDEM SWITCH (UPG OF   |
| 0 |            | NTX386AA)                      |
| 0 | NTX387AD01 | SMU AND ISDN/MBS SMU           |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN      |
| 0 |            | POINT                          |
| 0 | NTX398AA12 | SCM - 100S                     |
| 0 | NTX399AA01 | IBN/ESB COMPATIBILITY          |
| 0 | NTX407AB01 | ACD - CALL PROCESSING          |
| 0 |            | (REP.NTX407AA)                 |
| 0 | NTX410AA02 | DYNAMIC ATTENDANT CONSOLE      |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX411AA01 | IBN - VOICE MESSAGING          |
| 0 | NTX412CB01 | IBN - CUSTOMER DATA CHANGE     |
| 0 |            | (UPG. OF NTX412CA)             |
| 0 | NTX413AB01 | IBN - ENHANCED CALL            |
| 0 |            | FORWARDING(UPGR. OF NTX413AA)  |
| 0 | NTX414AA01 | IBN - DIRECTED CALL PARK,      |
| 0 |            | BUSINESS SET AND 2500 SET      |
| 0 | NTX415AA07 | ACD BASIC                      |
| 0 | NTX416AJ01 | ACD ENHANCED II (UPG. OF       |
| 0 |            | NTX416AI)                      |
| 0 | NTX418AA01 | IBN_SERVICE ANALYSIS           |
| 0 | NTX419AA01 | MACD PIN CONFIGURATION AND     |
| 0 |            | CONTROL                        |
| 0 | NTX420AA01 | MACD NODAL SERVICE OBSERVING   |
| 0 | NTX426AA02 | ASYNCHRONOUS INTERFACE LINE    |
| 0 |            | CARD                           |
| 0 | NTX427AA04 | END USER TESTING OF TRUNKS     |
| 0 | NTX430AA02 | ESN                            |
| 0 | NTX431AA03 | IBN - CUT THROUGH DIALING      |
| 0 | NTX432AA01 | NETWORK SPEED CALLING          |
| 0 | NTX433AA01 | TIME OF DAY ROUTING            |
| 0 | NTX434AA01 | TIME OF DAY NCOS               |
| 0 | NTX435AA03 | IBN SUPERSET                   |
| 0 | NTX436AA01 | IBN ENHANCED DIAL PLAN         |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX447AA01 | E911 - TANDEM                  |
| 0 | NTX451AA02 | E-911 DATABASE                 |
| 0 | NTX455AB01 | 1A EADAS NETWORK MANAGEMENT    |
| 0 |            | (UPG. OF NTX455AA)             |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |

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0 NTX554AA02 CCS7 - E800/SSP
0 NTX560AB03 NOP - GENERIC R0 SERVICE(REP
0 NTX562AA03 NOS - DATA COLLECTION
0 NTX563AA05 BNM - STATION ADMINISTRATION
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500
0 SET ONLY
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY
0 NTX621AB02 SMU SPECIAL SERVICES(REP
0 NTX621AA)
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS
0 NTX711AB02 EQUAL ACCESS END OFFICE
0 ENHANCEMENTS (UPG. OF
0 NTX711AA)
0 NTX712AA01 CCS7 DATA PORT
0 NTX713AA01 LATA-WIDE CENTREX BILLING
0 NTX717AB01 IBN TRK VERIFICATION
0 DESIGNATED STN(UPGR.OF
0 NTX717AA)
0 NTX719AA01 BUSINESS SET BUSY INDICATOR
0 NTX727AD01 ACD - LOAD MANAGEMENT III
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER
0 NTX732AA06 SIMPLIFIED MESSAGE DESK
0 INTERFACE(SMDI)
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF
0 NTX733AD IN BCS29)
0 NTX734AA01 EAE0 - IBN PIC USING SERVORD
0 NTX735AA01 FLEXIBLE ANI
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF
0 NTX737AA)
0 NTX738AC02 SWITCH PERFORMANCE MONITORING
0 SYSTEM (UPG NTX738AB V.O.30)
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM
0 NTX750AB
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC
0 RATE SERVICES (UPG OF
0 NTX753AA)
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE
0 SERVICE (UPG OF NTX754AA) (UP
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES
0 COMPLIANCE(UPG.FR. NTX755AB)
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES
0 NTX757AA02 TR444 ISUP INTERWORKING
0 NTX761AA01 CLASS ON ISDN
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS
0 COMPLIANCE- END OFFICE

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0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION

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0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC49BB01 STATUS NAP TARGET SUPERNODE  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SN30 ENET/DSN

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS



|   |            |                                                               |
|---|------------|---------------------------------------------------------------|
| 0 | NTXA68AA01 | NETWORK MESSAGE SERVICE                                       |
| 0 | NTXA72AA01 | SECONDARY MADN CALL FORWARDING                                |
| 0 | NTXA73AA01 | LOUDSPEAKER PAGING ANSWER                                     |
| 0 | NTXA74AA01 | OUTGOING RESTRICTION CONTROL                                  |
| 0 | NTXA77AA01 | ENHANCED UCD                                                  |
| 0 | NTXA79AA03 | IBN TRUNKS WITH ISUP<br>SIGNALLING                            |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY                                          |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES                                    |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA                                        |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD                                           |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/<br>REMOTE (UPG OF NTXA85AA)         |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC-<br>96/REMOTE: SPECIAL SERVICES |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM                                            |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM                                        |
| 0 | NTXA94AA01 | RES FEATURES                                                  |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL<br>FORWARDING                            |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION                                |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC                                      |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF<br>NTXE09AA IN BCS32)                 |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION<br>EAO (REP. NTXE13AA)         |
| 0 | NTXE14AB03 | CCS7 ISUP INTERLATA CONN<br>ACCESS TANDEM (REP. NTXE14AA)     |
| 0 | NTXE22AA02 | ACD SUPERGROUP                                                |
| 0 | NTXE23AA01 | CELLULAR INTERCONNECT - END<br>OFFICE                         |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM<br>POOLING                          |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY                                |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL<br>RETRANSMISSION                  |
| 0 | NTXE38AB01 | CLASS: CND ON SCMS/SMSR(UPG.OF<br>NTXE38AA)                   |
| 0 | NTXE39AA01 | CALL FORWARD BUSY/DO NOT<br>ANSWER SPLITS                     |
| 0 | NTXE40AB01 | MERIDIAN BUSINESS SET INSPECT<br>KEY (UPG. FROM NTXE40AA)     |
| 0 | NTXE43AA01 | TERMINATING BILLING OPTION                                    |
| 0 | NTXE44AA01 | EXECUTIVE BUSY OVERRIDE<br>ENHANCEMENT                        |
| 0 | NTXE46AA01 | CALLING NAME/NUMBER DELIVERY<br>BLOCKING                      |

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0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION

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0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON

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0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTP00AA01 LINE CARD MONITOR  
0 NTP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTP10AA01 NETWORK MODULE SOFTWARE  
0 NTP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION

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0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING

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0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING

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0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

|   |            |                                                      |
|---|------------|------------------------------------------------------|
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)                             |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)                            |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION                               |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT                         |
| 0 | NTX055BA01 | RONI TRUNK TESTING                                   |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION                              |
| 0 | NTX060AB11 | NETWORK MANAGEMENT                                   |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED                        |
| 0 | NTX063AA02 | ECHO SUPPRESSOR                                      |
| 0 | NTX065AA12 | SERVICE ANALYSIS                                     |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE<br>DIALLING (IDDD)     |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM                             |
| 0 | NTX076AA01 | AMA - ENHANCED                                       |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE                           |
| 0 | NTX080AA02 | LAMA ENHANCED                                        |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS                         |
| 0 | NTX083AA01 | FEATURE GROUP A                                      |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT                         |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE                             |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT                            |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES                               |
| 0 | NTX090AA01 | COIN SERVICES                                        |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES                          |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT                                 |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS<br>ENHANCEMENTS             |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS -<br>BASIC (IBN)        |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS<br>SERVICES                  |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL<br>RECORDING            |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED                                  |
| 0 | NTX103BA02 | IBN STATION SPECIFIC<br>AUTHORIZATION CODES          |
| 0 | NTX105AA03 | TRUNK QUEUING                                        |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET                       |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES                               |
| 0 | NTX110AA01 | IBN - HOSPITAL                                       |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE                               |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS<br>(UPG FROM NTX112AA) |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE                                  |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY<br>PACKAGE                 |
| 0 | NTX121AA01 | OVERLAP OUTPUT PULSING (TRK TO                       |



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0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING

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0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN

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0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY

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0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAEO - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |
| 0 | NTX796AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - BASIC RATE INTERFACE         |
| 0 | NTX797AB01 | PRI MESSAGE WAITING INDICATION |
| 0 |            | (UPG OF 797AA)                 |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX821AA01 | TANDEM OPERATOR SERVICE        |
| 0 |            | ROUTING                        |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. FR. NTX878AD |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX882AA04 | BIT ERROR RATIO INDICATOR FOR  |

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0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC50AB01 STATUS LTD TARGET SUPERNODE

0 DMS100/200 BCS36 S/W LOAD FOR

0 SN40 (UPG OF C50AA)

0 NTXA00AC01 CLASS - CALL SETUP

0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY

0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED

0 TRACE

0 NTXA11AA01 PATCH ADMINISTRATION &

0 DOWNLOADING VIA X.25

0 NTXA15AA01 CALL PROGRESS TONES

0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)

0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE

0 BLOCKING

0 NTXA22AA01 ENHANCED ARS

0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER

0 TOLL DENIAL

0 NTXA27AA01 EXECUTIVE CONFERENCE

0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK

0 AHEAD

0 NTXA31AA01 DISA THIRD DIAL TONE - IBN

0 NTXA32AA01 DISTINCTIVE CALL WAITING

0 RINGBACK

0 NTXA33AA01 MADN RING FORWARD

0 NTXA35AA03 NETWORK NUMBER DISPLAY

0 NTXA36AA01 NETWORK WIDE RING AGAIN

0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT

0 SERVICE

0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY

0 BLOCKING ADMINISTRATION

0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL

0 WAITING

0 NTXA45AA01 CLASS SELECTIVE CALL

0 ACCEPTANCE

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I

0 (REP. NTXA52AA)

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED

0 SERVICES) BASE

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

0 NTXA68AA01 NETWORK MESSAGE SERVICE

0 NTXA72AA01 SECONDARY MADN CALL FORWARDING

0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER

0 NTXA74AA01 OUTGOING RESTRICTION CONTROL

0 NTXA77AA01 ENHANCED UCD

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0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING



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0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS

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0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK

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0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER

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0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT
0 NTXR65AA01 FLEXIBLE DWS ACCESS
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS
0 TANDEM)
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE
0 NTXR71AA01 RSC-S EXTENDED DISTANCE
0 CAPABILITY
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED
0 PLATFORMS
0 NTXR74AA01 ENABLING OF MBG FEATURE
0 NETWORKING
0 NTXR75AA01 VCN 1A BILLING
0 NTXR76AA01 VCN 1A OM'S
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL
0 NTXR83AA01 PER LINE FEATURE CONTROL
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR
0 DMS100
0 NTXR89AA01 CENTREX COORDINATED VOICE AND
0 DATA
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST
0 EDITING
0 NTXR95AA01 NAME DISPLAY - TCAP
0 NTXS00AA01 INTERCHANGABLE NPA
0 NTXS01AA01 ISDN MULTI-POINT LOOP
0 MAINTENANCE
0 NTXS05AA01 XPM PLUS IN RSC
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER
0 NTXS08AA01 ENHANCED TIME SWITCH
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7
0 TRKS
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)
0 NTXS17AA01 DATA CALL TESTER
0 NTXS22AA01 THIRD PARTY AGENT CONTROL
0 NTXS25AA01 DWS BASE
0 NTXS26AA01 DWS PRI BASE
0 NTXS27AA01 DWS PRI TEST TOOL
0 NTXS28AA01 DWS INTERTOLL ISUP
0 NTXS29AA01 APU MAINTENANCE
0 NTXS36AA01 XPM+ ON DTCI
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM
0 UPLOADING
0 NTXV00AA01 DN SCREENING DATABASE - BASE
0 NTXW00AA02 WORLD LINE CARD BASE
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE
0 REPORT
0 NTXW20AA01 WORLD LINE CARD 900 +2

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0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING

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0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT           |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE         |
| 0 |            | SERVICES                       |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL      |
| 0 |            | RECORDING                      |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX174AA03 | AIOD(AUTO IDENTIFIED OUTWARD   |
| 0 |            | DIALING)                       |
| 0 | NTX175AA01 | IBN - MULTI BILINGUAL CONSOLE  |
| 0 | NTX186AB02 | EQUAL ACCESS END OFFICE (UPG   |
| 0 |            | OF NTX186AA)                   |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT    |
| 0 |            | ANI                            |
| 0 | NTX195AA05 | MECHANIZED LOOP TESTER (MLT)   |
| 0 |            | I/F                            |
| 0 | NTX196AA02 | CALLING NUMBER ANNOUNCEMENT    |
| 0 |            | (CNA)                          |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING         |
| 0 | NTX204AA02 | CCIS BANDED SIGNALLING         |
| 0 | NTX206AA02 | UNAUTHORIZED DIGITONE SERVICE  |
| 0 |            | DETECTION                      |
| 0 | NTX209AB01 | FEATURE GRP B AMA - END (ATT   |
| 0 |            | FORMAT)(UPG FR.NTX209AA)       |



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE            |
| 0 | NTX211AB01 | FEATURE GRP B AMA - TANDEM(ATT |
| 0 |            | FORMAT)(UPG FR.NTX211AA)       |
| 0 | NTX213AC01 | SUBSCRIBER CARRIER             |
| 0 |            | MODULE(SCM)(REP. NTX213AB)     |
| 0 | NTX215AA02 | SES NO.2 - INTERFACE           |
| 0 | NTX218AA03 | 1A/1B EADAS INTERFACE          |
| 0 | NTX219AB03 | TEEN SERVICE                   |
| 0 | NTX243AA07 | AMA TELEPROCESSING             |
| 0 |            | SYSTEM(AMATPS)                 |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |
| 0 |            | HUNTING(UPG OF 244AA IN BCS23) |
| 0 | NTX250AA15 | DATAPATH - BASIC               |
| 0 | NTX251AA06 | DATAPATH - MODEM POOLING       |
| 0 | NTX259AA03 | DATAPATH EXTENSION - DPX       |
| 0 | NTX260AA02 | IBN - PRESET CONFERENCE        |
| 0 | NTX262AA01 | IBN PRIORITY CONSOLE ALERTING  |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX277AA02 | DIALABLE LINE CIRCUIT          |
| 0 |            | IDENTIFICATION                 |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND      |
| 0 |            | TREATMENT                      |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX297AA01 | BRIDGES SERVICES               |
| 0 | NTX299AB01 | SPECIAL SERVICES - SCM(UPG OF  |
| 0 |            | NTX299AA)                      |
| 0 | NTX380AA02 | DUAL RCC                       |
| 0 | NTX381AA01 | RSC - REMOTE - OFF REMOTE      |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX386AB02 | ACCESS TANDEM SWITCH (UPG OF   |
| 0 |            | NTX386AA)                      |
| 0 | NTX387AD01 | SMU AND ISDN/MBS SMU           |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN      |
| 0 |            | POINT                          |
| 0 | NTX398AA12 | SCM - 100S                     |
| 0 | NTX399AA01 | IBN/ESB COMPATIBILITY          |
| 0 | NTX407AB01 | ACD - CALL PROCESSING          |
| 0 |            | (REP.NTX407AA)                 |

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0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX713AA01 | LATA-WIDE CENTREX BILLING      |
| 0 | NTX717AB01 | IBN TRK VERIFICATION           |
| 0 |            | DESIGNATED STN(UPGR.OF         |
| 0 |            | NTX717AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 | FLEXIBLE ANI                   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AC02 | ISDN BASIC ACCESS(UPG. FROM    |
| 0 |            | NTX750AB                       |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |

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0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

0

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0 NTXC50BB01 STATUS NAP TARGET SUPERNODE  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SN40 ENET/DSN  
  
0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED

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0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM

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0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF16AA01 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS



|   |            |                                                      |
|---|------------|------------------------------------------------------|
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                                      |
| 0 | NTXJ42AA02 | FEATURE GROUP D ON MDC                               |
| 0 | NTXJ43AA02 | #5ESS AT&T INTERWORKING                              |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                                      |
| 0 | NTXJ47AA01 | TEEN SERVICE ON MDC                                  |
| 0 | NTXJ48AA01 | ISDN INTEGRATED PH MAINTENANCE<br>WITH OAMP REQUIRED |
| 0 | NTXJ51AA02 | ISDN DIGITAL TEST ACCESS                             |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING<br>OPTIONS             |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE                         |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG<br>OF NTXJ59AB)        |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA<br>(UPG OF NTXJ60AA)  |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL                             |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION<br>FOR DMS ISI          |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS                        |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD                                |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING<br>CALLS                |
| 0 | NTXJ78AA02 | CLASS II ON MDC                                      |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY                        |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A<br>TRANSPARENCY                  |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION<br>FOR HUNT GROUPS      |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA                               |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY<br>LAMP FIELD FOR MBS  |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON                        |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS<br>(UPG OF NTXN01AA)  |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION                        |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                                      |
| 0 | NTXN11AA01 | TEN DIGIT GTT FOR CLASS<br>FEATURES                  |
| 0 | NTXN12AA01 | NCEO/LEAS INTERFACE                                  |
| 0 | NTXN16AA01 | ENHANCED DRAM                                        |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI<br>ALI DATABASE         |
| 0 | NTXN18AA04 | FBUS - LIU BASE                                      |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7<br>APPLICATIONS              |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS                           |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD                         |

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN66AA01 | E911 DIRECT ACCESS TO DATA     |
| 0 |            | MGT. SYSTEM ALI DATABASE       |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |
| 0 | NTXN82AB01 | RSC ENHANCED ESA (LINES &      |
| 0 |            | TRUNKS)(UPG FR NTXN82AA)       |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXN87AB01 | INTEGRATED TESTING BASE        |
| 0 | NTXN89AA01 | ISDN TESTING                   |
| 0 | NTXN91AA01 | TL 1 TESTING INTERFACE BASE    |
| 0 | NTXN93AA01 | TL-1 TESTING ENHANCED BUSINESS |
| 0 | NTXN99AA01 | ISDN INBOUND MODEM POOLING     |
| 0 | NTXP00AA01 | LINE CARD MONITOR              |
| 0 | NTXP01AA03 | INTELLIGENT NETWORK 0.0 BASE   |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP12AA01 | CLASS: ANONYMOUS CALLER        |
| 0 |            | REJECTION                      |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP38AA01 | BD CHANNEL LOOPBACK            |
| 0 | NTXP47AB01 | DMS PACKET HANDLER BASE (UPG   |
| 0 |            | OF NTXP47AA)                   |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP53AA01 | ACD ACCESS FEATURE GROUPING    |
| 0 | NTXP57AA01 | CALL WAKE-UP SERVICE           |
| 0 | NTXP58AA01 | VFG SPPRT FOR E911(LOC &/OR    |
| 0 |            | INC ISUP/ANI CALL)             |
| 0 | NTXP73AA01 | CNDB OFFICE-WIDE ACTIVATION    |
| 0 | NTXP75AA01 | DMS PACKET HANDLER SERVORD     |

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0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS

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0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX020AC01 | VERTICAL SERVICES I (UPGRADE   |
| 0 |            | FROM NTX020AB)                 |
| 0 | NTX021AA04 | REMOTE CALL FORWARDING         |
| 0 | NTX023AB03 | REMOTE LINE MODULE (RLM)       |
| 0 | NTX024AA01 | RLM INTRA-RLM CALLING          |
| 0 | NTX025AA02 | RLM EMERGENCY STAND-ALONE      |
| 0 |            | OPERATION                      |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |
| 0 |            | SIGNALLING - BASIC             |
| 0 | NTX042AA04 | LOCAL AUTOMATIC MESSAGE        |
| 0 |            | ACCOUNTING (LAMA)              |
| 0 | NTX043AA03 | LOCAL CALL DETAIL RECORDING    |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE      |
| 0 |            | ACCOUNTING (CAMA)              |
| 0 | NTX045AA01 | USAGE SENSITIVE PRICING(USP    |
| 0 |            | BELLCORE FORMAT)               |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AC01 | CIRCLE DIGIT IDENTIFICATION    |
| 0 | NTX049AD01 | SINGLE PARTY REVERTIVE CALLING |
| 0 | NTX049AE01 | NORTH ELECTRIC ANI FORMAT      |
| 0 |            | GENERATION                     |
| 0 | NTX049AG01 | ITT ANI FORMAT (RECEIPT)       |
| 0 | NTX049AH01 | COME AGAIN SIGNALLING          |
| 0 | NTX049AL01 | TIME AND TEMPERATURE           |
| 0 |            | ANNOUNCEMENT                   |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX063AA02 | ECHO SUPPRESSOR                |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT           |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUT PULSING (TRK TO |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX129AA02 | TWO WAY OPERATOR OFFICE TRUNK  |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |

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0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)

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0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC



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0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III

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0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAE0 - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS

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0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON

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0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC51AB01 STATUS LTD  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SN50 (UPG OF C51AA)  
  
0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXA27AA01 | EXECUTIVE CONFERENCE           |
| 0 | NTXA30AA01 | VIRTUAL FACILITY GROUP LOOK    |
| 0 |            | AHEAD                          |
| 0 | NTXA31AA01 | DISA THIRD DIAL TONE - IBN     |
| 0 | NTXA32AA01 | DISTINCTIVE CALL WAITING       |
| 0 |            | RINGBACK                       |
| 0 | NTXA33AA01 | MADN RING FORWARD              |
| 0 | NTXA35AA03 | NETWORK NUMBER DISPLAY         |
| 0 | NTXA36AA01 | NETWORK WIDE RING AGAIN        |
| 0 | NTXA39AA02 | MERIDIAN NETWORK ATTENDANT     |
| 0 |            | SERVICE                        |
| 0 | NTXA41AA01 | CLASS: CALLING NUMBER DELIVERY |
| 0 |            | BLOCKING ADMINISTRATION        |
| 0 | NTXA42AA01 | CLASS DISTINCTIVE RINGING/CALL |
| 0 |            | WAITING                        |
| 0 | NTXA45AA01 | CLASS SELECTIVE CALL           |
| 0 |            | ACCEPTANCE                     |
| 0 | NTXA52AB01 | ACD REMOTE LOAD MANAGEMENT I   |
| 0 |            | (REP. NTXA52AA)                |
| 0 | NTXA64AA05 | RES(RESIDENTIAL ENHANCED       |
| 0 |            | SERVICES) BASE                 |
| 0 | NTXA67AA01 | EXTENDED XPM DIAGNOSTICS       |
| 0 | NTXA68AA01 | NETWORK MESSAGE SERVICE        |
| 0 | NTXA72AA01 | SECONDARY MADN CALL FORWARDING |
| 0 | NTXA73AA01 | LOUDSPEAKER PAGING ANSWER      |
| 0 | NTXA74AA01 | OUTGOING RESTRICTION CONTROL   |
| 0 | NTXA77AA01 | ENHANCED UCD                   |
| 0 | NTXA79AA03 | IBN TRUNKS WITH ISUP           |
| 0 |            | SIGNALLING                     |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY           |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES     |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA         |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD            |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/      |
| 0 |            | REMOTE (UPG OF NTXA85AA)       |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC- |
| 0 |            | 96/REMOTE: SPECIAL SERVICES    |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM             |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM         |
| 0 | NTXA94AA01 | RES FEATURES                   |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL           |
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |

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0  
0 EAE0 (REP. NTXE13AA)  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP

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0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE

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0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE



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0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXQ29AA01 | CLASS+ CALLING NAME DELIVERY   |
| 0 |            | BLOCKING FOR LINES             |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ70AA01 | UNIVERSAL CLASS FEATURE ACCESS |
| 0 | NTXQ81AA01 | CLASS - NAME DISPLAY ON MADN   |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXQ90AB01 | ENHANCED RESIDENTIAL SERVICES  |
| 0 |            | (UPG OF NTXQ90AA)              |
| 0 | NTXQ95AA01 | LINE LOG REDUCTION             |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY       |
| 0 |            | CONTROL                        |
| 0 | NTXR25AA02 | NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 | MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 | POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 | DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 | CLASS: SPLIT NPA MANAGEMENT    |
| 0 | NTXR62AA01 | STUTTER DIALTONE ENHANCEMENT   |
| 0 | NTXR65AA01 | FLEXIBLE DWS ACCESS            |
| 0 | NTXR66AA01 | DWS ACCESS TO CARRIER (ACCESS  |
| 0 |            | TANDEM)                        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR71AA01 | RSC-S EXTENDED DISTANCE        |
| 0 |            | CAPABILITY                     |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXR74AA01 | ENABLING OF MBG FEATURE        |
| 0 |            | NETWORKING                     |
| 0 | NTXR75AA01 | VCN 1A BILLING                 |
| 0 | NTXR76AA01 | VCN 1A OM'S                    |
| 0 | NTXR78AA01 | MBG FEATURE NETWORKING CONTROL |
| 0 | NTXR83AA01 | PER LINE FEATURE CONTROL       |
| 0 | NTXR88AA01 | NETWORK ACCESS REGISTERS FOR   |
| 0 |            | DMS100                         |
| 0 | NTXR89AA01 | CENTREX COORDINATED VOICE AND  |
| 0 |            | DATA                           |
| 0 | NTXR94AA01 | DATAPATH (SLE) SCREEN LIST     |

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0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)

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0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS

|   |            |                                |
|---|------------|--------------------------------|
|   |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPULSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX129AA02 | TWO WAY OPERATOR OFFICE TRUNK  |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |

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0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE

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0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING

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0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAE0 - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)



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0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)

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0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)

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0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC51BB01 STATUS NAP  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SN50 ENET/DSN  
  
0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXA41AA01 | CLASS: CALLING NUMBER DELIVERY |
| 0 |            | BLOCKING ADMINISTRATION        |
| 0 | NTXA42AA01 | CLASS DISTINCTIVE RINGING/CALL |
| 0 |            | WAITING                        |
| 0 | NTXA45AA01 | CLASS SELECTIVE CALL           |
| 0 |            | ACCEPTANCE                     |
| 0 | NTXA52AB01 | ACD REMOTE LOAD MANAGEMENT I   |
| 0 |            | (REP. NTXA52AA)                |
| 0 | NTXA64AA05 | RES(RESIDENTIAL ENHANCED       |
| 0 |            | SERVICES) BASE                 |
| 0 | NTXA67AA01 | EXTENDED XPM DIAGNOSTICS       |
| 0 | NTXA68AA01 | NETWORK MESSAGE SERVICE        |
| 0 | NTXA72AA01 | SECONDARY MADN CALL FORWARDING |
| 0 | NTXA73AA01 | LOUDSPEAKER PAGING ANSWER      |
| 0 | NTXA74AA01 | OUTGOING RESTRICTION CONTROL   |
| 0 | NTXA77AA01 | ENHANCED UCD                   |
| 0 | NTXA79AA03 | IBN TRUNKS WITH ISUP           |
| 0 |            | SIGNALLING                     |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY           |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES     |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA         |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD            |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/      |
| 0 |            | REMOTE (UPG OF NTXA85AA)       |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC- |
| 0 |            | 96/REMOTE: SPECIAL SERVICES    |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM             |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM         |
| 0 | NTXA94AA01 | RES FEATURES                   |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL           |
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |
| 0 |            | EAE0 (REP. NTXE13AA)           |
| 0 | NTXE14AB03 | CCS7 ISUP INTERLATA CONN       |
| 0 |            | ACCESS TANDEM (REP. NTXE14AA)  |
| 0 | NTXE22AA02 | ACD SUPERGROUP                 |
| 0 | NTXE23AA01 | CELLULAR INTERCONNECT - END    |
| 0 |            | OFFICE                         |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM      |
| 0 |            | POOLING                        |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL     |
| 0 |            | RETRANSMISSION                 |

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0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)

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0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXJ78AA02 | CLASS II ON MDC                |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY  |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A            |
| 0 |            | TRANSPARENCY                   |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION   |
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS |
| 0 |            | (UPG OF NTXN01AA)              |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION  |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                |
| 0 | NTXN11AA01 | TEN DIGIT GTT FOR CLASS        |
| 0 |            | FEATURES                       |
| 0 | NTXN12AA01 | NCE0/LEAS INTERFACE            |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI   |
| 0 |            | ALI DATABASE                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN66AA01 | E911 DIRECT ACCESS TO DATA     |
| 0 |            | MGT. SYSTEM ALI DATABASE       |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |
| 0 | NTXN82AB01 | RSC ENHANCED ESA (LINES &      |
| 0 |            | TRUNKS)(UPG FR NTXN82AA)       |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |

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0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)

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0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION

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0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING

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0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPULSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE

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0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX297AA01 | BRIDGES SERVICES               |
| 0 | NTX299AB01 | SPECIAL SERVICES - SCM(UPG OF  |
| 0 |            | NTX299AA)                      |
| 0 | NTX380AA02 | DUAL RCC                       |
| 0 | NTX381AA01 | RSC - REMOTE - OFF REMOTE      |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX386AB02 | ACCESS TANDEM SWITCH (UPG OF   |
| 0 |            | NTX386AA)                      |
| 0 | NTX387AD01 | SMU AND ISDN/MBS SMU           |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN      |
| 0 |            | POINT                          |
| 0 | NTX398AA12 | SCM - 100S                     |
| 0 | NTX399AA01 | IBN/ESB COMPATIBILITY          |
| 0 | NTX407AB01 | ACD - CALL PROCESSING          |
| 0 |            | (REP.NTX407AA)                 |
| 0 | NTX410AA02 | DYNAMIC ATTENDANT CONSOLE      |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX411AA01 | IBN - VOICE MESSAGING          |
| 0 | NTX412CB01 | IBN - CUSTOMER DATA CHANGE     |
| 0 |            | (UPG. OF NTX412CA)             |
| 0 | NTX413AB01 | IBN - ENHANCED CALL            |
| 0 |            | FORWARDING(UPGR. OF NTX413AA)  |
| 0 | NTX414AA01 | IBN - DIRECTED CALL PARK,      |
| 0 |            | BUSINESS SET AND 2500 SET      |
| 0 | NTX415AA07 | ACD BASIC                      |
| 0 | NTX416AJ01 | ACD ENHANCED II (UPG. OF       |
| 0 |            | NTX416AI)                      |
| 0 | NTX418AA01 | IBN_SERVICE ANALYSIS           |
| 0 | NTX419AA01 | MACD PIN CONFIGURATION AND     |
| 0 |            | CONTROL                        |
| 0 | NTX420AA01 | MACD NODAL SERVICE OBSERVING   |
| 0 | NTX426AA02 | ASYNCHRONOUS INTERFACE LINE    |
| 0 |            | CARD                           |
| 0 | NTX427AA04 | END USER TESTING OF TRUNKS     |
| 0 | NTX430AA02 | ESN                            |
| 0 | NTX431AA03 | IBN - CUT THROUGH DIALING      |
| 0 | NTX432AA01 | NETWORK SPEED CALLING          |
| 0 | NTX433AA01 | TIME OF DAY ROUTING            |
| 0 | NTX434AA01 | TIME OF DAY NCOS               |
| 0 | NTX435AA03 | IBN SUPERSET                   |
| 0 | NTX436AA01 | IBN ENHANCED DIAL PLAN         |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX447AA01 | E911 - TANDEM                  |
| 0 | NTX451AA02 | E-911 DATABASE                 |
| 0 | NTX455AB01 | 1A EADAS NETWORK MANAGEMENT    |

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | (UPG. OF NTX455AA)             |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX554AA02 | CCS7 - E800/SSP                |
| 0 | NTX560AB03 | NOP - GENERIC R0 SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX571AA01 | IBN - DIRECTED CALL PARK,2500  |
| 0 |            | SET ONLY                       |
| 0 | NTX573AA01 | IBN SECURITY CODE - 2500 ONLY  |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP       |
| 0 |            | NTX621AA)                      |
| 0 | NTX710AA02 | LATA EQUAL ACCESS SYSTEM       |
| 0 | NTX710AB01 | INTERCHANGEABLE NPAS FOR LEAS  |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX713AA01 | LATA-WIDE CENTREX BILLING      |
| 0 | NTX717AB01 | IBN TRK VERIFICATION           |
| 0 |            | DESIGNATED STN(UPGR.OF         |
| 0 |            | NTX717AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 | FLEXIBLE ANI                   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AC02 | ISDN BASIC ACCESS(UPG. FROM    |
| 0 |            | NTX750AB                       |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |
| 0 | NTX796AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - BASIC RATE INTERFACE         |
| 0 | NTX797AB01 | PRI MESSAGE WAITING INDICATION |
| 0 |            | (UPG OF 797AA)                 |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX821AA01 | TANDEM OPERATOR SERVICE        |
| 0 |            | ROUTING                        |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |



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0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC52AB01 STATUS LTD TARGET SUPERNODE  
0 DMS200 BCS36 S/W LOAD FOR SN20  
0 (UPG OF C52AA)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | OPTIONS                        |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY       |
| 0 |            | CONTROL                        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH           |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM  |
| 0 |            | UPLOADING                      |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |
| 0 |            | SIGNALLING - BASIC             |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE      |

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | ACCOUNTING (CAMA)              |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AG01 | ITT ANI FORMAT (RECEIPT)       |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX063AA02 | ECHO SUPPRESSOR                |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT           |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX129AA02 | TWO WAY OPERATOR OFFICE TRUNK  |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT    |
| 0 |            | ANI                            |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING         |

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0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX821AA01 | TANDEM OPERATOR SERVICE        |
| 0 |            | ROUTING                        |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX882AA04 | BIT ERROR RATIO INDICATOR FOR  |
| 0 |            | TOLL SWITCHES                  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX888AA01 | EAOSS                          |
| 0 | NTX892AA04 | MPC MULTILINK MANAGEMENT       |
| 0 | NTX903AA01 | TRANSMISSION MEASUREMENTS      |
| 0 | NTX940AA13 | CM BILGE                       |
| 0 | NTX941AA12 | CM COMMON                      |
| 0 | NTX942AB02 | DMS - SUPERNODE SYSTEM LOAD    |
| 0 |            | MODULE(SLM)(UPG.FR. NTX942AB)  |
| 0 | NTX944AA03 | BASE NODE MAINTENANCE          |
| 0 | NTX945AA03 | MS BASE LINK MAINTENANCE       |
| 0 | NTX950AA06 | MS BILGE                       |
| 0 | NTX951AA08 | MS COMMON                      |
| 0 | NTX986AA01 | ANI WITH AMA                   |
| 0 | NTX987AA01 | FIBER MAINTENANCE BASIC MODE   |
| 0 | NTX989AA01 | CARRIER ACCESS CODE BLOCKING   |
| 0 |            | FOR IC/INC                     |

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0 NTXC52BB01 STATUS NAP TARGET SUPERNODE  
0 DMS200 BCS36 S/W LOAD FOR SN20  
0 ENET/DSN

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7

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0 APPLICATIONS  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3



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0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE

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0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE

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0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC53AB01 STATUS LTD TARGET SUPERNODE  
0 DMS200 BCS36 S/W LOAD FOR SN30  
0 (UPG OF C53AA)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING (UPG. OF NTXF71AA)  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE

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0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AG01 | ITT ANI FORMAT (RECEIPT)       |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX063AA02 | ECHO SUPPRESSOR                |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT           |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX129AA02 | 20 WAY OPERATOR OFFICE TRUNK   |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT    |
| 0 |            | ANI                            |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING         |
| 0 | NTX204AA02 | CCIS BANDED SIGNALLING         |
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE            |
| 0 | NTX211AB01 | FEATURE GRP B AMA - TANDEM(ATT |
| 0 |            | FORMAT)(UPG FR.NTX211AA)       |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX215AA02 | SES NO.2 - INTERFACE           |
| 0 | NTX218AA03 | 1A/1B EADAS INTERFACE          |
| 0 | NTX243AA07 | AMA TELEPROCESSING             |
| 0 |            | SYSTEM(AMATPS)                 |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND      |
| 0 |            | TREATMENT                      |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX386AB02 | ACCESS TANDEM SWITCH (UPG OF   |
| 0 |            | NTX386AA)                      |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN      |
| 0 |            | POINT                          |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX455AB01 | 1A EADAS NETWORK MANAGEMENT    |
| 0 |            | (UPG. OF NTX455AA)             |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX554AA02 | CCS7 - E800/SSP                |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX710AA02 | LATA EQUAL ACCESS SYSTEM       |
| 0 | NTX710AB01 | INTERCHANGEABLE NPAS FOR LEAS  |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.0.30)   |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |

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0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC53BB01 STATUS NAP TARGET SUPERNODE  
0 DMS200 BCS36 S/W LOAD FOR SN30  
0 ENET/DSN0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING (UPG. OF NTXF71AA)  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE

|   |            |                                                |
|---|------------|------------------------------------------------|
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7 APPLICATIONS           |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING                         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY ON MS           |
| 0 | NTXN85AA01 | MPC 1984 X.25                                  |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE                        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS                   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE INCREASE            |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V                     |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF CONTINUITY TEST     |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION                  |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE PACKAGE               |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING                        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER                        |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL TEST (ILPT7)     |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY CONTROL               |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1 ACCESS               |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE STRATEGY) BASIC |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING                           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS                        |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER                   |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE                    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED PLATFORMS          |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA                             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER                     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH                           |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM UPLOADING        |
| 0 | NTX000AA19 | BILGE                                          |
| 0 | NTX001AA29 | COMMON BASIC                                   |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE SIGNALLING - BASIC  |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)    |
| 0 | NTX048AA06 | SYNCHRONIZATION                                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM MASTER CLOCK          |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AG01 | ITT ANI FORMAT (RECEIPT)       |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX063AA02 | ECHO SUPPRESSOR                |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT           |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX129AA02 | 20 WAY OPERATOR OFFICE TRUNK   |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT    |
| 0 |            | ANI                            |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING         |
| 0 | NTX204AA02 | CCIS BANDED SIGNALLING         |
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE            |
| 0 | NTX211AB01 | FEATURE GRP B AMA - TANDEM(ATT |
| 0 |            | FORMAT)(UPG FR.NTX211AA)       |

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0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC54AB01 STATUS LTD TARGET SUPERNODE  
0 DMS200 BCS36 S/W LOAD FOR SN40  
0 (UPG OF C54AA)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF16AA01 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING (UPG. OF NTXF71AA)  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE

|   |            |                                                |
|---|------------|------------------------------------------------|
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7 APPLICATIONS           |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING                         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY ON MS           |
| 0 | NTXN85AA01 | MPC 1984 X.25                                  |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE                        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS                   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE INCREASE            |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V                     |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF CONTINUITY TEST     |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION                  |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE PACKAGE               |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING                        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER                        |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL TEST (ILPT7)     |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY CONTROL               |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1 ACCESS               |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE STRATEGY) BASIC |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING                           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS                        |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER                   |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE                    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED PLATFORMS          |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA                             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER                     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH                           |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM UPLOADING        |
| 0 | NTX000AA19 | BILGE                                          |
| 0 | NTX001AA29 | COMMON BASIC                                   |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE SIGNALLING - BASIC  |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)    |
| 0 | NTX048AA06 | SYNCHRONIZATION                                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM MASTER CLOCK          |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AG01 | ITT ANI FORMAT (RECEIPT)       |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX063AA02 | ECHO SUPPRESSOR                |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT           |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX129AA02 | TWO WAY OPERATOR OFFICE TRUNK  |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT    |
| 0 |            | ANI                            |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING         |
| 0 | NTX204AA02 | CCIS BANDED SIGNALLING         |
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE            |
| 0 | NTX211AB01 | FEATURE GRP B AMA - TANDEM(ATT |
| 0 |            | FORMAT)(UPG FR.NTX211AA)       |



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0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX803AA02 EQUAL ACCESS ALTERNATE
0 SWITCHING POINT
0 NTX812AA03 CENTRALIZED MAP
0 NTX813AA01 CENTRALIZED ALARMS
0 NTX821AA01 TANDEM OPERATOR SERVICE
0 ROUTING
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE
0 MEASUREMENTS
0 NTX836AA01 LPP - V.35 SUBRATE LINKS
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND
0 BERT (REP. NTX839AA)
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF
0 NTX843AA IN BCS27)
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR
0 TOLL SWITCHES
0 NTX883AA01 INTER OFFICE TRK BIT ERROR
0 RATE TESTING
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.
0 OF NTX885AA)
0 NTX888AA01 EA0SS
0 NTX892AA04 MPC MULTILINK MANAGEMENT
0 NTX903AA01 TRANSMISSION MEASUREMENTS
0 NTX940AA13 CM BILGE
0 NTX941AA12 CM COMMON
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD
0 MODULE(SLM)(UPG.FR. NTX942AB)
0 NTX944AA03 BASE NODE MAINTENANCE
0 NTX945AA03 MS BASE LINK MAINTENANCE
0 NTX950AA06 MS BILGE
0 NTX951AA08 MS COMMON
0 NTX986AA01 ANI WITH AMA
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING
0 FOR IC/INC

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0 NTXC54BB01 STATUS NAP TARGET SUPERNODE  
0 DMS200 BCS36 S/W LOAD FOR SN40  
0 (UPG OF C54AA)0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF16AA01 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING (UPG. OF NTXF71AA)  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE

|   |            |                                                |
|---|------------|------------------------------------------------|
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7 APPLICATIONS           |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING                         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY ON MS           |
| 0 | NTXN85AA01 | MPC 1984 X.25                                  |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE                        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS                   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE INCREASE            |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V                     |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF CONTINUITY TEST     |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION                  |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE PACKAGE               |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING                        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER                        |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL TEST (ILPT7)     |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY CONTROL               |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1 ACCESS               |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE STRATEGY) BASIC |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING                           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS                        |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER                   |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE                    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED PLATFORMS          |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA                             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER                     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH                           |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM UPLOADING        |
| 0 | NTX000AA19 | BILGE                                          |
| 0 | NTX001AA29 | COMMON BASIC                                   |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE SIGNALLING - BASIC  |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)    |
| 0 | NTX048AA06 | SYNCHRONIZATION                                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM MASTER CLOCK          |

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0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX215AA02 | SES NO.2 - INTERFACE           |
| 0 | NTX218AA03 | 1A/1B EADAS INTERFACE          |
| 0 | NTX243AA07 | AMA TELEPROCESSING             |
| 0 |            | SYSTEM(AMATPS)                 |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND      |
| 0 |            | TREATMENT                      |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX386AB02 | ACCESS TANDEM SWITCH (UPG OF   |
| 0 |            | NTX386AA)                      |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN      |
| 0 |            | POINT                          |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX455AB01 | 1A EADAS NETWORK MANAGEMENT    |
| 0 |            | (UPG. OF NTX455AA)             |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX554AA02 | CCS7 - E800/SSP                |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX710AA02 | LATA EQUAL ACCESS SYSTEM       |
| 0 | NTX710AB01 | INTERCHANGEABLE NPAS FOR LEAS  |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.0.30)   |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |

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0 NTXC55AB01 STATUS LTD  
0 DMS200 BCS36 S/W LOAD FOR SN50  
0 (UPG OF C55AA)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7



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0 APPLICATIONS  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3

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0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX218AA03 | 1A/1B EADAS INTERFACE          |
| 0 | NTX243AA07 | AMA TELEPROCESSING             |
| 0 |            | SYSTEM(AMATPS)                 |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND      |
| 0 |            | TREATMENT                      |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX386AB02 | ACCESS TANDEM SWITCH (UPG OF   |
| 0 |            | NTX386AA)                      |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN      |
| 0 |            | POINT                          |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX455AB01 | 1A EADAS NETWORK MANAGEMENT    |
| 0 |            | (UPG. OF NTX455AA)             |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX554AA02 | CCS7 - E800/SSP                |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX710AA02 | LATA EQUAL ACCESS SYSTEM       |
| 0 | NTX710AB01 | INTERCHANGEABLE NPAS FOR LEAS  |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.0.30)   |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |

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0  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC55BB01 STATUS NAP

0 DMS200 BCS36 S/W LOAD FOR SN50

0 (UPG OF C55AA)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25

0 NTXA15AA01 CALL PROGRESS TONES

0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

0 NTXE01AA06 ENHANCED NETWORK - BASIC

0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)

0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION

0 NTXE54AA01 SYSTEM LOAD MODULE II

0 NTXE65AA01 MPC X.25 INTERFACE

0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS

0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM

0 NTXE98AA02 HIGH SPEED MPC

0 NTXF14AA01 HIGH CAPACITY DPP

0 NTXF20AA02 LMS ON LPP

0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)

0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER

0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER

0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)

0 NTXF97AA02 BRISC SERIES SUPERNODE BASE

0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS

0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT

0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS

0 NTXJ41AA01 CCS7 TEST TOOLS

0 NTXJ44AA01 SLM FILE SYSTEM

0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS

0 NTXJ94AA01 MANDATORY PARALLEL AMA

0 NTXN16AA01 ENHANCED DRAM

0 NTXN18AA04 FBUS - LIU BASE

0 NTXN19AA02 LIU7 FOR LPP BASED CCS7

| 0 |            | APPLICATIONS                   |
|---|------------|--------------------------------|
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY       |
| 0 |            | CONTROL                        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH           |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM  |
| 0 |            | UPLOADING                      |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |
| 0 |            | SIGNALLING - BASIC             |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE      |
| 0 |            | ACCOUNTING (CAMA)              |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |

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0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE

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0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE



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0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC56BB01 STATUS NAP

0 UNIVERSAL S/W LOAD FOR BRISC

0 TOLL (REG OF NTXC56AB)

0 NTXA11AA01 PATCH ADMINISTRATION &

0 DOWNLOADING VIA X.25

0 NTXA15AA01 CALL PROGRESS TONES

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

0 NTXE01AA06 ENHANCED NETWORK - BASIC

0 NTXE14AB03 CCS7 ISUP INTERLATA CONN

0 ACCESS TANDEM (REP. NTXE14AA)

0 NTXE28AA02 AMA MOD (LAMA MODULES)

0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED

0 MAINTENANCE FOR MSB7

0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL

0 RETRANSMISSION

0 NTXE54AA01 SYSTEM LOAD MODULE II

0 NTXE65AA01 MPC X.25 INTERFACE

0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS

0 NTXE98AA02 HIGH SPEED MPC

0 NTXF14AA01 HIGH CAPACITY DPP

0 NTXF20AA02 LMS ON LPP

0 NTXF25AD01 FRAME RELAY BASIC (UPG FR

0 NTXF25AC)

0 NTXF26AA01 SYNCHRONIZATION - BITS

0 COMPOSITE MASTER

0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN

0 - C MASTER

0 NTXF71AB02 SUPERNODE ENHANCED

0 MESSAGING (UPG. OF NTXF71AA)

0 NTXF97AA02 BRISC SERIES SUPERNODE BASE

0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED

0 ACCESS

0 NTXH77AA01 CHANNELIZED ACCESS ON LPP/LIS

0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT

0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION

0 TOOLS

0 NTXJ41AA01 CCS7 TEST TOOLS

0 NTXJ44AA01 SLM FILE SYSTEM

0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING

0 OPTIONS

0 NTXJ94AA01 MANDATORY PARALLEL AMA

0 NTXN16AA01 ENHANCED DRAM

0 NTXN18AA04 FBUS - LIU BASE

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0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP08AA01 TRUNK GROUP MEMBER USAGE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP56AA01 TWO DIGIT ANI - CAMA  
0 NTXP82AA01 AMA MOD (CAMA MODULES)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ38AA01 SSP 800 CALLING AND DIALLED  
0 NUMBER DELIVERY  
0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTXQ40AA02 SSP 800 OVERFLOW CALL ROUTING  
0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ65AB01 CCS7 AUTO ATTENDANT RELEASE  
0 LINK TRUNK (UPG OF NTXQ65AA)  
0 NTXQ73AA01 ISUP TO MF 2 STAGE  
0 OUTPUTSING(CANADA)  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM

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0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)  
0 NTX029AA01 DIRECT DIALLING OVERSEAS, TOLL  
0 (CANADA)  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE

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0 NTX121AA01 OVERLAP OUTPUTSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP

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0 NTX560AA) NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.0.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXC57AB01 STATUS LTD TARGET SUPERNODE  
0 DMS100 BCS36 S/W LOAD FOR SNSE  
0 SERIES 20 (UPG OF C57AA)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD

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0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS



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0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT

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0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE

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0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXP53AA01 | ACD ACCESS FEATURE GROUPING    |
| 0 | NTXP57AA01 | CALL WAKE-UP SERVICE           |
| 0 | NTXP58AA01 | VFG SPPRT FOR E911(LOC &/OR    |
| 0 |            | INC ISUP/ANI CALL)             |
| 0 | NTXP72AA01 | ENET 16K CONFIGURATION         |
| 0 | NTXP73AA01 | CNDB OFFICE-WIDE ACTIVATION    |
| 0 | NTXP75AA01 | DMS PACKET HANDLER SERVORD     |
| 0 | NTXP80AA01 | TWO LEVEL AUTOMATIC RECALL     |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTXP81AA01 | REMOTE ACTIVATION OF LINE LOAD |
| 0 |            | CONTROL                        |
| 0 | NTXP92AB01 | RSC-S BASIC (UPG OF NTXP92AA)  |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXP99AB01 | E911 REMOTE CALL EVENT         |
| 0 |            | RECORD(UPG.OF NTXP99AA)        |
| 0 | NTXQ12AA01 | RSC ENHANCED ESA(LINES         |
| 0 |            | ONLY)(FOR BCS34 RELEASE)       |
| 0 | NTXQ18AA01 | SRDB MEMORY ADMINISTRATION     |
| 0 | NTXQ29AA01 | CLASS+ CALLING NAME DELIVERY   |
| 0 |            | BLOCKING FOR LINES             |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ52AA01 | SUPPORT FOR MS RESIDENT, LIS   |
| 0 |            | CONTROLLER                     |
| 0 | NTXQ70AA01 | UNIVERSAL CLASS FEATURE ACCESS |
| 0 | NTXQ81AA01 | CLASS - NAME DISPLAY ON MADN   |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXQ90AB01 | ENHANCED RESIDENTIAL SERVICES  |
| 0 |            | (UPG OF NTXQ90AA)              |
| 0 | NTXQ95AA01 | LINE LOG REDUCTION             |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY       |
| 0 |            | CONTROL                        |
| 0 | NTXR25AA02 | NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 | MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 | POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 | DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 | CLASS: SPLIT NPA MANAGEMENT    |

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0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2

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0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |

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0  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)



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0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND

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0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAEO - IBN PIC USING SERVORD

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0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. FR. NTX878AD |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX888AA01 | EAOSS                          |
| 0 | NTX892AA04 | MPC MULTILINK MANAGEMENT       |
| 0 | NTX898AA01 | VARIABLE SPEED CALL ACCESS     |
| 0 |            | CODE - IBN                     |
| 0 | NTX899AA01 | CALL TRANSFER ENHANCEMENTS     |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX902AA07 | LOCAL FEATURES II              |
| 0 | NTX903AA01 | TRANSMISSION MEASUREMENTS      |
| 0 | NTX940AA13 | CM BILGE                       |
| 0 | NTX941AA12 | CM COMMON                      |
| 0 | NTX942AB02 | DMS - SUPERNODE SYSTEM LOAD    |
| 0 |            | MODULE(SLM)(UPG.FR. NTX942AB)  |
| 0 | NTX944AA03 | BASE NODE MAINTENANCE          |
| 0 | NTX945AA03 | MS BASE LINK MAINTENANCE       |
| 0 | NTX946AB01 | EBS - CALL NAME DISPLAY(UPG.OF |
| 0 |            | NTX946AA IN BCS26)             |
| 0 | NTX950AA06 | MS BILGE                       |
| 0 | NTX951AA08 | MS COMMON                      |
| 0 | NTX983AB02 | SERVICE SWITCHING POINT        |
| 0 |            | PRIVATE VIRTUAL NTWKG(REP      |
| 0 |            | NTX983AA)                      |
| 0 | NTX984AA01 | SERVICE SWITCHING POINT        |
| 0 |            | PRIV.VIRTUAL NETWRKG-          |
| 0 |            | ATT.SERVICES                   |
| 0 | NTX986AA01 | ANI WITH AMA                   |
| 0 | NTX987AA01 | FIBER MAINTENANCE BASIC MODE   |

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0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC57BB01 STATUS NAP TARGET SUPERNODE  
0 DMS100 BCS36 S/W LOAD FOR SNSE  
0 SERIES 20 (UPG OF C57AA)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | ACCEPTANCE                     |
| 0 | NTXA52AB01 | ACD REMOTE LOAD MANAGEMENT I   |
| 0 |            | (REP. NTXA52AA)                |
| 0 | NTXA64AA05 | RES(RESIDENTIAL ENHANCED       |
| 0 |            | SERVICES) BASE                 |
| 0 | NTXA67AA01 | EXTENDED XPM DIAGNOSTICS       |
| 0 | NTXA68AA01 | NETWORK MESSAGE SERVICE        |
| 0 | NTXA72AA01 | SECONDARY MADN CALL FORWARDING |
| 0 | NTXA73AA01 | LOUDSPEAKER PAGING ANSWER      |
| 0 | NTXA74AA01 | OUTGOING RESTRICTION CONTROL   |
| 0 | NTXA77AA01 | ENHANCED UCD                   |
| 0 | NTXA79AA03 | IBN TRUNKS WITH ISUP           |
| 0 |            | SIGNALLING                     |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY           |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES     |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA         |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD            |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/      |
| 0 |            | REMOTE (UPG OF NTXA85AA)       |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC- |
| 0 |            | 96/REMOTE: SPECIAL SERVICES    |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM             |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM         |
| 0 | NTXA94AA01 | RES FEATURES                   |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL           |
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |
| 0 |            | EAE0 (REP. NTXE13AA)           |
| 0 | NTXE22AA02 | ACD SUPERGROUP                 |
| 0 | NTXE23AA01 | CELLULAR INTERCONNECT - END    |
| 0 |            | OFFICE                         |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM      |
| 0 |            | POOLING                        |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL     |
| 0 |            | RETRANSMISSION                 |
| 0 | NTXE38AB01 | CLASS: CND ON SCMS/SMSR(UPG.OF |
| 0 |            | NTXE38AA)                      |
| 0 | NTXE39AA01 | CALL FORWARD BUSY/DO NOT       |
| 0 |            | ANSWER SPLITS                  |
| 0 | NTXE40AB01 | MERIDIAN BUSINESS SET INSPECT  |
| 0 |            | KEY (UPG. FROM NTXE40AA)       |
| 0 | NTXE43AA01 | TERMINATING BILLING OPTION     |

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0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS



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0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER

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0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP72AA01 ENET 16K CONFIGURATION  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS  
0 CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS

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0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL

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0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING

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0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO

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0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT

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0 NTX210AA03 NO. 2 SCC INTERFACE
0 NTX213AC01 SUBSCRIBER CARRIER
0 MODULE(SCM)(REP. NTX213AB)
0 NTX215AA02 SES NO.2 - INTERFACE
0 NTX218AA03 1A/1B EADAS INTERFACE
0 NTX219AB03 TEEN SERVICE
0 NTX243AA07 AMA TELEPROCESSING
0 SYSTEM(AMATPS)
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK
0 HUNTING(UPG OF 244AA IN BCS23)
0 NTX250AA15 DATAPATH - BASIC
0 NTX251AA06 DATAPATH - MODEM POOLING
0 NTX259AA03 DATAPATH EXTENSION - DPX
0 NTX260AA02 IBN - PRESET CONFERENCE
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING
0 NTX269AA07 UNIVERSAL TONE
0 RECEIVER(DOMESTIC)
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE
0 PACKAGE
0 NTX272AA02 FOCUSED MAINTENANCE
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER
0 BX.25
0 NTX277AA02 DIALABLE LINE CIRCUIT
0 IDENTIFICATION
0 NTX290AA01 TANDEMING/SUPERVISION AND
0 TREATMENT
0 NTX291AA04 ENHANCED REAL TIME INDICATOR
0 NTX292AB04 ENHANCED SECURITY - WITH
0 PASSWORD ENCRYPTION
0 NTX293AA02 ENHANCED SECURITY PACKAGE II
0 NTX297AA01 BRIDGES SERVICES
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF
0 NTX299AA)
0 NTX380AA02 DUAL RCC
0 NTX381AA01 RSC - REMOTE - OFF REMOTE
0 NTX385AA01 OM THRESHOLDING AND ALARMS
0 NTX387AD01 SMU AND ISDN/MBS SMU
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN
0 POINT
0 NTX398AA12 SCM - 100S
0 NTX399AA01 IBN/ESB COMPATIBILITY
0 NTX407AB01 ACD - CALL PROCESSING
0 (REP.NTX407AA)
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE
0 MEASUREMENTS
0 NTX411AA01 IBN - VOICE MESSAGING

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0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING



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0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAE0 - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -

|   |            |                                                                 |
|---|------------|-----------------------------------------------------------------|
| 0 |            | POTS(UPGR. OF NTX807AA)                                         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS                                   |
| 0 | NTX812AA03 | CENTRALIZED MAP                                                 |
| 0 | NTX813AA01 | CENTRALIZED ALARMS                                              |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN                                    |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE                                           |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -<br>IBN(UPGR. OF NTX824AA)               |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE<br>MEASUREMENTS                     |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS                                        |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND<br>BERT (REP. NTX839AA)          |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING                                  |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF<br>NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA                                       |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON<br>CONSOLES                            |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN<br>INDIVIDUAL CONSOLE BASIS      |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION                                      |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK<br>CONSOLE(UPG. OF NTX877AA)         |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS<br>SET SERVICES(UPG. FR. NTX878AD) |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE<br>MAINTENANCE(UPG. OF NTX881AB)          |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR<br>RATE TESTING                      |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.<br>OF NTX885AA)                   |
| 0 | NTX888AA01 | EAOSS                                                           |
| 0 | NTX892AA04 | MPC MULTILINK MANAGEMENT                                        |
| 0 | NTX898AA01 | VARIABLE SPEED CALL ACCESS<br>CODE - IBN                        |
| 0 | NTX899AA01 | CALL TRANSFER ENHANCEMENTS                                      |
| 0 | NTX901AA24 | LOCAL FEATURES I                                                |
| 0 | NTX902AA07 | LOCAL FEATURES II                                               |
| 0 | NTX903AA01 | TRANSMISSION MEASUREMENTS                                       |
| 0 | NTX940AA13 | CM BILGE                                                        |
| 0 | NTX941AA12 | CM COMMON                                                       |
| 0 | NTX942AB02 | DMS - SUPERNODE SYSTEM LOAD<br>MODULE(SLM)(UPG.FR. NTX942AB)    |
| 0 | NTX944AA03 | BASE NODE MAINTENANCE                                           |
| 0 | NTX945AA03 | MS BASE LINK MAINTENANCE                                        |
| 0 | NTX946AB01 | EBS - CALL NAME DISPLAY(UPG.OF                                  |

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0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

0

0 -----

0 NTXC58AB01 STATUS LTD TARGET SUPERNODE  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SNSE SERIES 20 (UPG OF C58AA)  
  
0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING

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RINGBACK
0 NTXA33AA01 MADN RING FORWARD
0 NTXA35AA03 NETWORK NUMBER DISPLAY
0 NTXA36AA01 NETWORK WIDE RING AGAIN
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT
0 SERVICE
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY
0 BLOCKING ADMINISTRATION
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL
0 WAITING
0 NTXA45AA01 CLASS SELECTIVE CALL
0 ACCEPTANCE
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I
0 (REP. NTXA52AA)
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED
0 SERVICES) BASE
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS
0 NTXA68AA01 NETWORK MESSAGE SERVICE
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL
0 NTXA77AA01 ENHANCED UCD
0 NTXA79AA03 IBN TRUNKS WITH ISUP
0 SIGNALLING
0 NTXA80AA02 NETWORK NAME DISPLAY
0 NTXA81AA01 EXTENSION BRIDGED SERVICES
0 NTXA82AA03 CLASS LINE OFFICE DATA
0 NTXA84AA01 EBS - MUSIC ON HOLD
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/
0 REMOTE (UPG OF NTXA85AA)
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-
0 96/REMOTE: SPECIAL SERVICES
0 NTXA88AA02 MDR VIA AMA STREAM
0 NTXA89AA01 SMDR TIME DUMP FOR BNM
0 NTXA94AA01 RES FEATURES
0 NTXA95AA01 CLASS SELECTIVE CALL
0 FORWARDING
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION
0 NTXE01AA06 ENHANCED NETWORK - BASIC
0 NTXE09AB01 ACD ON 2500 SET (UPG OF
0 NTXE09AA IN BCS32)
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION
0 EAE0 (REP. NTXE13AA)
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN
0 ACCESS TANDEM (REP. NTXE14AA)
0 NTXE22AA02 ACD SUPERGROUP
0 NTXE23AA01 CELLULAR INTERCONNECT - END

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0  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN

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0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL

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0 NTXJ63AA01 VOICE PROCESSING INTEGRATION
0 FOR DMS ISI
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS
0 NTXJ69AA01 RESIDENTIAL CALL HOLD
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING
0 CALLS
0 NTXJ78AA02 CLASS II ON MDC
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY
0 NTXJ84AA02 CALL FORWARDING- 1A
0 TRANSPARENCY
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION
0 FOR HUNT GROUPS
0 NTXJ94AA01 MANDATORY PARALLEL AMA
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY
0 LAMP FIELD FOR MBS
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS
0 (UPG OF NTXN01AA)
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION
0 NTXN10AA01 HIGH SPEED SMDI
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS
0 FEATURES
0 NTXN12AA01 NCEO/LEAS INTERFACE
0 NTXN16AA01 ENHANCED DRAM
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI
0 ALI DATABASE
0 NTXN18AA04 FBUS - LIU BASE
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7
0 APPLICATIONS
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD
0 CONTROLS
0 NTXN28AA01 INTELLIGENT NETWORK BILLING
0 ATTRIBUTES
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT
0 NTXN35AA01 COT ENHANCEMENTS
0 NTXN46AA02 NETWORKED ACD ON CCS7
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER
0 NTXN53AA02 ENHANCED PRA MAINTENANCE
0 NTXN59AA02 RINGBACK TO E911 CALLERS
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB
0 UPDATE
0 NTXN65AA01 MDC FAST TRANSFER
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA
0 MGT. SYSTEM ALI DATABASE
0 NTXN68AA01 XPM BROADCAST PATCHING
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT
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|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | UNIQUE PIN                     |
| 0 | NTXN82AB01 | RSC ENHANCED ESA (LINES &      |
| 0 |            | TRUNKS)(UPG FR NTXN82AA)       |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXN87AB01 | INTEGRATED TESTING BASE        |
| 0 | NTXN89AA01 | ISDN TESTING                   |
| 0 | NTXN91AA01 | TL 1 TESTING INTERFACE BASE    |
| 0 | NTXN93AA01 | TL-1 TESTING ENHANCED BUSINESS |
| 0 | NTXN99AA01 | ISDN INBOUND MODEM POOLING     |
| 0 | NTXP00AA01 | LINE CARD MONITOR              |
| 0 | NTXP01AA03 | INTELLIGENT NETWORK 0.0 BASE   |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP12AA01 | CLASS: ANONYMOUS CALLER        |
| 0 |            | REJECTION                      |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP38AA01 | BD CHANNEL LOOPBACK            |
| 0 | NTXP44AA01 | DMS SUPERNODE SE COMMON        |
| 0 | NTXP47AB01 | DMS PACKET HANDLER BASE (UPG   |
| 0 |            | OF NTXP47AA)                   |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP53AA01 | ACD ACCESS FEATURE GROUPING    |
| 0 | NTXP57AA01 | CALL WAKE-UP SERVICE           |
| 0 | NTXP58AA01 | VFG SPRT FOR E911(LOC &/OR     |
| 0 |            | INC ISUP/ANI CALL)             |
| 0 | NTXP72AA01 | ENET 16K CONFIGURATION         |
| 0 | NTXP73AA01 | CNDB OFFICE-WIDE ACTIVATION    |
| 0 | NTXP75AA01 | DMS PACKET HANDLER SERVORD     |
| 0 | NTXP80AA01 | TWO LEVEL AUTOMATIC RECALL     |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTXP81AA01 | REMOTE ACTIVATION OF LINE LOAD |
| 0 |            | CONTROL                        |
| 0 | NTXP92AB01 | RSC-S BASIC (UPG OF NTXP92AA)  |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXP99AB01 | E911 REMOTE CALL EVENT         |
| 0 |            | RECORD(UPG.OF NTXP99AA)        |
| 0 | NTXQ12AA01 | RSC ENHANCED ESA(LINES         |
| 0 |            | ONLY)(FOR BCS34 RELEASE)       |
| 0 | NTXQ18AA01 | SRDB MEMORY ADMINISTRATION     |
| 0 | NTXQ29AA01 | CLASS+ CALLING NAME DELIVERY   |
| 0 |            | BLOCKING FOR LINES             |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |



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0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING

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0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS

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0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO

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0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE

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0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING

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0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAE0 - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM

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0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)

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0 NTXC58AB01 STATUS LTD TARGET SUPERNODE  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SNSE SERIES 20 (UPG OF C58AA)

0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -



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0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE

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0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC58BB01 STATUS NAP TARGET SUPERNODE  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SNSE SERIES 20 (UPG OF C58AA)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER

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0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)

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0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS

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0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS

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0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB

|   |            |                                |
|---|------------|--------------------------------|
|   |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN66AA01 | E911 DIRECT ACCESS TO DATA     |
| 0 |            | MGT. SYSTEM ALI DATABASE       |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |
| 0 | NTXN82AB01 | RSC ENHANCED ESA (LINES &      |
| 0 |            | TRUNKS)(UPG FR NTXN82AA)       |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXN87AB01 | INTEGRATED TESTING BASE        |
| 0 | NTXN89AA01 | ISDN TESTING                   |
| 0 | NTXN91AA01 | TL 1 TESTING INTERFACE BASE    |
| 0 | NTXN93AA01 | TL-1 TESTING ENHANCED BUSINESS |
| 0 | NTXN99AA01 | ISDN INBOUND MODEM POOLING     |
| 0 | NTXP00AA01 | LINE CARD MONITOR              |
| 0 | NTXP01AA03 | INTELLIGENT NETWORK 0.0 BASE   |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP12AA01 | CLASS: ANONYMOUS CALLER        |
| 0 |            | REJECTION                      |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP38AA01 | BD CHANNEL LOOPBACK            |
| 0 | NTXP44AA01 | DMS SUPERNODE SE COMMON        |
| 0 | NTXP47AB01 | DMS PACKET HANDLER BASE (UPG   |
| 0 |            | OF NTXP47AA)                   |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP53AA01 | ACD ACCESS FEATURE GROUPING    |
| 0 | NTXP57AA01 | CALL WAKE-UP SERVICE           |
| 0 | NTXP58AA01 | VFG SPPRT FOR E911(LOC &/OR    |
| 0 |            | INC ISUP/ANI CALL)             |
| 0 | NTXP72AA01 | ENET 16K CONFIGURATION         |
| 0 | NTXP73AA01 | CNDB OFFICE-WIDE ACTIVATION    |
| 0 | NTXP75AA01 | DMS PACKET HANDLER SERVORD     |
| 0 | NTXP80AA01 | TWO LEVEL AUTOMATIC RECALL     |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTXP81AA01 | REMOTE ACTIVATION OF LINE LOAD |
| 0 |            | CONTROL                        |
| 0 | NTXP92AB01 | RSC-S BASIC (UPG OF NTXP92AA)  |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXP99AB01 | E911 REMOTE CALL EVENT         |
| 0 |            | RECORD(UPG.OF NTXP99AA)        |

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0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS  
0 CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL



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0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE

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0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT

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0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING

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0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE

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0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX426AA02 | ASYNCHRONOUS INTERFACE LINE    |
| 0 |            | CARD                           |
| 0 | NTX427AA04 | END USER TESTING OF TRUNKS     |
| 0 | NTX430AA02 | ESN                            |
| 0 | NTX431AA03 | IBN - CUT THROUGH DIALING      |
| 0 | NTX432AA01 | NETWORK SPEED CALLING          |
| 0 | NTX433AA01 | TIME OF DAY ROUTING            |
| 0 | NTX434AA01 | TIME OF DAY NCOS               |
| 0 | NTX435AA03 | IBN SUPERSET                   |
| 0 | NTX436AA01 | IBN ENHANCED DIAL PLAN         |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX447AA01 | E911 - TANDEM                  |
| 0 | NTX451AA02 | E-911 DATABASE                 |
| 0 | NTX455AB01 | 1A EADAS NETWORK MANAGEMENT    |
| 0 |            | (UPG. OF NTX455AA)             |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX554AA02 | CCS7 - E800/SSP                |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX571AA01 | IBN - DIRECTED CALL PARK,2500  |
| 0 |            | SET ONLY                       |
| 0 | NTX573AA01 | IBN SECURITY CODE - 2500 ONLY  |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP       |
| 0 |            | NTX621AA)                      |
| 0 | NTX710AA02 | LATA EQUAL ACCESS SYSTEM       |
| 0 | NTX710AB01 | INTERCHANGEABLE NPAS FOR LEAS  |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX713AA01 | LATA-WIDE CENTREX BILLING      |
| 0 | NTX717AB01 | IBN TRK VERIFICATION           |
| 0 |            | DESIGNATED STN(UPGR.OF         |
| 0 |            | NTX717AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX734AA01 | EAE0 - IBN PICUSING SERVORD    |

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0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX821AA01 | TANDEM OPERATOR SERVICE        |
| 0 |            | ROUTING                        |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. FR. NTX878AD |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX882AA04 | BIT ERROR RATIO INDICATOR FOR  |
| 0 |            | TOLL SWITCHES                  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX888AA01 | EAOSS                          |
| 0 | NTX892AA04 | MPC MULTILINK MANAGEMENT       |
| 0 | NTX898AA01 | VARIABLE SPEED CALL ACCESS     |
| 0 |            | CODE - IBN                     |
| 0 | NTX899AA01 | CALL TRANSFER ENHANCEMENTS     |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX902AA07 | LOCAL FEATURES II              |
| 0 | NTX903AA01 | TRANSMISSION MEASUREMENTS      |
| 0 | NTX940AA13 | CM BILGE                       |
| 0 | NTX941AA12 | CM COMMON                      |
| 0 | NTX942AB02 | DMS - SUPERNODE SYSTEM LOAD    |
| 0 |            | MODULE(SLM)(UPG.FR. NTX942AB)  |
| 0 | NTX944AA03 | BASE NODE MAINTENANCE          |
| 0 | NTX945AA03 | MS BASE LINK MAINTENANCE       |
| 0 | NTX946AB01 | EBS - CALL NAME DISPLAY(UPG.OF |
| 0 |            | NTX946AA IN BCS26)             |



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0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC59AB01 STATUS LTD TARGET SUPERNODE  
0 DMS200 BCS36 S/W LOAD FOR SNSE  
0 SERIES 20 (UPG OF C59AA)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP

|   |            |                                 |
|---|------------|---------------------------------|
| 0 | NTXF25AD01 | FRAME RELAY BASIC (UPG FR       |
| 0 |            | NTXF25AC)                       |
| 0 | NTXF26AA01 | SYNCHRONIZATION - BITS          |
| 0 |            | COMPOSITE MASTER                |
| 0 | NTXF27AA01 | SYNCHRONIZATION - CESIUM, LORAN |
| 0 |            | - C MASTER                      |
| 0 | NTXF70AA01 | SUPERNODE SN-20 PROCESSOR       |
| 0 | NTXF71AB02 | SUPERNODE ENHANCED              |
| 0 |            | MESSAGING(UPG. OF NTFX71AA)     |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS  |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT     |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION       |
| 0 |            | TOOLS                           |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                 |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                 |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING   |
| 0 |            | OPTIONS                         |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA          |
| 0 | NTXN16AA01 | ENHANCED DRAM                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                 |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7         |
| 0 |            | APPLICATIONS                    |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT       |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING          |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY  |
| 0 |            | ON MS                           |
| 0 | NTXN85AA01 | MPC 1984 X.25                   |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE         |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS    |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE      |
| 0 |            | INCREASE                        |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V      |
| 0 | NTXP44AA01 | DMS SUPERNODE SE COMMON         |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF      |
| 0 |            | CONTINUITY TEST                 |
| 0 | NTXP72AA01 | ENET 16K CONFIGURATION          |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION   |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE        |
| 0 |            | PACKAGE                         |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING         |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER         |
| 0 | NTXQ52AA01 | SUPPORT FOR MS RESIDENT, LIS    |
| 0 |            | CONTROLLER                      |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL   |
| 0 |            | TEST (ILPT7)                    |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY        |
| 0 |            | CONTROL                         |

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0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT

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0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING

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0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC59BB01 STATUS NAP TARGET SUPERNODE  
0 DMS200 BCS36 S/W LOAD FOR SNSE  
0 SERIES 20 (UPG OF C59AA)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)

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0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP72AA01 ENET 16K CONFIGURATION  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS  
0 CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS

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0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS



|   |            |                                                         |
|---|------------|---------------------------------------------------------|
|   |            | ENHANCEMENTS                                            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY PACKAGE                       |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO TRK)                         |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY                              |
| 0 | NTX129AA02 | TWO WAY OPERATOR OFFICE TRUNK                           |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION MEASURING SYSTEM                 |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR                                      |
| 0 | NTX143AA02 | DS-1 - ESF                                              |
| 0 | NTX157AA01 | CCIS - INWATS OSO                                       |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (REP.OF NTX167AA)               |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI                          |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT ANI                         |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING                                  |
| 0 | NTX204AA02 | CCIS BANDED SIGNALLING                                  |
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE                                     |
| 0 | NTX211AB01 | FEATURE GRP B AMA - TANDEM(ATT FORMAT)(UPG FR.NTX211AA) |
| 0 | NTX215AA02 | SES NO.2 - INTERFACE                                    |
| 0 | NTX218AA03 | 1A/1B EADAS INTERFACE                                   |
| 0 | NTX243AA07 | AMA TELEPROCESSING SYSTEM(AMATPS)                       |
| 0 | NTX269AA07 | UNIVERSAL TONE RECEIVER(DOMESTIC)                       |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE PACKAGE                      |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE                                    |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER BX.25                       |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND TREATMENT                     |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR                            |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II                            |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS                              |
| 0 | NTX386AB02 | ACCESS TANDEM SWITCH (UPG OF NTX386AA)                  |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN POINT                         |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING                              |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE OF NTX445AA)             |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX455AB01 | 1A EADAS NETWORK MANAGEMENT    |
| 0 |            | (UPG. OF NTX455AA)             |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX554AA02 | CCS7 - E800/SSP                |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX710AA02 | LATA EQUAL ACCESS SYSTEM       |
| 0 | NTX710AB01 | INTERCHANGEABLE NPAS FOR LEAS  |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX821AA01 | TANDEM OPERATOR SERVICE        |
| 0 |            | ROUTING                        |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX882AA04 | BIT ERROR RATIO INDICATOR FOR  |
| 0 |            | TOLL SWITCHES                  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX888AA01 | EAOSS                          |
| 0 | NTX892AA04 | MPC MULTILINK MANAGEMENT       |
| 0 | NTX903AA01 | TRANSMISSION MEASUREMENTS      |
| 0 | NTX940AA13 | CM BILGE                       |

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0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC60AA01 STATUS LTD  
0 DMS100 BCS36 S/W LOAD FOR SNSE  
0 SERIES 60

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT

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0  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAO (REP. NTXE13AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF

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0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY

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0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | TRANSPARENCY                   |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION   |
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS |
| 0 |            | (UPG OF NTXN01AA)              |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION  |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                |
| 0 | NTXN11AA01 | TEN DIGIT GTT FOR CLASS        |
| 0 |            | FEATURES                       |
| 0 | NTXN12AA01 | NCEO/LEAS INTERFACE            |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI   |
| 0 |            | ALI DATABASE                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN66AA01 | E911 DIRECT ACCESS TO DATA     |
| 0 |            | MGT. SYSTEM ALI DATABASE       |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |
| 0 | NTXN82AB01 | RSC ENHANCED ESA (LINES &      |
| 0 |            | TRUNKS)(UPG FR NTXN82AA)       |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXN87AB01 | INTEGRATED TESTING BASE        |
| 0 | NTXN89AA01 | ISDN TESTING                   |
| 0 | NTXN91AA01 | TL 1 TESTING INTERFACE BASE    |

|   |            |                                                    |
|---|------------|----------------------------------------------------|
| 0 | NTXN93AA01 | TL-1 TESTING ENHANCED BUSINESS                     |
| 0 | NTXN99AA01 | ISDN INBOUND MODEM POOLING                         |
| 0 | NTXP00AA01 | LINE CARD MONITOR                                  |
| 0 | NTXP01AA03 | INTELLIGENT NETWORK 0.0 BASE                       |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE                            |
| 0 | NTXP12AA01 | CLASS: ANONYMOUS CALLER<br>REJECTION               |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS                       |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE<br>INCREASE             |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V                         |
| 0 | NTXP38AA01 | BD CHANNEL LOOPBACK                                |
| 0 | NTXP44AA01 | DMS SUPERNODE SE COMMON                            |
| 0 | NTXP47AB01 | DMS PACKET HANDLER BASE (UPG<br>OF NTPX47AA)       |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF<br>CONTINUITY TEST      |
| 0 | NTXP53AA01 | ACD ACCESS FEATURE GROUPING                        |
| 0 | NTXP57AA01 | CALL WAKE-UP SERVICE                               |
| 0 | NTXP58AA01 | VFG SPRT FOR E911(LOC &/OR<br>INC ISUP/ANI CALL)   |
| 0 | NTXP72AA01 | ENET 16K CONFIGURATION                             |
| 0 | NTXP73AA01 | CNDB OFFICE-WIDE ACTIVATION                        |
| 0 | NTXP75AA01 | DMS PACKET HANDLER SERVORD                         |
| 0 | NTXP80AA01 | TWO LEVEL AUTOMATIC RECALL<br>ENHANCEMENTS         |
| 0 | NTXP81AA01 | REMOTE ACTIVATION OF LINE LOAD<br>CONTROL          |
| 0 | NTXP92AB01 | RSC-S BASIC (UPG OF NTPX92AA)                      |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION                      |
| 0 | NTXP99AB01 | E911 REMOTE CALL EVENT<br>RECORD(UPG.OF NTPX99AA)  |
| 0 | NTXQ12AA01 | RSC ENHANCED ESA(LINES<br>ONLY)(FOR BCS34 RELEASE) |
| 0 | NTXQ18AA01 | SRDB MEMORY ADMINISTRATION                         |
| 0 | NTXQ29AA01 | CLASS+ CALLING NAME DELIVERY<br>BLOCKING FOR LINES |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE<br>PACKAGE                |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING                            |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER                            |
| 0 | NTXQ52AA01 | SUPPORT FOR MS RESIDENT, LIS<br>CONTROLLER         |
| 0 | NTXQ70AA01 | UNIVERSAL CLASS FEATURE ACCESS                     |
| 0 | NTXQ81AA01 | CLASS - NAME DISPLAY ON MADN                       |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL<br>TEST (ILPT7)      |



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0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS

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0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING

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0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE

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0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPULSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT

|   |                                          |
|---|------------------------------------------|
| 0 | (CNA)                                    |
| 0 | NTX197AA01 CCIS DIRECT SIGNALLING        |
| 0 | NTX204AA02 CCIS BANDED SIGNALLING        |
| 0 | NTX206AA02 UNAUTHORIZED DIGITONE SERVICE |
| 0 | DETECTION                                |
| 0 | NTX209AB01 FEATURE GRP B AMA - END (ATT  |
| 0 | FORMAT)(UPG FR.NTX209AA)                 |
| 0 | NTX210AA03 NO. 2 SCC INTERFACE           |
| 0 | NTX213AC01 SUBSCRIBER CARRIER            |
| 0 | MODULE(SCM)(REP. NTX213AB)               |
| 0 | NTX215AA02 SES NO.2 - INTERFACE          |
| 0 | NTX218AA03 1A/1B EADAS INTERFACE         |
| 0 | NTX219AB03 TEEN SERVICE                  |
| 0 | NTX243AA07 AMA TELEPROCESSING            |
| 0 | SYSTEM(AMATPS)                           |
| 0 | NTX244AB02 ENHANCED SEQUENTIAL TRUNK     |
| 0 | HUNTING(UPG OF 244AA IN BCS23)           |
| 0 | NTX250AA15 DATAPATH - BASIC              |
| 0 | NTX251AA06 DATAPATH - MODEM POOLING      |
| 0 | NTX259AA03 DATAPATH EXTENSION - DPX      |
| 0 | NTX260AA02 IBN - PRESET CONFERENCE       |
| 0 | NTX262AA01 IBN PRIORITY CONSOLE ALERTING |
| 0 | NTX269AA07 UNIVERSAL TONE                |
| 0 | RECEIVER(DOMESTIC)                       |
| 0 | NTX270AA19 NEW PERIPHERAL MAINTENANCE    |
| 0 | PACKAGE                                  |
| 0 | NTX272AA02 FOCUSSED MAINTENANCE          |
| 0 | NTX273AA07 MULTI - PROTOCOL CONTROLLER   |
| 0 | BX.25                                    |
| 0 | NTX277AA02 DIALABLE LINE CIRCUIT         |
| 0 | IDENTIFICATION                           |
| 0 | NTX290AA01 TANDEMING/SUPERVISION AND     |
| 0 | TREATMENT                                |
| 0 | NTX291AA04 ENHANCED REAL TIME INDICATOR  |
| 0 | NTX292AB04 ENHANCED SECURITY - WITH      |
| 0 | PASSWORD ENCRYPTION                      |
| 0 | NTX293AA02 ENHANCED SECURITY PACKAGE II  |
| 0 | NTX297AA01 BRIDGES SERVICES              |
| 0 | NTX299AB01 SPECIAL SERVICES - SCM(UPG OF |
| 0 | NTX299AA)                                |
| 0 | NTX380AA02 DUAL RCC                      |
| 0 | NTX381AA01 RSC - REMOTE - OFF REMOTE     |
| 0 | NTX385AA01 OM THRESHOLDING AND ALARMS    |
| 0 | NTX387AD01 SMU AND ISDN/MBS SMU          |
| 0 | NTX395AA01 REMOTE MAKE BUZY VIA SCAN     |
| 0 | POINT                                    |
| 0 | NTX398AA12 SCM - 100S                    |

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0 NTX399AA01 IBN/ESB COMPATIBILITY
0 NTX407AB01 ACD - CALL PROCESSING
0 (REP.NTX407AA)
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE
0 MEASUREMENTS
0 NTX411AA01 IBN - VOICE MESSAGING
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE
0 (UPG. OF NTX412CA)
0 NTX413AB01 IBN - ENHANCED CALL
0 FORWARDING(UPGR. OF NTX413AA)
0 NTX414AA01 IBN - DIRECTED CALL PARK,
0 BUSINESS SET AND 2500 SET
0 NTX415AA07 ACD BASIC
0 NTX416AJ01 ACD ENHANCED II (UPG. OF
0 NTX416AI)
0 NTX418AA01 IBN_SERVICE ANALYSIS
0 NTX419AA01 MACD PIN CONFIGURATION AND
0 CONTROL
0 NTX420AA01 MACD NODAL SERVICE OBSERVING
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE
0 CARD
0 NTX427AA04 END USER TESTING OF TRUNKS
0 NTX430AA02 ESN
0 NTX431AA03 IBN - CUT THROUGH DIALING
0 NTX432AA01 NETWORK SPEED CALLING
0 NTX433AA01 TIME OF DAY ROUTING
0 NTX434AA01 TIME OF DAY NCOS
0 NTX435AA03 IBN SUPERSET
0 NTX436AA01 IBN ENHANCED DIAL PLAN
0 NTX437AA01 RANDOM CONDITIONAL ROUTING
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE
0 OF NTX445AA)
0 NTX447AA01 E911 - TANDEM
0 NTX451AA02 E-911 DATABASE
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT
0 (UPG. OF NTX455AA)
0 NTX550AA02 CCS7 - TRANSACTION SERVICE
0 SUPPORT
0 NTX554AA02 CCS7 - E800/SSP
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP
0 NTX560AA)
0 NTX562AA03 NOS - DATA COLLECTION
0 NTX563AA05 BNM - STATION ADMINISTRATION
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500
0 SET ONLY
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY
0 NTX621AB02 SMU SPECIAL SERVICES(REP

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0  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAE0 - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | UPG (UPG OF 797AA)             |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. FR. NTX878AD |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX888AA01 | EAOSS                          |
| 0 | NTX892AA04 | MPC MULTILINK MANAGEMENT       |
| 0 | NTX898AA01 | VARIABLE SPEED CALL ACCESS     |
| 0 |            | CODE - IBN                     |
| 0 | NTX899AA01 | CALL TRANSFER ENHANCEMENTS     |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX902AA07 | LOCAL FEATURES II              |
| 0 | NTX903AA01 | TRANSMISSION MEASUREMENTS      |
| 0 | NTX940AA13 | CM BILGE                       |



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0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

0

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0 NTXC60BA01 STATUS NAP  
0 DMS100 BCS36 S/W LOAD FOR SNSE  
0 SERIES 60  
  
0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER

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0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAO (REP. NTXE13AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS

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0  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | (UPG OF NTXJ60AA)              |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL       |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION   |
| 0 |            | FOR DMS ISI                    |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS  |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD          |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING   |
| 0 |            | CALLS                          |
| 0 | NTXJ78AA02 | CLASS II ON MDC                |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY  |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A            |
| 0 |            | TRANSPARENCY                   |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION   |
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS |
| 0 |            | (UPG OF NTXN01AA)              |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION  |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                |
| 0 | NTXN11AA01 | TEN DIGIT GTT FOR CLASS        |
| 0 |            | FEATURES                       |
| 0 | NTXN12AA01 | NCEO/LEAS INTERFACE            |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI   |
| 0 |            | ALI DATABASE                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN66AA01 | E911 DIRECT ACCESS TO DATA     |
| 0 |            | MGT. SYSTEM ALI DATABASE       |

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0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP72AA01 ENET 16K CONFIGURATION  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY

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0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS  
0 CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA

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0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE



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0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT           |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE         |
| 0 |            | SERVICES                       |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL      |

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0  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION

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0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX554AA02 | CCS7 - E800/SSP                |
| 0 | NTX560AB03 | NOP - GENERIC R0 SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX571AA01 | IBN - DIRECTED CALL PARK,2500  |
| 0 |            | SET ONLY                       |
| 0 | NTX573AA01 | IBN SECURITY CODE - 2500 ONLY  |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP       |
| 0 |            | NTX621AA)                      |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX713AA01 | LATA-WIDE CENTREX BILLING      |
| 0 | NTX717AB01 | IBN TRK VERIFICATION           |
| 0 |            | DESIGNATED STN(UPGR.OF         |
| 0 |            | NTX717AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 | FLEXIBLE ANI                   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AC02 | ISDN BASIC ACCESS(UPG. FROM    |
| 0 |            | NTX750AB                       |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |

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|---|------------|--------------------------------|
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |
| 0 | NTX796AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - BASIC RATE INTERFACE         |
| 0 | NTX797AB01 | PRI MESSAGE WAITING INDICATION |
| 0 |            | (UPG OF 797AA)                 |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. FR. NTX878AD |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |

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0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC61AA01 STATUS LTD  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SNSE SERIES 60

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0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/



|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | REMOTE (UPG OF NTXA85AA)       |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC- |
| 0 |            | 96/REMOTE: SPECIAL SERVICES    |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM             |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM         |
| 0 | NTXA94AA01 | RES FEATURES                   |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL           |
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |
| 0 |            | EAE0 (REP. NTXE13AA)           |
| 0 | NTXE14AB03 | CCS7 ISUP INTERLATA CONN       |
| 0 |            | ACCESS TANDEM (REP. NTXE14AA)  |
| 0 | NTXE22AA02 | ACD SUPERGROUP                 |
| 0 | NTXE23AA01 | CELLULAR INTERCONNECT - END    |
| 0 |            | OFFICE                         |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM      |
| 0 |            | POOLING                        |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL     |
| 0 |            | RETRANSMISSION                 |
| 0 | NTXE38AB01 | CLASS: CND ON SCMS/MSR(UPG.OF  |
| 0 |            | NTXE38AA)                      |
| 0 | NTXE39AA01 | CALL FORWARD BUSY/DO NOT       |
| 0 |            | ANSWER SPLITS                  |
| 0 | NTXE40AB01 | MERIDIAN BUSINESS SET INSPECT  |
| 0 |            | KEY (UPG. FROM NTXE40AA)       |
| 0 | NTXE43AA01 | TERMINATING BILLING OPTION     |
| 0 | NTXE44AA01 | EXECUTIVE BUSY OVERRIDE        |
| 0 |            | ENHANCEMENT                    |
| 0 | NTXE46AA01 | CALLING NAME/NUMBER DELIVERY   |
| 0 |            | BLOCKING                       |
| 0 | NTXE47AA02 | MERIDIAN DISPLAY COMMUNICATION |
| 0 | NTXE52AA01 | CALLING NAME DELIVERY SWITCH   |
| 0 |            | BASED                          |
| 0 | NTXE54AA01 | SYSTEM LOAD MODULE II          |
| 0 | NTXE56AA02 | CLASS SCREENING LIST EDITING   |
| 0 | NTXE58AA01 | CLASS ON MVP                   |
| 0 | NTXE60AA01 | DATAPATH - CLOSED USER GROUPS  |
| 0 |            | (U.S.)                         |
| 0 | NTXE62AA01 | EBS CALL FORWARD UNIVERSAL PER |
| 0 |            | KEY                            |
| 0 | NTXE64AA02 | #4ESS AT&T INTERWORKING        |
| 0 | NTXE65AA01 | MPC X.25 INTERFACE             |

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0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR

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0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN66AA01 | E911 DIRECT ACCESS TO DATA     |
| 0 |            | MGT. SYSTEM ALI DATABASE       |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |
| 0 | NTXN82AB01 | RSC ENHANCED ESA (LINES &      |
| 0 |            | TRUNKS)(UPG FR NTXN82AA)       |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXN87AB01 | INTEGRATED TESTING BASE        |
| 0 | NTXN89AA01 | ISDN TESTING                   |
| 0 | NTXN91AA01 | TL 1 TESTING INTERFACE BASE    |
| 0 | NTXN93AA01 | TL-1 TESTING ENHANCED BUSINESS |
| 0 | NTXN99AA01 | ISDN INBOUND MODEM POOLING     |
| 0 | NTXP00AA01 | LINE CARD MONITOR              |
| 0 | NTXP01AA03 | INTELLIGENT NETWORK 0.0 BASE   |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP12AA01 | CLASS: ANONYMOUS CALLER        |
| 0 |            | REJECTION                      |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP38AA01 | BD CHANNEL LOOPBACK            |
| 0 | NTXP44AA01 | DMS SUPERNODE SE COMMON        |
| 0 | NTXP47AB01 | DMS PACKET HANDLER BASE (UPG   |
| 0 |            | OF NTXP47AA)                   |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP53AA01 | ACD ACCESS FEATURE GROUPING    |
| 0 | NTXP57AA01 | CALL WAKE-UP SERVICE           |
| 0 | NTXP58AA01 | VFG SPPRT FOR E911(LOC &/OR    |

|   |                                           |
|---|-------------------------------------------|
| 0 | INC ISUP/ANI CALL)                        |
| 0 | NTXP72AA01 ENET 16K CONFIGURATION         |
| 0 | NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION    |
| 0 | NTXP75AA01 DMS PACKET HANDLER SERVORD     |
| 0 | NTXP80AA01 TWO LEVEL AUTOMATIC RECALL     |
| 0 | ENHANCEMENTS                              |
| 0 | NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD |
| 0 | CONTROL                                   |
| 0 | NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  |
| 0 | NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXP99AB01 E911 REMOTE CALL EVENT         |
| 0 | RECORD(UPG.OF NTXP99AA)                   |
| 0 | NTXQ12AA01 RSC ENHANCED ESA(LINES         |
| 0 | ONLY)(FOR BCS34 RELEASE)                  |
| 0 | NTXQ18AA01 SRDB MEMORY ADMINISTRATION     |
| 0 | NTXQ29AA01 CLASS+ CALLING NAME DELIVERY   |
| 0 | BLOCKING FOR LINES                        |
| 0 | NTXQ34AA01 FRAME RELAY BILLING BASE       |
| 0 | PACKAGE                                   |
| 0 | NTXQ35AA01 FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 MS SR512 LIS CONTROLLER        |
| 0 | NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS   |
| 0 | CONTROLLER                                |
| 0 | NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS |
| 0 | NTXQ81AA01 CLASS - NAME DISPLAY ON MADN   |
| 0 | NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  |
| 0 | TEST (ILPT7)                              |
| 0 | NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  |
| 0 | (UPG OF NTXQ90AA)                         |
| 0 | NTXQ95AA01 LINE LOG REDUCTION             |
| 0 | NTXR21AA01 EADAS HARDWARE INVENTORY       |
| 0 | CONTROL                                   |
| 0 | NTXR25AA02 NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 FRAME RELAY FRACTIONAL T1      |
| 0 | ACCESS                                    |
| 0 | NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE |
| 0 | STRATEGY) BASIC                           |
| 0 | NTXR42AA01 FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR46AA01 ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT    |
| 0 | NTXR62AA01 STUTTER DIALTONE ENHANCEMENT   |
| 0 | NTXR65AA01 FLEXIBLE DWS ACCESS            |
| 0 | NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  |

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0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR

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0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT           |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE         |
| 0 |            | SERVICES                       |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL      |
| 0 |            | RECORDING                      |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX174AA03 | AIOD(AUTO IDENTIFIED OUTWARD   |
| 0 |            | DIALING)                       |
| 0 | NTX175AA01 | IBN - MULTI BILINGUAL CONSOLE  |
| 0 | NTX186AB02 | EQUAL ACCESS END OFFICE (UPG   |
| 0 |            | OF NTX186AA)                   |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT    |
| 0 |            | ANI                            |
| 0 | NTX195AA05 | MECHANIZED LOOP TESTER (MLT)   |
| 0 |            | I/F                            |
| 0 | NTX196AA02 | CALLING NUMBER ANNOUNCEMENT    |
| 0 |            | (CNA)                          |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING         |
| 0 | NTX204AA02 | CCIS BANDED SIGNALLING         |
| 0 | NTX206AA02 | UNAUTHORIZED DIGITONE SERVICE  |
| 0 |            | DETECTION                      |
| 0 | NTX209AB01 | FEATURE GRP B AMA - END (ATT   |
| 0 |            | FORMAT)(UPG FR.NTX209AA)       |
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE            |
| 0 | NTX211AB01 | FEATURE GRP B AMA - TANDEM(ATT |
| 0 |            | FORMAT)(UPG FR.NTX211AA)       |
| 0 | NTX213AC01 | SUBSCRIBER CARRIER             |

|   |                                          |
|---|------------------------------------------|
| 0 | MODULE(SCM)(REP. NTX213AB)               |
| 0 | NTX215AA02 SES NO.2 - INTERFACE          |
| 0 | NTX218AA03 1A/1B EADAS INTERFACE         |
| 0 | NTX219AB03 TEEN SERVICE                  |
| 0 | NTX243AA07 AMA TELEPROCESSING            |
| 0 | SYSTEM(AMATPS)                           |
| 0 | NTX244AB02 ENHANCED SEQUENTIAL TRUNK     |
| 0 | HUNTING(UPG OF 244AA IN BCS23)           |
| 0 | NTX250AA15 DATAPATH - BASIC              |
| 0 | NTX251AA06 DATAPATH - MODEM POOLING      |
| 0 | NTX259AA03 DATAPATH EXTENSION - DPX      |
| 0 | NTX260AA02 IBN - PRESET CONFERENCE       |
| 0 | NTX262AA01 IBN PRIORITY CONSOLE ALERTING |
| 0 | NTX269AA07 UNIVERSAL TONE                |
| 0 | RECEIVER(DOMESTIC)                       |
| 0 | NTX270AA19 NEW PERIPHERAL MAINTENANCE    |
| 0 | PACKAGE                                  |
| 0 | NTX272AA02 FOCUSED MAINTENANCE           |
| 0 | NTX273AA07 MULTI - PROTOCOL CONTROLLER   |
| 0 | BX.25                                    |
| 0 | NTX277AA02 DIALABLE LINE CIRCUIT         |
| 0 | IDENTIFICATION                           |
| 0 | NTX290AA01 TANDEMING/SUPERVISION AND     |
| 0 | TREATMENT                                |
| 0 | NTX291AA04 ENHANCED REAL TIME INDICATOR  |
| 0 | NTX292AB04 ENHANCED SECURITY - WITH      |
| 0 | PASSWORD ENCRYPTION                      |
| 0 | NTX293AA02 ENHANCED SECURITY PACKAGE II  |
| 0 | NTX297AA01 BRIDGES SERVICES              |
| 0 | NTX299AB01 SPECIAL SERVICES - SCM(UPG OF |
| 0 | NTX299AA)                                |
| 0 | NTX380AA02 DUAL RCC                      |
| 0 | NTX381AA01 RSC - REMOTE - OFF REMOTE     |
| 0 | NTX385AA01 OM THRESHOLDING AND ALARMS    |
| 0 | NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  |
| 0 | NTX386AA)                                |
| 0 | NTX387AD01 SMU AND ISDN/MBS SMU          |
| 0 | NTX395AA01 REMOTE MAKE BUZY VIA SCAN     |
| 0 | POINT                                    |
| 0 | NTX398AA12 SCM - 100S                    |
| 0 | NTX399AA01 IBN/ESB COMPATIBILITY         |
| 0 | NTX407AB01 ACD - CALL PROCESSING         |
| 0 | (REP.NTX407AA)                           |
| 0 | NTX410AA02 DYNAMIC ATTENDANT CONSOLE     |
| 0 | MEASUREMENTS                             |
| 0 | NTX411AA01 IBN - VOICE MESSAGING         |
| 0 | NTX412CB01 IBN - CUSTOMER DATA CHANGE    |

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | (UPG. OF NTX412CA)             |
| 0 | NTX413AB01 | IBN - ENHANCED CALL            |
| 0 |            | FORWARDING(UPGR. OF NTX413AA)  |
| 0 | NTX414AA01 | IBN - DIRECTED CALL PARK,      |
| 0 |            | BUSINESS SET AND 2500 SET      |
| 0 | NTX415AA07 | ACD BASIC                      |
| 0 | NTX416AJ01 | ACD ENHANCED II (UPG. OF       |
| 0 |            | NTX416AI)                      |
| 0 | NTX418AA01 | IBN_SERVICE ANALYSIS           |
| 0 | NTX419AA01 | MACD PIN CONFIGURATION AND     |
| 0 |            | CONTROL                        |
| 0 | NTX420AA01 | MACD NODAL SERVICE OBSERVING   |
| 0 | NTX426AA02 | ASYNCHRONOUS INTERFACE LINE    |
| 0 |            | CARD                           |
| 0 | NTX427AA04 | END USER TESTING OF TRUNKS     |
| 0 | NTX430AA02 | ESN                            |
| 0 | NTX431AA03 | IBN - CUT THROUGH DIALING      |
| 0 | NTX432AA01 | NETWORK SPEED CALLING          |
| 0 | NTX433AA01 | TIME OF DAY ROUTING            |
| 0 | NTX434AA01 | TIME OF DAY NCOS               |
| 0 | NTX435AA03 | IBN SUPERSET                   |
| 0 | NTX436AA01 | IBN ENHANCED DIAL PLAN         |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX447AA01 | E911 - TANDEM                  |
| 0 | NTX451AA02 | E-911 DATABASE                 |
| 0 | NTX455AB01 | 1A EADAS NETWORK MANAGEMENT    |
| 0 |            | (UPG. OF NTX455AA)             |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX554AA02 | CCS7 - E800/SSP                |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX571AA01 | IBN - DIRECTED CALL PARK, 2500 |
| 0 |            | SET ONLY                       |
| 0 | NTX573AA01 | IBN SECURITY CODE - 2500 ONLY  |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP       |
| 0 |            | NTX621AA)                      |
| 0 | NTX710AA02 | LATA EQUAL ACCESS SYSTEM       |
| 0 | NTX710AB01 | INTERCHANGEABLE NPAS FOR LEAS  |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |

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0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN

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0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC61BA01 STATUS NAP  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SNSE SERIES 60

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES

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0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | FORWARDING                     |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF        |
| 0 |            | NTXE09AA IN BCS32)             |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION |
| 0 |            | EAE0 (REP. NTXE13AA)           |
| 0 | NTXE14AB03 | CCS7 ISUP INTERLATA CONN       |
| 0 |            | ACCESS TANDEM (REP. NTXE14AA)  |
| 0 | NTXE22AA02 | ACD SUPERGROUP                 |
| 0 | NTXE23AA01 | CELLULAR INTERCONNECT - END    |
| 0 |            | OFFICE                         |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM      |
| 0 |            | POOLING                        |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL     |
| 0 |            | RETRANSMISSION                 |
| 0 | NTXE38AB01 | CLASS: CND ON SCMS/SMSR(UPG.OF |
| 0 |            | NTXE38AA)                      |
| 0 | NTXE39AA01 | CALL FORWARD BUSY/DO NOT       |
| 0 |            | ANSWER SPLITS                  |
| 0 | NTXE40AB01 | MERIDIAN BUSINESS SET INSPECT  |
| 0 |            | KEY (UPG. FROM NTXE40AA)       |
| 0 | NTXE43AA01 | TERMINATING BILLING OPTION     |
| 0 | NTXE44AA01 | EXECUTIVE BUSY OVERRIDE        |
| 0 |            | ENHANCEMENT                    |
| 0 | NTXE46AA01 | CALLING NAME/NUMBER DELIVERY   |
| 0 |            | BLOCKING                       |
| 0 | NTXE47AA02 | MERIDIAN DISPLAY COMMUNICATION |
| 0 | NTXE52AA01 | CALLING NAME DELIVERY SWITCH   |
| 0 |            | BASED                          |
| 0 | NTXE54AA01 | SYSTEM LOAD MODULE II          |
| 0 | NTXE56AA02 | CLASS SCREENING LIST EDITING   |
| 0 | NTXE58AA01 | CLASS ON MVP                   |
| 0 | NTXE60AA01 | DATAPATH - CLOSED USER GROUPS  |
| 0 |            | (U.S.)                         |
| 0 | NTXE62AA01 | EBS CALL FORWARD UNIVERSAL PER |
| 0 |            | KEY                            |
| 0 | NTXE64AA02 | #4ESS AT&T INTERWORKING        |
| 0 | NTXE65AA01 | MPC X.25 INTERFACE             |
| 0 | NTXE66AA02 | CCS7 ISUP OPTION CONTROLS      |
| 0 | NTXE67AA01 | EQUAL ACCESS INTERMEDIATE      |
| 0 |            | TANDEM                         |
| 0 | NTXE74AA01 | PRESET CONFERENCE - EXPANDED   |
| 0 |            | CAPACITY                       |
| 0 | NTXE94AA02 | SECONDARY DIRECTORY NUMBERS    |
| 0 |            | WITH OPTIONS                   |



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0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC

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0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS

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0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP72AA01 ENET 16K CONFIGURATION  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD

|   |                                           |
|---|-------------------------------------------|
| 0 | CONTROL                                   |
| 0 | NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  |
| 0 | NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXP99AB01 E911 REMOTE CALL EVENT         |
| 0 | RECORD(UPG.OF NTXP99AA)                   |
| 0 | NTXQ12AA01 RSC ENHANCED ESA(LINES         |
| 0 | ONLY)(FOR BCS34 RELEASE)                  |
| 0 | NTXQ18AA01 SRDB MEMORY ADMINISTRATION     |
| 0 | NTXQ29AA01 CLASS+ CALLING NAME DELIVERY   |
| 0 | BLOCKING FOR LINES                        |
| 0 | NTXQ34AA01 FRAME RELAY BILLING BASE       |
| 0 | PACKAGE                                   |
| 0 | NTXQ35AA01 FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 MS SR512 LIS CONTROLLER        |
| 0 | NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS   |
| 0 | CONTROLLER                                |
| 0 | NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS |
| 0 | NTXQ81AA01 CLASS - NAME DISPLAY ON MADN   |
| 0 | NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  |
| 0 | TEST (ILPT7)                              |
| 0 | NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  |
| 0 | (UPG OF NTXQ90AA)                         |
| 0 | NTXQ95AA01 LINE LOG REDUCTION             |
| 0 | NTXR21AA01 EADAS HARDWARE INVENTORY       |
| 0 | CONTROL                                   |
| 0 | NTXR25AA02 NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 FRAME RELAY FRACTIONAL T1      |
| 0 | ACCESS                                    |
| 0 | NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE |
| 0 | STRATEGY) BASIC                           |
| 0 | NTXR42AA01 FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR46AA01 ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT    |
| 0 | NTXR62AA01 STUTTER DIALTONE ENHANCEMENT   |
| 0 | NTXR65AA01 FLEXIBLE DWS ACCESS            |
| 0 | NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  |
| 0 | TANDEM)                                   |
| 0 | NTXR68AA01 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR71AA01 RSC-S EXTENDED DISTANCE        |
| 0 | CAPABILITY                                |
| 0 | NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED    |
| 0 | PLATFORMS                                 |
| 0 | NTXR74AA01 ENABLING OF MBG FEATURE        |

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | NETWORKING                     |
| 0 | NTXR75AA01 | VCN 1A BILLING                 |
| 0 | NTXR76AA01 | VCN 1A OM'S                    |
| 0 | NTXR78AA01 | MBG FEATURE NETWORKING CONTROL |
| 0 | NTXR83AA01 | PER LINE FEATURE CONTROL       |
| 0 | NTXR88AA01 | NETWORK ACCESS REGISTERS FOR   |
| 0 |            | DMS100                         |
| 0 | NTXR89AA01 | CENTREX COORDINATED VOICE AND  |
| 0 |            | DATA                           |
| 0 | NTXR94AA01 | DATAPATH (SLE) SCREEN LIST     |
| 0 |            | EDITING                        |
| 0 | NTXR95AA01 | NAME DISPLAY - TCAP            |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS01AA01 | ISDN MULTI-POINT LOOP          |
| 0 |            | MAINTENANCE                    |
| 0 | NTXS05AA01 | XPM PLUS IN RSC                |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH           |
| 0 | NTXS09AA01 | DIALABLE WIDEBAND SERVICE SS7  |
| 0 |            | TRKS                           |
| 0 | NTXS11AA01 | FILE TRANSFER PROTOCOL (DARPA) |
| 0 | NTXS17AA01 | DATA CALL TESTER               |
| 0 | NTXS22AA01 | THIRD PARTY AGENT CONTROL      |
| 0 | NTXS25AA01 | DWS BASE                       |
| 0 | NTXS26AA01 | DWS PRI BASE                   |
| 0 | NTXS27AA01 | DWS PRI TEST TOOL              |
| 0 | NTXS28AA01 | DWS INTERTOLL ISUP             |
| 0 | NTXS29AA01 | APU MAINTENANCE                |
| 0 | NTXS36AA01 | XPM+ ON DTCI                   |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM  |
| 0 |            | UPLOADING                      |
| 0 | NTXV00AA01 | DN SCREENING DATABASE - BASE   |
| 0 | NTXW00AA02 | WORLD LINE CARD BASE           |
| 0 | NTXW03AA01 | WORLD LINE CARD OVER VOLTAGE   |
| 0 |            | REPORT                         |
| 0 | NTXW20AA01 | WORLD LINE CARD 900 +2         |
| 0 | NTXW21AA01 | TEMPLATE FOR 900+2 FOR TYPE 2  |
| 0 | NTXY97AA01 | TCAP TRID EXPANSION            |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX006AA04 | BUSINESS LINES                 |
| 0 | NTX007AB02 | PBX INTERFACE I (UPGRADE OF    |
| 0 |            | NTX007AA)                      |
| 0 | NTX008AB02 | PBX INTERFACE II(UPG. OF       |
| 0 |            | NTX008AA)                      |
| 0 | NTX019AA02 | CIVIC SERVICES                 |
| 0 | NTX020AC01 | VERTICAL SERVICES I (UPGRADE   |

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0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED

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0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX149AA03 | RSC EMBER STAND ALONE          |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT           |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE         |
| 0 |            | SERVICES                       |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL      |
| 0 |            | RECORDING                      |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX174AA03 | AIOD(AUTO IDENTIFIED OUTWARD   |
| 0 |            | DIALING)                       |
| 0 | NTX175AA01 | IBN - MULTI BILINGUAL CONSOLE  |
| 0 | NTX186AB02 | EQUAL ACCESS END OFFICE (UPG   |
| 0 |            | OF NTX186AA)                   |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT    |
| 0 |            | ANI                            |
| 0 | NTX195AA05 | MECHANIZED LOOP TESTER (MLT)   |
| 0 |            | I/F                            |
| 0 | NTX196AA02 | CALLING NUMBER ANNOUNCEMENT    |
| 0 |            | (CNA)                          |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING         |
| 0 | NTX204AA02 | CCIS BANDED SIGNALLING         |
| 0 | NTX206AA02 | UNAUTHORIZED DIGITONE SERVICE  |
| 0 |            | DETECTION                      |
| 0 | NTX209AB01 | FEATURE GRP B AMA - END (ATT   |
| 0 |            | FORMAT)(UPG FR.NTX209AA)       |
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE            |
| 0 | NTX211AB01 | FEATURE GRP B AMA - TANDEM(ATT |
| 0 |            | FORMAT)(UPG FR.NTX211AA)       |
| 0 | NTX213AC01 | SUBSCRIBER CARRIER             |
| 0 |            | MODULE(SCM)(REP. NTX213AB)     |
| 0 | NTX215AA02 | SES NO.2 - INTERFACE           |
| 0 | NTX218AA03 | 1A/1B EADAS INTERFACE          |
| 0 | NTX219AB03 | TEEN SERVICE                   |
| 0 | NTX243AA07 | AMA TELEPROCESSING             |
| 0 |            | SYSTEM(AMATPS)                 |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |



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0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF

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0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 | FLEXIBLE ANI                   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AC02 | ISDN BASIC ACCESS(UPG. FROM    |
| 0 |            | NTX750AB                       |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |
| 0 | NTX796AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - BASIC RATE INTERFACE         |
| 0 | NTX797AB01 | PRI MESSAGE WAITING INDICATION |
| 0 |            | (UPG OF 797AA)                 |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX821AA01 | TANDEM OPERATOR SERVICE        |
| 0 |            | ROUTING                        |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. FR. NTX878AD |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX882AA04 | BIT ERROR RATIO INDICATOR FOR  |
| 0 |            | TOLL SWITCHES                  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX888AA01 | EAOSS                          |
| 0 | NTX892AA04 | MPC MULTILINK MANAGEMENT       |
| 0 | NTX898AA01 | VARIABLE SPEED CALL ACCESS     |
| 0 |            | CODE - IBN                     |
| 0 | NTX899AA01 | CALL TRANSFER ENHANCEMENTS     |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX902AA07 | LOCAL FEATURES II              |
| 0 | NTX903AA01 | TRANSMISSION MEASUREMENTS      |
| 0 | NTX940AA13 | CM BILGE                       |
| 0 | NTX941AA12 | CM COMMON                      |
| 0 | NTX942AB02 | DMS - SUPERNODE SYSTEM LOAD    |

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0  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

0

0 -----

0 NTXC62AA01 STATUS LTD  
0 DMS200 BCS36 S/W LOAD FOR SNSE  
0 SERIES 60  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS

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0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP72AA01 ENET 16K CONFIGURATION  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | CONTROLLER                     |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY       |
| 0 |            | CONTROL                        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH           |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM  |
| 0 |            | UPLOADING                      |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |
| 0 |            | SIGNALLING - BASIC             |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE      |
| 0 |            | ACCOUNTING (CAMA)              |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AG01 | ITT ANI FORMAT (RECEIPT)       |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX063AA02 | ECHO SUPPRESSOR                |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |

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0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS



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0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR

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0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC62BA01 STATUS NAP  
0 DMS200 BCS36 S/W LOAD FOR SNSE  
0 SERIES 60  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM

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0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP72AA01 ENET 16K CONFIGURATION  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS  
0 CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL

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0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT           |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPULSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX129AA02 | TWO WAY OPERATOR OFFICE TRUNK  |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT    |
| 0 |            | ANI                            |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING         |
| 0 | NTX204AA02 | CCIS BANDED SIGNALLING         |
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE            |
| 0 | NTX211AB01 | FEATURE GRP B AMA - TANDEM(ATT |
| 0 |            | FORMAT)(UPG FR.NTX211AA)       |
| 0 | NTX215AA02 | SES NO.2 - INTERFACE           |
| 0 | NTX218AA03 | 1A/1B EADAS INTERFACE          |
| 0 | NTX243AA07 | AMA TELEPROCESSING             |
| 0 |            | SYSTEM(AMATPS)                 |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND      |
| 0 |            | TREATMENT                      |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX386AB02 | ACCESS TANDEM SWITCH (UPG OF   |
| 0 |            | NTX386AA)                      |

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0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.

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0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC63BB01 STATUS NAP TARGET SUPERNODE  
0 SMART MGMT SNSE 20 (REGRADE OF  
0 NTXC63AB)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN

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0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE21AA01 CMS NAC INTERFACE  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED



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0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II

0  
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0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ57AA02 NSS DATABASE CONTROL POINT  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS |
| 0 |            | (UPG OF NTXN01AA)              |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION  |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI   |
| 0 |            | ALI DATABASE                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN47AA01 | NETWORKED ACD ON PRA           |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN67AA01 | MERIDIAN AUTOMATIC ROUTE       |
| 0 |            | SELECTION                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |
| 0 | NTXN81AA01 | TWO DIGIT ANI ID - END         |
| 0 |            | OFFICE(LAMA)                   |
| 0 | NTXN82AB01 | RSC ENHANCED ESA (LINES &      |
| 0 |            | TRUNKS)(UPG FR NTXN82AA)       |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXN86AA01 | E911 ACD PSAP MIS ENHANCEMENTS |
| 0 | NTXN87AB01 | INTEGRATED TESTING BASE        |
| 0 | NTXN89AA01 | ISDN TESTING                   |
| 0 | NTXN91AA01 | TL 1 TESTING INTERFACE BASE    |
| 0 | NTXN93AA01 | TL-1 TESTING ENHANCED BUSINESS |

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|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXQ90AB01 | ENHANCED RESIDENTIAL SERVICES  |
| 0 |            | (UPG OF NTXQ90AA)              |
| 0 | NTXQ95AA01 | LINE LOG REDUCTION             |
| 0 | NTXR25AA02 | NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR35AA01 | 800 DIALED NUMBER DISPLAY AND  |
| 0 |            | BCLID                          |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 | MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 | POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR45AA01 | AUTO ATTENDANT - RLT (DMS-100) |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 | DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 | CLASS: SPLIT NPA MANAGEMENT    |
| 0 | NTXR62AA01 | STUTTER DIALTONE ENHANCEMENT   |
| 0 | NTXR65AA01 | FLEXIBLE DWS ACCESS            |
| 0 | NTXR66AA01 | DWS ACCESS TO CARRIER (ACCESS  |
| 0 |            | TANDEM)                        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR71AA01 | RSC-S EXTENDED DISTANCE        |
| 0 |            | CAPABILITY                     |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXR74AA01 | ENABLING OF MBG FEATURE        |
| 0 |            | NETWORKING                     |
| 0 | NTXR75AA01 | VCN 1A BILLING                 |
| 0 | NTXR76AA01 | VCN 1A OM'S                    |
| 0 | NTXR78AA01 | MBG FEATURE NETWORKING CONTROL |
| 0 | NTXR80AA01 | CONTROL OF MULTIPLE CALL       |
| 0 |            | FORWARD                        |
| 0 | NTXR83AA01 | PER LINE FEATURE CONTROL       |
| 0 | NTXR88AA01 | NETWORK ACCESS REGISTERS FOR   |
| 0 |            | DMS100                         |
| 0 | NTXR89AA01 | CENTREX COORDINATED VOICE AND  |
| 0 |            | DATA                           |
| 0 | NTXR94AA01 | DATAPATH (SLE) SCREEN LIST     |
| 0 |            | EDITING                        |
| 0 | NTXR95AA01 | NAME DISPLAY - TCAP            |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS01AA01 | ISDN MULTI-POINT LOOP          |
| 0 |            | MAINTENANCE                    |

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0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS12AA01 DIGITAL TEST ACCESS FOR PRI  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXS81AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED NO. DISP - CMS  
0 NTXS82AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)

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0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057BA01 CUTOVER ASSISTANCE III (NON  
0 RESIDENT)  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX061AA01 CIRCUIT SWITCHED DIGITAL DATA  
0 SERVICE I  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX080BA01 TERMINATING CALL BILLING(NT  
0 FORMAT)  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTTING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |



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0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX181AA12 NON RES NT SUPPORT SOFTWARE  
0 (ORDERABLE BY TIA CUST. ONLY)  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)

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0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD

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0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX728AA02 SMDR DATA ACCESS  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAEO - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AD01 ISDN BASIC ACCESS (UPG FROM  
0 NTX750AC)

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0 NTXC64BB01 STATUS NAP TARGET SUPERNODE  
0 UNIVERSAL S/W LOAD SNSE 20 FOR  
0 TOLL (REG NTXC64AB)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP08AA01 | TRUNK GROUP MEMBER USAGE       |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP44AA01 | DMS SUPERNODE SE COMMON        |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP56AA01 | TWO DIGIT ANI - CAMA           |
| 0 | NTXP72AA01 | ENET 16K CONFIGURATION         |
| 0 | NTXP82AA01 | AMA MOD (CAMA MODULES)         |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ38AA01 | SSP 800 CALLING AND DIALLED    |
| 0 |            | NUMBER DELIVERY                |
| 0 | NTXQ39AA01 | SSP 800 BILLING ENHANCEMENTS   |
| 0 | NTXQ40AA02 | SSP 800 OVERFLOW CALL ROUTING  |
| 0 | NTXQ41AA01 | NB / SB ENHANCEMENT            |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ52AA01 | SUPPORT FOR MS RESIDENT, LIS   |
| 0 |            | CONTROLLER                     |
| 0 | NTXQ65AB01 | CCS7 AUTO ATTENDANT RELEASE    |
| 0 |            | LINK TRUNK (UPG OF NTXQ65AA)   |
| 0 | NTXQ73AA01 | ISUP TO MF 2 STAGE             |
| 0 |            | OUTPULSING(CANADA)             |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |

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0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)  
0 NTX029AA01 DIRECT DIALLING OVERSEAS, TOLL  
0 (CANADA)  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT



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0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE

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0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXC65BB01 STATUS NAP TARGET SUPERNODE  
0 UNIVERSAL S/W LOAD FOR SN 30  
0 (REGRADE OF NTXC65AB)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D  
0 SIGNALLING  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA60AA02 TOPS CLOSEDOWN(REPLACES  
0 NTX134BB AND NTX039AB)  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH  
0 SPEED  
0 NTXA91AA02 STANDARD INTERFACE FOR DA/  
0 INTERCEPT APPLICATIONS  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE04AA02 SCREENED SERVICE ROUTING  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE18AA01 TOPS AMA ENHANCEMENTS  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA  
0 FORMAT(EBAF)  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE34AA01 TOPS E911  
0 NTXE35AA01 ALTERNATE CARRIER SELECTION  
0 NTXE36AB01 AUTOMATIC DA CALL COMPLETION

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0 (UPG OF NTXE36AA)  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTXE71AA01 TOPS DIRECTORY ASSISTANCE/TOLL  
0 BRANDING  
0 NTXE72AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT - CCS7 VALIDATION  
0 (U.S.)  
0 NTXE73AA01 IMPROVED STATSPAC  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF10AA01 AUTOMATED DA CALL COMPLETION  
0 WITH ALTERNATE BILLING  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ10AA01 OPERATOR HAND OFF TO AABS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ37AA01 TOPS EXTERNAL PERSONAL AUDIO  
0 RESPONSE SYSTEM (PARS)  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ67AA01 TOPS DA SUBTENDING TMS  
0 NTXJ73AA01 TOPS ACCOUNT CODE BILLING  
0 NTXJ94AA01 MANDATORY PARALLEL AMA

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXJ96AA01 | ENHANCED MFADS                 |
| 0 | NTXN04AA01 | PARS REMOTE                    |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN29AA01 | IBM DA TPC                     |
| 0 | NTXN49AA01 | AUTOMATED INTERCEPT CALL       |
| 0 |            | COMPLETION                     |
| 0 | NTXN51AA01 | TOPS MP SUPPORT OF INTERNAL    |
| 0 |            | DRAM                           |
| 0 | NTXN52AA01 | TWO DIGIT ANI - TOPS OFFICE    |
| 0 | NTXN54AA01 | HOST/REMOTE NETWORKING VIA     |
| 0 |            | CALL TYPE                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP08AA01 | TRUNK GROUP MEMBER USAGE       |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP41AA01 | TOPS HOST QUEUE MANAGEMENT     |
| 0 |            | SYSTEM                         |
| 0 | NTXP42AA01 | TOPS REMOTE QUEUE MANAGEMENT   |
| 0 |            | SYSTEM                         |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP49AA01 | TOPS OPEN POSITION PROTOCOL    |
| 0 | NTXP56AA01 | TWO DIGIT ANI - CAMA           |
| 0 | NTXP78AA01 | FGB CARRIER CODE EXPANSION     |
| 0 | NTXP79AB01 | TOPS FRENCH/ENGLISH AABS       |
| 0 | NTXP82AA01 | AMA MOD (CAMA MODULES)         |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ23AA02 | TOPS ADAS                      |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ38AA01 | SSP 800 CALLING AND DIALLED    |
| 0 |            | NUMBER DELIVERY                |
| 0 | NTXQ39AA01 | SSP 800 BILLING ENHANCEMENTS   |
| 0 | NTXQ40AA02 | SSP 800 OVERFLOW CALL ROUTING  |
| 0 | NTXQ41AA01 | NB / SB ENHANCEMENT            |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ65AB01 | CCS7 AUTO ATTENDANT RELEASE    |

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0 LINK TRUNK (UPG OF NTXQ65AA)  
0 NTXQ73AA01 ISUP TO MF 2 STAGE  
0 OUTPULSING(CANADA)  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTXR50AA01 QMS EXTERNAL MANAGEMENT  
0 INFORMATION SYSTEM INTERFACE  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS18AA01 TOPS INTERCHANGEABLE NPA  
0 NTXS19AA01 TOPS DN CALL SCREENING  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS35AA01 AABS CALL SCREENING  
0 NTXS37AA01 AABS ENHANCED SERVICES ACCESS  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)  
0 NTX029AA01 DIRECT DIALING OVERSEAS, TOLL  
0 (CANADA)  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX035AA03 TOPS REMOTE CAMA  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA

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0 FOR LPP APPLICATION)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX096AA01 TOPS NOTIS FORMAT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTPULSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX140AA02 TOPS DIAL UP AUTOQUOTE

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0 NTX141AA01 TOPS CITY ZONE RATING  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX208AB01 AUTOMATIC COIN TOLL SERVICE  
0 (ACTS) (UPG OF NTX208AA)  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX552AD01 CUSTOM CHARGE CALLING (UPGRADE  
0 OF NTX552AC  
0 NTX555AB01 800 PLUS



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0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX731AA06 TOPS MP - TERMINAL  
0 HANDLER(ORDER VIA MP NTX704)  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX825AB01 EXCHANGE ALTERNATE BILLING  
0 SERVICE(UPG OF NTX825AA IN  
0 BCS34  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX850AB01 TOPS ALTERNATE  
0 ANNOUNCEMENT(UPG.FR.NTX850AA)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX873AA01 HOST TOPS MP O.C. - DATA LINK  
0 HANDLING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR  
0 SERV SIG  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXC66AA01 STATUS LTD  
0 SMART MANAGEMENT FOR SERIES 60

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE

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0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE21AA01 CMS NAC INTERFACE  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT

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0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION

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0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ57AA02 NSS DATABASE CONTROL POINT  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION

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0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN47AA01 NETWORKED ACD ON PRA  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN67AA01 MERIDIAN AUTOMATIC ROUTE  
0 SELECTION  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN81AA01 TWO DIGIT ANI ID - END  
0 OFFICE(LAMA)  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN86AA01 E911 ACD PSAP MIS ENHANCEMENTS  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTP00AA01 LINE CARD MONITOR  
0 NTP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTP10AA01 NETWORK MODULE SOFTWARE  
0 NTP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTP14AA01 DIRP PARALLEL STORAGE SIZE

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0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP55AB01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/LDR) (UPG OF P55AA)  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR35AA01 800 DIALED NUMBER DISPLAY AND  
0 BCLID

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0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR45AA01 AUTO ATTENDANT - RLT (DMS-100)  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR80AA01 CONTROL OF MULTIPLE CALL  
0 FORWARD  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS12AA01 DIGITAL TEST ACCESS FOR PRI  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL



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0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXS81AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED NO. DISP - CMS  
0 NTXS82AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)

|   |            |                                                                   |
|---|------------|-------------------------------------------------------------------|
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE                                    |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)                                          |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)                                         |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION                                            |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT                                      |
| 0 | NTX055BA01 | RONI TRUNK TESTING                                                |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION                                           |
| 0 | NTX057AB05 | CUTOVER ASSISTANCE II (NON<br>RESIDENT)                           |
| 0 | NTX057BA01 | CUTOVER ASSISTANCE III (NON<br>RESIDENT)                          |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)<br>(UPG. OF NTX057DA)                 |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG<br>ACCTG.DATA VIA DATAPAC(UPG.OF<br>NTX058AD |
| 0 | NTX060AB11 | NETWORK MANAGEMENT                                                |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED                                     |
| 0 | NTX061AA01 | CIRCUIT SWITCHED DIGITAL DATA<br>SERVICE I                        |
| 0 | NTX065AA12 | SERVICE ANALYSIS                                                  |
| 0 | NTX066AB01 | BILINGUAL INTERFACE(UPG FR.<br>NTX066AA)                          |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE<br>DIALLING (IDDD)                  |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM                                          |
| 0 | NTX076AA01 | AMA - ENHANCED                                                    |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE                                        |
| 0 | NTX080AA02 | LAMA ENHANCED                                                     |
| 0 | NTX080BA01 | TERMINATING CALL BILLING(NT<br>FORMAT)                            |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS                                      |
| 0 | NTX083AA01 | FEATURE GROUP A                                                   |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT                                      |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE                                          |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT                                         |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES                                            |
| 0 | NTX090AA01 | COIN SERVICES                                                     |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES                                       |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS<br>ENHANCEMENTS                          |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS -<br>BASIC (IBN)                     |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS<br>SERVICES                               |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL<br>RECORDING                         |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT           |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE         |
| 0 |            | SERVICES                       |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL      |
| 0 |            | RECORDING                      |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX174AA03 | AIOD(AUTO IDENTIFIED OUTWARD   |

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0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX181AA12 NON RES NT SUPPORT SOFTWARE  
0 (ORDERABLE BY TIA CUST. ONLY)  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX297AA01 | BRIDGES SERVICES               |
| 0 | NTX299AB01 | SPECIAL SERVICES - SCM(UPG OF  |
| 0 |            | NTX299AA)                      |
| 0 | NTX380AA02 | DUAL RCC                       |
| 0 | NTX381AA01 | RSC - REMOTE - OFF REMOTE      |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX387AD01 | SMU AND ISDN/MBS SMU           |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN      |
| 0 |            | POINT                          |
| 0 | NTX398AA12 | SCM - 100S                     |
| 0 | NTX399AA01 | IBN/ESB COMPATIBILITY          |
| 0 | NTX407AB01 | ACD - CALL PROCESSING          |
| 0 |            | (REP.NTX407AA)                 |
| 0 | NTX410AA02 | DYNAMIC ATTENDANT CONSOLE      |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX411AA01 | IBN - VOICE MESSAGING          |
| 0 | NTX412CB01 | IBN - CUSTOMER DATA CHANGE     |
| 0 |            | (UPG. OF NTX412CA)             |
| 0 | NTX413AB01 | IBN - ENHANCED CALL            |
| 0 |            | FORWARDING(UPGR. OF NTX413AA)  |
| 0 | NTX414AA01 | IBN - DIRECTED CALL PARK,      |
| 0 |            | BUSINESS SET AND 2500 SET      |
| 0 | NTX415AA07 | ACD BASIC                      |
| 0 | NTX416AJ01 | ACD ENHANCED II (UPG. OF       |
| 0 |            | NTX416AI)                      |
| 0 | NTX417AA03 | ACD MANAGEMENT REPORT DATA     |
| 0 |            | STREAM                         |
| 0 | NTX418AA01 | IBN_SERVICE ANALYSIS           |
| 0 | NTX419AA01 | MACD PIN CONFIGURATION AND     |
| 0 |            | CONTROL                        |
| 0 | NTX420AA01 | MACD NODAL SERVICE OBSERVING   |
| 0 | NTX426AA02 | ASYNCHRONOUS INTERFACE LINE    |
| 0 |            | CARD                           |
| 0 | NTX427AA04 | END USER TESTING OF TRUNKS     |
| 0 | NTX430AA02 | ESN                            |
| 0 | NTX431AA03 | IBN - CUT THROUGH DIALING      |
| 0 | NTX432AA01 | NETWORK SPEED CALLING          |
| 0 | NTX433AA01 | TIME OF DAY ROUTING            |
| 0 | NTX434AA01 | TIME OF DAY NCOS               |
| 0 | NTX435AA03 | IBN SUPERSET                   |
| 0 | NTX436AA01 | IBN ENHANCED DIAL PLAN         |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX447AA01 | E911 - TANDEM                  |

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0 NTX451AA02 E-911 DATABASE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX728AA02 SMDR DATA ACCESS  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAE0 - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AD01 ISDN BASIC ACCESS (UPG FROM  
0 NTX750AC)  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |
| 0 | NTX796AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - BASIC RATE INTERFACE         |
| 0 | NTX797AB01 | PRI MESSAGE WAITING INDICATION |
| 0 |            | (UPG OF 797AA)                 |
| 0 | NTX804AA02 | OM POLLING & VERTICAL          |
| 0 |            | SERVICES(ORDER VIA MP NTX071BG |
| 0 |            | & UP)                          |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX851AA01 | SMDR DERIVED FROM BCR AMA      |
| 0 | NTX853AA01 | IBN ALARM CALL STATUS ON       |
| 0 |            | CONSOLES                       |
| 0 | NTX856AA02 | IBN ATTENDANT CONSOLE OM ON AN |
| 0 |            | INDIVIDUAL CONSOLE BASIS       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX877AB01 | INTERFACE TO NON-DATA LINK     |
| 0 |            | CONSOLE(UPG. OF NTX877AA)      |
| 0 | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS   |
| 0 |            | SET SERVICES(UPG. FR. NTX878AD |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |

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0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC66BA01 STATUS NAP  
0 SMART MANAGEMENT FOR SERIES 60  
0 (REGRADE OF NTXC66AA)  
  
0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25



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0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION

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0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE21AA01 CMS NAC INTERFACE  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP

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0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ57AA02 NSS DATABASE CONTROL POINT  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL       |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION   |
| 0 |            | FOR DMS ISI                    |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS  |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD          |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING   |
| 0 |            | CALLS                          |
| 0 | NTXJ78AA02 | CLASS II ON MDC                |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY  |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A            |
| 0 |            | TRANSPARENCY                   |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION   |
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS |
| 0 |            | (UPG OF NTXN01AA)              |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION  |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI   |
| 0 |            | ALI DATABASE                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN47AA01 | NETWORKED ACD ON PRA           |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN67AA01 | MERIDIAN AUTOMATIC ROUTE       |
| 0 |            | SELECTION                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |

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0 NTXN81AA01 TWO DIGIT ANI ID - END  
0 OFFICE(LAMA)  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN86AA01 E911 ACD PSAP MIS ENHANCEMENTS  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP55AB01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/LDR) (UPG OF P55AA)  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY

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0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR35AA01 800 DIALED NUMBER DISPLAY AND  
0 BCLID  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR45AA01 AUTO ATTENDANT - RLT (DMS-100)  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR80AA01 CONTROL OF MULTIPLE CALL  
0 FORWARD  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100

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0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS12AA01 DIGITAL TEST ACCESS FOR PRI  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXS81AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED NO. DISP - CMS  
0 NTXS82AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE

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0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057BA01 CUTOVER ASSISTANCE III (NON  
0 RESIDENT)  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX061AA01 CIRCUIT SWITCHED DIGITAL DATA  
0 SERVICE I  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED



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0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX080BA01 TERMINATING CALL BILLING(NT  
0 FORMAT)  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE

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0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE  
0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX181AA12 NON RES NT SUPPORT SOFTWARE  
0 (ORDERABLE BY TIA CUST. ONLY)  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)

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0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX417AA03 | ACD MANAGEMENT REPORT DATA     |
| 0 |            | STREAM                         |
| 0 | NTX418AA01 | IBN_SERVICE ANALYSIS           |
| 0 | NTX419AA01 | MACD PIN CONFIGURATION AND     |
| 0 |            | CONTROL                        |
| 0 | NTX420AA01 | MACD NODAL SERVICE OBSERVING   |
| 0 | NTX426AA02 | ASYNCHRONOUS INTERFACE LINE    |
| 0 |            | CARD                           |
| 0 | NTX427AA04 | END USER TESTING OF TRUNKS     |
| 0 | NTX430AA02 | ESN                            |
| 0 | NTX431AA03 | IBN - CUT THROUGH DIALING      |
| 0 | NTX432AA01 | NETWORK SPEED CALLING          |
| 0 | NTX433AA01 | TIME OF DAY ROUTING            |
| 0 | NTX434AA01 | TIME OF DAY NCOS               |
| 0 | NTX435AA03 | IBN SUPERSET                   |
| 0 | NTX436AA01 | IBN ENHANCED DIAL PLAN         |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX447AA01 | E911 - TANDEM                  |
| 0 | NTX451AA02 | E-911 DATABASE                 |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX555AB01 | 800 PLUS                       |
| 0 | NTX558AA01 | CCC END OFFICE DP/DTMF         |
| 0 |            | GENERATION                     |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP       |
| 0 |            | NTX621AA)                      |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX717AB01 | IBN TRK VERIFICATION           |
| 0 |            | DESIGNATED STN(UPGR.OF         |
| 0 |            | NTX717AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX728AA02 | SMDR DATA ACCESS               |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 | FLEXIBLE ANI                   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AD01 | ISDN BASIC ACCESS (UPG FROM    |
| 0 |            | NTX750AC)                      |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |
| 0 | NTX792AA01 | ISDN PRA: NETWORK NAME DISPLAY |
| 0 | NTX793AA03 | PRA INTEGRATED SERVICES ACCESS |
| 0 | NTX794AA01 | PRA CCS7 INTERWORKING          |
| 0 | NTX795AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - PRIMARY RATE INTERFACE       |
| 0 | NTX796AA01 | INFO+ ENHANCED NUMBER DELIVERY |
| 0 |            | - BASIC RATE INTERFACE         |
| 0 | NTX797AB01 | PRI MESSAGE WAITING INDICATION |
| 0 |            | (UPG OF 797AA)                 |
| 0 | NTX804AA02 | OM POLLING & VERTICAL          |
| 0 |            | SERVICES(ORDER VIA MP NTX071BG |
| 0 |            | & UP)                          |
| 0 | NTX806AA01 | ENHANCED CALL FORWARDING -     |
| 0 |            | POTS                           |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX808AA01 | ENHANCED 3-WAY CALLING - POTS  |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX822AA02 | EBS AS MESSAGE CENTRE          |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |

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0 NTX836AA01 LPP - V.35 SUBRATE LINKS
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND
0 BERT (REP. NTX839AA)
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING
0 NTX851AA01 SMDR DERIVED FROM BCR AMA
0 NTX853AA01 IBN ALARM CALL STATUS ON
0 CONSOLES
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN
0 INDIVIDUAL CONSOLE BASIS
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION
0 NTX877AB01 INTERFACE TO NON-DATA LINK
0 CONSOLE(UPG. OF NTX877AA)
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS
0 SET SERVICES(UPG. FR. NTX878AD
0 NTX881AC03 SWITCH BIT ERROR RATE
0 MAINTENANCE(UPG. OF NTX881AB)
0 NTX883AA01 INTER OFFICE TRK BIT ERROR
0 RATE TESTING
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.
0 OF NTX885AA)
0 NTX888AA01 EA0SS
0 NTX892AA04 MPC MULTILINK MANAGEMENT
0 NTX898AA01 VARIABLE SPEED CALL ACCESS
0 CODE - IBN
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS
0 NTX901AA24 LOCAL FEATURES I
0 NTX902AA07 LOCAL FEATURES II
0 NTX903AA01 TRANSMISSION MEASUREMENTS
0 NTX940AA13 CM BILGE
0 NTX941AA12 CM COMMON
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD
0 MODULE(SLM)(UPG.FR. NTX942AB)
0 NTX944AA03 BASE NODE MAINTENANCE
0 NTX945AA03 MS BASE LINK MAINTENANCE
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF
0 NTX946AA IN BCS26)
0 NTX950AA06 MS BILGE
0 NTX951AA08 MS COMMON
0 NTX983AB02 SERVICE SWITCHING POINT
0 PRIVATE VIRTUAL NTWKG(REP
0 NTX983AA)
0 NTX984AA01 SERVICE SWITCHING POINT
0 PRIV.VIRTUAL NETWRKG-
0 ATT.SERVICES
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE
0 NTX991AF01 ACD-MGMT REP 2WAY DATA

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0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC67AA01 STATUS LTD  
0 UNIVERSAL S/W LOAD SERIES 60  
0 FOR TOLL

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | TOOLS                          |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING  |
| 0 |            | OPTIONS                        |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP08AA01 | TRUNK GROUP MEMBER USAGE       |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP56AA01 | TWO DIGIT ANI - CAMA           |
| 0 | NTXP82AA01 | AMA MOD (CAMA MODULES)         |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ38AA01 | SSP 800 CALLING AND DIALLED    |
| 0 |            | NUMBER DELIVERY                |
| 0 | NTXQ39AA01 | SSP 800 BILLING ENHANCEMENTS   |
| 0 | NTXQ40AA02 | SSP 800 OVERFLOW CALL ROUTING  |
| 0 | NTXQ41AA01 | NB / SB ENHANCEMENT            |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ65AB01 | CCS7 AUTO ATTENDANT RELEASE    |
| 0 |            | LINK TRUNK (UPG OF NTXQ65AA)   |
| 0 | NTXQ73AA01 | ISUP TO MF 2 STAGE             |
| 0 |            | OUTPUTSING(CANADA)             |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |



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0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)  
0 NTX029AA01 DIRECT DIALING OVERSEAS, TOLL  
0 (CANADA)  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE

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0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT

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0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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## 0 NTXC67BA01 STATUS NAP

0 UNIVERSAL S/W SERIES 60 FOR

0 TOLL (REG OF NTXC67AA)

0 NTXA11AA01 PATCH ADMINISTRATION &amp;

0 DOWNLOADING VIA X.25

0 NTXA15AA01 CALL PROGRESS TONES

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

0 NTXE01AA06 ENHANCED NETWORK - BASIC

0 NTXE14AB03 CCS7 ISUP INTERLATA CONN

0 ACCESS TANDEM (REP. NTXE14AA)

0 NTXE28AA02 AMA MOD (LAMA MODULES)

0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED

0 MAINTENANCE FOR MSB7

0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL

0 RETRANSMISSION

0 NTXE54AA01 SYSTEM LOAD MODULE II

0 NTXE65AA01 MPC X.25 INTERFACE

0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS

0 NTXE98AA02 HIGH SPEED MPC

0 NTXF14AA01 HIGH CAPACITY DPP

0 NTXF20AA02 LMS ON LPP

0 NTXF25AD01 FRAME RELAY BASIC (UPG FR

0 NTXF25AC)

0 NTXF26AA01 SYNCHRONIZATION - BITS

0 COMPOSITE MASTER

0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN

0 - C MASTER

0 NTXF71AB02 SUPERNODE ENHANCED

0 MESSAGING(UPG. OF NTXF71AA)

0 NTXF97AA02 BRISC SERIES SUPERNODE BASE

0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED

0 ACCESS

0 NTXH77AA01 CHANNELIZED ACCESS ON LPP/LIS

0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT

0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION

0 TOOLS

0 NTXJ41AA01 CCS7 TEST TOOLS

0 NTXJ44AA01 SLM FILE SYSTEM

0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING

0 OPTIONS

0 NTXJ94AA01 MANDATORY PARALLEL AMA

0 NTXN16AA01 ENHANCED DRAM

0 NTXN18AA04 FBUS - LIU BASE

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0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP08AA01 TRUNK GROUP MEMBER USAGE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP56AA01 TWO DIGIT ANI - CAMA  
0 NTXP82AA01 AMA MOD (CAMA MODULES)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ38AA01 SSP 800 CALLING AND DIALLED  
0 NUMBER DELIVERY  
0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTXQ40AA02 SSP 800 OVERFLOW CALL ROUTING  
0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ65AB01 CCS7 AUTO ATTENDANT RELEASE  
0 LINK TRUNK (UPG OF NTXQ65AA)  
0 NTXQ73AA01 ISUP TO MF 2 STAGE  
0 OUTPUTSING(CANADA)  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM

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0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)  
0 NTX029AA01 DIRECT DIALLING OVERSEAS, TOLL  
0 (CANADA)  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE

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0 NTX121AA01 OVERLAP OUTPUTSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP

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0 NTX560AA) NTX562AA03 NOS - DATA COLLECTION  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXC68AA01 STATUS LTD  
0 DMS100 BCS36 S/W LOAD FOR SN60

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE



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0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM

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0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR (UPG OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS

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0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | WITH OAMP REQUIRED             |
| 0 | NTXJ51AA02 | ISDN DIGITAL TEST ACCESS       |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING  |
| 0 |            | OPTIONS                        |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE   |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG  |
| 0 |            | OF NTXJ59AB)                   |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA |
| 0 |            | (UPG OF NTXJ60AA)              |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL       |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION   |
| 0 |            | FOR DMS ISI                    |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS  |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD          |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING   |
| 0 |            | CALLS                          |
| 0 | NTXJ78AA02 | CLASS II ON MDC                |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY  |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A            |
| 0 |            | TRANSPARENCY                   |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION   |
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS |
| 0 |            | (UPG OF NTXN01AA)              |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION  |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                |
| 0 | NTXN11AA01 | TEN DIGIT GTT FOR CLASS        |
| 0 |            | FEATURES                       |
| 0 | NTXN12AA01 | NCEO/LEAS INTERFACE            |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI   |
| 0 |            | ALI DATABASE                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |

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0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION

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0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL

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0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | OPERATION                      |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |
| 0 |            | SIGNALLING - BASIC             |
| 0 | NTX042AA04 | LOCAL AUTOMATIC MESSAGE        |
| 0 |            | ACCOUNTING (LAMA)              |
| 0 | NTX043AA03 | LOCAL CALL DETAIL RECORDING    |
| 0 | NTX045AA01 | USAGE SENSITIVE PRICING(USP    |
| 0 |            | BELLCORE FORMAT)               |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AC01 | CIRCLE DIGIT IDENTIFICATION    |
| 0 | NTX049AD01 | SINGLE PARTY REVERTIVE CALLING |
| 0 | NTX049AE01 | NORTH ELECTRIC ANI FORMAT      |
| 0 |            | GENERATION                     |
| 0 | NTX049AH01 | COME AGAIN SIGNALLING          |
| 0 | NTX049AL01 | TIME AND TEMPERATURE           |
| 0 |            | ANNOUNCEMENT                   |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |



|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | ENTHANCEMENTS                  |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX103BA02 | IBN STATION SPECIFIC           |
| 0 |            | AUTHORIZATION CODES            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPULSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |

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0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND

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0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)

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0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAEO - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES

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0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD

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0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC68BA01 STATUS NAP  
0 DMS100 BCS36 S/W LOAD FOR SN60

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP

|   |            |                                                               |
|---|------------|---------------------------------------------------------------|
| 0 |            | SIGNALING                                                     |
| 0 | NTXA80AA02 | NETWORK NAME DISPLAY                                          |
| 0 | NTXA81AA01 | EXTENSION BRIDGED SERVICES                                    |
| 0 | NTXA82AA03 | CLASS LINE OFFICE DATA                                        |
| 0 | NTXA84AA01 | EBS - MUSIC ON HOLD                                           |
| 0 | NTXA85AB02 | SUBSCRIBER MODULE SLC-96/<br>REMOTE (UPG OF NTXA85AA)         |
| 0 | NTXA86AA01 | SUBSCRIBER CARRIER MODULE SLC-<br>96/REMOTE: SPECIAL SERVICES |
| 0 | NTXA88AA02 | MDR VIA AMA STREAM                                            |
| 0 | NTXA89AA01 | SMDR TIME DUMP FOR BNM                                        |
| 0 | NTXA94AA01 | RES FEATURES                                                  |
| 0 | NTXA95AA01 | CLASS SELECTIVE CALL<br>FORWARDING                            |
| 0 | NTXA96AA01 | CLASS SELECTIVE CALL REJECTION                                |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC                                      |
| 0 | NTXE09AB01 | ACD ON 2500 SET (UPG OF<br>NTXE09AA IN BCS32)                 |
| 0 | NTXE13AB01 | CCS7 ISUP INTERLATA CONNECTION<br>EAO (REP. NTXE13AA)         |
| 0 | NTXE22AA02 | ACD SUPERGROUP                                                |
| 0 | NTXE23AA01 | CELLULAR INTERCONNECT - END<br>OFFICE                         |
| 0 | NTXE25AA01 | ISDN CIRCUIT SWITCH MODEM<br>POOLING                          |
| 0 | NTXE27AA01 | CLASS DIALABLE NUMBER DELIVERY                                |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL<br>RETRANSMISSION                  |
| 0 | NTXE38AB01 | CLASS: CND ON SCMS/MSR(UPG.OF<br>NTXE38AA)                    |
| 0 | NTXE39AA01 | CALL FORWARD BUSY/DO NOT<br>ANSWER SPLITS                     |
| 0 | NTXE40AB01 | MERIDIAN BUSINESS SET INSPECT<br>KEY (UPG. FROM NTXE40AA)     |
| 0 | NTXE43AA01 | TERMINATING BILLING OPTION                                    |
| 0 | NTXE44AA01 | EXECUTIVE BUSY OVERRIDE<br>ENHANCEMENT                        |
| 0 | NTXE46AA01 | CALLING NAME/NUMBER DELIVERY<br>BLOCKING                      |
| 0 | NTXE47AA02 | MERIDIAN DISPLAY COMMUNICATION                                |
| 0 | NTXE52AA01 | CALLING NAME DELIVERY SWITCH<br>BASED                         |
| 0 | NTXE54AA01 | SYSTEM LOAD MODULE II                                         |
| 0 | NTXE56AA02 | CLASS SCREENING LIST EDITING                                  |
| 0 | NTXE58AA01 | CLASS ON MVP                                                  |
| 0 | NTXE60AA01 | DATAPATH - CLOSED USER GROUPS<br>(U.S.)                       |



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0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE

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0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG  
0 OF NTXJ59AB)  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXJ69AA01 RESIDENTIAL CALL HOLD  
0 NTXJ70AA01 CALL FORWARD OF CALL WAITING  
0 CALLS  
0 NTXJ78AA02 CLASS II ON MDC  
0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTXJ84AA02 CALL FORWARDING- 1A  
0 TRANSPARENCY  
0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION  
0 FOR HUNT GROUPS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY  
0 LAMP FIELD FOR MBS  
0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN11AA01 TEN DIGIT GTT FOR CLASS  
0 FEATURES  
0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |
| 0 | NTXN65AA01 | MDC FAST TRANSFER              |
| 0 | NTXN66AA01 | E911 DIRECT ACCESS TO DATA     |
| 0 |            | MGT. SYSTEM ALI DATABASE       |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN75AA01 | REMOTE CALL FORWARD WITHOUT    |
| 0 |            | UNIQUE PIN                     |
| 0 | NTXN82AB01 | RSC ENHANCED ESA (LINES &      |
| 0 |            | TRUNKS)(UPG FR NTXN82AA)       |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXN87AB01 | INTEGRATED TESTING BASE        |
| 0 | NTXN89AA01 | ISDN TESTING                   |
| 0 | NTXN91AA01 | TL 1 TESTING INTERFACE BASE    |
| 0 | NTXN93AA01 | TL-1 TESTING ENHANCED BUSINESS |
| 0 | NTXN99AA01 | ISDN INBOUND MODEM POOLING     |
| 0 | NTXP00AA01 | LINE CARD MONITOR              |
| 0 | NTXP01AA03 | INTELLIGENT NETWORK 0.0 BASE   |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP12AA01 | CLASS: ANONYMOUS CALLER        |
| 0 |            | REJECTION                      |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP38AA01 | BD CHANNEL LOOPBACK            |
| 0 | NTXP47AB01 | DMS PACKET HANDLER BASE (UPG   |
| 0 |            | OF NTXP47AA)                   |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP53AA01 | ACD ACCESS FEATURE GROUPING    |
| 0 | NTXP57AA01 | CALL WAKE-UP SERVICE           |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXP58AA01 | VFG SPRT FOR E911(LOC &/OR     |
| 0 |            | INC ISUP/ANI CALL)             |
| 0 | NTXP73AA01 | CNDB OFFICE-WIDE ACTIVATION    |
| 0 | NTXP75AA01 | DMS PACKET HANDLER SERVORD     |
| 0 | NTXP80AA01 | TWO LEVEL AUTOMATIC RECALL     |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTXP81AA01 | REMOTE ACTIVATION OF LINE LOAD |
| 0 |            | CONTROL                        |
| 0 | NTXP92AB01 | RSC-S BASIC (UPG OF NTPX92AA)  |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXP99AB01 | E911 REMOTE CALL EVENT         |
| 0 |            | RECORD(UPG.OF NTPX99AA)        |
| 0 | NTXQ12AA01 | RSC ENHANCED ESA(LINES         |
| 0 |            | ONLY)(FOR BCS34 RELEASE)       |
| 0 | NTXQ18AA01 | SRDB MEMORY ADMINISTRATION     |
| 0 | NTXQ29AA01 | CLASS+ CALLING NAME DELIVERY   |
| 0 |            | BLOCKING FOR LINES             |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ70AA01 | UNIVERSAL CLASS FEATURE ACCESS |
| 0 | NTXQ81AA01 | CLASS - NAME DISPLAY ON MADN   |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXQ90AB01 | ENHANCED RESIDENTIAL SERVICES  |
| 0 |            | (UPG OF NTXQ90AA)              |
| 0 | NTXQ95AA01 | LINE LOG REDUCTION             |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY       |
| 0 |            | CONTROL                        |
| 0 | NTXR25AA02 | NETWORK FACILITY ACCESS        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR43AA01 | MBG GENERIC ADDRESS PARAMETER  |
| 0 | NTXR44AA01 | POWER FEATURE AUDIO TRIAL      |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR49AA02 | DIALABLE WIDE BAND SERVICE PRI |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR59AA01 | CLASS: SPLIT NPA MANAGEMENT    |
| 0 | NTXR62AA01 | STUTTER DIALTONE ENHANCEMENT   |
| 0 | NTXR65AA01 | FLEXIBLE DWS ACCESS            |
| 0 | NTXR66AA01 | DWS ACCESS TO CARRIER (ACCESS  |
| 0 |            | TANDEM)                        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |

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0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF

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0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE

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0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX139AA01 REVERTIVE PULSING ON DIGITAL  
0 LINES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX149AA03 RSC EMERGENCY STAND ALONE

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0 OPERATION - LINES  
0 NTX149AB03 RSC ESA OPERATION - LINE AND  
0 TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX152AB01 RSC TRUNKING (UPG. OF  
0 NTX152AA)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE  
0 OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING



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0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS

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0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY  
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX717AB01 IBN TRK VERIFICATION  
0 DESIGNATED STN(UPGR.OF  
0 NTX717AA)  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX734AA01 EAE0 - IBN PIC USING SERVORD  
0 NTX735AA01 FLEXIBLE ANI  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)

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0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)

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0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC69AA01 STATUS LTD  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SN60

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE

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0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY

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0  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | OF NTXF88AA)                   |
| 0 | NTXF92AA02 | ISDN OAM BASE                  |
| 0 | NTXF93AA02 | ISDN PROVISIONING              |
| 0 | NTXF94AB01 | ISDN INTEGRATED PH MAINTENANCE |
| 0 |            | W/O OAMP(REP NTXF94AA)         |
| 0 | NTXF95AA03 | ISDN OAM PROCESSOR             |
| 0 | NTXF97AA02 | BRISC SERIES SUPERNODE BASE    |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS |
| 0 | NTXJ00AA03 | ISDN ON RSC (REP BY NTXJ00AB)  |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT    |
| 0 | NTXJ38AA01 | MDC WARM LINE                  |
| 0 | NTXJ39AA01 | CLASS VISUAL MESSAGE WAITING   |
| 0 |            | INDICATOR                      |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION      |
| 0 |            | TOOLS                          |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                |
| 0 | NTXJ42AA02 | FEATURE GROUP D ON MDC         |
| 0 | NTXJ43AA02 | #5ESS AT&T INTERWORKING        |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                |
| 0 | NTXJ47AA01 | TEEN SERVICE ON MDC            |
| 0 | NTXJ48AA01 | ISDN INTEGRATED PH MAINTENANCE |
| 0 |            | WITH OAMP REQUIRED             |
| 0 | NTXJ51AA02 | ISDN DIGITAL TEST ACCESS       |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING  |
| 0 |            | OPTIONS                        |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE   |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG  |
| 0 |            | OF NTXJ59AB)                   |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA |
| 0 |            | (UPG OF NTXJ60AA)              |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL       |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION   |
| 0 |            | FOR DMS ISI                    |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS  |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD          |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING   |
| 0 |            | CALLS                          |
| 0 | NTXJ78AA02 | CLASS II ON MDC                |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY  |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A            |
| 0 |            | TRANSPARENCY                   |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION   |
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |



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0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING

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0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING

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0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

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0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX127AA01 | WARM LINE                      |
| 0 | NTX129AA02 | TWO WAY OPERATOR OFFICE TRUNK  |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT           |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE         |
| 0 |            | SERVICES                       |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL      |
| 0 |            | RECORDING                      |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX174AA03 | AIOD(AUTO IDENTIFIED OUTWARD   |
| 0 |            | DIALING)                       |
| 0 | NTX175AA01 | IBN - MULTI BILINGUAL CONSOLE  |
| 0 | NTX186AB02 | EQUAL ACCESS END OFFICE (UPG   |
| 0 |            | OF NTX186AA)                   |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT    |
| 0 |            | ANI                            |
| 0 | NTX195AA05 | MECHANIZED LOOP TESTER (MLT)   |
| 0 |            | I/F                            |
| 0 | NTX196AA02 | CALLING NUMBER ANNOUNCEMENT    |
| 0 |            | (CNA)                          |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING         |

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0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN

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0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500  
0 SET ONLY



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|---|------------|--------------------------------|
| 0 | NTX573AA01 | IBN SECURITY CODE - 2500 ONLY  |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP       |
| 0 |            | NTX621AA)                      |
| 0 | NTX710AA02 | LATA EQUAL ACCESS SYSTEM       |
| 0 | NTX710AB01 | INTERCHANGEABLE NPAS FOR LEAS  |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE        |
| 0 |            | ENHANCEMENTS (UPG. OF          |
| 0 |            | NTX711AA)                      |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX713AA01 | LATA-WIDE CENTREX BILLING      |
| 0 | NTX717AB01 | IBN TRK VERIFICATION           |
| 0 |            | DESIGNATED STN(UPGR.OF         |
| 0 |            | NTX717AA)                      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR    |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III      |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF  |
| 0 |            | NTX733AD IN BCS29)             |
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD   |
| 0 | NTX735AA01 | FLEXIBLE ANI                   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX750AC02 | ISDN BASIC ACCESS(UPG. FROM    |
| 0 |            | NTX750AB                       |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES (UPG OF          |
| 0 |            | NTX753AA)                      |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE  |
| 0 |            | SERVICE (UPG OF NTX754AA) (UP  |
| 0 | NTX755AC01 | ISDN SUPPLEMENTARY SERVICES    |
| 0 |            | COMPLIANCE(UPG.FR. NTX755AB)   |
| 0 | NTX756AA01 | ISDN ENHANCED DISPLAY SERVICES |
| 0 | NTX757AA02 | TR444 ISUP INTERWORKING        |
| 0 | NTX761AA01 | CLASS ON ISDN                  |
| 0 | NTX767AA03 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE- END OFFICE         |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX790AC02 | ISDN - PRIMARY RATE ACCESS     |
| 0 |            | BASE(UPG FR. NTX790AB)         |
| 0 | NTX791AA02 | ISDN PRA: NETWORK RING AGAIN   |

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0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR

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0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTKWG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC69BA01 STATUS NAP

0 DMS100/200 BCS36 S/W LOAD FOR  
0 SN60

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD

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0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE23AA01 CELLULAR INTERCONNECT - END  
0 OFFICE  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING

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0 NTXE58AA01 CLASS ON MVP  
0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS  
0 (U.S.)  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR

|   |            |                                                      |
|---|------------|------------------------------------------------------|
| 0 | NTXF97AA02 | BRIS SERIES SUPERNODE BASE                           |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS                       |
| 0 | NTXJ00AA03 | ISDN ON RSC (REP BY NTXJ00AB)                        |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT                          |
| 0 | NTXJ38AA01 | MDC WARM LINE                                        |
| 0 | NTXJ39AA01 | CLASS VISUAL MESSAGE WAITING<br>INDICATOR            |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION<br>TOOLS                   |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                                      |
| 0 | NTXJ42AA02 | FEATURE GROUP D ON MDC                               |
| 0 | NTXJ43AA02 | #5ESS AT&T INTERWORKING                              |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                                      |
| 0 | NTXJ47AA01 | TEEN SERVICE ON MDC                                  |
| 0 | NTXJ48AA01 | ISDN INTEGRATED PH MAINTENANCE<br>WITH OAMP REQUIRED |
| 0 | NTXJ51AA02 | ISDN DIGITAL TEST ACCESS                             |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING<br>OPTIONS             |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE                         |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG<br>OF NTXJ59AB)        |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA<br>(UPG OF NTXJ60AA)  |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL                             |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION<br>FOR DMS ISI          |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS                        |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD                                |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING<br>CALLS                |
| 0 | NTXJ78AA02 | CLASS II ON MDC                                      |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY                        |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A<br>TRANSPARENCY                  |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION<br>FOR HUNT GROUPS      |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA                               |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY<br>LAMP FIELD FOR MBS  |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON                        |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS<br>(UPG OF NTXN01AA)  |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION                        |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                                      |
| 0 | NTXN11AA01 | TEN DIGIT GTT FOR CLASS<br>FEATURES                  |

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0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN66AA01 E911 DIRECT ACCESS TO DATA  
0 MGT. SYSTEM ALI DATABASE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG



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0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2

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0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX025AA02 RLM EMERGENCY STAND-ALONE  
0 OPERATION  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX045AA01 USAGE SENSITIVE PRICING(USP  
0 BELLCORE FORMAT)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX049AE01 NORTH ELECTRIC ANI FORMAT  
0 GENERATION  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX049AL01 TIME AND TEMPERATURE  
0 ANNOUNCEMENT  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION

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0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |
| 0 | NTX157AA01 | CCIS - INWATS OSO              |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT           |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE         |
| 0 |            | SERVICES                       |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL      |
| 0 |            | RECORDING                      |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX174AA03 | AIOD(AUTO IDENTIFIED OUTWARD   |
| 0 |            | DIALING)                       |
| 0 | NTX175AA01 | IBN - MULTI BILINGUAL CONSOLE  |
| 0 | NTX186AB02 | EQUAL ACCESS END OFFICE (UPG   |
| 0 |            | OF NTX186AA)                   |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT    |
| 0 |            | ANI                            |
| 0 | NTX195AA05 | MECHANIZED LOOP TESTER (MLT)   |
| 0 |            | I/F                            |
| 0 | NTX196AA02 | CALLING NUMBER ANNOUNCEMENT    |
| 0 |            | (CNA)                          |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING         |
| 0 | NTX204AA02 | CCIS BANDED SIGNALLING         |
| 0 | NTX206AA02 | UNAUTHORIZED DIGITONE SERVICE  |
| 0 |            | DETECTION                      |
| 0 | NTX209AB01 | FEATURE GRP B AMA - END (ATT   |
| 0 |            | FORMAT)(UPG FR.NTX209AA)       |
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE            |

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0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25

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0 NTXC69BA01 STATUS NAP  
0 DMS100/200 BCS36 S/W LOAD FOR  
0 SN60  
  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)

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0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX418AA01 IBN SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT

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0 NTX554AA02 CCS7 - E800/SSP
0 NTX560AB03 NOP - GENERIC R0 SERVICE(REP
0 NTX562AA03 NOS - DATA COLLECTION
0 NTX563AA05 BNM - STATION ADMINISTRATION
0 NTX571AA01 IBN - DIRECTED CALL PARK,2500
0 SET ONLY
0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY
0 NTX621AB02 SMU SPECIAL SERVICES(REP
0 NTX621AA)
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS
0 NTX711AB02 EQUAL ACCESS END OFFICE
0 ENHANCEMENTS (UPG. OF
0 NTX711AA)
0 NTX712AA01 CCS7 DATA PORT
0 NTX713AA01 LATA-WIDE CENTREX BILLING
0 NTX717AB01 IBN TRK VERIFICATION
0 DESIGNATED STN(UPGR.OF
0 NTX717AA)
0 NTX719AA01 BUSINESS SET BUSY INDICATOR
0 NTX727AD01 ACD - LOAD MANAGEMENT III
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER
0 NTX732AA06 SIMPLIFIED MESSAGE DESK
0 INTERFACE(SMDI)
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF
0 NTX733AD IN BCS29)
0 NTX734AA01 EAE0 - IBN PIC USING SERVORD
0 NTX735AA01 FLEXIBLE ANI
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF
0 NTX737AA)
0 NTX738AC02 SWITCH PERFORMANCE MONITORING
0 SYSTEM (UPG NTX738AB V.O.30)
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM
0 NTX750AB
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC
0 RATE SERVICES (UPG OF
0 NTX753AA)
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE
0 SERVICE (UPG OF NTX754AA) (UP
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES
0 COMPLIANCE(UPG.FR. NTX755AB)
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES
0 NTX757AA02 TR444 ISUP INTERWORKING
0 NTX761AA01 CLASS ON ISDN
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS
0 COMPLIANCE- END OFFICE

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0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION

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0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC70AA01 STATUS LTD  
0 DMS200 BCS36 S/W LOAD FOR SN60

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS

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0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)

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0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING

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0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL

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0 NTXC70BA01 STATUS NAP

0 DMS200 BCS36 S/W LOAD FOR SN60

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY       |
| 0 |            | CONTROL                        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR55AA01 | TL1 TESTING INTERFACE PARSER   |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH           |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM  |
| 0 |            | UPLOADING                      |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |
| 0 |            | SIGNALLING - BASIC             |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE      |
| 0 |            | ACCOUNTING (CAMA)              |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |

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0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPULSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE

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0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT

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0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC71AA01 STATUS LTD  
0 SMART MANAGEMENT SNSE SERIES  
0 60

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0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR

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0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE21AA01 CMS NAC INTERFACE  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS

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0 WITH OPTIONS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTXF82AA01 RES SINGLE LINE VARIETY  
0 PACKAGE  
0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG  
0 OF NTXF88AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ38AA01 MDC WARM LINE  
0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING  
0 INDICATOR  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXJ57AA02 | NSS DATABASE CONTROL POINT     |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE   |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG  |
| 0 |            | OF NTXJ59AB)                   |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA |
| 0 |            | (UPG OF NTXJ60AA)              |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL       |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION   |
| 0 |            | FOR DMS ISI                    |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS  |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD          |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING   |
| 0 |            | CALLS                          |
| 0 | NTXJ78AA02 | CLASS II ON MDC                |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY  |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A            |
| 0 |            | TRANSPARENCY                   |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION   |
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |
| 0 | NTXN01AB01 | MULTI-LOCATION BUSINESS GROUPS |
| 0 |            | (UPG OF NTXN01AA)              |
| 0 | NTXN07AB01 | SMDI PRIVATE CLID SUPPRESSION  |
| 0 | NTXN10AA01 | HIGH SPEED SMDI                |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN17AA01 | E911 DIRECT INTERFACE TO CCI   |
| 0 |            | ALI DATABASE                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN26AA01 | ANNOUNCEMENTS ENHANCEMENTS     |
| 0 | NTXN27AA01 | INTELLIGENT NETWORK OVERLOAD   |
| 0 |            | CONTROLS                       |
| 0 | NTXN28AA01 | INTELLIGENT NETWORK BILLING    |
| 0 |            | ATTRIBUTES                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN35AA01 | COT ENHANCEMENTS               |
| 0 | NTXN46AA02 | NETWORKED ACD ON CCS7          |
| 0 | NTXN47AA01 | NETWORKED ACD ON PRA           |
| 0 | NTXN50AA01 | MDC SINGLE BUTTON TRANSFER     |
| 0 | NTXN53AA02 | ENHANCED PRA MAINTENANCE       |
| 0 | NTXN59AA02 | RINGBACK TO E911 CALLERS       |
| 0 | NTXN60AA01 | DIAL UP INTO ALI DB FOR SRDB   |
| 0 |            | UPDATE                         |



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0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN67AA01 MERIDIAN AUTOMATIC ROUTE  
0 SELECTION  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN81AA01 TWO DIGIT ANI ID - END  
0 OFFICE(LAMA)  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN86AA01 E911 ACD PSAP MIS ENHANCEMENTS  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER  
0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP55AB01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/LDR) (UPG OF P55AA)  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP72AA01 ENET 16K CONFIGURATION  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL

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0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR80AA01 CONTROL OF MULTIPLE CALL  
0 FORWARD  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS12AA01 DIGITAL TEST ACCESS FOR PRI  
0 NTXS17AA01 DATA CALL TESTER  
0 NTXS22AA01 THIRD PARTY AGENT CONTROL  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTXS27AA01 DWS PRI TEST TOOL  
0 NTXS28AA01 DWS INTERTOLL ISUP  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXS81AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED NO. DISP - CMS  
0 NTXS82AA01 END OFFICE 800 PLUS CALLER ID  
0 & DIALED  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE  
0 REPORT  
0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2

|   |            |                                                                   |
|---|------------|-------------------------------------------------------------------|
| 0 | NTXY97AA01 | TCAP TRID EXPANSION                                               |
| 0 | NTX000AA19 | BILGE                                                             |
| 0 | NTX001AA29 | COMMON BASIC                                                      |
| 0 | NTX006AA04 | BUSINESS LINES                                                    |
| 0 | NTX007AB02 | PBX INTERFACE I (UPGRADE OF<br>NTX007AA)                          |
| 0 | NTX008AB02 | PBX INTERFACE II(UPG. OF<br>NTX008AA)                             |
| 0 | NTX019AA02 | CIVIC SERVICES                                                    |
| 0 | NTX020AC01 | VERTICAL SERVICES I (UPGRADE<br>FROM NTX020AB)                    |
| 0 | NTX021AA04 | REMOTE CALL FORWARDING                                            |
| 0 | NTX023AB03 | REMOTE LINE MODULE (RLM)                                          |
| 0 | NTX024AA01 | RLM INTRA-RLM CALLING                                             |
| 0 | NTX025AA02 | RLM EMERGENCY STAND-ALONE<br>OPERATION                            |
| 0 | NTX028AA01 | DIRECT DIALLING OVERSEAS,<br>LOCAL (CANADA)                       |
| 0 | NTX041AB09 | CCS7 - MTP/SCCP(SEE NTXR72AA<br>FOR LPP APPLICATION)              |
| 0 | NTX042AA04 | LOCAL AUTOMATIC MESSAGE<br>ACCOUNTING (LAMA)                      |
| 0 | NTX043AA03 | LOCAL CALL DETAIL RECORDING                                       |
| 0 | NTX048AA06 | SYNCHRONIZATION                                                   |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3                                       |
| 0 | NTX049AD01 | SINGLE PARTY REVERTIVE CALLING                                    |
| 0 | NTX049AL01 | TIME AND TEMPERATURE<br>ANNOUNCEMENT                              |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING                                           |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL)                                    |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE                                    |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)                                          |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)                                         |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION                                            |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT                                      |
| 0 | NTX055BA01 | RONI TRUNK TESTING                                                |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION                                           |
| 0 | NTX057AB05 | CUTOVER ASSISTANCE II (NON<br>RESIDENT)                           |
| 0 | NTX057BA01 | CUTOVER ASSISTANCE III (NON<br>RESIDENT)                          |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)<br>(UPG. OF NTX057DA)                 |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG<br>ACCTG.DATA VIA DATAPAC(UPG.OF<br>NTX058AD |
| 0 | NTX060AB11 | NETWORK MANAGEMENT                                                |

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0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX061AA01 CIRCUIT SWITCHED DIGITAL DATA  
0 SERVICE I  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX080AA02 LAMA ENHANCED  
0 NTX080BA01 TERMINATING CALL BILLING(NT  
0 FORMAT)  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX083AA01 FEATURE GROUP A  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX090AA01 COIN SERVICES  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX103BA02 IBN STATION SPECIFIC  
0 AUTHORIZATION CODES  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTPULSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX127AA01 WARM LINE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX136AA03 | AUTOMATIC PROVISIONING         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX139AA01 | REVERTIVE PULSING ON DIGITAL   |
| 0 |            | LINES                          |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX149AA03 | RSC EMERGENCY STAND ALONE      |
| 0 |            | OPERATION - LINES              |
| 0 | NTX149AB03 | RSC ESA OPERATION - LINE AND   |
| 0 |            | TRUNK                          |
| 0 | NTX150AA04 | RSC - INTRA RSC CALLING        |
| 0 | NTX152AB01 | RSC TRUNKING (UPG. OF          |
| 0 |            | NTX152AA)                      |
| 0 | NTX154AA03 | RLCM - EMERGENCY STAND ALONE   |
| 0 |            | OPERATION                      |
| 0 | NTX156AA02 | INTRA RLCM CALLING             |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT           |
| 0 | NTX160AA06 | MULTIUNIT MESSAGE RATE         |
| 0 |            | SERVICES                       |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL      |
| 0 |            | RECORDING                      |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX174AA03 | AIOD(AUTO IDENTIFIED OUTWARD   |
| 0 |            | DIALING)                       |
| 0 | NTX175AA01 | IBN - MULTI BILINGUAL CONSOLE  |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES |
| 0 | NTX181AA12 | NON RES NT SUPPORT SOFTWARE    |
| 0 |            | (ORDERABLE BY TIA CUST. ONLY)  |
| 0 | NTX186AB02 | EQUAL ACCESS END OFFICE (UPG   |
| 0 |            | OF NTX186AA)                   |
| 0 | NTX195AA05 | MECHANIZED LOOP TESTER (MLT)   |
| 0 |            | I/F                            |
| 0 | NTX196AA02 | CALLING NUMBER ANNOUNCEMENT    |
| 0 |            | (CNA)                          |
| 0 | NTX206AA02 | UNAUTHORIZED DIGITONE SERVICE  |
| 0 |            | DETECTION                      |
| 0 | NTX209AB01 | FEATURE GRP B AMA - END (ATT   |
| 0 |            | FORMAT)(UPG FR.NTX209AA)       |

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0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX297AA01 BRIDGES SERVICES  
0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF  
0 NTX299AA)  
0 NTX380AA02 DUAL RCC  
0 NTX381AA01 RSC - REMOTE - OFF REMOTE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX398AA12 SCM - 100S  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS

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0 NTX411AA01 IBN - VOICE MESSAGING  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX414AA01 IBN - DIRECTED CALL PARK,  
0 BUSINESS SET AND 2500 SET  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX418AA01 IBN SERVICE ANALYSIS  
0 NTX419AA01 MACD PIN CONFIGURATION AND  
0 CONTROL  
0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX447AA01 E911 - TANDEM  
0 NTX451AA02 E-911 DATABASE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX621AB02 SMU SPECIAL SERVICES(REP  
0 NTX621AA)  
0 NTX711AB02 EQUAL ACCESS END OFFICE  
0 ENHANCEMENTS (UPG. OF  
0 NTX711AA)  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX717AB01 IBN TRK VERIFICATION



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0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)  
0 NTX950AA06 MS BILGE

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0 NTX951AA08 MS COMMON  
0 NTX983AB02 SERVICE SWITCHING POINT  
0 PRIVATE VIRTUAL NTWKG(REP  
0 NTX983AA)  
0 NTX984AA01 SERVICE SWITCHING POINT  
0 PRIV.VIRTUAL NETWRKG-  
0 ATT.SERVICES  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXC71BA01 STATUS NAP  
0 SMART MGMT SNSE SERIES 60  
0 (REGRADE OF NTXC71AA)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE  
0 BLOCKING  
0 NTXA22AA01 ENHANCED ARS  
0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK  
0 AHEAD  
0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTXA32AA01 DISTINCTIVE CALL WAITING  
0 RINGBACK  
0 NTXA33AA01 MADN RING FORWARD  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT  
0 SERVICE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL

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0  
0 WAITING  
0 NTXA45AA01 CLASS SELECTIVE CALL  
0 ACCEPTANCE  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/  
0 REMOTE (UPG OF NTXA85AA)  
0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-  
0 96/REMOTE: SPECIAL SERVICES  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR  
0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTXA94AA01 RES FEATURES  
0 NTXA95AA01 CLASS SELECTIVE CALL  
0 FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION  
0 EAE0 (REP. NTXE13AA)  
0 NTXE21AA01 CMS NAC INTERFACE  
0 NTXE22AA02 ACD SUPERGROUP  
0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM  
0 POOLING  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS

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0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF  
0 NTXE38AA)  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY  
0 BLOCKING  
0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH  
0 BASED  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE74AA01 PRESET CONFERENCE - EXPANDED  
0 CAPACITY  
0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS  
0 WITH OPTIONS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100  
0 ACCESS(SMA)  
0 NTXF55AA02 CLASS BULK CALLING LINE  
0 IDENTIFICATION  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTXF61AA02 DMS INTEGRATED E911 PSAP  
0 FUNCTIONALITY  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXF82AA01 | RES SINGLE LINE VARIETY        |
| 0 |            | PACKAGE                        |
| 0 | NTXF87AA02 | SERVICE ORDER SIMPLIFICATION   |
| 0 | NTXF88AB01 | MBS INTERACTIVE DISPLAYS (UPG  |
| 0 |            | OF NTXF88AA)                   |
| 0 | NTXF92AA02 | ISDN OAM BASE                  |
| 0 | NTXF93AA02 | ISDN PROVISIONING              |
| 0 | NTXF94AB01 | ISDN INTEGRATED PH MAINTENANCE |
| 0 |            | W/O OAMP(REP NTXF94AA)         |
| 0 | NTXF97AA02 | BRISC SERIES SUPERNODE BASE    |
| 0 | NTXH70AA01 | C7 SUPPORT FOR CHANNELIZED     |
| 0 |            | ACCESS                         |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS |
| 0 | NTXJ00AA03 | ISDN ON RSC (REP BY NTXJ00AB)  |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT    |
| 0 | NTXJ38AA01 | MDC WARM LINE                  |
| 0 | NTXJ39AA01 | CLASS VISUAL MESSAGE WAITING   |
| 0 |            | INDICATOR                      |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION      |
| 0 |            | TOOLS                          |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                |
| 0 | NTXJ47AA01 | TEEN SERVICE ON MDC            |
| 0 | NTXJ51AA02 | ISDN DIGITAL TEST ACCESS       |
| 0 | NTXJ57AA02 | NSS DATABASE CONTROL POINT     |
| 0 | NTXJ58AA01 | CANCEL CALL WAITING PER LINE   |
| 0 | NTXJ59AC01 | COMPUCALL BASE UTILITIES (UPG  |
| 0 |            | OF NTXJ59AB)                   |
| 0 | NTXJ60AB01 | ISI COORDINATED VOICE AND DATA |
| 0 |            | (UPG OF NTXJ60AA)              |
| 0 | NTXJ62AA02 | THIRD PARTY CALL CONTROL       |
| 0 | NTXJ63AA01 | VOICE PROCESSING INTEGRATION   |
| 0 |            | FOR DMS ISI                    |
| 0 | NTXJ68AA01 | IBN ISUP NETINFO TRANSLATIONS  |
| 0 | NTXJ69AA01 | RESIDENTIAL CALL HOLD          |
| 0 | NTXJ70AA01 | CALL FORWARD OF CALL WAITING   |
| 0 |            | CALLS                          |
| 0 | NTXJ78AA02 | CLASS II ON MDC                |
| 0 | NTXJ82AA02 | CALL HUNTING- 1A TRANSPARENCY  |
| 0 | NTXJ84AA02 | CALL FORWARDING- 1A            |
| 0 |            | TRANSPARENCY                   |
| 0 | NTXJ93AA01 | SERVICE ORDER SIMPLIFICATION   |
| 0 |            | FOR HUNT GROUPS                |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ97AA01 | DIRECT STATION SELECTION/BUSY  |
| 0 |            | LAMP FIELD FOR MBS             |
| 0 | NTXJ98AA01 | MERIDIAN BUSINESS SET CAMP ON  |

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0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)  
0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTXN10AA01 HIGH SPEED SMDI  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI  
0 ALI DATABASE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD  
0 CONTROLS  
0 NTXN28AA01 INTELLIGENT NETWORK BILLING  
0 ATTRIBUTES  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN35AA01 COT ENHANCEMENTS  
0 NTXN46AA02 NETWORKED ACD ON CCS7  
0 NTXN47AA01 NETWORKED ACD ON PRA  
0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTXN59AA02 RINGBACK TO E911 CALLERS  
0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB  
0 UPDATE  
0 NTXN65AA01 MDC FAST TRANSFER  
0 NTXN67AA01 MERIDIAN AUTOMATIC ROUTE  
0 SELECTION  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT  
0 UNIQUE PIN  
0 NTXN81AA01 TWO DIGIT ANI ID - END  
0 OFFICE(LAMA)  
0 NTXN82AB01 RSC ENHANCED ESA (LINES &  
0 TRUNKS)(UPG FR NTXN82AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN86AA01 E911 ACD PSAP MIS ENHANCEMENTS  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTXP00AA01 LINE CARD MONITOR  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP12AA01 CLASS: ANONYMOUS CALLER

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0 REJECTION  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG  
0 OF NTXP47AA)  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP53AA01 ACD ACCESS FEATURE GROUPING  
0 NTXP55AB01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/LDR) (UPG OF P55AA)  
0 NTXP57AA01 CALL WAKE-UP SERVICE  
0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR  
0 INC ISUP/ANI CALL)  
0 NTXP72AA01 ENET 16K CONFIGURATION  
0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL  
0 ENHANCEMENTS  
0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD  
0 CONTROL  
0 NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXP99AB01 E911 REMOTE CALL EVENT  
0 RECORD(UPG.OF NTXP99AA)  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES  
0 ONLY)(FOR BCS34 RELEASE)  
0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY  
0 BLOCKING FOR LINES  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS  
0 CONTROLLER  
0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES  
0 (UPG OF NTXQ90AA)  
0 NTXQ95AA01 LINE LOG REDUCTION



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0 NTXR25AA02 NETWORK FACILITY ACCESS  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR35AA01 800 DIALED NUMBER DISPLAY AND  
0 BCLID  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXR45AA01 AUTO ATTENDANT - RLT (DMS-100)  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS  
0 TANDEM)  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR71AA01 RSC-S EXTENDED DISTANCE  
0 CAPABILITY  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXR74AA01 ENABLING OF MBG FEATURE  
0 NETWORKING  
0 NTXR75AA01 VCN 1A BILLING  
0 NTXR76AA01 VCN 1A OM'S  
0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXR80AA01 CONTROL OF MULTIPLE CALL  
0 FORWARD  
0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR  
0 DMS100  
0 NTXR89AA01 CENTREX COORDINATED VOICE AND  
0 DATA  
0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST  
0 EDITING  
0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS01AA01 ISDN MULTI-POINT LOOP  
0 MAINTENANCE  
0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7  
0 TRKS

|   |            |                                                          |
|---|------------|----------------------------------------------------------|
| 0 | NTXS11AA01 | FILE TRANSFER PROTOCOL (DARPA)                           |
| 0 | NTXS12AA01 | DIGITAL TEST ACCESS FOR PRI                              |
| 0 | NTXS17AA01 | DATA CALL TESTER                                         |
| 0 | NTXS22AA01 | THIRD PARTY AGENT CONTROL                                |
| 0 | NTXS25AA01 | DWS BASE                                                 |
| 0 | NTXS26AA01 | DWS PRI BASE                                             |
| 0 | NTXS27AA01 | DWS PRI TEST TOOL                                        |
| 0 | NTXS28AA01 | DWS INTERTOLL ISUP                                       |
| 0 | NTXS29AA01 | APU MAINTENANCE                                          |
| 0 | NTXS36AA01 | XPM+ ON DTCI                                             |
| 0 | NTXS67AA01 | DCR MULTIPLE NETWORK ACCESS<br>(MNA)                     |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM<br>UPLOADING               |
| 0 | NTXS81AA01 | END OFFICE 800 PLUS CALLER ID<br>& DIALED NO. DISP - CMS |
| 0 | NTXS82AA01 | END OFFICE 800 PLUS CALLER ID<br>& DIALED                |
| 0 | NTXV00AA01 | DN SCREENING DATABASE - BASE                             |
| 0 | NTXW00AA02 | WORLD LINE CARD BASE                                     |
| 0 | NTXW03AA01 | WORLD LINE CARD OVER VOLTAGE<br>REPORT                   |
| 0 | NTXW20AA01 | WORLD LINE CARD 900 +2                                   |
| 0 | NTXW21AA01 | TEMPLATE FOR 900+2 FOR TYPE 2                            |
| 0 | NTXY97AA01 | TCAP TRID EXPANSION                                      |
| 0 | NTX000AA19 | BILGE                                                    |
| 0 | NTX001AA29 | COMMON BASIC                                             |
| 0 | NTX006AA04 | BUSINESS LINES                                           |
| 0 | NTX007AB02 | PBX INTERFACE I (UPGRADE OF<br>NTX007AA)                 |
| 0 | NTX008AB02 | PBX INTERFACE II(UPG. OF<br>NTX008AA)                    |
| 0 | NTX019AA02 | CIVIC SERVICES                                           |
| 0 | NTX020AC01 | VERTICAL SERVICES I (UPGRADE<br>FROM NTX020AB)           |
| 0 | NTX021AA04 | REMOTE CALL FORWARDING                                   |
| 0 | NTX023AB03 | REMOTE LINE MODULE (RLM)                                 |
| 0 | NTX024AA01 | RLM INTRA-RLM CALLING                                    |
| 0 | NTX025AA02 | RLM EMERGENCY STAND-ALONE<br>OPERATION                   |
| 0 | NTX028AA01 | DIRECT DIALLING OVERSEAS,<br>LOCAL (CANADA)              |
| 0 | NTX041AB09 | CCS7 - MTP/SCCP(SEE NTXR72AA<br>FOR LPP APPLICATION)     |
| 0 | NTX042AA04 | LOCAL AUTOMATIC MESSAGE<br>ACCOUNTING (LAMA)             |
| 0 | NTX043AA03 | LOCAL CALL DETAIL RECORDING                              |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX049AD01 | SINGLE PARTY REVERTIVE CALLING |
| 0 | NTX049AL01 | TIME AND TEMPERATURE           |
| 0 |            | ANNOUNCEMENT                   |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX057AB05 | CUTOVER ASSISTANCE II (NON     |
| 0 |            | RESIDENT)                      |
| 0 | NTX057BA01 | CUTOVER ASSISTANCE III (NON    |
| 0 |            | RESIDENT)                      |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX061AA01 | CIRCUIT SWITCHED DIGITAL DATA  |
| 0 |            | SERVICE I                      |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX066AB01 | BILINGUAL INTERFACE(UPG FR.    |
| 0 |            | NTX066AA)                      |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX080AA02 | LAMA ENHANCED                  |
| 0 | NTX080BA01 | TERMINATING CALL BILLING(NT    |
| 0 |            | FORMAT)                        |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX083AA01 | FEATURE GROUP A                |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX089AA01 | ENHANCED COIN SERVICES         |
| 0 | NTX090AA01 | COIN SERVICES                  |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |

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0 NTX160AA06 MULTIUNIT MESSAGE RATE  
0 SERVICES  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD  
0 DIALING)  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX181AA12 NON RES NT SUPPORT SOFTWARE  
0 (ORDERABLE BY TIA CUST. ONLY)  
0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG  
0 OF NTX186AA)  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX209AB01 FEATURE GRP B AMA - END (ATT  
0 FORMAT)(UPG FR.NTX209AA)  
0 NTX213AC01 SUBSCRIBER CARRIER  
0 MODULE(SCM)(REP. NTX213AB)  
0 NTX219AB03 TEEN SERVICE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX257AA01 DATAPATH - CLOSED USER  
0 GROUPS(CUG)  
0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25

|   |            |                               |
|---|------------|-------------------------------|
| 0 | NTX274AA04 | DTC 30 CARRIER MAINTENANCE    |
| 0 | NTX277AA02 | DIALABLE LINE CIRCUIT         |
| 0 |            | IDENTIFICATION                |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND     |
| 0 |            | TREATMENT                     |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR  |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH      |
| 0 |            | PASSWORD ENCRYPTION           |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II  |
| 0 | NTX297AA01 | BRIDGES SERVICES              |
| 0 | NTX299AB01 | SPECIAL SERVICES - SCM(UPG OF |
| 0 |            | NTX299AA)                     |
| 0 | NTX380AA02 | DUAL RCC                      |
| 0 | NTX381AA01 | RSC - REMOTE - OFF REMOTE     |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS    |
| 0 | NTX387AD01 | SMU AND ISDN/MBS SMU          |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN     |
| 0 |            | POINT                         |
| 0 | NTX398AA12 | SCM - 100S                    |
| 0 | NTX399AA01 | IBN/ESB COMPATIBILITY         |
| 0 | NTX407AB01 | ACD - CALL PROCESSING         |
| 0 |            | (REP.NTX407AA)                |
| 0 | NTX410AA02 | DYNAMIC ATTENDANT CONSOLE     |
| 0 |            | MEASUREMENTS                  |
| 0 | NTX411AA01 | IBN - VOICE MESSAGING         |
| 0 | NTX412CB01 | IBN - CUSTOMER DATA CHANGE    |
| 0 |            | (UPG. OF NTX412CA)            |
| 0 | NTX413AB01 | IBN - ENHANCED CALL           |
| 0 |            | FORWARDING(UPGR. OF NTX413AA) |
| 0 | NTX414AA01 | IBN - DIRECTED CALL PARK,     |
| 0 |            | BUSINESS SET AND 2500 SET     |
| 0 | NTX415AA07 | ACD BASIC                     |
| 0 | NTX416AJ01 | ACD ENHANCED II (UPG. OF      |
| 0 |            | NTX416AI)                     |
| 0 | NTX417AA03 | ACD MANAGEMENT REPORT DATA    |
| 0 |            | STREAM                        |
| 0 | NTX418AA01 | IBN_SERVICE ANALYSIS          |
| 0 | NTX419AA01 | MACD PIN CONFIGURATION AND    |
| 0 |            | CONTROL                       |
| 0 | NTX420AA01 | MACD NODAL SERVICE OBSERVING  |
| 0 | NTX426AA02 | ASYNCHRONOUS INTERFACE LINE   |
| 0 |            | CARD                          |
| 0 | NTX427AA04 | END USER TESTING OF TRUNKS    |
| 0 | NTX430AA02 | ESN                           |
| 0 | NTX431AA03 | IBN - CUT THROUGH DIALING     |
| 0 | NTX432AA01 | NETWORK SPEED CALLING         |
| 0 | NTX433AA01 | TIME OF DAY ROUTING           |

|   |            |                                                                  |
|---|------------|------------------------------------------------------------------|
| 0 | NTX434AA01 | TIME OF DAY NCOS                                                 |
| 0 | NTX435AA03 | IBN SUPERSET                                                     |
| 0 | NTX436AA01 | IBN ENHANCED DIAL PLAN                                           |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING                                       |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE<br>OF NTX445AA)                   |
| 0 | NTX447AA01 | E911 - TANDEM                                                    |
| 0 | NTX451AA02 | E-911 DATABASE                                                   |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE<br>SUPPORT                            |
| 0 | NTX555AB01 | 800 PLUS                                                         |
| 0 | NTX558AA01 | CCC END OFFICE DP/DTMF<br>GENERATION                             |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP<br>NTX560AA)                        |
| 0 | NTX562AA03 | NOS - DATA COLLECTION                                            |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION                                     |
| 0 | NTX621AB02 | SMU SPECIAL SERVICES(REP<br>NTX621AA)                            |
| 0 | NTX711AB02 | EQUAL ACCESS END OFFICE<br>ENHANCEMENTS (UPG. OF<br>NTX711AA)    |
| 0 | NTX712AA01 | CCS7 DATA PORT                                                   |
| 0 | NTX717AB01 | IBN TRK VERIFICATION<br>DESIGNATED STN(UPGR.OF<br>NTX717AA)      |
| 0 | NTX719AA01 | BUSINESS SET BUSY INDICATOR                                      |
| 0 | NTX727AD01 | ACD - LOAD MANAGEMENT III                                        |
| 0 | NTX728AA02 | SMDR DATA ACCESS                                                 |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER                                    |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK<br>INTERFACE(SMDI)                       |
| 0 | NTX733AE01 | ENHANCED SERVICE ORDER(UPG.OF<br>NTX733AD IN BCS29)              |
| 0 | NTX734AA01 | EAE0 - IBN PIC USING SERVORD                                     |
| 0 | NTX735AA01 | FLEXIBLE ANI                                                     |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF<br>NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING<br>SYSTEM (UPG NTX738AB V.O.30)    |
| 0 | NTX750AD01 | ISDN BASIC ACCESS (UPG FROM<br>NTX750AC)                         |
| 0 | NTX753AB01 | ISDN FUNCTIONAL MODE BASIC<br>RATE SERVICES (UPG OF<br>NTX753AA) |
| 0 | NTX754AB02 | ISDN ELECTRONIC KEY TELEPHONE<br>SERVICE (UPG OF NTX754AA) (UP   |

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0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX761AA01 CLASS ON ISDN  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - PRIMARY RATE INTERFACE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE  
0 NTX797AB01 PRI MESSAGE WAITING INDICATION  
0 (UPG OF 797AA)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX806AA01 ENHANCED CALL FORWARDING -  
0 POTS  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX877AB01 INTERFACE TO NON-DATA LINK  
0 CONSOLE(UPG. OF NTX877AA)  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS



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0 SET SERVICES(UPG. FR. NTX878AD
0 NTX881AC03 SWITCH BIT ERROR RATE
0 MAINTENANCE(UPG. OF NTX881AB)
0 NTX883AA01 INTER OFFICE TRK BIT ERROR
0 RATE TESTING
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.
0 OF NTX885AA)
0 NTX888AA01 EAOSS
0 NTX892AA04 MPC MULTILINK MANAGEMENT
0 NTX898AA01 VARIABLE SPEED CALL ACCESS
0 CODE - IBN
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS
0 NTX901AA24 LOCAL FEATURES I
0 NTX902AA07 LOCAL FEATURES II
0 NTX903AA01 TRANSMISSION MEASUREMENTS
0 NTX940AA13 CM BILGE
0 NTX941AA12 CM COMMON
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD
0 MODULE(SLM)(UPG.FR. NTX942AB)
0 NTX944AA03 BASE NODE MAINTENANCE
0 NTX945AA03 MS BASE LINK MAINTENANCE
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF
0 NTX946AA IN BCS26)
0 NTX950AA06 MS BILGE
0 NTX951AA08 MS COMMON
0 NTX983AB02 SERVICE SWITCHING POINT
0 PRIVATE VIRTUAL NTKWG(REP
0 NTX983AA)
0 NTX984AA01 SERVICE SWITCHING POINT
0 PRIV.VIRTUAL NETWRKG-
0 ATT.SERVICES
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA
0 STREAM(UPG OF NTX991AE IN
0 BCS32)
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0 NTXC72AA01 STATUS LTD  
0 UNIVERSAL S/W LOAD SNSE SERIES  
0 60 FOR TOLL

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELIZED ACCESS ON LPP/LIS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP08AA01 | TRUNK GROUP MEMBER USAGE       |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP44AA01 | DMS SUPERNODE SE COMMON        |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP56AA01 | TWO DIGIT ANI - CAMA           |
| 0 | NTXP72AA01 | ENET 16K CONFIGURATION         |
| 0 | NTXP82AA01 | AMA MOD (CAMA MODULES)         |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ38AA01 | SSP 800 CALLING AND DIALLED    |
| 0 |            | NUMBER DELIVERY                |
| 0 | NTXQ39AA01 | SSP 800 BILLING ENHANCEMENTS   |
| 0 | NTXQ40AA02 | SSP 800 OVERFLOW CALL ROUTING  |
| 0 | NTXQ41AA01 | NB / SB ENHANCEMENT            |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ52AA01 | SUPPORT FOR MS RESIDENT, LIS   |
| 0 |            | CONTROLLER                     |
| 0 | NTXQ65AB01 | CCS7 AUTO ATTENDANT RELEASE    |
| 0 |            | LINK TRUNK (UPG OF NTXQ65AA)   |
| 0 | NTXQ73AA01 | ISUP TO MF 2 STAGE             |
| 0 |            | OUTPULSING(CANADA)             |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |

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0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)  
0 NTX029AA01 DIRECT DIALLING OVERSEAS, TOLL  
0 (CANADA)  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT

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0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE

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0 SUPPORT
0 NTX555AB01 800 PLUS
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION
0 NTX560AB03 NOP - GENERIC R0 SERVICE(REP
0 NTX560AA)
0 NTX562AA03 NOS - DATA COLLECTION
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF
0 NTX737AA)
0 NTX738AC02 SWITCH PERFORMANCE MONITORING
0 SYSTEM (UPG NTX738AB V.O.30)
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS
0 COMPLIANCE - TOLL
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL
0 OFFICE
0 NTX801AA01 TOLL FEATURES I
0 NTX802AA04 TOLL FEATURES II
0 NTX812AA03 CENTRALIZED MAP
0 NTX813AA01 CENTRALIZED ALARMS
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE
0 MEASUREMENTS
0 NTX836AA01 LPP - V.35 SUBRATE LINKS
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND
0 BERT (REP. NTX839AA)
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR
0 TOLL SWITCHES
0 NTX883AA01 INTER OFFICE TRK BIT ERROR
0 RATE TESTING
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.
0 OF NTX885AA)
0 NTX892AA04 MPC MULTILINK MANAGEMENT
0 NTX903AA01 TRANSMISSION MEASUREMENTS
0 NTX940AA13 CM BILGE
0 NTX941AA12 CM COMMON
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD
0 MODULE(SLM)(UPG.FR. NTX942AB)
0 NTX944AA03 BASE NODE MAINTENANCE
0 NTX945AA03 MS BASE LINK MAINTENANCE
0 NTX950AA06 MS BILGE
0 NTX951AA08 MS COMMON

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## 0 NTXC72BA01 STATUS NAP

0 UNIVERSAL S/W FOR SNSE SERIES

0 60 FOR TOLL (NTXC72AA)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25

0 NTXA15AA01 CALL PROGRESS TONES

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

0 NTXE01AA06 ENHANCED NETWORK - BASIC

0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)

0 NTXE28AA02 AMA MOD (LAMA MODULES)

0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED  
0 MAINTENANCE FOR MSB7

0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION

0 NTXE54AA01 SYSTEM LOAD MODULE II

0 NTXE65AA01 MPC X.25 INTERFACE

0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS

0 NTXE98AA02 HIGH SPEED MPC

0 NTXF14AA01 HIGH CAPACITY DPP

0 NTXF20AA02 LMS ON LPP

0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)

0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER

0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER

0 NTXF71AB02 SUPERNODE ENHANCED

0 MESSAGING(UPG. OF NTXF71AA)

0 NTXF97AA02 BRISC SERIES SUPERNODE BASE

0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS

0 NTXH77AA01 CHANNELIZED ACCESS ON LPP/LIS

0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT

0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS

0 NTXJ41AA01 CCS7 TEST TOOLS

0 NTXJ44AA01 SLM FILE SYSTEM

0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS

0 NTXJ94AA01 MANDATORY PARALLEL AMA

0 NTXN16AA01 ENHANCED DRAM

0 NTXN18AA04 FBUS - LIU BASE

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0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP08AA01 TRUNK GROUP MEMBER USAGE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP56AA01 TWO DIGIT ANI - CAMA  
0 NTXP72AA01 ENET 16K CONFIGURATION  
0 NTXP82AA01 AMA MOD (CAMA MODULES)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ38AA01 SSP 800 CALLING AND DIALLED  
0 NUMBER DELIVERY  
0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTXQ40AA02 SSP 800 OVERFLOW CALL ROUTING  
0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS  
0 CONTROLLER  
0 NTXQ65AB01 CCS7 AUTO ATTENDANT RELEASE  
0 LINK TRUNK (UPG OF NTXQ65AA)  
0 NTXQ73AA01 ISUP TO MF 2 STAGE  
0 OUTPULSING(CANADA)  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER



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0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)  
0 NTX029AA01 DIRECT DIALLING OVERSEAS, TOLL  
0 (CANADA)  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT

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0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE

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## 0 NTXC74BB01 STATUS NAP

0 UNIVERSAL TOPS S/W FOR SN

0 SERIES 50-BRISC (NTXC74AB)

0 NTXA11AA01 PATCH ADMINISTRATION &amp;

0 DOWNLOADING VIA X.25

0 NTXA15AA01 CALL PROGRESS TONES

0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING

0 SERVICE

0 NTXA20AA01 TOPS MP OPEN INFORMATION

0 ACCESS INTERFACE

0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D

0 SIGNALLING

0 NTXA28AA02 TOPS AWT ENHANCEMENTS

0 NTXA60AA02 TOPS CLOSEDOWN(REPLACES

0 NTX134BB AND NTX039AB)

0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE

0 CALL HANDLING

0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT

0 CC MESSAGING

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

0 NTXA83AA02 TOPS MESSAGE SWITCH

0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH

0 SPEED

0 NTXA91AA02 STANDARD INTERFACE FOR DA/

0 INTERCEPT APPLICATIONS

0 NTXE00AA01 TOPS OPERATOR PASSWORD

0 NTXE01AA06 ENHANCED NETWORK - BASIC

0 NTXE04AA02 SCREENED SERVICE ROUTING

0 NTXE05AA01 TOPS - MP DA/INTERCEPT

0 MESSAGING - OPEN

0 NTXE14AB03 CCS7 ISUP INTERLATA CONN

0 ACCESS TANDEM (REP. NTXE14AA)

0 NTXE18AA01 TOPS AMA ENHANCEMENTS

0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA

0 FORMAT(EBAF)

0 NTXE28AA02 AMA MOD (LAMA MODULES)

0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED

0 MAINTENANCE FOR MSB7

0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL

0 RETRANSMISSION

0 NTXE34AA01 TOPS E911

0 NTXE35AA01 ALTERNATE CARRIER SELECTION

0 NTXE36AB01 AUTOMATIC DA CALL COMPLETION

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0 (UPG OF NTXE36AA)  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTXE71AA01 TOPS DIRECTORY ASSISTANCE/TOLL  
0 BRANDING  
0 NTXE72AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT - CCS7 VALIDATION  
0 (U.S.)  
0 NTXE73AA01 IMPROVED STATSPAC  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF10AA01 AUTOMATED DA CALL COMPLETION  
0 WITH ALTERNATE BILLING  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED  
0 ACCESS  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ10AA01 OPERATOR HAND OFF TO AABS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ37AA01 TOPS EXTERNAL PERSONAL AUDIO  
0 RESPONSE SYSTEM (PARS)  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ67AA01 TOPS DA SUBTENDING TMS  
0 NTXJ73AA01 TOPS ACCOUNT CODE BILLING

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ96AA01 | ENHANCED MFADS                 |
| 0 | NTXN04AA01 | PARS REMOTE                    |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN29AA01 | IBM DA TPC                     |
| 0 | NTXN49AA01 | AUTOMATED INTERCEPT CALL       |
| 0 |            | COMPLETION                     |
| 0 | NTXN51AA01 | TOPS MP SUPPORT OF INTERNAL    |
| 0 |            | DRAM                           |
| 0 | NTXN52AA01 | TWO DIGIT ANI - TOPS OFFICE    |
| 0 | NTXN54AA01 | HOST/REMOTE NETWORKING VIA     |
| 0 |            | CALL TYPE                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP08AA01 | TRUNK GROUP MEMBER USAGE       |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP41AA01 | TOPS HOST QUEUE MANAGEMENT     |
| 0 |            | SYSTEM                         |
| 0 | NTXP42AA01 | TOPS REMOTE QUEUE MANAGEMENT   |
| 0 |            | SYSTEM                         |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP49AA01 | TOPS OPEN POSITION PROTOCOL    |
| 0 | NTXP56AA01 | TWO DIGIT ANI - CAMA           |
| 0 | NTXP78AA01 | FGB CARRIER CODE EXPANSION     |
| 0 | NTXP79AB01 | TOPS FRENCH/ENGLISH AABS       |
| 0 | NTXP82AA01 | AMA MOD (CAMA MODULES)         |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ23AA02 | TOPS ADAS                      |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ38AA01 | SSP 800 CALLING AND DIALLED    |
| 0 |            | NUMBER DELIVERY                |
| 0 | NTXQ39AA01 | SSP 800 BILLING ENHANCEMENTS   |
| 0 | NTXQ40AA02 | SSP 800 OVERFLOW CALL ROUTING  |
| 0 | NTXQ41AA01 | NB / SB ENHANCEMENT            |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXQ65AB01 | CCS7 AUTO ATTENDANT RELEASE    |
| 0 |            | LINK TRUNK (UPG OF NTXQ65AA)   |
| 0 | NTXQ73AA01 | ISUP TO MF 2 STAGE             |
| 0 |            | OUTPULSING(CANADA)             |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR48AA01 | QMS: CALL AND AGENT MANAGER    |
| 0 | NTXR50AA01 | QMS EXTERNAL MANAGEMENT        |
| 0 |            | INFORMATION SYSTEM INTERFACE   |
| 0 | NTXR52AA01 | TOPS INCREASED MULTIPLEXING    |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH           |
| 0 | NTXS11AA01 | FILE TRANSFER PROTOCOL (DARPA) |
| 0 | NTXS18AA01 | TOPS INTERCHANGEABLE NPA       |
| 0 | NTXS19AA01 | TOPS DN CALL SCREENING         |
| 0 | NTXS29AA01 | APU MAINTENANCE                |
| 0 | NTXS35AA01 | AABS CALL SCREENING            |
| 0 | NTXS37AA01 | AABS ENHANCED SERVICES ACCESS  |
| 0 | NTXS67AA01 | DCR MULTIPLE NETWORK ACCESS    |
| 0 |            | (MNA)                          |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM  |
| 0 |            | UPLOADING                      |
| 0 | NTXV00AA01 | DN SCREENING DATABASE - BASE   |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX022AC01 | DYNAMICALLY CONTROLLED ROUTING |
| 0 |            | (DCR/HPR) (UPG OF 022AB)       |
| 0 | NTX029AA01 | DIRECT DIALLING OVERSEAS, TOLL |
| 0 |            | (CANADA)                       |
| 0 | NTX030BA03 | TOPS ACD FEATURES              |
| 0 | NTX030CC16 | TOPS CALL PROCESSING           |
| 0 |            | FEATURES(REP NTX030CB)         |
| 0 | NTX035AA03 | TOPS REMOTE CAMA               |
| 0 | NTX036AA01 | TOPS INWARD VALIDATION         |
| 0 | NTX039AA01 | HOST OC DATA - LINK HANDLING   |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |
| 0 |            | SIGNALLING - BASIC             |

|   |            |                                                             |
|---|------------|-------------------------------------------------------------|
| 0 | NTX041AB09 | CSS7 - MTP/SCCP(SEE NTRX72AA FOR LPP APPLICATION)           |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)                 |
| 0 | NTX048AA06 | SYNCHRONIZATION                                             |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM MASTER CLOCK                       |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2                                 |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING                                     |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL)                              |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE                              |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)                                   |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION                                      |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT                                |
| 0 | NTX055BA01 | RONI TRUNK TESTING                                          |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION                                     |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES) (UPG. OF NTX057DA)              |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG ACCTG.DATA VIA DATAPAC(UPG.OF NTX058AD |
| 0 | NTX060AB11 | NETWORK MANAGEMENT                                          |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED                               |
| 0 | NTX063AA02 | ECHO SUPPRESSOR                                             |
| 0 | NTX065AA12 | SERVICE ANALYSIS                                            |
| 0 | NTX066AB01 | BILINGUAL INTERFACE(UPG FR. NTX066AA)                       |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM                                    |
| 0 | NTX076AA01 | AMA - ENHANCED                                              |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE                                  |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT                                |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE                                    |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT                                   |
| 0 | NTX096AA01 | TOPS NOTIS FORMAT                                           |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT                                        |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS ENHANCEMENTS                       |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY PACKAGE                           |
| 0 | NTX121AA01 | OVERLAP OUTPULSING (TRK TO TRK)                             |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY                                  |
| 0 | NTX129AA02 | TWO WAY OPERATOR OFFICE TRUNK                               |
| 0 | NTX134BA02 | REMOTE OPERATOR CENTRALIZATION DATA LINK HANDLING           |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION MEASURING SYSTEM                     |



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0 NTX140AA02 TOPS DIAL UP AUTOQUOTE  
0 NTX141AA01 TOPS CITY ZONE RATING  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX208AB01 AUTOMATIC COIN TOLL SERVICE  
0 (ACTS) (UPG OF NTX208AA)  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX552AD01 CUSTOM CHARGE CALLING (UPGRADE  
0 OF NTX552AC

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0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX731AA06 TOPS MP - TERMINAL  
0 HANDLER(ORDER VIA MP NTX704)  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX825AB01 EXCHANGE ALTERNATE BILLING  
0 SERVICE(UPG OF NTX825AA IN  
0 BCS34  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX850AB01 TOPS ALTERNATE  
0 ANNOUNCEMENT(UPG.FR.NTX850AA)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX873AA01 HOST TOPS MP O.C. - DATA LINK  
0 HANDLING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR  
0 SERV SIG

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0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXC75AB01 STATUS LTD TARGET SUPERNODE  
0 DMS200 TOPS BCS36 S/W LOAD FOR  
0 SN20

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D  
0 SIGNALLING  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA60AA02 TOPS CLOSEDOWN(REPLACES  
0 NTX134BB AND NTX039AB)  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH  
0 SPEED  
0 NTXA91AA02 STANDARD INTERFACE FOR DA/  
0 INTERCEPT APPLICATIONS

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0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA  
0 FORMAT(EBAF)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE34AA01 TOPS E911  
0 NTXE35AA01 ALTERNATE CARRIER SELECTION  
0 NTXE36AB01 AUTOMATIC DA CALL COMPLETION  
0 (UPG OF NTXE36AA)  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTXE71AA01 TOPS DIRECTORY ASSISTANCE/TOLL  
0 BRANDING  
0 NTXE72AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT - CCS7 VALIDATION  
0 (U.S.)  
0 NTXE73AA01 IMPROVED STATSPAC  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF10AA01 AUTOMATED DA CALL COMPLETION  
0 WITH ALTERNATE BILLING  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ10AA01 OPERATOR HAND OFF TO AABS

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0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ37AA01 TOPS EXTERNAL PERSONAL AUDIO  
0 RESPONSE SYSTEM (PARS)  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ67AA01 TOPS DA SUBTENDING TMS  
0 NTXJ73AA01 TOPS ACCOUNT CODE BILLING  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ96AA01 ENHANCED MFADS  
0 NTXN04AA01 PARS REMOTE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN29AA01 IBM DA TPC  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN49AA01 AUTOMATED INTERCEPT CALL  
0 COMPLETION  
0 NTXN52AA01 TWO DIGIT ANI - TOPS OFFICE  
0 NTXN54AA01 HOST/REMOTE NETWORKING VIA  
0 CALL TYPE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP41AA01 TOPS HOST QUEUE MANAGEMENT  
0 SYSTEM  
0 NTXP42AA01 TOPS REMOTE QUEUE MANAGEMENT  
0 SYSTEM  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTXP78AA01 FGB CARRIER CODE EXPANSION  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ23AA02 TOPS ADAS  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING

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0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTXR50AA01 QMS EXTERNAL MANAGEMENT  
0 INFORMATION SYSTEM INTERFACE  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS18AA01 TOPS INTERCHANGEABLE NPA  
0 NTXS19AA01 TOPS DN CALL SCREENING  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX035AA03 TOPS REMOTE CAMA  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING

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0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX096AA01 TOPS NOTIS FORMAT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX140AA02 TOPS DIAL UP AUTOQUOTE  
0 NTX141AA01 TOPS CITY ZONE RATING  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING

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0 NTX208AB01 AUTOMATIC COIN TOLL SERVICE  
0 (ACTS) (UPG OF NTX208AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX731AA06 TOPS MP - TERMINAL



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0 HANDLER(ORDER VIA MP NTX704)  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX825AB01 EXCHANGE ALTERNATE BILLING  
0 SERVICE(UPG OF NTX825AA IN  
0 BCS34  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX850AB01 TOPS ALTERNATE  
0 ANNOUNCEMENT(UPG.FR.NTX850AA)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX873AA01 HOST TOPS MP O.C. - DATA LINK  
0 HANDLING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR  
0 SERV SIG  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE

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0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC75BB01 STATUS NAP TARGET SUPERNODE  
0 DMS200 TOPS BCS36 S/W LOAD FOR  
0 SN20

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D  
0 SIGNALLING  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA60AA02 TOPS CLOSEDOWN(REPLACES  
0 NTX134BB AND NTX039AB)  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH  
0 SPEED  
0 NTXA91AA02 STANDARD INTERFACE FOR DA/

|   |            |                                 |
|---|------------|---------------------------------|
| 0 |            | INTERCEPT APPLICATIONS          |
| 0 | NTXE00AA01 | TOPS OPERATOR PASSWORD          |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC        |
| 0 | NTXE05AA01 | TOPS - MP DA/INTERCEPT          |
| 0 |            | MESSAGING - OPEN                |
| 0 | NTXE14AB03 | CCS7 ISUP INTERLATA CONN        |
| 0 |            | ACCESS TANDEM (REP. NTXE14AA)   |
| 0 | NTXE20AA01 | TOPS EXTENDED BELLCORE AMA      |
| 0 |            | FORMAT(EBAF)                    |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL      |
| 0 |            | RETRANSMISSION                  |
| 0 | NTXE34AA01 | TOPS E911                       |
| 0 | NTXE35AA01 | ALTERNATE CARRIER SELECTION     |
| 0 | NTXE36AB01 | AUTOMATIC DA CALL COMPLETION    |
| 0 |            | (UPG OF NTXE36AA)               |
| 0 | NTXE54AA01 | SYSTEM LOAD MODULE II           |
| 0 | NTXE65AA01 | MPC X.25 INTERFACE              |
| 0 | NTXE66AA02 | CCS7 ISUP OPTION CONTROLS       |
| 0 | NTXE67AA01 | EQUAL ACCESS INTERMEDIATE       |
| 0 |            | TANDEM                          |
| 0 | NTXE68AA01 | TOPS EXPANDED CALLING CARD      |
| 0 |            | FORMAT                          |
| 0 | NTXE70AA01 | TOPS TWO TERMINAL DIRECTORY     |
| 0 |            | ASSISTANCE/INTERCEPT            |
| 0 | NTXE71AA01 | TOPS DIRECTORY ASSISTANCE/TOLL  |
| 0 |            | BRANDING                        |
| 0 | NTXE72AA01 | TOPS EXPANDED CALLING CARD      |
| 0 |            | FORMAT - CCS7 VALIDATION        |
| 0 |            | (U.S.)                          |
| 0 | NTXE73AA01 | IMPROVED STATSPAC               |
| 0 | NTXE98AA02 | HIGH SPEED MPC                  |
| 0 | NTXF05AA03 | ETHERNET INTERFACE UNIT         |
| 0 | NTXF10AA01 | AUTOMATED DA CALL COMPLETION    |
| 0 |            | WITH ALTERNATE BILLING          |
| 0 | NTXF14AA01 | HIGH CAPACITY DPP               |
| 0 | NTXF19AA02 | TCP/IP PROTOCOLS                |
| 0 | NTXF20AA02 | LMS ON LPP                      |
| 0 | NTXF25AD01 | FRAME RELAY BASIC (UPG FR       |
| 0 |            | NTXF25AC)                       |
| 0 | NTXF26AA01 | SYNCHRONIZATION - BITS          |
| 0 |            | COMPOSITE MASTER                |
| 0 | NTXF27AA01 | SYNCHRONIZATION - CESIUM, LORAN |
| 0 |            | - C MASTER                      |
| 0 | NTXF70AA01 | SUPERNODE SN-20 PROCESSOR       |
| 0 | NTXF71AB02 | SUPERNODE ENHANCED              |
| 0 |            | MESSAGING(UPG. OF NTXF71AA)     |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS  |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXJ10AA01 | OPERATOR HAND OFF TO AABS      |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT    |
| 0 | NTXJ37AA01 | TOPS EXTERNAL PERSONAL AUDIO   |
| 0 |            | RESPONSE SYSTEM (PARS)         |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION      |
| 0 |            | TOOLS                          |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING  |
| 0 |            | OPTIONS                        |
| 0 | NTXJ67AA01 | TOPS DA SUBTENDING TMS         |
| 0 | NTXJ73AA01 | TOPS ACCOUNT CODE BILLING      |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ96AA01 | ENHANCED MFADS                 |
| 0 | NTXN04AA01 | PARS REMOTE                    |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN29AA01 | IBM DA TPC                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN49AA01 | AUTOMATED INTERCEPT CALL       |
| 0 |            | COMPLETION                     |
| 0 | NTXN52AA01 | TWO DIGIT ANI - TOPS OFFICE    |
| 0 | NTXN54AA01 | HOST/REMOTE NETWORKING VIA     |
| 0 |            | CALL TYPE                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP41AA01 | TOPS HOST QUEUE MANAGEMENT     |
| 0 |            | SYSTEM                         |
| 0 | NTXP42AA01 | TOPS REMOTE QUEUE MANAGEMENT   |
| 0 |            | SYSTEM                         |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP49AA01 | TOPS OPEN POSITION PROTOCOL    |
| 0 | NTXP78AA01 | FGB CARRIER CODE EXPANSION     |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ23AA02 | TOPS ADAS                      |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |

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0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTXR50AA01 QMS EXTERNAL MANAGEMENT  
0 INFORMATION SYSTEM INTERFACE  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS18AA01 TOPS INTERCHANGEABLE NPA  
0 NTXS19AA01 TOPS DN CALL SCREENING  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX035AA03 TOPS REMOTE CAMA  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)

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0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX096AA01 TOPS NOTIS FORMAT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX140AA02 TOPS DIAL UP AUTOQUOTE  
0 NTX141AA01 TOPS CITY ZONE RATING  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING

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0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX208AB01 AUTOMATIC COIN TOLL SERVICE  
0 (ACTS) (UPG OF NTX208AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)

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0 NTX731AA06 TOPS MP - TERMINAL  
0 HANDLER(ORDER VIA MP NTX704)  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX825AB01 EXCHANGE ALTERNATE BILLING  
0 SERVICE(UPG OF NTX825AA IN  
0 BCS34  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX850AB01 TOPS ALTERNATE  
0 ANNOUNCEMENT(UPG.FR.NTX850AA)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX873AA01 HOST TOPS MP O.C. - DATA LINK  
0 HANDLING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR  
0 SERV SIG  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS



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0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC76AB01 STATUS LTD TARGET SUPERNODE  
0 DMS200 TOPS BCS36 S/W LOAD FOR  
0 SN30

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D  
0 SIGNALLING  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA60AA02 TOPS CLOSEDOWN(REPLACES  
0 NTX134BB AND NTX039AB)  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH  
0 SPEED

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0 NTXA91AA02 STANDARD INTERFACE FOR DA/  
0 INTERCEPT APPLICATIONS  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA  
0 FORMAT(EBAF)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE34AA01 TOPS E911  
0 NTXE35AA01 ALTERNATE CARRIER SELECTION  
0 NTXE36AB01 AUTOMATIC DA CALL COMPLETION  
0 (UPG OF NTXE36AA)  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTXE71AA01 TOPS DIRECTORY ASSISTANCE/TOLL  
0 BRANDING  
0 NTXE72AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT - CCS7 VALIDATION  
0 (U.S.)  
0 NTXE73AA01 IMPROVED STATSPAC  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF10AA01 AUTOMATED DA CALL COMPLETION  
0 WITH ALTERNATE BILLING  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED

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0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ10AA01 OPERATOR HAND OFF TO AABS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ37AA01 TOPS EXTERNAL PERSONAL AUDIO  
0 RESPONSE SYSTEM (PARS)  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ67AA01 TOPS DA SUBTENDING TMS  
0 NTXJ73AA01 TOPS ACCOUNT CODE BILLING  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ96AA01 ENHANCED MFADS  
0 NTXN04AA01 PARS REMOTE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN29AA01 IBM DA TPC  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN49AA01 AUTOMATED INTERCEPT CALL  
0 COMPLETION  
0 NTXN52AA01 TWO DIGIT ANI - TOPS OFFICE  
0 NTXN54AA01 HOST/REMOTE NETWORKING VIA  
0 CALL TYPE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP41AA01 TOPS HOST QUEUE MANAGEMENT  
0 SYSTEM  
0 NTXP42AA01 TOPS REMOTE QUEUE MANAGEMENT  
0 SYSTEM  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTXP78AA01 FGB CARRIER CODE EXPANSION  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ23AA02 TOPS ADAS

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0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTXR50AA01 QMS EXTERNAL MANAGEMENT  
0 INFORMATION SYSTEM INTERFACE  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS18AA01 TOPS INTERCHANGEABLE NPA  
0 NTXS19AA01 TOPS DN CALL SCREENING  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX035AA03 TOPS REMOTE CAMA  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3

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0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX096AA01 TOPS NOTIS FORMAT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX140AA02 TOPS DIAL UP AUTOQUOTE  
0 NTX141AA01 TOPS CITY ZONE RATING  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT

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0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX208AB01 AUTOMATIC COIN TOLL SERVICE  
0 (ACTS) (UPG OF NTX208AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX724AA02 | TOPS MP INTERFACE (ORDER VIA   |
| 0 |            | MP NTX704,706,708 OR 709)      |
| 0 | NTX731AA06 | TOPS MP - TERMINAL             |
| 0 |            | HANDLER(ORDER VIA MP NTX704)   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX821AA01 | TANDEM OPERATOR SERVICE        |
| 0 |            | ROUTING                        |
| 0 | NTX825AB01 | EXCHANGE ALTERNATE BILLING     |
| 0 |            | SERVICE(UPG OF NTX825AA IN     |
| 0 |            | BCS34                          |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX850AB01 | TOPS ALTERNATE                 |
| 0 |            | ANNOUNCEMENT(UPG.FR.NTX850AA)  |
| 0 | NTX871AA01 | REMOTE TOPS MP O.C. DATA LINK  |
| 0 |            | HANDLING                       |
| 0 | NTX873AA01 | HOST TOPS MP O.C. - DATA LINK  |
| 0 |            | HANDLING                       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX882AA04 | BIT ERROR RATIO INDICATOR FOR  |
| 0 |            | TOLL SWITCHES                  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |
| 0 |            | RATE TESTING                   |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX888AA01 | EAOSS                          |
| 0 | NTX891AA02 | TOPS - EXCHANGE ACCESS OPR     |
| 0 |            | SERV SIG                       |

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0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC76BB01 STATUS NAP TARGET SUPERNODE  
0 DMS200 TOPS BCS36 S/W LOAD FOR  
0 SN30

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D  
0 SIGNALLING  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA60AA02 TOPS CLOSEDOWN(REPLACES  
0 NTX134BB AND NTX039AB)  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA83AA02 TOPS MESSAGE SWITCH



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0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH  
0 SPEED  
0 NTXA91AA02 STANDARD INTERFACE FOR DA/  
0 INTERCEPT APPLICATIONS  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA  
0 FORMAT(EBAF)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE34AA01 TOPS E911  
0 NTXE35AA01 ALTERNATE CARRIER SELECTION  
0 NTXE36AB01 AUTOMATIC DA CALL COMPLETION  
0 (UPG OF NTXE36AA)  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTXE71AA01 TOPS DIRECTORY ASSISTANCE/TOLL  
0 BRANDING  
0 NTXE72AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT - CCS7 VALIDATION  
0 (U.S.)  
0 NTXE73AA01 IMPROVED STATSPAC  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF10AA01 AUTOMATED DA CALL COMPLETION  
0 WITH ALTERNATE BILLING  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | - C MASTER                     |
| 0 | NTXF71AB02 | SUPERNODE ENHANCED             |
| 0 |            | MESSAGING(UPG. OF NTXF71AA)    |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS |
| 0 | NTXJ10AA01 | OPERATOR HAND OFF TO AABS      |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT    |
| 0 | NTXJ37AA01 | TOPS EXTERNAL PERSONAL AUDIO   |
| 0 |            | RESPONSE SYSTEM (PARS)         |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION      |
| 0 |            | TOOLS                          |
| 0 | NTXJ41AA01 | CCS7 TEST T00LS                |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING  |
| 0 |            | OPTIONS                        |
| 0 | NTXJ67AA01 | TOPS DA SUBTENDING TMS         |
| 0 | NTXJ73AA01 | TOPS ACCOUNT CODE BILLING      |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA         |
| 0 | NTXJ96AA01 | ENHANCED MFADS                 |
| 0 | NTXN04AA01 | PARS REMOTE                    |
| 0 | NTXN16AA01 | ENHANCED DRAM                  |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTXN29AA01 | IBM DA TPC                     |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT      |
| 0 | NTXN49AA01 | AUTOMATED INTERCEPT CALL       |
| 0 |            | COMPLETION                     |
| 0 | NTXN52AA01 | TWO DIGIT ANI - TOPS OFFICE    |
| 0 | NTXN54AA01 | HOST/REMOTE NETWORKING VIA     |
| 0 |            | CALL TYPE                      |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP41AA01 | TOPS HOST QUEUE MANAGEMENT     |
| 0 |            | SYSTEM                         |
| 0 | NTXP42AA01 | TOPS REMOTE QUEUE MANAGEMENT   |
| 0 |            | SYSTEM                         |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP49AA01 | TOPS OPEN POSITION PROTOCOL    |
| 0 | NTXP78AA01 | FGB CARRIER CODE EXPANSION     |

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0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ23AA02 TOPS ADAS  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTXR50AA01 QMS EXTERNAL MANAGEMENT  
0 INFORMATION SYSTEM INTERFACE  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS18AA01 TOPS INTERCHANGEABLE NPA  
0 NTXS19AA01 TOPS DN CALL SCREENING  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX035AA03 TOPS REMOTE CAMA  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM

|   |                                           |
|---|-------------------------------------------|
|   | MASTER CLOCK                              |
| 0 | NTX048BA02 SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX048CA02 SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX049AG01 ITT ANI FORMAT (RECEIPT)       |
| 0 | NTX051AA02 AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 RONI TRUNK TESTING             |
| 0 | NTX056AA05 ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 NETWORK MANAGEMENT             |
| 0 | NTX060BB01 NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX063AA02 ECHO SUPPRESSOR                |
| 0 | NTX065AA12 SERVICE ANALYSIS               |
| 0 | NTX072AA01 INTERNATIONAL DIRECT DISTANCE  |
| 0 | DIALLING (IDDD)                           |
| 0 | NTX074AA09 DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 AMA - ENHANCED                 |
| 0 | NTX077AA01 ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX085AA05 TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 TRAFFIC SEPARATION REPORT      |
| 0 | NTX096AA01 TOPS NOTIS FORMAT              |
| 0 | NTX098AA07 BELLCORE CAMA FORMAT           |
| 0 | NTX099AA01 OPERATIONAL MEASUREMENTS       |
| 0 | ENHANCEMENTS                              |
| 0 | NTX120AA01 OFFICE HARDWARE INVENTORY      |
| 0 | PACKAGE                                   |
| 0 | NTX121AA01 OVERLAP OUTPULSING (TRK TO     |
| 0 | TRK)                                      |
| 0 | NTX122AA02 OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  |
| 0 | NTX134BA02 REMOTE OPERATOR CENTRALIZATION |
| 0 | DATA LINK HANDLING                        |
| 0 | NTX136AA03 AUTOMATIC TRANSMISSION         |
| 0 | MEASURING SYSTEM                          |
| 0 | NTX140AA02 TOPS DIAL UP AUTOQUOTE         |
| 0 | NTX141AA01 TOPS CITY ZONE RATING          |
| 0 | NTX142AA02 DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 DS-1 - ESF                     |
| 0 | NTX157AA01 CCIS - INWATS OSO              |
| 0 | NTX167AB11 CCS7 - TRUNK SIGNALLING (      |
| 0 | REP.OF NTX167AA)                          |
| 0 | NTX187AA03 TOPS - EQUAL ACCESS            |
| 0 | NTX188AA02 TOPS - BCR AMA FORMAT          |

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0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX208AB01 AUTOMATIC COIN TOLL SERVICE  
0 (ACTS) (UPG OF NTX208AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS

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0 NTX712AA01 CCS7 DATA PORT  
0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX731AA06 TOPS MP - TERMINAL  
0 HANDLER(ORDER VIA MP NTX704)  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX825AB01 EXCHANGE ALTERNATE BILLING  
0 SERVICE(UPG OF NTX825AA IN  
0 BCS34  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX850AB01 TOPS ALTERNATE  
0 ANNOUNCEMENT(UPG.FR.NTX850AA)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX873AA01 HOST TOPS MP O.C. - DATA LINK  
0 HANDLING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS

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0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR  
0 SERV SIG  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC77AB01 STATUS LTD TARGET SUPERNODE  
0 DMS200 TOPS BCS36 S/W LOAD FOR  
0 SN40

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D  
0 SIGNALLING  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA60AA02 TOPS CLOSEDOWN(REPLACES  
0 NTX134BB AND NTX039AB)  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING

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0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH  
0 SPEED  
0 NTXA91AA02 STANDARD INTERFACE FOR DA/  
0 INTERCEPT APPLICATIONS  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA  
0 FORMAT(EBAF)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE34AA01 TOPS E911  
0 NTXE35AA01 ALTERNATE CARRIER SELECTION  
0 NTXE36AB01 AUTOMATIC DA CALL COMPLETION  
0 (UPG OF NTXE36AA)  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTXE71AA01 TOPS DIRECTORY ASSISTANCE/TOLL  
0 BRANDING  
0 NTXE72AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT - CCS7 VALIDATION  
0 (U.S.)  
0 NTXE73AA01 IMPROVED STATSPAC  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF10AA01 AUTOMATED DA CALL COMPLETION  
0 WITH ALTERNATE BILLING  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF16AA01 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS



|   |            |                                 |
|---|------------|---------------------------------|
| 0 |            | COMPOSITE MASTER                |
| 0 | NTXF27AA01 | SYNCHRONIZATION - CESIUM, LORAN |
| 0 |            | - C MASTER                      |
| 0 | NTXF71AB02 | SUPERNODE ENHANCED              |
| 0 |            | MESSAGING(UPG. OF NTXF71AA)     |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS  |
| 0 | NTXJ10AA01 | OPERATOR HAND OFF TO AABS       |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT     |
| 0 | NTXJ37AA01 | TOPS EXTERNAL PERSONAL AUDIO    |
| 0 |            | RESPONSE SYSTEM (PARS)          |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION       |
| 0 |            | TOOLS                           |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                 |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                 |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING   |
| 0 |            | OPTIONS                         |
| 0 | NTXJ67AA01 | TOPS DA SUBTENDING TMS          |
| 0 | NTXJ73AA01 | TOPS ACCOUNT CODE BILLING       |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA          |
| 0 | NTXJ96AA01 | ENHANCED MFADS                  |
| 0 | NTXN04AA01 | PARS REMOTE                     |
| 0 | NTXN16AA01 | ENHANCED DRAM                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                 |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7         |
| 0 |            | APPLICATIONS                    |
| 0 | NTXN29AA01 | IBM DA TPC                      |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT       |
| 0 | NTXN49AA01 | AUTOMATED INTERCEPT CALL        |
| 0 |            | COMPLETION                      |
| 0 | NTXN52AA01 | TWO DIGIT ANI - TOPS OFFICE     |
| 0 | NTXN54AA01 | HOST/REMOTE NETWORKING VIA      |
| 0 |            | CALL TYPE                       |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING          |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY  |
| 0 |            | ON MS                           |
| 0 | NTXN85AA01 | MPC 1984 X.25                   |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE         |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS    |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE      |
| 0 |            | INCREASE                        |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V      |
| 0 | NTXP41AA01 | TOPS HOST QUEUE MANAGEMENT      |
| 0 |            | SYSTEM                          |
| 0 | NTXP42AA01 | TOPS REMOTE QUEUE MANAGEMENT    |
| 0 |            | SYSTEM                          |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF      |
| 0 |            | CONTINUITY TEST                 |

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0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTXP78AA01 FGB CARRIER CODE EXPANSION  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ23AA02 TOPS ADAS  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTXR50AA01 QMS EXTERNAL MANAGEMENT  
0 INFORMATION SYSTEM INTERFACE  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS18AA01 TOPS INTERCHANGEABLE NPA  
0 NTXS19AA01 TOPS DN CALL SCREENING  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX035AA03 TOPS REMOTE CAMA  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)

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0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX096AA01 TOPS NOTIS FORMAT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX140AA02 TOPS DIAL UP AUTOQUOTE  
0 NTX141AA01 TOPS CITY ZONE RATING  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)

|   |            |                                                         |
|---|------------|---------------------------------------------------------|
| 0 | NTX187AA03 | TOPS - EQUAL ACCESS                                     |
| 0 | NTX188AA02 | TOPS - BCR AMA FORMAT                                   |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI                          |
| 0 | NTX193AA01 | 4X OPERATION - AMR 5 FORMAT ANI                         |
| 0 | NTX197AA01 | CCIS DIRECT SIGNALLING                                  |
| 0 | NTX204AA02 | CCIS BANDED SIGNALLING                                  |
| 0 | NTX208AB01 | AUTOMATIC COIN TOLL SERVICE (ACTS) (UPG OF NTX208AA)    |
| 0 | NTX210AA03 | NO. 2 SCC INTERFACE                                     |
| 0 | NTX211AB01 | FEATURE GRP B AMA - TANDEM(ATT FORMAT)(UPG FR.NTX211AA) |
| 0 | NTX215AA02 | SES NO.2 - INTERFACE                                    |
| 0 | NTX218AA03 | 1A/1B EADAS INTERFACE                                   |
| 0 | NTX243AA07 | AMA TELEPROCESSING SYSTEM(AMATPS)                       |
| 0 | NTX269AA07 | UNIVERSAL TONE RECEIVER(DOMESTIC)                       |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE PACKAGE                      |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE                                    |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER BX.25                       |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND TREATMENT                     |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR                            |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II                            |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS                              |
| 0 | NTX386AB02 | ACCESS TANDEM SWITCH (UPG OF NTX386AA)                  |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN POINT                         |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING                              |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE OF NTX445AA)             |
| 0 | NTX455AB01 | 1A EADAS NETWORK MANAGEMENT (UPG. OF NTX455AA)          |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE SUPPORT                      |
| 0 | NTX554AA02 | CCS7 - E800/SSP                                         |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP NTX560AA)                  |
| 0 | NTX562AA03 | NOS - DATA COLLECTION                                   |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION                            |
| 0 | NTX645AA01 | TOPS - SERVICE BILLING                                  |

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0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX712AA01 CCS7 DATA PORT  
0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX731AA06 TOPS MP - TERMINAL  
0 HANDLER(ORDER VIA MP NTX704)  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.0.30)  
0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE - TOLL  
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL  
0 OFFICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX821AA01 TANDEM OPERATOR SERVICE  
0 ROUTING  
0 NTX825AB01 EXCHANGE ALTERNATE BILLING  
0 SERVICE(UPG OF NTX825AA IN  
0 BCS34  
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE  
0 MEASUREMENTS  
0 NTX836AA01 LPP - V.35 SUBRATE LINKS  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF  
0 NTX843AA IN BCS27)  
0 NTX850AB01 TOPS ALTERNATE  
0 ANNOUNCEMENT(UPG.FR.NTX850AA)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX873AA01 HOST TOPS MP O.C. - DATA LINK  
0 HANDLING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.

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0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR  
0 SERV SIG  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

0

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0 NTXC77BB01 STATUS NAP TARGET SUPERNODE  
0 DMS200 TOPS BCS36 S/W LOAD FOR  
0 SN40

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D  
0 SIGNALLING  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA60AA02 TOPS CLOSEDOWN(REPLACES  
0 NTX134BB AND NTX039AB)  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING

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0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH  
0 SPEED  
0 NTXA91AA02 STANDARD INTERFACE FOR DA/  
0 INTERCEPT APPLICATIONS  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXE14AB03 CCS7 ISUP INTERLATA CONN  
0 ACCESS TANDEM (REP. NTXE14AA)  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA  
0 FORMAT(EBAF)  
0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL  
0 RETRANSMISSION  
0 NTXE34AA01 TOPS E911  
0 NTXE35AA01 ALTERNATE CARRIER SELECTION  
0 NTXE36AB01 AUTOMATIC DA CALL COMPLETION  
0 (UPG OF NTXE36AA)  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTXE67AA01 EQUAL ACCESS INTERMEDIATE  
0 TANDEM  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTXE71AA01 TOPS DIRECTORY ASSISTANCE/TOLL  
0 BRANDING  
0 NTXE72AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT - CCS7 VALIDATION  
0 (U.S.)  
0 NTXE73AA01 IMPROVED STATSPAC  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF10AA01 AUTOMATED DA CALL COMPLETION  
0 WITH ALTERNATE BILLING  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF16AA01 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR

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0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTXP78AA01 FGB CARRIER CODE EXPANSION  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ23AA02 TOPS ADAS  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTXR50AA01 QMS EXTERNAL MANAGEMENT  
0 INFORMATION SYSTEM INTERFACE  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS18AA01 TOPS INTERCHANGEABLE NPA  
0 NTXS19AA01 TOPS DN CALL SCREENING  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX035AA03 TOPS REMOTE CAMA  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC

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0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX096AA01 TOPS NOTIS FORMAT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX140AA02 TOPS DIAL UP AUTOQUOTE  
0 NTX141AA01 TOPS CITY ZONE RATING  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO

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0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX208AB01 AUTOMATIC COIN TOLL SERVICE (ACTS) (UPG OF NTX208AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX554AA02 CCS7 - E800/SSP  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX645AA01 | TOPS - SERVICE BILLING         |
| 0 | NTX710AA02 | LATA EQUAL ACCESS SYSTEM       |
| 0 | NTX710AB01 | INTERCHANGEABLE NPAS FOR LEAS  |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX714AA01 | TOPS INTERLATA CARRIER SERVICE |
| 0 | NTX724AA02 | TOPS MP INTERFACE (ORDER VIA   |
| 0 |            | MP NTX704,706,708 OR 709)      |
| 0 | NTX731AA06 | TOPS MP - TERMINAL             |
| 0 |            | HANDLER(ORDER VIA MP NTX704)   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX821AA01 | TANDEM OPERATOR SERVICE        |
| 0 |            | ROUTING                        |
| 0 | NTX825AB01 | EXCHANGE ALTERNATE BILLING     |
| 0 |            | SERVICE(UPG OF NTX825AA IN     |
| 0 |            | BCS34                          |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX850AB01 | TOPS ALTERNATE                 |
| 0 |            | ANNOUNCEMENT(UPG.FR.NTX850AA)  |
| 0 | NTX871AA01 | REMOTE TOPS MP O.C. DATA LINK  |
| 0 |            | HANDLING                       |
| 0 | NTX873AA01 | HOST TOPS MP O.C. - DATA LINK  |
| 0 |            | HANDLING                       |
| 0 | NTX875AA01 | CCS7 MASS TRUNK CONVERSION     |
| 0 | NTX882AA04 | BIT ERROR RATIO INDICATOR FOR  |
| 0 |            | TOLL SWITCHES                  |
| 0 | NTX883AA01 | INTER OFFICE TRK BIT ERROR     |

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0  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR  
0 SERV SIG  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

0

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0 NTXC79AB01 STATUS LTD TARGET SUPERNODE  
0 NNA TOPS S/W LOAD FOR BCS36

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA60AA02 TOPS CLOSEDOWN(REPLACES  
0 NTX134BB AND NTX039AB)  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

|   |            |                                 |
|---|------------|---------------------------------|
| 0 | NTXA83AA02 | TOPS MESSAGE SWITCH             |
| 0 | NTXA90AA07 | TOPS-MP TERMINAL HANDLER HIGH   |
| 0 |            | SPEED                           |
| 0 | NTXA91AA02 | STANDARD INTERFACE FOR DA/      |
| 0 |            | INTERCEPT APPLICATIONS          |
| 0 | NTXE00AA01 | TOPS OPERATOR PASSWORD          |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC        |
| 0 | NTXE05AA01 | TOPS - MP DA/INTERCEPT          |
| 0 |            | MESSAGING - OPEN                |
| 0 | NTXE18AA01 | TOPS AMA ENHANCEMENTS           |
| 0 | NTXE20AA01 | TOPS EXTENDED BELLCORE AMA      |
| 0 |            | FORMAT(EBAF)                    |
| 0 | NTXE28AA02 | AMA MOD (LAMA MODULES)          |
| 0 | NTXE30AA01 | CCS7 SIGNALING LINK ENHANCED    |
| 0 |            | MAINTENANCE FOR MSB7            |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL      |
| 0 |            | RETRANSMISSION                  |
| 0 | NTXE36AB01 | AUTOMATIC DA CALL COMPLETION    |
| 0 |            | (UPG OF NTXE36AA)               |
| 0 | NTXE54AA01 | SYSTEM LOAD MODULE II           |
| 0 | NTXE65AA01 | MPC X.25 INTERFACE              |
| 0 | NTXE66AA02 | CCS7 ISUP OPTION CONTROLS       |
| 0 | NTXE68AA01 | TOPS EXPANDED CALLING CARD      |
| 0 |            | FORMAT                          |
| 0 | NTXE70AA01 | TOPS TWO TERMINAL DIRECTORY     |
| 0 |            | ASSISTANCE/INTERCEPT            |
| 0 | NTXE71AA01 | TOPS DIRECTORY ASSISTANCE/TOLL  |
| 0 |            | BRANDING                        |
| 0 | NTXE72AA01 | TOPS EXPANDED CALLING CARD      |
| 0 |            | FORMAT - CCS7 VALIDATION        |
| 0 |            | (U.S.)                          |
| 0 | NTXE73AA01 | IMPROVED STATSPAC               |
| 0 | NTXE98AA02 | HIGH SPEED MPC                  |
| 0 | NTXF05AA03 | ETHERNET INTERFACE UNIT         |
| 0 | NTXF10AA01 | AUTOMATED DA CALL COMPLETION    |
| 0 |            | WITH ALTERNATE BILLING          |
| 0 | NTXF14AA01 | HIGH CAPACITY DPP               |
| 0 | NTXF19AA02 | TCP/IP PROTOCOLS                |
| 0 | NTXF20AA02 | LMS ON LPP                      |
| 0 | NTXF26AA01 | SYNCHRONIZATION - BITS          |
| 0 |            | COMPOSITE MASTER                |
| 0 | NTXF27AA01 | SYNCHRONIZATION - CESIUM, LORAN |
| 0 |            | - C MASTER                      |
| 0 | NTXF70AA01 | SUPERNODE SN-20 PROCESSOR       |
| 0 | NTXF71AB02 | SUPERNODE ENHANCED              |
| 0 |            | MESSAGING(UPG. OF NTXF71AA)     |
| 0 | NTXH38AA03 | GLOBAL TOPS - BASIC             |

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0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ10AA01 OPERATOR HAND OFF TO AABS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ37AA01 TOPS EXTERNAL PERSONAL AUDIO  
0 RESPONSE SYSTEM (PARS)  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ67AA01 TOPS DA SUBTENDING TMS  
0 NTXJ73AA01 TOPS ACCOUNT CODE BILLING  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ96AA01 ENHANCED MFADS  
0 NTXN04AA01 PARS REMOTE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN29AA01 IBM DA TPC  
0 NTXN54AA01 HOST/REMOTE NETWORKING VIA  
0 CALL TYPE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP08AA01 TRUNK GROUP MEMBER USAGE  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP41AA01 TOPS HOST QUEUE MANAGEMENT  
0 SYSTEM  
0 NTXP42AA01 TOPS REMOTE QUEUE MANAGEMENT  
0 SYSTEM  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTXP82AA01 AMA MOD (CAMA MODULES)  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ38AA01 SSP 800 CALLING AND DIALLED  
0 NUMBER DELIVERY  
0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTXQ40AA02 SSP 800 OVERFLOW CALL ROUTING  
0 NTXQ65AB01 CCS7 AUTO ATTENDANT RELEASE

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | LINK TRUNK (UPG OF NTXQ65AA)   |
| 0 | NTXQ73AA01 | ISUP TO MF 2 STAGE             |
| 0 |            | OUTPUTSING(CANADA)             |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR47AA01 | GLOBAL TMS (PCM 30)            |
| 0 | NTXR48AA01 | QMS: CALL AND AGENT MANAGER    |
| 0 | NTXR51AA02 | GLOBAL OPERATOR SERVICES       |
| 0 |            | RATING SYSTEM                  |
| 0 | NTXR52AA01 | TOPS INCREASED MULTIPLEXING    |
| 0 | NTXR58AA01 | GLOBAL OPERATOR SERVICES       |
| 0 |            | BOOKED CALL DATA BASE          |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |
| 0 | NTXS19AA01 | TOPS DN CALL SCREENING         |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDAM   |
| 0 |            | UPLOADING                      |
| 0 | NTXV00AA01 | DN SCREENING DATABASE - BASE   |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX029AA01 | DIRECT DIALLING OVERSEAS, TOLL |
| 0 |            | (CANADA)                       |
| 0 | NTX030BA03 | TOPS ACD FEATURES              |
| 0 | NTX030CC16 | TOPS CALL PROCESSING           |
| 0 |            | FEATURES(REP NTX030CB)         |
| 0 | NTX036AA01 | TOPS INWARD VALIDATION         |
| 0 | NTX039AA01 | HOST OC DATA - LINK HANDLING   |
| 0 | NTX040AA03 | COMMON CHANNEL INTEROFFICE     |
| 0 |            | SIGNALLING - BASIC             |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE      |
| 0 |            | ACCOUNTING (CAMA)              |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048AB01 | SYNCHRONIZATION - CESIUM       |
| 0 |            | MASTER CLOCK                   |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX055BA01 | RONI TRUNK TESTING             |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX063AA02 | ECHO SUPPRESSOR                |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX066AB01 | BILINGUAL INTERFACE(UPG FR.    |
| 0 |            | NTX066AA)                      |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX076AA01 | AMA - ENHANCED                 |
| 0 | NTX077AA01 | ONLINE PERIPHERAL SOFTWARE     |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX096AA01 | TOPS NOTIS FORMAT              |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT           |
| 0 | NTX099AA01 | OPERATIONAL MEASUREMENTS       |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX121AA01 | OVERLAP OUTPUTSING (TRK TO     |
| 0 |            | TRK)                           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX129AA02 | TWO WAY OPERATOR OFFICE TRUNK  |
| 0 | NTX134BA02 | REMOTE OPERATOR CENTRALIZATION |
| 0 |            | DATA LINK HANDLING             |
| 0 | NTX136AA03 | AUTOMATIC TRANSMISSION         |
| 0 |            | MEASURING SYSTEM               |
| 0 | NTX140AA02 | TOPS DIAL UP AUTOQUOTE         |
| 0 | NTX142AA02 | DS-1 64 KBPS CLEAR             |
| 0 | NTX143AA02 | DS-1 - ESF                     |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX169BA01 | 800 PLUS SOUTHBOUND            |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES |
| 0 | NTX188AA02 | TOPS - BCR AMA FORMAT          |
| 0 | NTX192AA01 | 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX243AA07 | AMA TELEPROCESSING             |
| 0 |            | SYSTEM(AMATPS)                 |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |
| 0 |            | HUNTING(UPG OF 244AA IN BCS23) |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | RECEIVER (DOMESTIC)            |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND      |
| 0 |            | TREATMENT                      |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN      |
| 0 |            | POINT                          |
| 0 | NTX437AA01 | RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX555AB01 | 800 PLUS                       |
| 0 | NTX559AA01 | CCC SSP DP/DTMF SEPARATION     |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX645AA01 | TOPS - SERVICE BILLING         |
| 0 | NTX724AA02 | TOPS MP INTERFACE (ORDER VIA   |
| 0 |            | MP NTX704,706,708 OR 709)      |
| 0 | NTX731AA06 | TOPS MP - TERMINAL             |
| 0 |            | HANDLER(ORDER VIA MP NTX704)   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX825AB01 | EXCHANGE ALTERNATE BILLING     |
| 0 |            | SERVICE(UPG OF NTX825AA IN     |
| 0 |            | BCS34                          |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |

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0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND  
0 BERT (REP. NTX839AA)  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX873AA01 HOST TOPS MP O.C. - DATA LINK  
0 HANDLING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXC81AA01 STATUS LTD  
0 DMS200 TOPS BCS36 S/W LOAD FOR  
0 SN60  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL  
0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D

|   |            |                                                                  |
|---|------------|------------------------------------------------------------------|
| 0 |            | SIGNALLING                                                       |
| 0 | NTXA28AA02 | TOPS AWT ENHANCEMENTS                                            |
| 0 | NTXA60AA02 | TOPS CLOSEDOWN(REPLACES<br>NTX134BB AND NTX039AB)                |
| 0 | NTXA62AA01 | TOPS MP - DA AUDIO RESPONSE<br>CALL HANDLING                     |
| 0 | NTXA63AA01 | DIRECTORY ASSISTANCE/INTERCEPT<br>CC MESSAGING                   |
| 0 | NTXA67AA01 | EXTENDED XPM DIAGNOSTICS                                         |
| 0 | NTXA83AA02 | TOPS MESSAGE SWITCH                                              |
| 0 | NTXA90AA07 | TOPS-MP TERMINAL HANDLER HIGH<br>SPEED                           |
| 0 | NTXA91AA02 | STANDARD INTERFACE FOR DA/<br>INTERCEPT APPLICATIONS             |
| 0 | NTXE00AA01 | TOPS OPERATOR PASSWORD                                           |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC                                         |
| 0 | NTXE05AA01 | TOPS - MP DA/INTERCEPT<br>MESSAGING - OPEN                       |
| 0 | NTXE14AB03 | CCS7 ISUP INTERLATA CONN<br>ACCESS TANDEM (REP. NTXE14AA)        |
| 0 | NTXE20AA01 | TOPS EXTENDED BELLCORE AMA<br>FORMAT(EBAF)                       |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL<br>RETRANSMISSION                     |
| 0 | NTXE34AA01 | TOPS E911                                                        |
| 0 | NTXE35AA01 | ALTERNATE CARRIER SELECTION                                      |
| 0 | NTXE36AB01 | AUTOMATIC DA CALL COMPLETION<br>(UPG OF NTXE36AA)                |
| 0 | NTXE54AA01 | SYSTEM LOAD MODULE II                                            |
| 0 | NTXE65AA01 | MPC X.25 INTERFACE                                               |
| 0 | NTXE66AA02 | CCS7 ISUP OPTION CONTROLS                                        |
| 0 | NTXE67AA01 | EQUAL ACCESS INTERMEDIATE<br>TANDEM                              |
| 0 | NTXE68AA01 | TOPS EXPANDED CALLING CARD<br>FORMAT                             |
| 0 | NTXE70AA01 | TOPS TWO TERMINAL DIRECTORY<br>ASSISTANCE/INTERCEPT              |
| 0 | NTXE71AA01 | TOPS DIRECTORY ASSISTANCE/TOLL<br>BRANDING                       |
| 0 | NTXE72AA01 | TOPS EXPANDED CALLING CARD<br>FORMAT - CCS7 VALIDATION<br>(U.S.) |
| 0 | NTXE73AA01 | IMPROVED STATSPAC                                                |
| 0 | NTXE98AA02 | HIGH SPEED MPC                                                   |
| 0 | NTXF05AA03 | ETHERNET INTERFACE UNIT                                          |
| 0 | NTXF10AA01 | AUTOMATED DA CALL COMPLETION<br>WITH ALTERNATE BILLING           |

|   |            |                                 |
|---|------------|---------------------------------|
| 0 | NTXF14AA01 | HIGH CAPACITY DPP               |
| 0 | NTXF19AA02 | TCP/IP PROTOCOLS                |
| 0 | NTXF20AA02 | LMS ON LPP                      |
| 0 | NTXF25AD01 | FRAME RELAY BASIC (UPG FR       |
| 0 |            | NTXF25AC)                       |
| 0 | NTXF26AA01 | SYNCHRONIZATION - BITS          |
| 0 |            | COMPOSITE MASTER                |
| 0 | NTXF27AA01 | SYNCHRONIZATION - CESIUM, LORAN |
| 0 |            | - C MASTER                      |
| 0 | NTXF71AB02 | SUPERNODE ENHANCED              |
| 0 |            | MESSAGING(UPG. OF NTXF71AA)     |
| 0 | NTXF97AA02 | BRISC SERIES SUPERNODE BASE     |
| 0 | NTXH77AA01 | CHANNELLIZED ACCESS ON LPP/LIS  |
| 0 | NTXJ10AA01 | OPERATOR HAND OFF TO AABS       |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT     |
| 0 | NTXJ37AA01 | TOPS EXTERNAL PERSONAL AUDIO    |
| 0 |            | RESPONSE SYSTEM (PARS)          |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION       |
| 0 |            | TOOLS                           |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                 |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                 |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING   |
| 0 |            | OPTIONS                         |
| 0 | NTXJ67AA01 | TOPS DA SUBTENDING TMS          |
| 0 | NTXJ73AA01 | TOPS ACCOUNT CODE BILLING       |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA          |
| 0 | NTXJ96AA01 | ENHANCED MFADS                  |
| 0 | NTXN04AA01 | PARS REMOTE                     |
| 0 | NTXN16AA01 | ENHANCED DRAM                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                 |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7         |
| 0 |            | APPLICATIONS                    |
| 0 | NTXN29AA01 | IBM DA TPC                      |
| 0 | NTXN31AA02 | OSS INTERFACE ENHANCEMENT       |
| 0 | NTXN49AA01 | AUTOMATED INTERCEPT CALL        |
| 0 |            | COMPLETION                      |
| 0 | NTXN52AA01 | TWO DIGIT ANI - TOPS OFFICE     |
| 0 | NTXN54AA01 | HOST/REMOTE NETWORKING VIA      |
| 0 |            | CALL TYPE                       |
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING          |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY  |
| 0 |            | ON MS                           |
| 0 | NTXN85AA01 | MPC 1984 X.25                   |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE         |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS    |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE      |
| 0 |            | INCREASE                        |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXP15AA01 | MAP ACCESS VIA PHASE V         |
| 0 | NTXP41AA01 | TOPS HOST QUEUE MANAGEMENT     |
| 0 |            | SYSTEM                         |
| 0 | NTXP42AA01 | TOPS REMOTE QUEUE MANAGEMENT   |
| 0 |            | SYSTEM                         |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP49AA01 | TOPS OPEN POSITION PROTOCOL    |
| 0 | NTXP78AA01 | FGB CARRIER CODE EXPANSION     |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ23AA02 | TOPS ADAS                      |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR21AA01 | EADAS HARDWARE INVENTORY       |
| 0 |            | CONTROL                        |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR48AA01 | QMS: CALL AND AGENT MANAGER    |
| 0 | NTXR50AA01 | QMS EXTERNAL MANAGEMENT        |
| 0 |            | INFORMATION SYSTEM INTERFACE   |
| 0 | NTXR52AA01 | TOPS INCREASED MULTIPLEXING    |
| 0 | NTXR68AA01 | 64 KBIT CCS7 LINK INTERFACE    |
| 0 | NTXR72AA01 | CCS7 MTP/SCCP FOR LPP BASED    |
| 0 |            | PLATFORMS                      |
| 0 | NTXS00AA01 | INTERCHANGABLE NPA             |
| 0 | NTXS07AA01 | TELCO DEFINED LOGIN BANNER     |
| 0 | NTXS08AA01 | ENHANCED TIME SWITCH           |
| 0 | NTXS11AA01 | FILE TRANSFER PROTOCOL (DARPA) |
| 0 | NTXS18AA01 | TOPS INTERCHANGEABLE NPA       |
| 0 | NTXS19AA01 | TOPS DN CALL SCREENING         |
| 0 | NTXS29AA01 | APU MAINTENANCE                |
| 0 | NTXS72AA01 | CC SOFTWARE SUPPORT FOR EDRAM  |
| 0 |            | UPLOADING                      |
| 0 | NTXV00AA01 | DN SCREENING DATABASE - BASE   |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX030BA03 | TOPS ACD FEATURES              |
| 0 | NTX030CC16 | TOPS CALL PROCESSING           |
| 0 |            | FEATURES(REP NTX030CB)         |

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0 NTX035AA03 TOPS REMOTE CAMA  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX096AA01 TOPS NOTIS FORMAT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTPULSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM

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0 NTX140AA02 TOPS DIAL UP AUTOQUOTE  
0 NTX141AA01 TOPS CITY ZONE RATING  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX157AA01 CCIS - INWATS OSO  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX193AA01 4X OPERATION - AMR 5 FORMAT  
0 ANI  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX208AB01 AUTOMATIC COIN TOLL SERVICE  
0 (ACTS) (UPG OF NTX208AA)  
0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT  
0 FORMAT)(UPG FR.NTX211AA)  
0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF  
0 NTX386AA)  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX455AB01 1A EADAS NETWORK MANAGEMENT  
0 (UPG. OF NTX455AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE



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0  
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0  
0 HANDLING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EAOSS  
0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR  
0 SERV SIG  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC81BA01 STATUS NAP  
0 DMS200 TOPS BCS36 S/W LOAD FOR  
0 SN60  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER  
0 TOLL DENIAL

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXA26AA01 | TOPS INCOMING FEATURE GROUP D  |
| 0 |            | SIGNALLING                     |
| 0 | NTXA28AA02 | TOPS AWT ENHANCEMENTS          |
| 0 | NTXA60AA02 | TOPS CLOSEDOWN(REPLACES        |
| 0 |            | NTX134BB AND NTX039AB)         |
| 0 | NTXA62AA01 | TOPS MP - DA AUDIO RESPONSE    |
| 0 |            | CALL HANDLING                  |
| 0 | NTXA63AA01 | DIRECTORY ASSISTANCE/INTERCEPT |
| 0 |            | CC MESSAGING                   |
| 0 | NTXA67AA01 | EXTENDED XPM DIAGNOSTICS       |
| 0 | NTXA83AA02 | TOPS MESSAGE SWITCH            |
| 0 | NTXA90AA07 | TOPS-MP TERMINAL HANDLER HIGH  |
| 0 |            | SPEED                          |
| 0 | NTXA91AA02 | STANDARD INTERFACE FOR DA/     |
| 0 |            | INTERCEPT APPLICATIONS         |
| 0 | NTXE00AA01 | TOPS OPERATOR PASSWORD         |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC       |
| 0 | NTXE05AA01 | TOPS - MP DA/INTERCEPT         |
| 0 |            | MESSAGING - OPEN               |
| 0 | NTXE14AB03 | CCS7 ISUP INTERLATA CONN       |
| 0 |            | ACCESS TANDEM (REP. NTXE14AA)  |
| 0 | NTXE20AA01 | TOPS EXTENDED BELLCORE AMA     |
| 0 |            | FORMAT(EBAF)                   |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL     |
| 0 |            | RETRANSMISSION                 |
| 0 | NTXE34AA01 | TOPS E911                      |
| 0 | NTXE35AA01 | ALTERNATE CARRIER SELECTION    |
| 0 | NTXE36AB01 | AUTOMATIC DA CALL COMPLETION   |
| 0 |            | (UPG OF NTXE36AA)              |
| 0 | NTXE54AA01 | SYSTEM LOAD MODULE II          |
| 0 | NTXE65AA01 | MPC X.25 INTERFACE             |
| 0 | NTXE66AA02 | CCS7 ISUP OPTION CONTROLS      |
| 0 | NTXE67AA01 | EQUAL ACCESS INTERMEDIATE      |
| 0 |            | TANDEM                         |
| 0 | NTXE68AA01 | TOPS EXPANDED CALLING CARD     |
| 0 |            | FORMAT                         |
| 0 | NTXE70AA01 | TOPS TWO TERMINAL DIRECTORY    |
| 0 |            | ASSISTANCE/INTERCEPT           |
| 0 | NTXE71AA01 | TOPS DIRECTORY ASSISTANCE/TOLL |
| 0 |            | BRANDING                       |
| 0 | NTXE72AA01 | TOPS EXPANDED CALLING CARD     |
| 0 |            | FORMAT - CCS7 VALIDATION       |
| 0 |            | (U.S.)                         |
| 0 | NTXE73AA01 | IMPROVED STATSPAC              |
| 0 | NTXE98AA02 | HIGH SPEED MPC                 |
| 0 | NTXF05AA03 | ETHERNET INTERFACE UNIT        |
| 0 | NTXF10AA01 | AUTOMATED DA CALL COMPLETION   |

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0 WITH ALTERNATE BILLING  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF25AD01 FRAME RELAY BASIC (UPG FR  
0 NTXF25AC)  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN  
0 - C MASTER  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING (UPG. OF NTXF71AA)  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXJ10AA01 OPERATOR HAND OFF TO AABS  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXJ37AA01 TOPS EXTERNAL PERSONAL AUDIO  
0 RESPONSE SYSTEM (PARS)  
0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION  
0 TOOLS  
0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING  
0 OPTIONS  
0 NTXJ67AA01 TOPS DA SUBTENDING TMS  
0 NTXJ73AA01 TOPS ACCOUNT CODE BILLING  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXJ96AA01 ENHANCED MFADS  
0 NTXN04AA01 PARS REMOTE  
0 NTXN16AA01 ENHANCED DRAM  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXN29AA01 IBM DA TPC  
0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTXN49AA01 AUTOMATED INTERCEPT CALL  
0 COMPLETION  
0 NTXN52AA01 TWO DIGIT ANI - TOPS OFFICE  
0 NTXN54AA01 HOST/REMOTE NETWORKING VIA  
0 CALL TYPE  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE

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0 INCREASE  
0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXP41AA01 TOPS HOST QUEUE MANAGEMENT  
0 SYSTEM  
0 NTXP42AA01 TOPS REMOTE QUEUE MANAGEMENT  
0 SYSTEM  
0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF  
0 CONTINUITY TEST  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTXP78AA01 FGB CARRIER CODE EXPANSION  
0 NTXP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTXQ23AA02 TOPS ADAS  
0 NTXQ34AA01 FRAME RELAY BILLING BASE  
0 PACKAGE  
0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL  
0 TEST (ILPT7)  
0 NTXR21AA01 EADAS HARDWARE INVENTORY  
0 CONTROL  
0 NTXR28AA01 FRAME RELAY FRACTIONAL T1  
0 ACCESS  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE  
0 STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTXR50AA01 QMS EXTERNAL MANAGEMENT  
0 INFORMATION SYSTEM INTERFACE  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS18AA01 TOPS INTERCHANGEABLE NPA  
0 NTXS19AA01 TOPS DN CALL SCREENING  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING

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0 FEATURES(REP NTX030CB)  
0 NTX035AA03 TOPS REMOTE CAMA  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX096AA01 TOPS NOTIS FORMAT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTTING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX136AA03 AUTOMATIC TRANSMISSION

| 0 | MEASURING SYSTEM                          |
|---|-------------------------------------------|
| 0 | NTX140AA02 TOPS DIAL UP AUTOQUOTE         |
| 0 | NTX141AA01 TOPS CITY ZONE RATING          |
| 0 | NTX142AA02 DS-1 64 Kbps CLEAR             |
| 0 | NTX143AA02 DS-1 - ESF                     |
| 0 | NTX157AA01 CCIS - INWATS OSO              |
| 0 | NTX167AB11 CCS7 - TRUNK SIGNALLING (      |
| 0 | REP.OF NTX167AA)                          |
| 0 | NTX187AA03 TOPS - EQUAL ACCESS            |
| 0 | NTX188AA02 TOPS - BCR AMA FORMAT          |
| 0 | NTX192AA01 4X OPERATION - BELL FORMAT ANI |
| 0 | NTX193AA01 4X OPERATION - AMR 5 FORMAT    |
| 0 | ANI                                       |
| 0 | NTX197AA01 CCIS DIRECT SIGNALLING         |
| 0 | NTX204AA02 CCIS BANDED SIGNALLING         |
| 0 | NTX208AB01 AUTOMATIC COIN TOLL SERVICE    |
| 0 | (ACTS) (UPG OF NTX208AA)                  |
| 0 | NTX210AA03 NO. 2 SCC INTERFACE            |
| 0 | NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT |
| 0 | FORMAT)(UPG FR.NTX211AA)                  |
| 0 | NTX215AA02 SES NO.2 - INTERFACE           |
| 0 | NTX218AA03 1A/1B EADAS INTERFACE          |
| 0 | NTX243AA07 AMA TELEPROCESSING             |
| 0 | SYSTEM(AMATPS)                            |
| 0 | NTX269AA07 UNIVERSAL TONE                 |
| 0 | RECEIVER(DOMESTIC)                        |
| 0 | NTX270AA19 NEW PERIPHERAL MAINTENANCE     |
| 0 | PACKAGE                                   |
| 0 | NTX272AA02 FOCUSED MAINTENANCE            |
| 0 | NTX273AA07 MULTI - PROTOCOL CONTROLLER    |
| 0 | BX.25                                     |
| 0 | NTX290AA01 TANDEMING/SUPERVISION AND      |
| 0 | TREATMENT                                 |
| 0 | NTX291AA04 ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292AB04 ENHANCED SECURITY - WITH       |
| 0 | PASSWORD ENCRYPTION                       |
| 0 | NTX293AA02 ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 OM THRESHOLDING AND ALARMS     |
| 0 | NTX386AB02 ACCESS TANDEM SWITCH (UPG OF   |
| 0 | NTX386AA)                                 |
| 0 | NTX395AA01 REMOTE MAKE BUZY VIA SCAN      |
| 0 | POINT                                     |
| 0 | NTX437AA01 RANDOM CONDITIONAL ROUTING     |
| 0 | NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 | OF NTX445AA)                              |
| 0 | NTX455AB01 1A EADAS NETWORK MANAGEMENT    |
| 0 | (UPG. OF NTX455AA)                        |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX554AA02 | CCS7 - E800/SSP                |
| 0 | NTX560AB03 | NOP - GENERIC R0 SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX645AA01 | TOPS - SERVICE BILLING         |
| 0 | NTX710AA02 | LATA EQUAL ACCESS SYSTEM       |
| 0 | NTX710AB01 | INTERCHANGEABLE NPAS FOR LEAS  |
| 0 | NTX712AA01 | CCS7 DATA PORT                 |
| 0 | NTX714AA01 | TOPS INTERLATA CARRIER SERVICE |
| 0 | NTX724AA02 | TOPS MP INTERFACE (ORDER VIA   |
| 0 |            | MP NTX704,706,708 OR 709)      |
| 0 | NTX731AA06 | TOPS MP - TERMINAL             |
| 0 |            | HANDLER(ORDER VIA MP NTX704)   |
| 0 | NTX737AB02 | FLEXIBLE BELLCORE AMA (UPG. OF |
| 0 |            | NTX737AA)                      |
| 0 | NTX738AC02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPG NTX738AB V.O.30)   |
| 0 | NTX768AA02 | TR-448 ISDN DIGIT ANALYSIS     |
| 0 |            | COMPLIANCE - TOLL              |
| 0 | NTX769AA01 | TR444 ISUP INTERWORKING - TOLL |
| 0 |            | OFFICE                         |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX803AA02 | EQUAL ACCESS ALTERNATE         |
| 0 |            | SWITCHING POINT                |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX813AA01 | CENTRALIZED ALARMS             |
| 0 | NTX821AA01 | TANDEM OPERATOR SERVICE        |
| 0 |            | ROUTING                        |
| 0 | NTX825AB01 | EXCHANGE ALTERNATE BILLING     |
| 0 |            | SERVICE(UPG OF NTX825AA IN     |
| 0 |            | BCS34                          |
| 0 | NTX827AA02 | NEW PERIPHERALS PERFORMANCE    |
| 0 |            | MEASUREMENTS                   |
| 0 | NTX836AA01 | LPP - V.35 SUBRATE LINKS       |
| 0 | NTX839AB02 | LPP - ENHANCED MAINTENANCE AND |
| 0 |            | BERT (REP. NTX839AA)           |
| 0 | NTX840AA02 | LIU7 GATEWAY MESSAGE SCREENING |
| 0 | NTX843AB01 | CELLULAR INTERCONNECT(UPG. OF  |
| 0 |            | NTX843AA IN BCS27)             |
| 0 | NTX850AB01 | TOPS ALTERNATE                 |
| 0 |            | ANNOUNCEMENT(UPG.FR.NTX850AA)  |
| 0 | NTX871AA01 | REMOTE TOPS MP O.C. DATA LINK  |
| 0 |            | HANDLING                       |



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0 NTX873AA01 HOST TOPS MP O.C. - DATA LINK  
0 HANDLING  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX888AA01 EA0SS  
0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR  
0 SERV SIG  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 NTX986AA01 ANI WITH AMA  
0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX989AA01 CARRIER ACCESS CODE BLOCKING  
0 FOR IC/INC

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0 NTXC82AA01 STATUS LTD  
0 UNIVERSAL TOPS S/W LOAD SERIES  
0 60

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA15AA01 CALL PROGRESS TONES  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING  
0 SERVICE  
0 NTXA20AA01 TOPS MP OPEN INFORMATION  
0 ACCESS INTERFACE  
0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D

|   |            |                                                                  |
|---|------------|------------------------------------------------------------------|
| 0 |            | SIGNALING                                                        |
| 0 | NTXA28AA02 | TOPS AWT ENHANCEMENTS                                            |
| 0 | NTXA60AA02 | TOPS CLOSEDOWN(REPLACES<br>NTX134BB AND NTX039AB)                |
| 0 | NTXA62AA01 | TOPS MP - DA AUDIO RESPONSE<br>CALL HANDLING                     |
| 0 | NTXA63AA01 | DIRECTORY ASSISTANCE/INTERCEPT<br>CC MESSAGING                   |
| 0 | NTXA67AA01 | EXTENDED XPM DIAGNOSTICS                                         |
| 0 | NTXA83AA02 | TOPS MESSAGE SWITCH                                              |
| 0 | NTXA90AA07 | TOPS-MP TERMINAL HANDLER HIGH<br>SPEED                           |
| 0 | NTXA91AA02 | STANDARD INTERFACE FOR DA/<br>INTERCEPT APPLICATIONS             |
| 0 | NTXE00AA01 | TOPS OPERATOR PASSWORD                                           |
| 0 | NTXE01AA06 | ENHANCED NETWORK - BASIC                                         |
| 0 | NTXE04AA02 | SCREENED SERVICE ROUTING                                         |
| 0 | NTXE05AA01 | TOPS - MP DA/INTERCEPT<br>MESSAGING - OPEN                       |
| 0 | NTXE14AB03 | CCS7 ISUP INTERLATA CONN<br>ACCESS TANDEM (REP. NTXE14AA)        |
| 0 | NTXE18AA01 | TOPS AMA ENHANCEMENTS                                            |
| 0 | NTXE20AA01 | TOPS EXTENDED BELLCORE AMA<br>FORMAT(EBAF)                       |
| 0 | NTXE28AA02 | AMA MOD (LAMA MODULES)                                           |
| 0 | NTXE30AA01 | CCS7 SIGNALING LINK ENHANCED<br>MAINTENANCE FOR MSB7             |
| 0 | NTXE32AA01 | CCS7 PREVENTATIVE CYCLICAL<br>RETRANSMISSION                     |
| 0 | NTXE34AA01 | TOPS E911                                                        |
| 0 | NTXE35AA01 | ALTERNATE CARRIER SELECTION                                      |
| 0 | NTXE36AB01 | AUTOMATIC DA CALL COMPLETION<br>(UPG OF NTXE36AA)                |
| 0 | NTXE54AA01 | SYSTEM LOAD MODULE II                                            |
| 0 | NTXE65AA01 | MPC X.25 INTERFACE                                               |
| 0 | NTXE66AA02 | CCS7 ISUP OPTION CONTROLS                                        |
| 0 | NTXE68AA01 | TOPS EXPANDED CALLING CARD<br>FORMAT                             |
| 0 | NTXE70AA01 | TOPS TWO TERMINAL DIRECTORY<br>ASSISTANCE/INTERCEPT              |
| 0 | NTXE71AA01 | TOPS DIRECTORY ASSISTANCE/TOLL<br>BRANDING                       |
| 0 | NTXE72AA01 | TOPS EXPANDED CALLING CARD<br>FORMAT - CCS7 VALIDATION<br>(U.S.) |
| 0 | NTXE73AA01 | IMPROVED STATSPAC                                                |
| 0 | NTXE98AA02 | HIGH SPEED MPC                                                   |

|   |            |                                 |
|---|------------|---------------------------------|
| 0 | NTXF05AA03 | ETHERNET INTERFACE UNIT         |
| 0 | NTXF10AA01 | AUTOMATED DA CALL COMPLETION    |
| 0 |            | WITH ALTERNATE BILLING          |
| 0 | NTXF14AA01 | HIGH CAPACITY DPP               |
| 0 | NTXF15AA01 | DMS-CORE MC68030 33MHZ          |
| 0 |            | PROCESSOR                       |
| 0 | NTXF19AA02 | TCP/IP PROTOCOLS                |
| 0 | NTXF20AA02 | LMS ON LPP                      |
| 0 | NTXF25AD01 | FRAME RELAY BASIC (UPG FR       |
| 0 |            | NTXF25AC)                       |
| 0 | NTXF26AA01 | SYNCHRONIZATION - BITS          |
| 0 |            | COMPOSITE MASTER                |
| 0 | NTXF27AA01 | SYNCHRONIZATION - CESIUM, LORAN |
| 0 |            | - C MASTER                      |
| 0 | NTXF71AB02 | SUPERNODE ENHANCED              |
| 0 |            | MESSAGING(UPG. OF NTXF71AA)     |
| 0 | NTXF97AA02 | BRISC SERIES SUPERNODE BASE     |
| 0 | NTXH70AA01 | C7 SUPPORT FOR CHANNELIZED      |
| 0 |            | ACCESS                          |
| 0 | NTXH77AA01 | CHANNELIZED ACCESS ON LPP/LIS   |
| 0 | NTXJ10AA01 | OPERATOR HAND OFF TO AABS       |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT     |
| 0 | NTXJ37AA01 | TOPS EXTERNAL PERSONAL AUDIO    |
| 0 |            | RESPONSE SYSTEM (PARS)          |
| 0 | NTXJ40AA02 | LIU7 GATEWAY VERIFICATION       |
| 0 |            | TOOLS                           |
| 0 | NTXJ41AA01 | CCS7 TEST TOOLS                 |
| 0 | NTXJ44AA01 | SLM FILE SYSTEM                 |
| 0 | NTXJ54AA01 | ISUP FGD MF/CCS7 INTERWORKING   |
| 0 |            | OPTIONS                         |
| 0 | NTXJ67AA01 | TOPS DA SUBTENDING TMS          |
| 0 | NTXJ73AA01 | TOPS ACCOUNT CODE BILLING       |
| 0 | NTXJ94AA01 | MANDATORY PARALLEL AMA          |
| 0 | NTXJ96AA01 | ENHANCED MFADS                  |
| 0 | NTXN04AA01 | PARS REMOTE                     |
| 0 | NTXN16AA01 | ENHANCED DRAM                   |
| 0 | NTXN18AA04 | FBUS - LIU BASE                 |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7         |
| 0 |            | APPLICATIONS                    |
| 0 | NTXN29AA01 | IBM DA TPC                      |
| 0 | NTXN49AA01 | AUTOMATED INTERCEPT CALL        |
| 0 |            | COMPLETION                      |
| 0 | NTXN51AA01 | TOPS MP SUPPORT OF INTERNAL     |
| 0 |            | DRAM                            |
| 0 | NTXN52AA01 | TWO DIGIT ANI - TOPS OFFICE     |
| 0 | NTXN54AA01 | HOST/REMOTE NETWORKING VIA      |
| 0 |            | CALL TYPE                       |

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXN68AA01 | XPM BROADCAST PATCHING         |
| 0 | NTXN83AA02 | LIS COMMON - LMS FUNCTIONALITY |
| 0 |            | ON MS                          |
| 0 | NTXN85AA01 | MPC 1984 X.25                  |
| 0 | NTXP08AA01 | TRUNK GROUP MEMBER USAGE       |
| 0 | NTXP10AA01 | NETWORK MODULE SOFTWARE        |
| 0 | NTXP13AA02 | ENET SWITCH PATH DIAGNOSTICS   |
| 0 | NTXP14AA01 | DIRP PARALLEL STORAGE SIZE     |
| 0 |            | INCREASE                       |
| 0 | NTXP15AA01 | MAP ACCESS VIA MPC PHASE V     |
| 0 | NTXP41AA01 | TOPS HOST QUEUE MANAGEMENT     |
| 0 |            | SYSTEM                         |
| 0 | NTXP42AA01 | TOPS REMOTE QUEUE MANAGEMENT   |
| 0 |            | SYSTEM                         |
| 0 | NTXP48AA01 | CCS7 TWO WIRE EMULATION OF     |
| 0 |            | CONTINUITY TEST                |
| 0 | NTXP49AA01 | TOPS OPEN POSITION PROTOCOL    |
| 0 | NTXP56AA01 | TWO DIGIT ANI - CAMA           |
| 0 | NTXP78AA01 | FGB CARRIER CODE EXPANSION     |
| 0 | NTXP79AB01 | TOPS FRENCH/ENGLISH AABS       |
| 0 | NTXP82AA01 | AMA MOD (CAMA MODULES)         |
| 0 | NTXP97AA01 | IEM BASIC EVENT CONSOLIDATION  |
| 0 | NTXQ23AA02 | TOPS ADAS                      |
| 0 | NTXQ34AA01 | FRAME RELAY BILLING BASE       |
| 0 |            | PACKAGE                        |
| 0 | NTXQ35AA01 | FRAME RELAY LEC BILLING        |
| 0 | NTXQ38AA01 | SSP 800 CALLING AND DIALLED    |
| 0 |            | NUMBER DELIVERY                |
| 0 | NTXQ39AA01 | SSP 800 BILLING ENHANCEMENTS   |
| 0 | NTXQ40AA02 | SSP 800 OVERFLOW CALL ROUTING  |
| 0 | NTXQ41AA01 | NB / SB ENHANCEMENT            |
| 0 | NTXQ51AA01 | MS SR512 LIS CONTROLLER        |
| 0 | NTXQ65AB01 | CCS7 AUTO ATTENDANT RELEASE    |
| 0 |            | LINK TRUNK (UPG OF NTXQ65AA)   |
| 0 | NTXQ73AA01 | ISUP TO MF 2 STAGE             |
| 0 |            | OUTPULSING(CANADA)             |
| 0 | NTXQ89AA01 | CCS7 INTEGRATED LINK PROTOCOL  |
| 0 |            | TEST (ILPT7)                   |
| 0 | NTXR28AA01 | FRAME RELAY FRACTIONAL T1      |
| 0 |            | ACCESS                         |
| 0 | NTXR34AB01 | XPM PLUS (PRODUCT LINE UPGRADE |
| 0 |            | STRATEGY) BASIC                |
| 0 | NTXR42AA01 | FIRMWARE DOWNLOADING           |
| 0 | NTXR46AA01 | ROBUSTNESS ENHANCEMENTS        |
| 0 | NTXR48AA01 | QMS: CALL AND AGENT MANAGER    |
| 0 | NTXR50AA01 | QMS EXTERNAL MANAGEMENT        |
| 0 |            | INFORMATION SYSTEM INTERFACE   |

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0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXS18AA01 TOPS INTERCHANGEABLE NPA  
0 NTXS19AA01 TOPS DN CALL SCREENING  
0 NTXS29AA01 APU MAINTENANCE  
0 NTXS35AA01 AABS CALL SCREENING  
0 NTXS37AA01 AABS ENHANCED SERVICES ACCESS  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS  
0 (MNA)  
0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM  
0 UPLOADING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)  
0 NTX029AA01 DIRECT DIALING OVERSEAS, TOLL  
0 (CANADA)  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX035AA03 TOPS REMOTE CAMA  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE  
0 SIGNALLING - BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048AB01 SYNCHRONIZATION - CESIUM  
0 MASTER CLOCK  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING

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0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX063AA02 ECHO SUPPRESSOR  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX096AA01 TOPS NOTIS FORMAT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX121AA01 OVERLAP OUTPUTSING (TRK TO  
0 TRK)  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX140AA02 TOPS DIAL UP AUTOQUOTE  
0 NTX141AA01 TOPS CITY ZONE RATING  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX208AB01 AUTOMATIC COIN TOLL SERVICE  
0 (ACTS) (UPG OF NTX208AA)

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0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS
0 COMPLIANCE - TOLL
0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL
0 OFFICE
0 NTX801AA01 TOLL FEATURES I
0 NTX802AA04 TOLL FEATURES II
0 NTX812AA03 CENTRALIZED MAP
0 NTX813AA01 CENTRALIZED ALARMS
0 NTX825AB01 EXCHANGE ALTERNATE BILLING
0 SERVICE(UPG OF NTX825AA IN
0 BCS34
0 NTX827AA02 NEW PERIPHERALS PERFORMANCE
0 MEASUREMENTS
0 NTX836AA01 LPP - V.35 SUBRATE LINKS
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND
0 BERT (REP. NTX839AA)
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING
0 NTX850AB01 TOPS ALTERNATE
0 ANNOUNCEMENT(UPG.FR.NTX850AA)
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK
0 HANDLING
0 NTX873AA01 HOST TOPS MP O.C. - DATA LINK
0 HANDLING
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR
0 TOLL SWITCHES
0 NTX883AA01 INTER OFFICE TRK BIT ERROR
0 RATE TESTING
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.
0 OF NTX885AA)
0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR
0 SERV SIG
0 NTX892AA04 MPC MULTILINK MANAGEMENT
0 NTX903AA01 TRANSMISSION MEASUREMENTS
0 NTX940AA13 CM BILGE
0 NTX941AA12 CM COMMON
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD
0 MODULE(SLM)(UPG.FR. NTX942AB)
0 NTX944AA03 BASE NODE MAINTENANCE
0 NTX945AA03 MS BASE LINK MAINTENANCE
0 NTX950AA06 MS BILGE
0 NTX951AA08 MS COMMON

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0 NTXD00AC02 STATUS RTM  
0 POTS TO RES CONVERTER(UPG FR  
0 NTXD00AB)

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXD01AB03 STATUS RTM  
0 RES OFFICE CONVERSION(U.S  
0 MARKET)(UPG. OF NTXD01AA)

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX734AA01 EAEO - IBN PIC USING SERVORD

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0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXD04AA05 STATUS RTM  
0 DMS-100 FAMILY MAINTENANCE:  
0 LOCAL( UPG.BY NTXD04AB)  
  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)  
0 I/F  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTXD04AB03 STATUS RTM  
0 DMS-100 FAMILY MAINTENANCE:  
0 LOCAL(UPG.OF NTXD04AA)  
  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX195AA05 MECHANIZED LOOP TESTER (MLT)

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0 I/F  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX277AA02 DIALABLE LINE CIRCUIT  
0 IDENTIFICATION  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTXD05AA05 STATUS RTM  
0 DMS-100 FAMILY MAINTENANCE:  
0 TOLL( UPG.BY NTXD05AB)  
  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTXD05AB03 STATUS RTM  
0 DMS-100 FAMILY MAINTENANCE:  
0 TOLL (UPG.OF NTXD05AA)

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0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTXD07AA06 STATUS RTM  
0 AMA MODERNIZATION - LAMA  
0 (BCS28)

0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)

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0 NTXD08AA05 STATUS RTM  
0 AMA MODERNIZATION - CAMA

0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)

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0 NTXD08AB02 STATUS RTM  
0 AMA MODERNIZATION - CAMA (  
0 BCS32)

0 NTXP82AA01 AMA MOD (CAMA MODULES)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)

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0 NTXD09AA06 STATUS RTM  
0 AMA MODERNIZATION - TOPS  
0 (BCS28)

0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA  
0 FORMAT(EBAF)  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX188AA02 TOPS - BCR AMA FORMAT

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0 NTXD13AA07 STATUS A+M  
0 BASIC ACD SERVICES(U.S)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AC01 ACD ENHANCED II(UPG.BY  
0 NTX416AC)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III

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0 NTXD13AB07 STATUS A+M  
0 BASIC ACD SERVICES(U.S)(UPG.  
0 OF NTXD13AA IN BCS28)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AD01 ACD ENHANCED II(UPG. BY  
0 NTX416AE)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III

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0 NTXD13AC06 STATUS A+M  
0 BASIC ACD SERVICES(UPG.BY  
0 NTXD13AD)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AE01 ACD ENHANCED II(UPG. BY  
0 NTX416AF)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III

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0 NTXD13AD05 STATUS A+M  
0 BASIC ACD SERVICES(UPG. BY  
0 NTXD13AE)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AF01 ACD ENHANCED II (UPG. BY  
0 NTX416AG)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III

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0 NTXD13AE04 STATUS A+M  
0 BASIC ACD SERVICES(UPG. OF  
0 NTXD13AD)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AG01 ACD ENHANCED II(UPG. OF  
0 NTX416AF)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III

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0 NTXD13AF04 STATUS A+M  
0 BASIC ACD SERVICES(UPG.BY  
0 NTXD13AG)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AH01 ACD ENHANCED II(UPG. OF  
0 NTX416AG IN BCS32)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III

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0 NTXD13AG03 STATUS A+M  
0 BASIC ACD SERVICES(UPG.BY  
0 NTXD13AH)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AI01 ACD ENHANCED II(UPG. OF  
0 NTX416AH)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III

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0 NTXD13AH01 STATUS RTM  
0 BASIC ACD SERVICES(UPG.FR  
0 NTXD13AG)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III

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0 NTXD14AA07 STATUS A+M  
0 ENHANCED ACD SERVICES (U.S)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AC01 ACD ENHANCED II(UPG.BY  
0 NTX416AC)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AB02 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG BY NTX991AC)

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0 NTXD14AB08 STATUS A+M  
0 ENHANCED ACD SERVICES (U.S)  
0 (UPG. OF NTXD14AA IN BCS28)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AD01 ACD ENHANCED II(UPG. BY  
0 NTX416AE)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AB02 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG BY NTX991AC)

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0 NTXD14AC06 STATUS A+M  
0 ENHANCED ACD SERVICES(UPG.BY  
0 NTXD14AD)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AE01 ACD ENHANCED II(UPG. BY  
0 NTX416AF)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AC01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG. BY NTX991AD)

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0 NTXD14AD05 STATUS A+M  
0 ENHANCED ACD SERVICES(UPG BY  
0 NTXD14AE)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AF01 ACD ENHANCED II (UPG. BY  
0 NTX416AG)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III

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0 NTX991AD01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG.. BY NTX991AE)

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0 NTXD14AE04 STATUS A+M  
0 ENHANCED ACD SERVICES(UPG OF  
0 NTXD14AD)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AG01 ACD ENHANCED II(UPG. OF  
0 NTX416AF)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AE01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG.BY NTX991AF)

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0 NTXD14AF03 STATUS A+M  
0 ENHANCED ACD SERVICES(UPG BY  
0 NTXD14AG)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC

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0 NTX416AH01 ACD ENHANCED II(UPG. OF  
0 NTX416AG IN BCS32)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXD14AG02 STATUS A+M  
0 ENHANCED ACD SERVICES(UPG BY  
0 NTXD14AH)  
  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AI01 ACD ENHANCED II(UPG. OF  
0 NTX416AH)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXD14AH01 STATUS RTM  
0 ENHANCED ACD SERVICES(UPG FR  
0 NTXD14AG)  
  
0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)

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0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXD15AB03 STATUS A+M  
0 ISDN INTEGRATED OAM (UPG FR.  
0 NTXD15AA)

0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR

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0 NTXD15AC02 STATUS RTM  
0 ISDN INTEGRATED OAM (UPG FR.  
0 NTXD15AB)

0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR

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0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE  
0 WITH OAMP REQUIRED

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0 NTXD17AB02 STATUS RTM TARGET SUPERNODE  
0 SUPERNODE SERIES 30  
0 PROCESSOR(UPG. FR NTXD17AA)

0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXD18AB02 STATUS RTM TARGET SUPERNODE  
0 SUPERNODE SERIES 40 PROCESSOR  
0 (UPG.FR. NTXD18AA)

0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXF16AA01 DMS-CORE MC68030 40 MHZ  
0 PROCESSOR  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD

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0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXD25AA02 STATUS RTM  
0 SUPERNODE SERIES 50 PROCESSOR

0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXD26AA01 STATUS LTD  
0 DMS-SUPERNODE SERIES 60 BASIC  
0 MASTER

0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)



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0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXD28AA03 STATUS RTM  
0 SWITCH PATH INTEGRITY  
0 MANAGEMENT, LOCAL

0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTXD29AA03 STATUS RTM  
0 SWITCH PATH INTEGRITY  
0 MANAGEMENT, TOLL

0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTXD32AA06 STATUS A+M  
0 MSL-100 BASIC RATE ACCESS(UPG  
0 BY NTXD32AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTXD32AB03 STATUS A+M  
0 MSL-100 BASIC RATE ACCESS(UPG.  
0 FR NTXD32AA)

0 NTXQ60AA01 SL-100 ISDN CABINET CIRCUIT  
0 LOCATOR  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTXD32AC01 STATUS LTD  
0 MSL-100 BASIC RATE ACCESS

0 NTXQ60AA01 SL-100 ISDN CABINET CIRCUIT  
0 LOCATOR  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB

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0 NTXD32AD01 STATUS LTD  
0 MSL-100 BASIC RATE ACCESS

0 NTXQ60AA01 SL-100 ISDN CABINET CIRCUIT  
0 LOCATOR  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX750AD01 ISDN BASIC ACCESS (UPG FROM  
0 NTX750AC)

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0 NTXD33AA06 STATUS A+M  
0 MSL-100 FUNCTIONAL SIGNALLING  
0 AND EKTS(UPG.BY NTXD33AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX753AA06 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES(UPG BY NTX753AB)  
0 NTX754AA02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE(UPG BY NTX754AB)  
0 NTX755AA01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG. BY NTX755AB)

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0 NTXD33AB02 STATUS A+M  
0 MSL-100 FUNCTIONAL SIGNALLING  
0 AND EKTS(UPG. BY. NTXD33AC)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX753AA06 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES(UPG BY NTX753AB)  
0 NTX754AA02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE(UPG BY NTX754AB)  
0 NTX755AB01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR.NTX755AA)

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0 NTXD33AC01 STATUS RTM  
0 MSL-100 FUNCTIONAL SIGNALLING  
0 AND EKTS(UPG. FR. NTXD33AB)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)

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0 NTXD34AA06 STATUS A+M  
0 MSL-100 PRIMARY RATE  
0 ACCESS(UPG. BY NTXD34AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING

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0 NTXD34AB03 STATUS A+M  
0 MSL-100 PRIMARY RATE  
0 ACCESS(UPG. BY NTXD34AC)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS

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0 NTXD34AC02 STATUS RTM  
0 MSL-100 PRIMARY RATE  
0 ACCESS(UPG. FR. NTXD34AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS

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0 NTXD35AA06 STATUS RTM  
0 MSL-100 NETWORK SERVICES

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY

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0 NTXD37AA04 STATUS RTM  
0 TOPS MPX - HOST

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTXJ67AA01 TOPS DA SUBTENDING TMS  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXD38AA04 STATUS RTM  
0 TOPS MPX - REMOTE

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY  
0 ASSISTANCE/INTERCEPT  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXD39AA04 STATUS RTM  
0 TOPS MP- TOLL & DIR. ASS.  
0 OPERATION (IBM INTERFACE)

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING

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0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH  
0 SPEED  
0 NTXA91AA02 STANDARD INTERFACE FOR DA/  
0 INTERCEPT APPLICATIONS  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTXN29AA01 IBM DA TPC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXD40AA04 STATUS RTM  
0 TOPS MP- TOLL & DIR. ASS.  
0 OPERATION- REMOTE (IBM  
0 INTERFACE)  
  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT  
0 MESSAGING - OPEN  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK



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0 HANDLING  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTXD41AA02 STATUS A+M  
0 BASIC NETWORKING FEATURES -  
0 CANADA(UPG.BY NTXD41AB)

0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY

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0 NTXD41AB02 STATUS A+M  
0 BASIC NETWORKING FEATURES -  
0 CANADA(UPG. BY NTXD41AC)

0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXN01AA01 MULTI-LOCATION BUSINESS  
0 GROUPS(UPG BY NTXN01AB)

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0 NTXD41AC01 STATUS RTM  
0 BASIC NETWORKING FEATURES -  
0 CANADA(UPG. FR NTXD41AB)  
  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS  
0 (UPG OF NTXN01AA)

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0 NTXD44AA03 STATUS A+M TARGET SUPERNODE  
0 LPP ON DMS SUPERNODE SSP(UPG.  
0 BY NTXD44AB)  
  
0 NTXF20AA02 LMS ON LPP  
0 NTXF71AA01 SUPERNODE ENHANCED  
0 MESSAGING(UPG.BY NTXF71AB)  
0 NTXN18AA04 FBUS - LIU BASE

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0 NTXD44AB02 STATUS RTM TARGET SUPERNODE  
0 LPP ON DMS SUPERNODE SSP(UPG.  
0 FR NTXD44AA)  
  
0 NTXF20AA02 LMS ON LPP  
0 NTXF71AB02 SUPERNODE ENHANCED

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0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXN18AA04 FBUS - LIU BASE

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0 NTXD46AA02 STATUS A+M  
0 CUSTOMER CONFIGURATION  
0 MANAGEMENT(UPG.BY NTXD46AB)

0 NTX412CA04 IBN - CUSTOMER DATA  
0 CHANGE(UPG. BY NTX412CB)  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX812AA03 CENTRALIZED MAP

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0 NTXD46AB02 STATUS RTM  
0 CUSTOMER COFIGURATION  
0 MANAGEMENT(UPG.BY NTXD46AC)

0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX812AA03 CENTRALIZED MAP

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0 NTXD47AA05 STATUS A+M  
0 BELL CANADA - CALL MANAGEMENT  
0 SERVICES I(UPG BY NTXD47AB)

0 NTXA00AB02 CLASS - CALL SETUP (UPGRADE OF  
0 NTXA00AA IN BCS32)  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXD47AC01 STATUS RTM  
0 BELL CANADA CALL MANAGEMENT  
0 SERVICES I(UPG FR. NTXD47AB)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE

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0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXD47AD01 STATUS LTD  
0 BELL CANADA CALL MANAGEMENT  
0 SERVICES I (UPG OF D47AC)

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED  
0 TRACE  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY  
0 BLOCKING ADMINISTRATION  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED  
0 SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA87AA01 CMS LONG DISTANCE INDICATOR  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXD50AA05 STATUS A+M  
0 SML MDC - BELL CANADA( UPG. BY  
0 NTXD50AB)  
  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX878AB02 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG.BY NTX878AC)  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS

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0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)

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0 NTXD50AB04 STATUS A+M  
0 SML MDC - BELL CANADA(UPG. BY  
0 NTXD50AC)

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX878AC01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. BY NTX878AD)  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)

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0 NTXD50AC04 STATUS A+M  
0 SML MDC - BELL CANADA(UPG. BY  
0 NTXD50AC)

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX878AD01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. BY NTX878AE)  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)

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0 NTXD50AD02 STATUS LTD  
0 SML MDC - BELL CANADA(UPG FR  
0 NTXD50AC)

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)



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0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE  
0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)

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0 NTXD51AA01 STATUS A+M  
0 ENHANCED MDC - BELL CANADA(  
0 UPG. BY NTXD51AB)  
  
0 NTX105AA03 TRUNK QUEUING  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING

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0 NTXD51AB01 STATUS RTM  
0 ENHANCED MDC - BELL  
0 CANADA(UPG. OF NTXD51AA)  
  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING

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0 NTXD52AA01 STATUS A+M  
0 BENCHMARK 90 - BELL CANADA  
0 (UPG. BY NTXD52AB)  
  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX878AB02 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG.BY NTX878AC)  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)

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0 NTXD52AB01 STATUS A+M  
0 BENCHMARK 90 - BELL CANADA  
0 (UPG. FR. NTXD52AA)  
  
0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX878AC01 ENHANCED ELECTRONIC BUSINESS

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0 SET SERVICES(UPG. BY NTX878AD)  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)

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0 NTXD52AC01 STATUS A+M  
0 BENCHMARK 90 - BELL  
0 CANADA(UPG.BY NTXD52AD)

0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX878AD01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. BY NTX878AE)  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)

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0 NTXD52AD01 STATUS LTD  
0 BENCHMARK 90 - BELL CANADA  
0 (UPG. FR NTXD52AC)

0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD  
0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF  
0 NTX946AA IN BCS26)

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0 Software Features  
0 Appendix S

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0 NTXD53AA02 STATUS A+M  
0 ACD - BELL CANADA

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AE01 ACD ENHANCED II(UPG. BY  
0 NTX416AF)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AC01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG. BY NTX991AD)

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0 NTXD53AB02 STATUS A+M  
0 ACD - BELL CANADA(UPG. BY  
0 NTXD53AC)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AF01 ACD ENHANCED II (UPG. BY  
0 NTX416AG)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AD01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG.. BY NTX991AE)

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0 NTXD53AC01 STATUS A+M  
0 ACD - BELL CANADA(UPG. BY  
0 NTXD53AD)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AG01 ACD ENHANCED II(UPG. OF  
0 NTX416AF)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AE01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG.BY NTX991AF)

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0 NTXD53AD01 STATUS A+M  
0 ACD - BELL CANADA(UPG.BY  
0 NTXD53AE)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AH01 ACD ENHANCED II(UPG. OF  
0 NTX416AG IN BCS32)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXD53AE01 STATUS A+M  
0 ACD - BELL CANADA(UPG.BY  
0 NTXD53AF)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AI01 ACD ENHANCED II(UPG. OF  
0 NTX416AH)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXD53AF01 STATUS LTD  
0 ACD - BELL CANADA(UPG FR  
0 NTXD53AE)

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)

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0 NTXD54AA03 STATUS RTM  
0 NATIONAL CENTREX SERVICE -  
0 SMDI

0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)

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0 NTXD55AA01 STATUS RTM  
0 MDC ESN - BELL CANADA

0 NTX430AA02 ESN  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS

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0 NTXD56AA02 STATUS RTM  
0 MDC DATA - BELL CANADA

0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD

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0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD

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0 NTXD56AB01 STATUS RTM  
0 NATIONAL CENTREX SERVICE -  
0 DATA

0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX255AA02 DATAPATH PROVISIONING (CANADA)  
0 NTX256AA04 DATAPATH - LOOP EXTENSION  
0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE  
0 CARD

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0 NTXD57AA01 STATUS RTM  
0 TELECOM CANADA HPR

0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTX022AB01 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG. OF  
0 NTX022AA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)



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0 NTXD57AB01 STATUS LTD  
0 TELECOM CANADA HPR

0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)

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0 NTXD62AA04 STATUS A+M  
0 BELL CANADA LOCAL CCS7 CUSTOM  
0 PACKAGES

0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING

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0 NTXD63AA04 STATUS A+M  
0 BELL CANADA PRI CUSTOMER  
0 PACKAGE(UPG. BY NTXD63AB)

0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTX143AA02 DS-1 - ESF  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING

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0 NTXD63AB03 STATUS A+M  
0 BELL CANADA PRI CUSTOMER  
0 PACKAGE(UPG. FR NTXD63AA)

0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING

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0 NTXD63AC02 STATUS LTD  
0 BELL CANADA PRI CUSTOMER  
0 PACKAGE(UPG.FR. NTXD63AB)

0 NTXN53AA02 ENHANCED PRA MAINTENANCE  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS  
0 BASE(UPG FR. NTX790AB)  
0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX794AA01 PRA CCS7 INTERWORKING

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0 NTXD64AA04 STATUS A+M  
0 BELL CANADA BRI CUSTOMER  
0 PACKAGE(UPG. BY NTXD64AB)

0 NTXF93AA02 ISDN PROVISIONING  
0 NTX753AA06 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES(UPG BY NTX753AB)

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0 NTXD64AB03 STATUS A+M  
0 BELL CANADA BRI CUSTOMER  
0 PACKAGE(UPG. BY NTXD64AC)  
  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX753AA06 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES(UPG BY NTX753AB)  
0 NTX754AA02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE(UPG BY NTX754AB)  
0 NTX755AA01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG. BY NTX755AB)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE

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0 NTXD64AC02 STATUS A+M  
0 BELL CANADA BRI CUSTOMER  
0 PACKAGE(UPG. BY NTXD64AD)  
  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX753AA06 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES(UPG BY NTX753AB)  
0 NTX754AA02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE(UPG BY NTX754AB)  
0 NTX755AB01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG. FR. NTX755AA)  
0 NTX757AA02 TR444 ISUP INTERWORKING

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0 RELEASE 28.01  
0 93 12 03

0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE

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0 NTXD64AD01 STATUS A+M  
0 BELL CANADA BRI CUSTOMER  
0 PACKAGE(UPG. FR. NTXD64AC)

0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE

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0 NTXD64AE01 STATUS LTD  
0 BELL CANADA BRI CUSTOM PACKAGE

0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF

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0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE

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0 NTXD64AF01 STATUS LTD  
0 BRI CUSTOM PACKAGE - CANADA

0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX750AD01 ISDN BASIC ACCESS (UPG FROM  
0 NTX750AC)  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE  
0 SERVICE (UPG OF NTX754AA) (UP  
0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES  
0 COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS  
0 COMPLIANCE- END OFFICE  
0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY  
0 - BASIC RATE INTERFACE

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0 NTXD65AA01 STATUS A+M  
0 MILITARY CENTREX AT(UPG. BY  
0 NTXD65AB)

0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX607AA04 PBX ACCESS TO AUTOVON  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX715AA02 DSN 2-WIRE PREEMPTION(UPG. BY  
0 NTX715AB)

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0 NTXD66AA01 STATUS A+M  
0 MILITARY CENTREX EO(UPG. BY  
0 NTXD66AB)

0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX607AA04 PBX ACCESS TO AUTOVON  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX715AA02 DSN 2-WIRE PREEMPTION(UPG. BY  
0 NTX715AB)  
0 NTX801AA01 TOLL FEATURES I

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0 NTXD66AB01 STATUS RTM  
0 MILITARY CENTREX AT(UPG. FR  
0 NTXD66AA)  
  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX607AA04 PBX ACCESS TO AUTOVON  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX715AB01 DSN 2-WIRE PREEMPTION(UPG. FR  
0 NTX715AA)  
0 NTX801AA01 TOLL FEATURES I

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0 NTXD69AA02 STATUS RTM  
0 CENTRALIZED PACKET HANDLER OA  
  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE  
0 W/O OAMP(REP NTXF94AA)  
0 NTXF95AA03 ISDN OAM PROCESSOR

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0 NTXD88AA01 STATUS RTM TARGET SUPERNODE  
0 DMS SUPERNODE SE (SERIES 20)  
0 BASE  
  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)



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0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXD90AA01 STATUS A+M  
0 NATIONAL CENTREX  
0 BENCHMARK(UPG. BY NTXD90AB)

0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXE09AA01 ACD ON 2500 SET(UPG. BY  
0 NTXE09AB)  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF

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0 NTX733AD IN BCS29)  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES  
0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS

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0 NTXD90AB01 STATUS RTM  
0 NATIONAL CENTREX  
0 BENCHMARK(UPG. FR. NTXD90AA)  
  
0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTXA77AA01 ENHANCED UCD  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXE33AA02 IBN ATTENDANT CONSOLE  
0 ENHANCEMENTS  
0 NTXE39AA01 CALL FORWARD BUSY/DO NOT  
0 ANSWER SPLITS  
0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT  
0 KEY (UPG. FROM NTXE40AA)  
0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE  
0 ENHANCEMENT  
0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER  
0 KEY  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE  
0 MEASUREMENTS  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF  
0 NTX733AD IN BCS29)  
0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX853AA01 IBN ALARM CALL STATUS ON  
0 CONSOLES

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0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN  
0 INDIVIDUAL CONSOLE BASIS

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0 NTXD92AA01 STATUS A+M TARGET SUPERNODE  
0 TELECOM CANADA SSP 800  
0 ENHANCED SERVICES

0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTXQ40AA02 SSP 800 OVERFLOW CALL ROUTING

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0 NTXD92AB01 STATUS LTD  
0 TELECOM CANADA SSP 800  
0 ENHANCED SERVICES (UPG OF  
0 D92AA)

0 NTXQ38AA01 SSP 800 CALLING AND DIALLED  
0 NUMBER DELIVERY  
0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ65AB01 CCS7 AUTO ATTENDANT RELEASE  
0 LINK TRUNK (UPG OF NTXQ65AA)

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## 0 NTXG00BA08 STATUS RTM

0 DMS-250 MASTER PACKAGE (TYPE  
0 II) (PART 2)

0 NTXG01AA06 DMS-250 PRA  
0 NTXG03AA02 DMS-250 CC BILLING SERVER  
0 (TYPE II)  
0 NTXG06AA02 DMS-250 EIOC MAP  
0 IMPLEMENTATION & NODE MTCE  
0 NTXG07AA01 DMS-250 EIOC/CC RASL ACCESS  
0 TYPES  
0 NTXG08AA01 DMS-250 CCS7 MTP TEST DRIVER  
0 NTXG09AA03 DVS XMS PASCAL BASED FEATURES  
0 NTXG11AA01 DMS-250 NRAG ON DMS250 PRA/  
0 ISUP  
0 NTXG13AA01 DMS BASE DATA ACCESS  
0 INTERFACE SESSION (DAIS)  
0 NTXG16AA01 DMS-250 EIOC MAP PASS-THRU  
0 NTXG18BA01 DMS-250 SAFE STORE TAP  
0 NTXG20AA02 DMS-250 SS7 FGD (TR-394)  
0 NTXG24AA03 DMS-250 INTEGRATED ECHO  
0 CANCELLOR  
0 NTXG25AA01 DMS-250 BLUE BOX FRAUD  
0 NTXG27AA01 DMS-250 DBLOCK CI COMMAND  
0 NTXG28AA01 DMS-250 ENHANCED COS SCREENING  
0 NTXG29AA02 DMS-250 DISTRIBUTED OM SYSTEM  
0 NTXG34AA01 DMS-250 TRUNK GROUP AND CLLI  
0 NAME ANALYSIS  
0 NTXG35BA01 DMS-250 PAY STATION  
0 PRETRANSLATOR (TYPE II)  
0 NTXG36AA01 DMS-250 OP250 COIN CONTROL  
0 NTXG40AA02 DMS-250 TRUNK GROUP  
0 UTILIZATION  
0 NTXG41BA05 DMS-250 OPERATOR SERVICES  
0 NTXG42AA01 DMS-250 SS7 IMT TERMINATIONS  
0 TO DTU  
0 NTXG43AA05 DMS-250 3-WAY CALLING ON  
0 FONCARD  
0 NTXG44AA01 DMS-250 INTER VPN DIALING  
0 NTXG45AA06 DMS-250 INTERNATIONAL SERVICE  
0 CALL FEATURES  
0 NTXG46AA01 DMS-250 DIRECT TERMINATION  
0 SERVICE  
0 NTXG47AA02 DMS-250 LEC CALLING CARD

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0 NTX202AA01 DMS-250 OPERATIONAL  
0 MEASUREMENTS ON TAPE  
0 NTX203AA01 DMS-250 104 TESTLINES  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX221BA08 DMS-250 CALL DETAIL RECORDING  
0 (TYPE II)  
0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE  
0 II)  
0 NTX226BA01 DMS-250 ATB BY NPA USING  
0 OPERATIONAL MEASUREMENTS  
0 NTX227BA01 DMS-250 TIME OF DAY ROUTING  
0 NTX228BA01 DMS-250 DCM CHANNEL UNIT CROSS  
0 REFERENCE  
0 NTX230BA01 DMS-250 GENERIC SPEED NUMBERS  
0 NTX231BA01 DMS-250 INCOMING EXCLUSION  
0 NTX232BA01 DMS-250 ATB BY NPA USING LOGS  
0 NTX233BA01 DMS-250 OFF HOOK QUEUING  
0 NTX234BA01 DMS-250 AUTHCODES (TYPE II)  
0 NTX235BA02 DMS-250 RESTRICTED USAGE BY  
0 DATE AND TIME  
0 NTX236BA01 DMS-250 ALTERNATE TRUNK GROUP  
0 TREATMENTS  
0 NTX237AA02 DMS-250 NAILED UP CONNECTIONS  
0 NTX239BA02 DMS-250 TRANSLATION  
0 VERIFICATION  
0 NTX321BA01 DMS-250 GENERIC OFF NET ACCESS  
0 TRUNKS  
0 NTX340BA01 DMS-250 ADAPTIVE ROUTING  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE  
0 PACKAGE  
0 NTX343BA01 DMS-250 EQUAL ACCESS (TYPE II)  
0 NTX346BA01 DMS-250 INTRA-LATA INTRA-STATE  
0 SCREENING  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC  
0 SOFTWARE )  
0 NTX351BA02 DMS-250 AUTOMATIC TRUNK  
0 ROUTINING  
0 NTX354BA01 DMS-250 (AIOD) AUTOMATIC  
0 IDENTIFIED OUTWARD DIALING  
0 NTX358BA03 DMS-250 CHIPS INTERFACE  
0 NTX360BA02 DMS-250 TRAVEL CARD (IN SWITCH  
0 TCN DATABASE)  
0 NTX361BA05 DMS-250 CCS7 IMTS  
0 NTX362BA02 DMS-250 INCOMING EXCLUSION FOR  
0 800 SERVICES  
0 NTX363BA01 DMS-250 CAC INTERFACE  
0 NTX364BA02 DMS-250 CCS7 TCAP BASED TCN

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0 SERVICE  
0 NTX365BA03 DMS-250 CCS7 TCAP BASED N00  
0 SERVICE  
0 NTX366BA01 DMS-250 CCS7 TCAP BASED ACCT  
0 CODE & PRIV SPEED VALIDATION  
0 NTX367BA01 DMS-250 CCS7 TACAP BASED  
0 AUTHCODE VALIDATION  
0 NTX368BA01 DMS-250 MULTIPLE AUTHCODE SETS  
0 NTX369AA01 DMS-250 NT40 SUPPORT SYSTEM

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0 NTXG00CA08 STATUS RTM  
0 DMS-250 MASTER PACKAGE (TYPE  
0 III) (PART 2)

0 NTXG01CA07 DMS-250 PRA (TYPE III)  
0 NTXG05AA02 DMS-250 CC BILLING SERVER  
0 (TYPE III)  
0 NTXG06AA02 DMS-250 EIOC MAP  
0 IMPLEMENTATION & NODE MTCE  
0 NTXG07AA01 DMS-250 EIOC/CC RASL ACCESS  
0 TYPES  
0 NTXG09CA01 DVS XMS PASCAL BASED FEATURES  
0 (TYPE III)  
0 NTXG12CA06 DMS-250 EOPS (TYPE III)  
0 NTXG13AA01 DMS BASE DATA ACCESS  
0 INTERFACE SESSION (DAIS)  
0 NTXG16AA01 DMS-250 EIOC MAP PASS-THRU  
0 NTXG18AA02 DMS-250 SAFE STORE TAP  
0 NTXG19AA01 DMS-250 LOG TAP  
0 NTXG20AA02 DMS-250 SS7 FGD (TR-394)  
0 NTXG24AA03 DMS-250 INTEGRATED ECHO  
0 CANCELLOR  
0 NTXG25AA01 DMS-250 BLUE BOX FRAUD  
0 NTXG26AA01 DMS-250 MULTIPLE OPERATOR  
0 CENTER CALL ROUTING  
0 NTXG32AA01 DMS-250 PRA INTERWORKING WITH  
0 SYSTEM-85 PRI  
0 NTXG34AA01 DMS-250 TRUNK GROUP AND CLLI  
0 NAME ANALYSIS

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXG42AA01 | DMS-250 SS7 IMT TERMINATIONS   |
| 0 |            | TO DTU                         |
| 0 | NTX202AA01 | DMS-250 OPERATIONAL            |
| 0 |            | MEASUREMENTS ON TAPE           |
| 0 | NTX203AA01 | DMS-250 104 TESTLINES          |
| 0 | NTX220CA08 | DMS-250 BASE PACKAGE (TYPE     |
| 0 |            | III)                           |
| 0 | NTX221CA05 | DMS-250 CALL DETAIL RECORDING  |
| 0 |            | (TYPE III)                     |
| 0 | NTX222CA09 | DMS-250 CALL PROCESSING (TYPE  |
| 0 |            | III)                           |
| 0 | NTX223CA01 | DMS-250 ENHANCED KILLER TRUNKS |
| 0 | NTX226CA01 | DMS-250 ATB BY NPA USING       |
| 0 |            | OPERATIONAL MEASUREMENTS       |
| 0 | NTX227CA01 | DMS-250 TIME OF DAY ROUTING    |
| 0 | NTX228CA01 | DMS-250 DCM CHANNEL UNIT CROSS |
| 0 |            | REFERENCE                      |
| 0 | NTX230CA01 | DMS-250 GENERIC SPEED NUMBERS  |
| 0 | NTX231CA01 | DMS-250 INCOMING EXCLUSION     |
| 0 | NTX232CA01 | DMS-250 ATB BY NPA USING LOGS  |
| 0 | NTX233CA01 | DMS-250 OFF HOOK QUEUING       |
| 0 | NTX234CA01 | DMS-250 AUTHCODES (TYPE III)   |
| 0 |            | (VARIABLE DIGIT)               |
| 0 | NTX235CA01 | DMS-250 RESTRICTED USAGE BY    |
| 0 |            | DATE AND TIME                  |
| 0 | NTX236CA01 | DMS-250 ALTERNATE TRUNK GROUP  |
| 0 |            | TREATMENTS                     |
| 0 | NTX237AA02 | DMS-250 NAILED UP CONNECTIONS  |
| 0 | NTX239CA01 | DMS-250 TRANSLATION            |
| 0 |            | VERIFICATION                   |
| 0 | NTX321CA01 | DMS-250 GENERIC OFF NET ACCESS |
| 0 |            | TRUNKS                         |
| 0 | NTX340CA01 | DMS-250 ADAPTIVE ROUTING       |
| 0 | NTX341CA01 | DMS-250 TOPS                   |
| 0 | NTX342CA01 | DMS-250 EQUAL ACCESS BASE      |
| 0 |            | PACKAGE                        |
| 0 | NTX343CA02 | DMS-250 EQUAL ACCESS (TYPE     |
| 0 |            | III)                           |
| 0 | NTX344CA06 | DMS-250 NEMAS                  |
| 0 | NTX345CA04 | DMS-250 MCCS (CALLING CARD)    |
| 0 | NTX346CA01 | DMS-250 INTRA-LATA INTRA-STATE |
| 0 |            | SCREENING                      |
| 0 | NTX347AA06 | DMS BASE DATA COMMUNICATION CC |
| 0 |            | SOFTWARE )                     |
| 0 | NTX349CA02 | DMS-250 CAMA TRUNK GROUP CALL  |
| 0 |            | PROCESSING                     |
| 0 | NTX351CA02 | DMS-250 AUTOMATIC TRUNK        |

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0 ROUTINING  
0 NTX353CA05 DMS-250 VIRTUAL PRIVATE  
0 NETWORK (VNET)  
0 NTX359CA01 DMS-250 SPLASHBACK BY STS  
0 NTX361CA07 DMS-250 CCS7 IMTS  
0 NTX363CA01 DMS-250 CAC INTERFACE  
0 NTX369AA01 DMS-250 NT40 SUPPORT SYSTEM

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0 NTXG90AA07 STATUS RTM TARGET SUPERNODE  
0 DMS-250 INTERNATIONAL BASE  
0 MASTER PACKAGE

0 NTXG06AA02 DMS-250 EIOC MAP  
0 IMPLEMENTATION & NODE MTCE  
0 NTXG07AA01 DMS-250 EIOC/CC RASL ACCESS  
0 TYPES  
0 NTXG13AA01 DMS BASE DATA ACCESS  
0 INTERFACE SESSION (DAIS)  
0 NTXG16AA01 DMS-250 EIOC MAP PASS-THRU  
0 NTXH14AA01 NTT NCCI CCITT #7 MTP  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX202AA01 DMS-250 OPERATIONAL  
0 MEASUREMENTS ON TAPE



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0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC  
0 SOFTWARE )  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX712AA01 CCS7 DATA PORT

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0 NTXG91AA07 STATUS RTM  
0 DMS-250 INTERNATIONAL EIOC  
0 BASE MASTER PACKAGE

0 NTXG06AA02 DMS-250 EIOC MAP  
0 IMPLEMENTATION & NODE MTCE  
0 NTXG07AA01 DMS-250 EIOC/CC RASL ACCESS  
0 TYPES  
0 NTXG13AA01 DMS BASE DATA ACCESS  
0 INTERFACE SESSION (DAIS)  
0 NTXG16AA01 DMS-250 EIOC MAP PASS-THRU  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC  
0 SOFTWARE )

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0 NTXG92AA04 STATUS RTM  
0 DMS-250 UCS EOPS MASTER  
0 PACKAGE

0 NTXG12AA06 DMS-250 EOPS  
0 NTXG26AA01 DMS-250 MULTIPLE OPERATOR  
0 CENTER CALL ROUTING  
0 NTXL06AA01 DMS-250 EOPS FGD ROUTING  
0 ENHANCEMENTS  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX076AA01 AMA - ENHANCED  
0 NTX341BA01 DMS-250 OPERATOR SERVICES  
0 NTX801AA01 TOLL FEATURES I

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0 NTXG99BA07 STATUS RTM TARGET NT40  
0 DMS-250 EIOC MASTER PACKAGE  
0 (TYPE II)

0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXG06AA02 DMS-250 EIOC MAP  
0 IMPLEMENTATION & NODE MTCE  
0 NTXG07AA01 DMS-250 EIOC/CC RASL ACCESS  
0 TYPES  
0 NTXG13AA01 DMS BASE DATA ACCESS  
0 INTERFACE SESSION (DAIS)

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0 NTXG16AA01 DMS-250 EIOC MAP PASS-THRU  
0 NTXG18BA01 DMS-250 SAFE STORE TAP  
0 NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 NTX000AA19 BILGE  
0 NTX202AA01 DMS-250 OPERATIONAL  
0 MEASUREMENTS ON TAPE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC  
0 SOFTWARE )  
0 NTX358BA03 DMS-250 CHIPS INTERFACE  
0 NTX369AA01 DMS-250 NT40 SUPPORT SYSTEM  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)

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0 NTXG99CA07 STATUS RTM TARGET NT40  
0 DMS-250 EIOC MASTER PACKAGE  
0 (TYPE III)

0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXG06AA02 DMS-250 EIOC MAP  
0 IMPLEMENTATION & NODE MTCE  
0 NTXG07AA01 DMS-250 EIOC/CC RASL ACCESS  
0 TYPES  
0 NTXG13AA01 DMS BASE DATA ACCESS  
0 INTERFACE SESSION (DAIS)  
0 NTXG16AA01 DMS-250 EIOC MAP PASS-THRU  
0 NTXG18AA02 DMS-250 SAFE STORE TAP  
0 NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 NTX000AA19 BILGE  
0 NTX202AA01 DMS-250 OPERATIONAL  
0 MEASUREMENTS ON TAPE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX344CA06 DMS-250 NEMAS  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC  
0 SOFTWARE )  
0 NTX369AA01 DMS-250 NT40 SUPPORT SYSTEM

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0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)

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0 NTXH20AA06 STATUS A+M TARGET SUPERNODE  
0 JAPAN 300/ITOPS SUPERNODE  
0 MASTER PACKAGE(UPG.BY  
0 NTXH20AB)

0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB13AA06 ITOPS TOLL BASIC(UPG. BY  
0 NTXB13AB)  
0 NTXB21AA01 COEXISTENCE (TRUNK TYPE)  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXH10AA02 PCM300 MAINTENANCE  
0 ENHANCEMENTS  
0 NTXH11AA01 M20 MAINTENANCE  
0 NTXH12AA01 ITOPS ENHANCEMENTS FOR JAPAN  
0 NTXH14AA01 NTT NCCI CCITT #7 MTP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS

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0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX300AA11 INTERNATIONAL SWITCHING CENTRE  
0 (ISC) BASIC  
0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN  
0 POINT  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX658AA02 MCL DMS-300 (A-LAW) SIGNALLING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX909AA01 ANI TOLL  
0 NTX925AA01 ISC TIME OF DAY AND PERCENTAGE  
0 ROUTING

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0 NTXH20AB04 STATUS A+M TARGET SUPERNODE  
0 JAPAN 300/ITOPS SUPERNODE  
0 MASTER  
0 PACKAGE(UPG.FR.NTXH20AA)

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|---|------------|--------------------------------|
| 0 | NTXB05AA01 | ITOPS COMMON BASIC             |
| 0 | NTXB13AB01 | ITOPS TOLL - ENHANCED          |
| 0 |            | QUEUEING(UPG.FR. NTXB13AA)     |
| 0 | NTXB21AA01 | COEXISTENCE (TRUNK TYPE)       |
| 0 | NTXB84AA04 | INTERNATIONAL RATING SYSTEM    |
| 0 | NTXF26AA01 | SYNCHRONIZATION - BITS         |
| 0 |            | COMPOSITE MASTER               |
| 0 | NTXH10AA02 | PCM300 MAINTENANCE             |
| 0 |            | ENHANCEMENTS                   |
| 0 | NTXH11AA01 | M20 MAINTENANCE                |
| 0 | NTXH12AA01 | ITOPS ENHANCEMENTS FOR JAPAN   |
| 0 | NTXH14AA01 | NTT NCCI CCITT #7 MTP          |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX041AB09 | CCS7 - MTP/SCCP(SEE NTXR72AA   |
| 0 |            | FOR LPP APPLICATION)           |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES |
| 0 | NTX178AA01 | NON RESIDENT DIAGNOSTIC        |
| 0 |            | UTILITIES                      |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX274AA04 | DTC 30 CARRIER MAINTENANCE     |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR   |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT    |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX300AA11 | INTERNATIONAL SWITCHING CENTRE |
| 0 |            | (ISC) BASIC                    |
| 0 | NTX395AA01 | REMOTE MAKE BUZY VIA SCAN      |
| 0 |            | POINT                          |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC   |
| 0 | NTX476AA01 | WINK-1 LINE SIGNALLING         |
| 0 | NTX477AA04 | DELAY DIAL-1 SIGNALLING        |

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0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX658AA02 MCL DMS-300 (A-LAW) SIGNALLING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX909AA01 ANI TOLL  
0 NTX925AA01 ISC TIME OF DAY AND PERCENTAGE  
0 ROUTING

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0 NTXL00AA04 STATUS RTM  
0 BILGE/Common (USED FOR PKG  
0 INCREMENTS)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTXQ49AA01 STATUS LTD TARGET SUPERNODE  
0 AIN RO.1 BASE MASTER PKG

0 NTXQ48AA01 SCP - CBIS SMS INTERFACE

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0 NTXQ53AA01 STATUS RTM TARGET SUPERNODE  
0 MS RESIDENT LIS CONTROLLER

0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY  
0 ON MS  
0 NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS  
0 CONTROLLER

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0 NTXR39AA02 STATUS RTM  
0 MERIDIAN ACD COMPUCALL MASTER  
0 PACKAGE

0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)  
0 NTXJ62AA02 THIRD PARTY CALL CONTROL

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0 NTXR39AB01 STATUS LTD  
0 MERIDIAN ACD COMPUCALL MASTER  
0 PACKAGE (UPG FR NTXR39AA)

0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA  
0 (UPG OF NTXJ60AA)



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0 NTXJ62AA02 THIRD PARTY CALL CONTROL  
0 NTXJ63AA01 VOICE PROCESSING INTEGRATION  
0 FOR DMS ISI

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0 NTXZ04AA03 STATUS A+M TARGET SUPERNODE  
0 JAPAN DMS SUPERNODE LOCAL  
0 TANDEM SOFTWARE(UPG. BY  
0 NTXZ04AB)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXH10AA02 PCM300 MAINTENANCE  
0 ENHANCEMENTS  
0 NTXH11AA01 M20 MAINTENANCE  
0 NTXH88AA01 NETWORK MANAGEMENT FOR  
0 UNIVERSAL XLA  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY

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0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXZ04AB02 STATUS LTD TARGET SUPERNODE  
0 JAPAN DMS SUPERNODE LOCAL  
0 TANDEM SOFTWARE(UPG.FR.  
0 NTXZ04AA)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXF15AA01 DMS-CORE MC68030 33MHZ  
0 PROCESSOR  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER

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0 NTXH10AA02 PCM300 MAINTENANCE  
0 ENHANCEMENTS  
0 NTXH11AA01 M20 MAINTENANCE  
0 NTXH88AA01 NETWORK MANAGEMENT FOR  
0 UNIVERSAL XLA  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON

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0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXZ04BA01 STATUS RTM  
0 JAPAN DMS SUPERNODE LOCAL  
0 TANDEM SOFTWARE/BRISC

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXF26AA01 SYNCHRONIZATION - BITS  
0 COMPOSITE MASTER  
0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXH10AA02 PCM300 MAINTENANCE  
0 ENHANCEMENTS  
0 NTXH11AA01 M20 MAINTENANCE  
0 NTXH88AA01 NETWORK MANAGEMENT FOR  
0 UNIVERSAL XLA  
0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS

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0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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0 NTXZ05AA02 STATUS A+M TARGET SUPERNODE  
0 JAPAN DMS SUPERNODE ACD  
0 SOFTWARE(UPG. BY NTXZ05AB)  
  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXE09AA01 ACD ON 2500 SET(UPG. BY  
0 NTXE09AB)  
0 NTXH86AA01 JAPAN LINE INTERFACE  
0 NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)

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0 NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 NTXZ03AA01 ACD SUPPORT SOFTWARE 4 (EQ912)  
0 NTXZ07AA01 JAPAN ACD APPLICATION BASE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AG01 ACD ENHANCED II(UPG. OF  
0 NTX416AF)  
0 NTX435AA03 IBN SUPERSET  
0 NTX878AD01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. BY NTX878AE)

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0 NTXZ05AB01 STATUS A+M TARGET SUPERNODE  
0 JAPAN DMS SUPERNODE ACD  
0 SOFTWARE(UPG BY NTXZ05AC)

0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXH86AA01 JAPAN LINE INTERFACE  
0 NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)  
0 NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 NTXZ03AA01 ACD SUPPORT SOFTWARE 4 (EQ912)  
0 NTXZ07AA01 JAPAN ACD APPLICATION BASE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AI01 ACD ENHANCED II(UPG. OF

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0 NTX416AH)  
0 NTX435AA03 IBN SUPERSET  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD

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0 NTXZ05AC01 STATUS RTM TARGET SUPERNODE  
0 JAPAN DMS SUPERNODE ACD  
0 SOFTWARE(UPG FR NTXZ05AB)

0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)  
0 NTXH86AA01 JAPAN LINE INTERFACE  
0 NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)  
0 NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 NTXZ03AA01 ACD SUPPORT SOFTWARE 4 (EQ912)  
0 NTXZ07AA01 JAPAN ACD APPLICATION BASE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX435AA03 IBN SUPERSET  
0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD

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0 NTXZ05AD01 STATUS LTD TARGET SUPERNODE

0 JAPAN DMS SUPERNODE ACD

0 SOFTWARE(UPG. FR. NTXZ05AC)

0 NTXA84AA01 EBS - MUSIC ON HOLD

0 NTXE09AB01 ACD ON 2500 SET (UPG OF  
0 NTXE09AA IN BCS32)

0 NTXH86AB01 JAPAN LINE INTERFACE

0 NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)

0 NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)

0 NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)

0 NTXZ03AA01 ACD SUPPORT SOFTWARE 4 (EQ912)

0 NTXZ07AA01 JAPAN ACD APPLICATION BASE

0 NTX054AA05 LINE TEST POSITION (LTP)

0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

0 NTX108AA05 IBN - DISPLAY FEATURES

0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)

0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)

0 NTX415AA07 ACD BASIC

0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)

0 NTX435AA03 IBN SUPERSET

0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS  
0 SET SERVICES(UPG. FR. NTX878AD

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0 NTXZ06AA01 STATUS RTM TARGET SUPERNODE

0 JAPAN ACD-MIS

0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I  
0 (REP. NTXA52AA)

0 NTX727AD01 ACD - LOAD MANAGEMENT III

0 NTX991AF01 ACD-MGMT REP 2 WAY DATA  
0 STREAM(UPG OF NTX991AE IN  
0 BCS32)



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0 NTX002AA29 STATUS RTM  
0 LOCAL BASIC

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

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0 NTX002AB29 STATUS A+M  
0 LOCAL STANDARD (REP.BY  
0 NTX002AC)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX002AC15 STATUS RTM  
0 LOCAL STANDARD (UPGRADE OF  
0 NTX002AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX003AA29 STATUS A+M  
0 LOCAL ENHANCED(Rep. BY  
0 NTX003AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(Rep. BY  
0 NTX007AB)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX003AB15 STATUS RTM  
0 LOCAL ENHANCED(UPGRADE OF  
0 NTX003AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX004AA29 STATUS RTM  
0 TOLL BASIC

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I

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0 NTX004AB29 STATUS RTM  
0 TOLL STANDARD

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX060AB11 NETWORK MANAGEMENT

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0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX005AA29 STATUS RTM  
0 TOLL ENHANCED

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX057AA04 STATUS A+M  
0 CUTOVER ASSISTANCE

0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA

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0 NTX069AA28 STATUS RTM  
0 LOCAL TOLL BASIC

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I

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0 NTX069BA22 STATUS A+M  
0 LOCAL TOLL ENHANCED(REP. BY  
0 NTX069BB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX069BB14 STATUS RTM  
0 LOCAL TOLL ENHANCED(UPGRADE OF  
0 NTX069BA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX070AA28 STATUS LTD  
0 AUTOVON - BASIC

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND  
0 ACCESS LINE INTERFACE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AA25 STATUS A+M  
0 BELL CANADA - LOCAL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I (REP. BY  
0 NTX007AB)  
0 NTX020AA01 VERTICAL SERVICES I (UPGRADED  
0 BY NTX020AB)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX058AD02 POLLING OMS DATA VIA DATAPAC  
0 (REP. BY NTX059AB FROM BCS20)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AB01 SUBSCRIBER LINE USAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071AB26 STATUS A+M  
0 BELL CANADA - TOLL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AA02 NETWORK MANAGEMENT - ENHANCED  
0 (REP. BY NTX060BA)  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AE25 STATUS A+M  
0 BELL CANADA - TOLL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT



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0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060AE03 NETWORK MANAGEMENT -  
0 ENHANCED(UPGRADED BY NTX060BA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AF21 STATUS A+M  
0 BELL CANADA - TOLL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060AE03 NETWORK MANAGEMENT -  
0 ENHANCED(UPGRADED BY NTX060BA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION

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0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AG19 STATUS A+M  
0 BELL CANADA - TOLL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AH18 STATUS A+M  
0 BELL CANADA - TOLL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AI17 STATUS A+M  
0 BELL CANADA - TOLL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

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0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AJ16 STATUS A+M  
0 BELL CANADA - TOLL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT

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0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AK15 STATUS A+M  
0 BELL CANADA - TOLL (REP BY  
0 NTX071AL)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX244AA02 SEQUENTIAL TRUNK  
0 SELECTION(REP.BY NTX244AB)

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0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AL13 STATUS A+M  
0 BELL CANADA - TOLL(REP. BY  
0 NTX071AM)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX244AA02 SEQUENTIAL TRUNK  
0 SELECTION(REP.BY NTX244AB)  
0 NTX269AA07 UNIVERSAL TONE

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0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AM12 STATUS A+M  
0 BELL CANADA - TOLL(UPG. BY  
0 NTX071AN)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE

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0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071AN10 STATUS A+M  
0 BELL CANADA - TOLL (UPG.BY  
0 NTX071A0)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE



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0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX555AB01 800 PLUS  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071A009 STATUS A+M  
0 BELL CANADA - TOLL ( UPG. BY  
0 NTX071AP)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT

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0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX738AB02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPGRADE OF NTX738AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071AP08 STATUS A+M  
0 BELL CANADA - TOLL (UPG. BY  
0 NTX071AQ)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |
| 0 |            | HUNTING(UPG OF 244AA IN BCS23) |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX555AB01 | 800 PLUS                       |
| 0 | NTX738AB02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPGRADE OF NTX738AA)   |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX882AA04 | BIT ERROR RATIO INDICATOR FOR  |
| 0 |            | TOLL SWITCHES                  |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |

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0 NTX071AQ07 STATUS A+M

0 BELL CANADA - TOLL (UPG. OF  
0 NTX071AP)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS

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0 NTX738AB02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPGRADE OF NTX738AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071AR06 STATUS A+M  
0 BELL CANADA - TOLL (UPG. BY  
0 NTX071AS)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AA03 DYNAMICALLY CONTROLLED  
0 ROUTING (DCR/HPR) (UPG. BY  
0 NTX022AB)  
0 NTX041AB09 CCS7 - MTP/SCCP (SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV (NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG. DATA VIA DATAPAC (UPG. OF  
0 NTX058AD)  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM

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0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX738AB02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPGRADE OF NTX738AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071AS05 STATUS A+M  
0 BELL CANADA - TOLL(UPG. BY  
0 NTX071AT)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXE65AA01 | MPC X.25 INTERFACE             |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX022AB01 | DYNAMICALLY CONTROLLED         |
| 0 |            | ROUTING(DCR/HPR)(UPG. OF       |
| 0 |            | NTX022AA)                      |
| 0 | NTX041AB09 | CCS7 - MTP/SCCP(SEE NTXR72AA   |
| 0 |            | FOR LPP APPLICATION)           |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |
| 0 |            | HUNTING(UPG OF 244AA IN BCS23) |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |

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0 NTX555AB01 800 PLUS  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071AT03 STATUS A+M  
0 BELL CANADA - TOLL(UPG. BY  
0 NTX071AU)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AB01 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG. OF  
0 NTX022AA)

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0 NTX071AT03 STATUS A+M

0 BELL CANADA - TOLL(UPG. BY  
0 NTX071AU)

0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)

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0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071AU02 STATUS A+M  
0 BELL CANADA - TOLL(UPG. FR  
0 NTX071AT)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP82AA01 AMA MOD (CAMA MODULES)  
0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTXQ40AA02 SSP 800 OVERFLOW CALL ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AB01 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG. OF  
0 NTX022AA)  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | FOR LPP APPLICATION)           |
| 0 | NTX044AA04 | CENTRAL AUTOMATIC MESSAGE      |
| 0 |            | ACCOUNTING (CAMA)              |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX098AA07 | BELLCORE CAMA FORMAT           |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY     |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX169BA01 | 800 PLUS SOUTHBOUND            |
| 0 | NTX243AA07 | AMA TELEPROCESSING             |
| 0 |            | SYSTEM(AMATPS)                 |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |
| 0 |            | HUNTING(UPG OF 244AA IN BCS23) |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX555AB01 | 800 PLUS                       |

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0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071AV01 STATUS LTD TARGET SUPERNODE  
0 BELL CANADA - TOLL (UPG FROM  
0 071AU)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP82AA01 AMA MOD (CAMA MODULES)  
0 NTXQ38AA01 SSP 800 CALLING AND DIALLED  
0 NUMBER DELIVERY  
0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTXQ40AA02 SSP 800 OVERFLOW CALL ROUTING  
0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTXQ65AB01 CCS7 AUTO ATTENDANT RELEASE  
0 LINK TRUNK (UPG OF NTXQ65AA)  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS

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0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AB01 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG. OF  
0 NTX022AA)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD)  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE

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0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071AW01 STATUS LTD TARGET SUPERNODE  
0 BELL CANADA - TOLL (UPG OF  
0 071AV)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP82AA01 AMA MOD (CAMA MODULES)  
0 NTXQ38AA01 SSP 800 CALLING AND DIALLED  
0 NUMBER DELIVERY  
0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTXQ40AA02 SSP 800 OVERFLOW CALL ROUTING  
0 NTXQ41AA01 NB / SB ENHANCEMENT

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0 NTXQ65AB01 CCS7 AUTO ATTENDANT RELEASE  
0 LINK TRUNK (UPG OF NTXQ65AA)  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING  
0 (DCR/HPR) (UPG OF 022AB)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION

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0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX555AB01 800 PLUS  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF  
0 NTX737AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071BA25 STATUS A+M  
0 BELL CANADA - LOCAL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX020AA01 VERTICAL SERVICES I (UPGRADED  
0 BY NTX020AB)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)



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0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX058AD02 POLLING OMS DATA VIA DATAPAC  
0 (REP. BY NTX059AB FROM BCS20)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BB25 STATUS A+M  
0 BELL CANADA - LOCAL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX020AA01 VERTICAL SERVICES I (UPGRADED  
0 BY NTX020AB)  
0 NTX028AA01 DIRECT DIALING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON

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0 RESIDENT)  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX058AD02 POLLING OMS DATA VIA DATAPAC  
0 (REP. BY NTX059AB FROM BCS20)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BD21 STATUS A+M  
0 BELL CANADA - LOCAL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX020AB03 VERTICAL SERVICES I (UPGRADED  
0 BY NTX020AC)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX058AD02 POLLING OMS DATA VIA DATAPAC  
0 (REP. BY NTX059AB FROM BCS20)

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0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BE17 STATUS A+M  
0 BELL CANADA - LOCAL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX020AB03 VERTICAL SERVICES I (UPGRADED  
0 BY NTX020AC)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX058AD02 POLLING OMS DATA VIA DATAPAC  
0 (REP. BY NTX059AB FROM BCS20)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS

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0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BF16 STATUS A+M  
0 BELL CANADA - LOCAL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX020AB03 VERTICAL SERVICES I (UPGRADED  
0 BY NTX020AC)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX058AD02 POLLING OMS DATA VIA DATAPAC  
0 (REP. BY NTX059AB FROM BCS20)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH

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0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BG15 STATUS A+M  
0 BELL CANADA - LOCAL(UPG.BY  
0 NTX071BH)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX244AA02 SEQUENTIAL TRUNK  
0 SELECTION(REP.BY NTX244AB)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE

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0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BH14 STATUS A+M  
0 BELL CANADA - LOCAL(UPGRADE OF  
0 NTX071BG)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM

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0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX244AA02 SEQUENTIAL TRUNK  
0 SELECTION(REP.BY NTX244AB)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BI13 STATUS A+M  
0 BELL CANADA - LOCAL(UPG.BY  
0 NTX071BJ)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION

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0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX244AA02 SEQUENTIAL TRUNK  
0 SELECTION(REP.BY NTX244AB)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BJ12 STATUS A+M  
0 BELL CANADA - LOCAL (UPG. BY  
0 NTX071BK)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING



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0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BK10 STATUS A+M  
0 BELL CANADA - LOCAL (UPG. BY  
0 NTX071BL)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES

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0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX881AB02 SWITCH BIT ERROR RATE  
0 NTCE(REP. BY NTX881AC)  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BL09 STATUS A+M  
0 BELL CANADA - LOCAL( UPG. BY  
0 NTX071BM)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX219AB03 TEEN SERVICE  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II

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0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX738AB02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPGRADE OF NTX738AA)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BM08 STATUS A+M  
0 BELL CANADA - LOCAL(UPG. BY  
0 NTX071BN)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX057AB05 | CUTOVER ASSISTANCE II (NON     |
| 0 |            | RESIDENT)                      |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX219AB03 | TEEN SERVICE                   |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |
| 0 |            | HUNTING(UPG OF 244AA IN BCS23) |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX558AA01 | CCC END OFFICE DP/DTMF         |
| 0 |            | GENERATION                     |
| 0 | NTX738AB02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPGRADE OF NTX738AA)   |
| 0 | NTX804AA02 | OM POLLING & VERTICAL          |
| 0 |            | SERVICES(ORDER VIA MP NTX071BG |
| 0 |            | & UP)                          |
| 0 | NTX807AB01 | ENHANCED CALL WAITING -        |
| 0 |            | POTS(UPG. OF NTX807AA)         |
| 0 | NTX881AC03 | SWITCH BIT ERROR RATE          |
| 0 |            | MAINTENANCE(UPG. OF NTX881AB)  |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX902AA07 | LOCAL FEATURES II              |

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0 NTX071BN07 STATUS A+M

0 BELL CANADA - LOCAL(UPG. BY  
0 NTX071B0)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX219AB03 TEEN SERVICE  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE

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0 OF NTX445AA)  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX738AB02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPGRADE OF NTX738AA)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071B005 STATUS A+M  
0 BELL CANADA - LOCAL(UPG. BY  
0 NTX071BP)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION

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0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX219AB03 TEEN SERVICE  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BP03 STATUS A+M

0 BELL CANADA - LOCAL(UPG.BY  
0 NTX071BQ)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX019AA02 CIVIC SERVICES  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX028AA01 DIRECT DIALLING OVERSEAS,  
0 LOCAL (CANADA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AB05 CUTOVER ASSISTANCE II (NON  
0 RESIDENT)  
0 NTX057BA01 CUTOVER ASSISTANCE III (NON  
0 RESIDENT)  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT  
0 (CNA)  
0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE  
0 DETECTION  
0 NTX219AB03 TEEN SERVICE  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)

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0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX290AA01 TANDEMING/SUPERVISION AND  
0 TREATMENT  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071BQ02 STATUS RTM  
0 BELL CANADA - LOCAL(UPG.FR  
0 NTX071BP)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX006AA04 | BUSINESS LINES                 |
| 0 | NTX008AB02 | PBX INTERFACE II(UPG. OF       |
| 0 |            | NTX008AA)                      |
| 0 | NTX019AA02 | CIVIC SERVICES                 |
| 0 | NTX020AC01 | VERTICAL SERVICES I (UPGRADE   |
| 0 |            | FROM NTX020AB)                 |
| 0 | NTX028AA01 | DIRECT DIALLING OVERSEAS,      |
| 0 |            | LOCAL (CANADA)                 |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX057AB05 | CUTOVER ASSISTANCE II (NON     |
| 0 |            | RESIDENT)                      |
| 0 | NTX057BA01 | CUTOVER ASSISTANCE III (NON    |
| 0 |            | RESIDENT)                      |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX066AB01 | BILINGUAL INTERFACE(UPG FR.    |
| 0 |            | NTX066AA)                      |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX094AA01 | DIGITAL SUBSCRIBER SERVICES    |
| 0 | NTX196AA02 | CALLING NUMBER ANNOUNCEMENT    |
| 0 |            | (CNA)                          |
| 0 | NTX206AA02 | UNAUTHORIZED DIGITONE SERVICE  |
| 0 |            | DETECTION                      |
| 0 | NTX219AB03 | TEEN SERVICE                   |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |
| 0 |            | HUNTING(UPG OF 244AA IN BCS23) |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX290AA01 | TANDEMING/SUPERVISION AND      |
| 0 |            | TREATMENT                      |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |

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0 OF NTX445AA)  
0 NTX558AA01 CCC END OFFICE DP/DTMF  
0 GENERATION  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX804AA02 OM POLLING & VERTICAL  
0 SERVICES(ORDER VIA MP NTX071BG  
0 & UP)  
0 NTX807AB01 ENHANCED CALL WAITING -  
0 POTS(UPG. OF NTX807AA)  
0 NTX881AC03 SWITCH BIT ERROR RATE  
0 MAINTENANCE(UPG. OF NTX881AB)  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX071CF19 STATUS A+M  
0 BELL CANADA - TOPS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT

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0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071CG17 STATUS A+M  
0 BELL CANADA - TOPS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II

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0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071CH16 STATUS A+M  
0 BELL CANADA - TOPS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057AC03 CUTOVER ASSISTANCE I (NON  
0 RESIDENT) UPGRADED BY NTX057DA  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 Software Features  
0 Appendix S

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0 NTX071CI15 STATUS A+M  
0 BELL CANADA - TOPS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX244AA02 SEQUENTIAL TRUNK  
0 SELECTION(REP.BY NTX244AB)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071CJ14 STATUS A+M  
0 BELL CANADA - TOPS (REP BY  
0 NTX071CK)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX244AA02 SEQUENTIAL TRUNK  
0 SELECTION(REP.BY NTX244AB)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II



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0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071CK13 STATUS A+M  
0 BELL CANADA - TOPS(REP. BY  
0 NTX071CL)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX244AA02 SEQUENTIAL TRUNK  
0 SELECTION(REP.BY NTX244AB)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE

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0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071CL12 STATUS A+M  
0 BELL CANADA - TOPS (UPG.BY  
0 NTX071CM)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE

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0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX071CM10 STATUS A+M  
0 BELL CANADA - TOPS (UPG.BY  
0 NTX071CN)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057DA01 CUTOVER ASSISTANCE IV  
0 (NRES)(UPG. BY NTX057EA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM

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0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX552AB03 CUSTOM CHARGE  
0 CALLING(CCC)(UPG. BY NTX552AC)  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071CN09 STATUS A+M  
0 BELL CANADA - TOPS (UPG. BY  
0 NTX071C0)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING

|   |            |                                                                   |
|---|------------|-------------------------------------------------------------------|
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE                                    |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)                                         |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION                                            |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT                                      |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION                                           |
| 0 | NTX057DA01 | CUTOVER ASSISTANCE IV<br>(NRES)(UPG. BY NTX057EA)                 |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG<br>ACCTG.DATA VIA DATAPAC(UPG.OF<br>NTX058AD |
| 0 | NTX060AB11 | NETWORK MANAGEMENT                                                |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED                                     |
| 0 | NTX065AA12 | SERVICE ANALYSIS                                                  |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM                                          |
| 0 | NTX241AA01 | ANI ASSIST CAPABILITY                                             |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK<br>HUNTING(UPG OF 244AA IN BCS23)       |
| 0 | NTX269AA07 | UNIVERSAL TONE<br>RECEIVER(DOMESTIC)                              |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE<br>PACKAGE                             |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE                                              |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH<br>PASSWORD ENCRYPTION                   |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II                                      |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS                                        |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE<br>OF NTX445AA)                    |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE<br>SUPPORT                             |
| 0 | NTX552AB03 | CUSTOM CHARGE<br>CALLING(CCC)(UPG. BY NTX552AC)                   |
| 0 | NTX555AB01 | 800 PLUS                                                          |
| 0 | NTX559AA01 | CCC SSP DP/DTMF SEPARATION                                        |
| 0 | NTX738AB02 | SWITCH PERFORMANCE MONITORING<br>SYSTEM (UPGRADE OF NTX738AA)     |
| 0 | NTX801AA01 | TOLL FEATURES I                                                   |
| 0 | NTX802AA04 | TOLL FEATURES II                                                  |
| 0 | NTX882AA04 | BIT ERROR RATIO INDICATOR FOR<br>TOLL SWITCHES                    |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.<br>OF NTX885AA)                     |

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0 NTX071C008 STATUS A+M  
0 BELL CANADA - TOPS (UPG. BY  
0 NTX071CP)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II

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0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX552AB03 CUSTOM CHARGE  
0 CALLING(CCC)(UPG. BY NTX552AC)  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX738AB02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPGRADE OF NTX738AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071CP07 STATUS A+M  
0 BELL CANADA - TOPS (UPG. BY  
0 NTX071CQ)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED  |
| 0 | NTX065AA12 | SERVICE ANALYSIS               |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX241AA01 | ANI ASSIST CAPABILITY          |
| 0 | NTX244AB02 | ENHANCED SEQUENTIAL TRUNK      |
| 0 |            | HUNTING(UPG OF 244AA IN BCS23) |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX293AA02 | ENHANCED SECURITY PACKAGE II   |
| 0 | NTX385AA01 | OM THRESHOLDING AND ALARMS     |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX552AB03 | CUSTOM CHARGE                  |
| 0 |            | CALLING(CCC)(UPG. BY NTX552AC) |
| 0 | NTX555AB01 | 800 PLUS                       |
| 0 | NTX559AA01 | CCC SSP DP/DTMF SEPARATION     |
| 0 | NTX738AB02 | SWITCH PERFORMANCE MONITORING  |
| 0 |            | SYSTEM (UPGRADE OF NTX738AA)   |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX802AA04 | TOLL FEATURES II               |
| 0 | NTX882AA04 | BIT ERROR RATIO INDICATOR FOR  |
| 0 |            | TOLL SWITCHES                  |
| 0 | NTX885AB04 | SWITCH PATH DIAGNOSTICS (UPG.  |
| 0 |            | OF NTX885AA)                   |



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0 NTX071CQ06 STATUS A+M

0 BELL CANADA - TOPS (UPG. BY  
0 NTX071CR)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE04AA02 SCREENED SERVICE ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AA03 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG.BY  
0 NTX022AB)  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD)  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER

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0 BX.25  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX552AB03 CUSTOM CHARGE  
0 CALLING(CCC)(UPG. BY NTX552AC)  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX738AB02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPGRADE OF NTX738AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071CR05 STATUS A+M  
0 BELL CANADA - TOPS(UPG.BY  
0 NTX071CS)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE04AA02 SCREENED SERVICE ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AA03 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG.BY

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0 NTX022AB)  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX552AB03 CUSTOM CHARGE  
0 CALLING(CCC)(UPG. BY NTX552AC)  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)

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0 NTX738AB02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPGRADE OF NTX738AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071CS05 STATUS A+M  
0 BELL CANADA - TOPS (UPG. BY  
0 NTX071CT)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE04AA02 SCREENED SERVICE ROUTING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AB01 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG. OF  
0 NTX022AA)  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION

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0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX552AB03 CUSTOM CHARGE  
0 CALLING(CCC)(UPG. BY NTX552AC)  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES

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0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071CT03 STATUS A+M  
0 BELL CANADA - TOPS(UPG.BY  
0 NTX071CU)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE04AA02 SCREENED SERVICE ROUTING  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT  
0 NTXE72AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT - CCS7 VALIDATION  
0 (U.S.)  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AB01 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG. OF  
0 NTX022AA)  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION

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0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX552AC02 CUSTOM CHARGE  
0 CALLING(CCC)(UPG. FR NTX552AB)  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR

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0 RELEASE 28.01  
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0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX071CU02 STATUS A+M  
0 BELL CANADA - TOPS(UPG.BY  
0 NTX071CV)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXE04AA02 SCREENED SERVICE ROUTING  
0 NTXE18AA01 TOPS AMA ENHANCEMENTS  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA  
0 FORMAT(EBAF)  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT  
0 NTXE72AA01 TOPS EXPANDED CALLING CARD  
0 FORMAT - CCS7 VALIDATION  
0 (U.S.)  
0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTXN68AA01 XPM BROADCAST PATCHING  
0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE  
0 INCREASE  
0 NTXP82AA01 AMA MOD (CAMA MODULES)  
0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTXQ40AA02 SSP 800 OVERFLOW CALL ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX022AB01 DYNAMICALLY CONTROLLED  
0 ROUTING(DCR/HPR)(UPG. OF  
0 NTX022AA)  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX036AA01 TOPS INWARD VALIDATION



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0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX057EA04 CUTOVER ASSISTANCE IV(NRES)  
0 (UPG. OF NTX057DA)  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX169BA01 800 PLUS SOUTHBOUND  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX241AA01 ANI ASSIST CAPABILITY  
0 NTX243AA07 AMA TELEPROCESSING  
0 SYSTEM(AMATPS)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX293AA02 ENHANCED SECURITY PACKAGE II  
0 NTX385AA01 OM THRESHOLDING AND ALARMS  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE

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0 SUPPORT  
0 NTX552AC02 CUSTOM CHARGE  
0 CALLING(CCC)(UPG. FR NTX552AB)  
0 NTX555AB01 800 PLUS  
0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)

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0 NTX073AA25 STATUS A+M  
0 A T & T - TOLL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060AE03 NETWORK MANAGEMENT -  
0 ENHANCED(UPGRADED BY NTX060BA)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE

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0 AIDS  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX073AB19 STATUS A+M  
0 A T & T - TOLL(REP.BY  
0 NTX073AC)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED(  
0 REPL. BY NTX060BB)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 Software Features  
0 Appendix S

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0 NTX073AC12 STATUS RTM  
0 AT & T - TOLL(UPG. FR.  
0 NTX073AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX200AA25 STATUS RTM  
0 DMS-250 STANDARD BASE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE

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0 NTX200BC05 STATUS RTM TARGET SUPERNODE

0 DMS-250 MASTER PACKAGE(TYPE

0 II) (PART 1)(UPG FR. NTX200BB)

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT

0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED

0 PLATFORMS

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX048AA06 SYNCHRONIZATION

0 NTX051AA02 AUTOMATIC TRUNK TESTING

0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

0 NTX055AA03 TRUNK TEST POSITION (TTP)

0 NTX055AB03 TTP-DIGIT VERIFICATION

0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT

0 NTX056AA05 ENHANCED ADMINISTRATION

0 NTX060AB11 NETWORK MANAGEMENT

0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED

0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE

0 DIALLING (IDDD)

0 NTX074AA09 DISK DATA STORAGE SYSTEM

0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT

0 NTX087AA04 TRAFFIC SEPARATION USAGE

0 NTX088AA04 TRAFFIC SEPARATION REPORT

0 NTX099AA01 OPERATIONAL MEASUREMENTS

0 ENHANCEMENTS

0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY

0 NTX136AA03 AUTOMATIC TRANSMISSION

0 MEASURING SYSTEM

0 NTX142AA02 DS-1 64 Kbps CLEAR

0 NTX143AA02 DS-1 - ESF

0 NTX167AB11 CCS7 - TRUNK SIGNALLING (

0 REP.OF NTX167AA)

0 NTX176AA05 NON RESIDENT ADMINISTRATIVE

0 AIDS

0 NTX178AA01 NON RESIDENT DIAGNOSTIC

0 UTILITIES

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0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.  
0 OF NTX885AA)  
0 NTX903AA01 TRANSMISSION MEASUREMENTS

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0 NTX200CA09 STATUS RTM TARGET SUPERNODE  
0 DMS-250 MASTER PACKAGE(TYPE  
0 III) (PART 1)  
  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX039AA01 HOST OC DATA - LINK HANDLING  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2

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0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX055BA01 RONI TRUNK TESTING  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE  
0 DIALLING (IDDD)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX076AA01 AMA - ENHANCED  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX136AA03 AUTOMATIC TRANSMISSION  
0 MEASURING SYSTEM  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX143AA02 DS-1 - ESF  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK  
0 HUNTING(UPG OF 244AA IN BCS23)  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR  
0 TOLL SWITCHES  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR  
0 RATE TESTING  
0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG.

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0 OF NTX885AA)  
0 NTX903AA01 TRANSMISSION MEASUREMENTS

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0 NTX287AC17 STATUS RTM  
0 TOPS STANDARD

0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)

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0 NTX289AC17 STATUS RTM  
0 REMOTE OPERATOR  
0 CENTRALIZATION(OC)(UPG.OF  
0 NTX289AB)

0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING

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0 NTX490AC15 STATUS A+M  
0 TURKEY DMS-100 LOCAL  
0 STANDARD(REP.BY NTX490AD)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AA03 INTERNATIONAL - LOCAL  
0 BASIC(UPGRADED BY NTX472AB)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)

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0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX493AA01 ADMINISTRATIVE CALL DIVERSION  
0 FEATURES  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)

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0 NTX490AD14 STATUS A+M  
0 TURKEY DMS-100 LOCAL  
0 STANDARD(REP.BY NTX490AE)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT    |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC   |
| 0 | NTX471AA01 | A-LAW COMPANDING               |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC    |
| 0 |            | (UPGR NTX472AA)                |
| 0 | NTX474AA07 | INTERNATIONAL BASE METERING    |
| 0 | NTX475AA01 | TURKISH TRK TRANSMN TESTING    |
| 0 | NTX476AA01 | WINK-1 LINE SIGNALLING         |
| 0 | NTX477AA04 | DELAY DIAL-1 SIGNALLING        |
| 0 | NTX478AA04 | CCITT PCM (30+2) DIGITAL       |
| 0 |            | SIGNALLING AND MAINTENANCE     |
| 0 | NTX479AA03 | INTL UNIV TONE RCVR SUPPORT    |
| 0 | NTX480AA02 | TURKISH TONE PLAN              |
| 0 | NTX481AA02 | TURKISH OPERATOR SWITCHBOARD   |
| 0 |            | SIGNALLING                     |
| 0 | NTX482AB03 | TURKISH LINE CARD              |
| 0 |            | DIAGNOSTICS(REP. NTX482AA)     |
| 0 | NTX483AA03 | INTERNATIONAL 101              |
| 0 |            | COMMUNICATION TEST LINE(UPG.BY |
| 0 |            | NTX483AB)                      |
| 0 | NTX484AA01 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | TOLL/TRANSIT                   |
| 0 | NTX485AA03 | INTL - CALL PROCESSING SYSTEM  |
| 0 | NTX486AA01 | MF-3 REGISTER SIGNALLING       |
| 0 | NTX487AA03 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | LOCAL                          |
| 0 | NTX488AA01 | INTERNATIONAL TIME OF DAY      |
| 0 |            | ROUTING                        |
| 0 | NTX492AA03 | OPERATOR TOLL BREAK-IN         |
| 0 | NTX494AA03 | AUTOMATIC CALL RECORDING       |
| 0 | NTX660AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE) - |
| 0 |            | BASIC                          |
| 0 | NTX661AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE)   |
| 0 |            | LOCAL                          |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX980AA01 | INTERNATIONAL TRUNK TST        |
| 0 |            | POSITION (ITTP)                |
| 0 | NTX981AA01 | INTERNATIONAL LINE TEST        |
| 0 |            | POSITION(ILTP)(REP.BY          |
| 0 |            | NTX472AB)                      |

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0 NTX490AE12 STATUS A+M  
0 TURKEY DMS-100 LOCAL  
0 STANDARD(REP.BY NTX490AF)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING

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0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)

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0 NTX490AF11 STATUS A+M  
0 TURKEY DMS-100 LOCAL  
0 STANDARD(UPG.OF NTX490AE)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

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0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -

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0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)  
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0 NTX490AG10 STATUS A+M  
0 TURKEY DMS-100 LOCAL STANDARD  
0 - UPGRADE OF NTX490AF  
  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION

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0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE
0 OF NTX445AA)
0 NTX470AA13 INTERNATIONAL - COMMON BASIC
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC
0 (UPGR NTX472AA)
0 NTX474AA07 INTERNATIONAL BASE METERING
0 NTX475AA01 TURKISH TRK TRANSMN TESTING
0 NTX476AA01 WINK-1 LINE SIGNALLING
0 NTX477AA04 DELAY DIAL-1 SIGNALLING
0 NTX478AA04 CCITT PCM (30+2) DIGITAL
0 SIGNALLING AND MAINTENANCE
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT
0 NTX480AA02 TURKISH TONE PLAN
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD
0 SIGNALLING
0 NTX482AB03 TURKISH LINE CARD
0 DIAGNOSTICS(REP. NTX482AA)
0 NTX483AA03 INTERNATIONAL 101
0 COMMUNICATION TEST LINE(UPG.BY
0 NTX483AB)
0 NTX484AA01 MALICIOUS CALL TRACE - INTL
0 TOLL/TRANSIT
0 NTX486AA01 MF-3 REGISTER SIGNALLING
0 NTX487AA03 MALICIOUS CALL TRACE - INTL
0 LOCAL
0 NTX488AA01 INTERNATIONAL TIME OF DAY
0 ROUTING
0 NTX492AA03 OPERATOR TOLL BREAK-IN
0 NTX494AA03 AUTOMATIC CALL RECORDING
0 NTX660AA01 INTERNATIONAL FEATURE
0 PROCESSING ENVIRONMENT (FPE) -
0 BASIC
0 NTX661AA01 INTERNATIONAL FEATURE
0 PROCESSING ENVIRONMENT (FPE)
0 LOCAL
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -
0 BASIC
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -
0 LOCAL
0 NTX669AA01 INTERNATIONAL NETWORK
0 MANAGEMENT
0 NTX901AA24 LOCAL FEATURES I
0 NTX980AA01 INTERNATIONAL TRUNK TST
0 POSITION (ITTP)

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0 NTX490AH04 STATUS RTM  
0 TURKEY DMS-100 LOCAL  
0 STANDARD(UPG.FR. NTX490AG)

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN

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0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490BB18 STATUS A+M  
0 TURKEY DMS-200 STANDARD(REP.BY  
0 NTX490BC)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION

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0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX445AA01 O.M. SELECTIVE OUTPUT(UPGRADED  
0 BY NTX445AB)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490BC16 STATUS A+M  
0 TURKEY DMS-200 STANDARD(REP.BY  
0 NTX490BD)

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0 NTX000AA19 BILGE
0 NTX001AA29 COMMON BASIC
0 NTX048AA06 SYNCHRONIZATION
0 NTX051AA02 AUTOMATIC TRUNK TESTING
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE
0 NTX056AA05 ENHANCED ADMINISTRATION
0 NTX074AA09 DISK DATA STORAGE SYSTEM
0 NTX120AA01 OFFICE HARDWARE INVENTORY
0 PACKAGE
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE
0 AIDS
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES
0 NTX178AA01 NON RESIDENT DIAGNOSTIC
0 UTILITIES
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE
0 PACKAGE
0 NTX272AA02 FOCUSED MAINTENANCE
0 NTX292BA03 ENHANCED SECURITY - WITHOUT
0 PASSWORD ENCRYPTION
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE
0 OF NTX445AA)
0 NTX470AA13 INTERNATIONAL - COMMON BASIC
0 NTX471AA01 A-LAW COMPANDING
0 NTX475AA01 TURKISH TRK TRANSMN TESTING
0 NTX476AA01 WINK-1 LINE SIGNALLING
0 NTX477AA04 DELAY DIAL-1 SIGNALLING
0 NTX478AA04 CCITT PCM (30+2) DIGITAL
0 SIGNALLING AND MAINTENANCE
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT
0 NTX480AA02 TURKISH TONE PLAN
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD
0 SIGNALLING
0 NTX483AA03 INTERNATIONAL 101
0 COMMUNICATION TEST LINE(UPG.BY
0 NTX483AB)
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM
0 NTX486AA01 MF-3 REGISTER SIGNALLING
0 NTX488AA01 INTERNATIONAL TIME OF DAY
0 ROUTING
0 NTX801AA01 TOLL FEATURES I
0 NTX980AA01 INTERNATIONAL TRUNK TST
0 POSITION (ITTP)

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0 NTX490BD14 STATUS A+M  
0 TURKEY DMS-200 STANDARD(REP.BY  
0 NTX490BE)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)

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0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX801AA01 TOLL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490BE12 STATUS A+M  
0 TURKEY DMS-200 STANDARD(REP.BY  
0 NTX490BF)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

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0 NTX471AA01 A-LAW COMPANDING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490BF11 STATUS A+M  
0 TURKEY DMS-200 STANDARD (UPG.  
0 BY NTX490BG)  
  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

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0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490BG10 STATUS A+M  
0 TURKEY DMS-200 STANDARD (UPG.  
0 OF NTX490BF)

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX483AA03 INTERNATIONAL 101

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0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490BH04 STATUS RTM  
0 TURKEY DMS-200 STANDARD  
0 (UPG.FR. NTX490BG)

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES

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0 NTX490CB15 STATUS A+M

0 TURKEY DMS-100/200 COMBINED

0 LOCAL/TOLL(REP.BY NTX490CC)

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX048AA06 SYNCHRONIZATION

0 NTX051AA02 AUTOMATIC TRUNK TESTING

0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

0 NTX056AA05 ENHANCED ADMINISTRATION

0 NTX074AA09 DISK DATA STORAGE SYSTEM

0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE

0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS

0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES

0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE

0 NTX272AA02 FOCUSED MAINTENANCE

0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION

0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)

0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX471AA01 A-LAW COMPANDING

0 NTX472AA03 INTERNATIONAL - LOCAL  
0 BASIC(UPGRADED BY NTX472AB)

0 NTX474AA07 INTERNATIONAL BASE METERING

0 NTX475AA01 TURKISH TRK TRANSMN TESTING

0 NTX476AA01 WINK-1 LINE SIGNALLING

0 NTX477AA04 DELAY DIAL-1 SIGNALLING

0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE

0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT

0 NTX480AA02 TURKISH TONE PLAN

0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING

0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)

0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)

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0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX493AA01 ADMINISTRATIVE CALL DIVERSION  
0 FEATURES  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)

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0 NTX490CC14 STATUS A+M  
0 TURKEY DMS-100/200 COMBINED  
0 LOCAL/TOLL(REP.BY NTX490CD)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT    |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC   |
| 0 | NTX471AA01 | A-LAW COMPANDING               |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC    |
| 0 |            | (UPGR NTX472AA)                |
| 0 | NTX474AA07 | INTERNATIONAL BASE METERING    |
| 0 | NTX475AA01 | TURKISH TRK TRANSMN TESTING    |
| 0 | NTX476AA01 | WINK-1 LINE SIGNALLING         |
| 0 | NTX477AA04 | DELAY DIAL-1 SIGNALLING        |
| 0 | NTX478AA04 | CCITT PCM (30+2) DIGITAL       |
| 0 |            | SIGNALLING AND MAINTENANCE     |
| 0 | NTX479AA03 | INTL UNIV TONE RCVR SUPPORT    |
| 0 | NTX480AA02 | TURKISH TONE PLAN              |
| 0 | NTX481AA02 | TURKISH OPERATOR SWITCHBOARD   |
| 0 |            | SIGNALLING                     |
| 0 | NTX482AB03 | TURKISH LINE CARD              |
| 0 |            | DIAGNOSTICS(REP. NTX482AA)     |
| 0 | NTX483AA03 | INTERNATIONAL 101              |
| 0 |            | COMMUNICATION TEST LINE(UPG.BY |
| 0 |            | NTX483AB)                      |
| 0 | NTX484AA01 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | TOLL/TRANSIT                   |
| 0 | NTX485AA03 | INTL - CALL PROCESSING SYSTEM  |
| 0 | NTX486AA01 | MF-3 REGISTER SIGNALLING       |
| 0 | NTX487AA03 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | LOCAL                          |
| 0 | NTX488AA01 | INTERNATIONAL TIME OF DAY      |
| 0 |            | ROUTING                        |
| 0 | NTX492AA03 | OPERATOR TOLL BREAK-IN         |
| 0 | NTX494AA03 | AUTOMATIC CALL RECORDING       |
| 0 | NTX660AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE) - |
| 0 |            | BASIC                          |
| 0 | NTX661AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE)   |
| 0 |            | LOCAL                          |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX980AA01 | INTERNATIONAL TRUNK TST        |
| 0 |            | POSITION (ITTP)                |
| 0 | NTX981AA01 | INTERNATIONAL LINE TEST        |

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0 POSITION(ILTP) (REP.BY  
0 NTX472AB)

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0 NTX490CD12 STATUS A+M  
0 TURKEY DMS-100/200 COMBINED  
0 LOCAL/TOLL (REP.BY NTX490CE)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT

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0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)

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0 NTX490CE11 STATUS A+M  
0 TURKEY DMS-100/200 COMBINED  
0 LOCAL/TOLL(UPG.BY NTX490CF)

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0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY

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0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)

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0 NTX490CF10 STATUS A+M  
0 TURKEY DMS-100/200 COMBINED  
0 LOCAL/TOLL(UPG.OF NTX490CE)  
  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

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0 RELEASE 28.01  
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0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX669AA01 INTERNATIONAL NETWORK

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0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490CG04 STATUS RTM  
0 TURKEY DMS-100/200 COMBINED  
0 LOCAL/TOLL(UPG.OF NTX490CF)

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING

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0 NTX490DA14 STATUS A+M

0 C & W CEP DMS-100 LOCAL  
0 STANDARD(REP.BY NTX490DB)

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX051AA02 AUTOMATIC TRUNK TESTING

0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

0 NTX056AA05 ENHANCED ADMINISTRATION

0 NTX074AA09 DISK DATA STORAGE SYSTEM

0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE

0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS

0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES

0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE

0 NTX272AA02 FOCUSED MAINTENANCE

0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)

0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX471AA01 A-LAW COMPANDING

0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)

0 NTX474AA07 INTERNATIONAL BASE METERING

0 NTX476AA01 WINK-1 LINE SIGNALLING

0 NTX477AA04 DELAY DIAL-1 SIGNALLING

0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE

0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT

0 NTX482BA02 CEP LINE CARD DIAGNOSTICS

0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)

0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT

0 NTX485AA03 INTL - CALL PROCESSING SYSTEM

0 NTX486AA01 MF-3 REGISTER SIGNALLING

0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL

0 NTX493AA01 ADMINISTRATIVE CALL DIVERSION  
0 FEATURES

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0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX498AA01 CEP CALL RECORDING(REP.BY  
0 NTX494AA)  
0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX656AA01 CEP TONE PLAN  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX663AA03 FAULTSMAN RINGBACK(ALL  
0 FEATURES MOVED TO NTX499AA)  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)

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0 NTX490DB13 STATUS A+M  
0 C & W CEP DMS-100 LOCAL  
0 STANDARD(REP.BY NTX490DC)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

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0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482BA02 CEP LINE CARD DIAGNOSTICS  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX496AA03 GATEWAY ACCESS  
0 NTX498AA01 CEP CALL RECORDING(REP.BY  
0 NTX494AA)  
0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX656AA01 CEP TONE PLAN  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX663AA03 FAULTSMAN RINGBACK(ALL  
0 FEATURES MOVED TO NTX499AA)  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC



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0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX668AA01 INSERT TONE ON COIN PHONE  
0 TERMINATION  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)  
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0 NTX490DC12 STATUS A+M  
0 C & W CEP DMS-100 LOCAL  
0 STANDARD(REP.BY NTX490DD)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING

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0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482BA02 CEP LINE CARD DIAGNOSTICS  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX496AA03 GATEWAY ACCESS  
0 NTX498AA01 CEP CALL RECORDING(REP.BY  
0 NTX494AA)  
0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX656AA01 CEP TONE PLAN  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX663AA03 FAULTSMAN RINGBACK(ALL  
0 FEATURES MOVED TO NTX499AA)  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX668AA01 INSERT TONE ON COIN PHONE  
0 TERMINATION  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX909AA01 ANI TOLL  
0 NTX910AA01 ANI LOCAL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST

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0 POSITION(ILTP)(REP.BY  
0 NTX472AB)

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0 NTX490DD11 STATUS A+M

0 C AND W CEP DMS-100 LOCAL  
0 STANDARD(UPG.BY NTX490DE)

0 NTXB04AA01 PBX LINE SUPPORT

0 NTXB07AA01 INTER ADMINISTRATION  
0 ACCOUNTING

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX051AA02 AUTOMATIC TRUNK TESTING

0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

0 NTX056AA05 ENHANCED ADMINISTRATION

0 NTX074AA09 DISK DATA STORAGE SYSTEM

0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE

0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS

0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES

0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE

0 NTX272AA02 FOCUSSED MAINTENANCE

0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)

0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX471AA01 A-LAW COMPANDING

0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)

0 NTX474AA07 INTERNATIONAL BASE METERING

0 NTX476AA01 WINK-1 LINE SIGNALLING

0 NTX477AA04 DELAY DIAL-1 SIGNALLING

0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE

0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT

0 NTX482BA02 CEP LINE CARD DIAGNOSTICS

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0 NTX483AA03 INTERNATIONAL 101
0 COMMUNICATION TEST LINE(UPG.BY
0 NTX483AB)
0 NTX484AA01 MALICIOUS CALL TRACE - INTL
0 TOLL/TRANSIT
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM
0 NTX486AA01 MF-3 REGISTER SIGNALLING
0 NTX487AA03 MALICIOUS CALL TRACE - INTL
0 LOCAL
0 NTX494AA03 AUTOMATIC CALL RECORDING
0 NTX495AA01 TS16 SIGNALLING FOR LD
0 NTX496AA03 GATEWAY ACCESS
0 NTX498AA01 CEP CALL RECORDING(REP.BY
0 NTX494AA)
0 NTX650AA02 TS16 SIGNALLING FOR R1
0 NTX655AA01 E & M SIGNALLING IN TS16
0 NTX656AA01 CEP TONE PLAN
0 NTX657AA01 INTERNATIONAL CAMA
0 NTX660AA01 INTERNATIONAL FEATURE
0 PROCESSING ENVIRONMENT (FPE) -
0 BASIC
0 NTX661AA01 INTERNATIONAL FEATURE
0 PROCESSING ENVIRONMENT (FPE)
0 LOCAL
0 NTX662AA01 EMERGENCY CUT-OFF
0 NTX663AA03 FAULTSMAN RINGBACK(ALL
0 FEATURES MOVED TO NTX499AA)
0 NTX664AA02 OMS IN ERLANGS
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -
0 BASIC
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -
0 LOCAL
0 NTX667AA01 PRINTED METER CHECK
0 NTX668AA01 INSERT TONE ON COIN PHONE
0 TERMINATION
0 NTX901AA24 LOCAL FEATURES I
0 NTX909AA01 ANI TOLL
0 NTX910AA01 ANI LOCAL
0 NTX980AA01 INTERNATIONAL TRUNK TST
0 POSITION (ITTP)
0 NTX981AA01 INTERNATIONAL LINE TEST
0 POSITION(ILTP)(REP.BY
0 NTX472AB)

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0 NTX490DE10 STATUS A+M  
0 C & W CEP DMS-100 LOCAL  
0 STANDARD(UPG.BY NTX490DF)

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXB07AA01 INTER ADMINISTRATION  
0 ACCOUNTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482BA02 CEP LINE CARD DIAGNOSTICS

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0 NTX483AA03 INTERNATIONAL 101
0 COMMUNICATION TEST LINE(UPG.BY
0 NTX483AB)
0 NTX484AA01 MALICIOUS CALL TRACE - INTL
0 TOLL/TRANSIT
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM
0 NTX486AA01 MF-3 REGISTER SIGNALLING
0 NTX487AA03 MALICIOUS CALL TRACE - INTL
0 LOCAL
0 NTX494AA03 AUTOMATIC CALL RECORDING
0 NTX495AA01 TS16 SIGNALLING FOR LD
0 NTX496AA03 GATEWAY ACCESS
0 NTX498AA01 CEP CALL RECORDING(REP.BY
0 NTX494AA)
0 NTX650AA02 TS16 SIGNALLING FOR R1
0 NTX655AA01 E & M SIGNALLING IN TS16
0 NTX656AA01 CEP TONE PLAN
0 NTX657AA01 INTERNATIONAL CAMA
0 NTX660AA01 INTERNATIONAL FEATURE
0 PROCESSING ENVIRONMENT (FPE) -
0 BASIC
0 NTX661AA01 INTERNATIONAL FEATURE
0 PROCESSING ENVIRONMENT (FPE)
0 LOCAL
0 NTX662AA01 EMERGENCY CUT-OFF
0 NTX663AA03 FAULTSMAN RINGBACK(ALL
0 FEATURES MOVED TO NTX499AA)
0 NTX664AA02 OMS IN ERLANGS
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -
0 BASIC
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -
0 LOCAL
0 NTX667AA01 PRINTED METER CHECK
0 NTX668AA01 INSERT TONE ON COIN PHONE
0 TERMINATION
0 NTX901AA24 LOCAL FEATURES I
0 NTX909AA01 ANI TOLL
0 NTX910AA01 ANI LOCAL
0 NTX980AA01 INTERNATIONAL TRUNK TST
0 POSITION (ITTP)
0 NTX981AA01 INTERNATIONAL LINE TEST
0 POSITION(ILTP)(REP.BY
0 NTX472AB)

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0 NTX490DF09 STATUS A+M  
0 C & W CEP DMS-100 LOCAL  
0 STANDARD(UPG.OF NTX490DE)

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXB07AA01 INTER ADMINISTRATION  
0 ACCOUNTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482BA02 CEP LINE CARD DIAGNOSTICS  
0 NTX483AA03 INTERNATIONAL 101

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0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX496AA03 GATEWAY ACCESS  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX656AA01 CEP TONE PLAN  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX668AA01 INSERT TONE ON COIN PHONE  
0 TERMINATION  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX909AA01 ANI TOLL  
0 NTX910AA01 ANI LOCAL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490DG04 STATUS RTM  
0 C & W CEP DMS-100 LOCAL  
0 STANDARD(UPG.OF NTX490DF)

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXB07AA01 INTER ADMINISTRATION  
0 ACCOUNTING  
0 NTXH22AA01 INTERNATIONAL LOCAL METERING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482BA02 CEP LINE CARD DIAGNOSTICS  
0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT

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0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX496AA03 GATEWAY ACCESS  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX656AA01 CEP TONE PLAN  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX668AA01 INSERT TONE ON COIN PHONE  
0 TERMINATION  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX909AA01 ANI TOLL  
0 NTX910AA01 ANI LOCAL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490EA11 STATUS A+M  
0 BELIZE DMS-100 LOCAL  
0 STANDARD(UPG.BY NTX490EB)  
  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX496AA03 GATEWAY ACCESS  
0 NTX498AA01 CEP CALL RECORDING(REP.BY  
0 NTX494AA)  
0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX660AA01 INTERNATIONAL FEATURE

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0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX663AA03 FAULTSMAN RINGBACK(ALL  
0 FEATURES MOVED TO NTX499AA)  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX910AA01 ANI LOCAL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)

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0 NTX490EB09 STATUS A+M  
0 BELIZE DMS-100 LOCAL  
0 STANDARD(UPG.OF NTX490EA)

0 NTXB04AA01 PBX LINE SUPPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

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0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX496AA03 GATEWAY ACCESS  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX901AA24 LOCAL FEATURES I

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0 NTX910AA01 ANI LOCAL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490EC04 STATUS RTM  
0 BELIZE DMS-100 LOCAL  
0 STANDARD(UPG.OF NTX490EB)

0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXH22AA01 INTERNATIONAL LOCAL METERING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN

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0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX496AA03 GATEWAY ACCESS  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX910AA01 ANI LOCAL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490FA11 STATUS A+M  
0 BELIZE DMS-100/200 LOCAL  
0 STANDARD(UPG.BY NTX490FB)

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0 NTXB04AA01 PBX LINE SUPPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX496AA03 GATEWAY ACCESS  
0 NTX498AA01 CEP CALL RECORDING(REP.BY  
0 NTX494AA)



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0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX663AA03 FAULTSMAN RINGBACK(ALL  
0 FEATURES MOVED TO NTX499AA)  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX909AA01 ANI TOLL  
0 NTX910AA01 ANI LOCAL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)  
0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)

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0 NTX490FB09 STATUS A+M  
0 BELIZE DMS-100/200 LOCAL  
0 STANDARD(UPG. BY NTX490FC)

0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES |
| 0 | NTX178AA01 | NON RESIDENT DIAGNOSTIC        |
| 0 |            | UTILITIES                      |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT    |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC   |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC    |
| 0 |            | (UPGR NTX472AA)                |
| 0 | NTX474AA07 | INTERNATIONAL BASE METERING    |
| 0 | NTX476AA01 | WINK-1 LINE SIGNALLING         |
| 0 | NTX477AA04 | DELAY DIAL-1 SIGNALLING        |
| 0 | NTX478AA04 | CCITT PCM (30+2) DIGITAL       |
| 0 |            | SIGNALLING AND MAINTENANCE     |
| 0 | NTX479AA03 | INTL UNIV TONE RCVR SUPPORT    |
| 0 | NTX480AA02 | TURKISH TONE PLAN              |
| 0 | NTX482AB03 | TURKISH LINE CARD              |
| 0 |            | DIAGNOSTICS(REP. NTX482AA)     |
| 0 | NTX483AA03 | INTERNATIONAL 101              |
| 0 |            | COMMUNICATION TEST LINE(UPG.BY |
| 0 |            | NTX483AB)                      |
| 0 | NTX484AA01 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | TOLL/TRANSIT                   |
| 0 | NTX486AA01 | MF-3 REGISTER SIGNALLING       |
| 0 | NTX487AA03 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | LOCAL                          |
| 0 | NTX488AA01 | INTERNATIONAL TIME OF DAY      |
| 0 |            | ROUTING                        |
| 0 | NTX494AA03 | AUTOMATIC CALL RECORDING       |
| 0 | NTX495AA01 | TS16 SIGNALLING FOR LD         |
| 0 | NTX496AA03 | GATEWAY ACCESS                 |
| 0 | NTX499AA10 | CEPT SUBSCRIBER SERVICES - I   |
| 0 | NTX650AA02 | TS16 SIGNALLING FOR R1         |
| 0 | NTX655AA01 | E & M SIGNALLING IN TS16       |
| 0 | NTX657AA01 | INTERNATIONAL CAMA             |
| 0 | NTX660AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE) - |
| 0 |            | BASIC                          |

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0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX909AA01 ANI TOLL  
0 NTX910AA01 ANI LOCAL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490FC06 STATUS A+M  
0 BELIZE DMS-100/200 LOCAL  
0 STANDARD(UPG. BY NTX490FD)

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXB00AA01 INTL - TRAFFIC SEPARATION  
0 NTXB01AA01 INTL - TRAFFIC SEPARATION  
0 REPORT  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB07AA01 INTER ADMINISTRATION  
0 ACCOUNTING  
0 NTXB08AA02 ITOPS FOR CEP  
0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTXB13AA06 ITOPS TOLL BASIC(UPG. BY  
0 NTXB13AB)  
0 NTXB83AA01 ITOPS TO INTL R2 INTERWORKING  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXH07AA01 | BERLINZE R2 SIGNALLING         |
| 0 | NTXH09AA02 | DOWNLOADABLE TONE              |
| 0 | NTXH22AA01 | INTERNATIONAL LOCAL METERING   |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES |
| 0 | NTX178AA01 | NON RESIDENT DIAGNOSTIC        |
| 0 |            | UTILITIES                      |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT    |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC   |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC    |
| 0 |            | (UPGR NTX472AA)                |
| 0 | NTX474AA07 | INTERNATIONAL BASE METERING    |
| 0 | NTX476AA01 | WINK-1 LINE SIGNALLING         |
| 0 | NTX477AA04 | DELAY DIAL-1 SIGNALLING        |
| 0 | NTX478AA04 | CCITT PCM (30+2) DIGITAL       |
| 0 |            | SIGNALLING AND MAINTENANCE     |
| 0 | NTX479AA03 | INTL UNIV TONE RCVR SUPPORT    |
| 0 | NTX480AA02 | TURKISH TONE PLAN              |
| 0 | NTX482AB03 | TURKISH LINE CARD              |
| 0 |            | DIAGNOSTICS(REP. NTX482AA)     |
| 0 | NTX483AA03 | INTERNATIONAL 101              |
| 0 |            | COMMUNICATION TEST LINE(UPG.BY |
| 0 |            | NTX483AB)                      |
| 0 | NTX484AA01 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | TOLL/TRANSIT                   |
| 0 | NTX486AA01 | MF-3 REGISTER SIGNALLING       |
| 0 | NTX487AA03 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | LOCAL                          |
| 0 | NTX488AA01 | INTERNATIONAL TIME OF DAY      |
| 0 |            | ROUTING                        |
| 0 | NTX494AA03 | AUTOMATIC CALL RECORDING       |

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0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX496AA03 GATEWAY ACCESS  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX651AA01 IRLCM  
0 NTX652AA02 INTRASWITCHING ON THE IRLCM  
0 NTX653AA01 IRLCM - EMERGENCY STAND ALONE  
0 (ESA)  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX656AA01 CEP TONE PLAN  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX668AA01 INSERT TONE ON COIN PHONE  
0 TERMINATION  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX909AA01 ANI TOLL  
0 NTX910AA01 ANI LOCAL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490FD04 STATUS RTM

0 BELIZE DMS-100/200 LOCAL

0 STANDARD(UPG. FROM NTX490FC)

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

0 NTXB00AA01 INTL - TRAFFIC SEPARATION

0 NTXB01AA01 INTL - TRAFFIC SEPARATION

0 REPORT

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS

0 - BASIC

0 NTXB03AA01 SERVICE ANALYSIS - LOCAL

0 NTXB04AA01 PBX LINE SUPPORT

0 NTXB05AA01 ITOPS COMMON BASIC

0 NTXB07AA01 INTER ADMINISTRATION

0 ACCOUNTING

0 NTXB08AA02 ITOPS FOR CEP

0 NTXB11AA02 DP REGISTER SIGNALLING

0 NTXB13AB01 ITOPS TOLL - ENHANCED

0 QUEUEING(UPG.FR. NTXB13AA)

0 NTXB83AA01 ITOPS TO INTL R2 INTERWORKING

0 NTXB84AA04 INTERNATIONAL RATING SYSTEM

0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING

0 NTXH07AA01 BERLIZE R2 SIGNALLING

0 NTXH09AA02 DOWNLOADABLE TONE

0 NTXH22AA01 INTERNATIONAL LOCAL METERING

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX048AA06 SYNCHRONIZATION

0 NTX051AA02 AUTOMATIC TRUNK TESTING

0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

0 NTX056AA05 ENHANCED ADMINISTRATION

0 NTX074AA09 DISK DATA STORAGE SYSTEM

0 NTX120AA01 OFFICE HARDWARE INVENTORY

0 PACKAGE

0 NTX176AA05 NON RESIDENT ADMINISTRATIVE

0 AIDS

0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

0 NTX178AA01 NON RESIDENT DIAGNOSTIC

0 UTILITIES

0 NTX270AA19 NEW PERIPHERAL MAINTENANCE

0 PACKAGE

0 NTX272AA02 FOCUSSED MAINTENANCE

0 NTX292BA03 ENHANCED SECURITY - WITHOUT

0 PASSWORD ENCRYPTION

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0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX495AA01 TS16 SIGNALLING FOR LD  
0 NTX496AA03 GATEWAY ACCESS  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX651AA01 IRLCM  
0 NTX652AA02 INTRASWITCHING ON THE IRLCM  
0 NTX653AA01 IRLCM - EMERGENCY STAND ALONE  
0 (ESA)  
0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX656AA01 CEP TONE PLAN  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -

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0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX668AA01 INSERT TONE ON COIN PHONE  
0 TERMINATION  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX909AA01 ANI TOLL  
0 NTX910AA01 ANI LOCAL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490GA10 STATUS A+M  
0 CHINA DMS100/200 COMBINED  
0 LOCAL/TOLL(UPG. BY NTX490GB)  
  
0 NTXB00AA01 INTL - TRAFFIC SEPARATION  
0 NTXB01AA01 INTL - TRAFFIC SEPARATION  
0 REPORT  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE



|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT    |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC   |
| 0 | NTX471AA01 | A-LAW COMPANDING               |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC    |
| 0 |            | (UPGR NTX472AA)                |
| 0 | NTX474AA07 | INTERNATIONAL BASE METERING    |
| 0 | NTX478AA04 | CCITT PCM (30+2) DIGITAL       |
| 0 |            | SIGNALLING AND MAINTENANCE     |
| 0 | NTX479AA03 | INTL UNIV TONE RCVR SUPPORT    |
| 0 | NTX482CA03 | CHINA LINE CARD DIAGNOSTICS    |
| 0 | NTX484AA01 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | TOLL/TRANSIT                   |
| 0 | NTX485AA03 | INTL - CALL PROCESSING SYSTEM  |
| 0 | NTX486AA01 | MF-3 REGISTER SIGNALLING       |
| 0 | NTX487AA03 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | LOCAL                          |
| 0 | NTX488AA01 | INTERNATIONAL TIME OF DAY      |
| 0 |            | ROUTING                        |
| 0 | NTX492AA03 | OPERATOR TOLL BREAK-IN         |
| 0 | NTX494AA03 | AUTOMATIC CALL RECORDING       |
| 0 | NTX499AA10 | CEPT SUBSCRIBER SERVICES - I   |
| 0 | NTX651AA01 | IRLCM                          |
| 0 | NTX652AA02 | INTRASWITCHING ON THE IRLCM    |
| 0 | NTX653AA01 | IRLCM - EMERGENCY STAND ALONE  |
| 0 |            | (ESA)                          |
| 0 | NTX657AA01 | INTERNATIONAL CAMA             |
| 0 | NTX660AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE) - |
| 0 |            | BASIC                          |
| 0 | NTX661AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE)   |
| 0 |            | LOCAL                          |
| 0 | NTX662AA01 | EMERGENCY CUT-OFF              |
| 0 | NTX665AA02 | SEMI-PERMANENT CONNECTIONS -   |
| 0 |            | BASIC                          |
| 0 | NTX666AA02 | SEMI-PERMANENT CONNECTIONS -   |
| 0 |            | LOCAL                          |
| 0 | NTX669AA01 | INTERNATIONAL NETWORK          |
| 0 |            | MANAGEMENT                     |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX980AA01 | INTERNATIONAL TRUNK TST        |
| 0 |            | POSITION (ITTP)                |

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0 NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY  
0 NTX472AB)

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0 NTX490GB09 STATUS A+M  
0 CHINA DMS100/200 COMBINED  
0 LOCAL/TOLL(UPG.BY NTX490GC)

0 NTXB00AA01 INTL - TRAFFIC SEPARATION  
0 NTXB01AA01 INTL - TRAFFIC SEPARATION  
0 REPORT  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB10AA03 CHINA COMMON BASIC  
0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTXB12AA01 ITOPS LOCAL BASIC  
0 NTXB13AA06 ITOPS TOLL BASIC(UPG. BY  
0 NTXB13AB)  
0 NTXB14AA02 CHINA LOCAL BASIC  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC   |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC    |
| 0 |            | (UPGR NTX472AA)                |
| 0 | NTX474AA07 | INTERNATIONAL BASE METERING    |
| 0 | NTX478AA04 | CCITT PCM (30+2) DIGITAL       |
| 0 |            | SIGNALLING AND MAINTENANCE     |
| 0 | NTX479AA03 | INTL UNIV TONE RCVR SUPPORT    |
| 0 | NTX482CA03 | CHINA LINE CARD DIAGNOSTICS    |
| 0 | NTX484AA01 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | TOLL/TRANSIT                   |
| 0 | NTX486AA01 | MF-3 REGISTER SIGNALLING       |
| 0 | NTX487AA03 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | LOCAL                          |
| 0 | NTX488AA01 | INTERNATIONAL TIME OF DAY      |
| 0 |            | ROUTING                        |
| 0 | NTX492AA03 | OPERATOR TOLL BREAK-IN         |
| 0 | NTX494AA03 | AUTOMATIC CALL RECORDING       |
| 0 | NTX499AA10 | CEPT SUBSCRIBER SERVICES - I   |
| 0 | NTX651AA01 | IRLCM                          |
| 0 | NTX652AA02 | INTRASWITCHING ON THE IRLCM    |
| 0 | NTX653AA01 | IRLCM - EMERGENCY STAND ALONE  |
| 0 |            | (ESA)                          |
| 0 | NTX657AA01 | INTERNATIONAL CAMA             |
| 0 | NTX660AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE) - |
| 0 |            | BASIC                          |
| 0 | NTX661AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE)   |
| 0 |            | LOCAL                          |
| 0 | NTX662AA01 | EMERGENCY CUT-OFF              |
| 0 | NTX665AA02 | SEMI-PERMANENT CONNECTIONS -   |
| 0 |            | BASIC                          |
| 0 | NTX666AA02 | SEMI-PERMANENT CONNECTIONS -   |
| 0 |            | LOCAL                          |
| 0 | NTX667AA01 | PRINTED METER CHECK            |
| 0 | NTX669AA01 | INTERNATIONAL NETWORK          |
| 0 |            | MANAGEMENT                     |
| 0 | NTX801AA01 | TOLL FEATURES I                |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX909AA01 | ANI TOLL                       |
| 0 | NTX980AA01 | INTERNATIONAL TRUNK TST        |
| 0 |            | POSITION (ITTP)                |

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0 NTX490GC08 STATUS A+M  
0 CHINA DMS100/200 COMBINED  
0 LOCAL/TOLL(UPG.BY NTX490GD)

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXB00AA01 INTL - TRAFFIC SEPARATION  
0 NTXB01AA01 INTL - TRAFFIC SEPARATION  
0 REPORT  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB08AA02 ITOPS FOR CEP  
0 NTXB10AA03 CHINA COMMON BASIC  
0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTXB12AA01 ITOPS LOCAL BASIC  
0 NTXB13AA06 ITOPS TOLL BASIC(UPG. BY  
0 NTXB13AB)  
0 NTXB14AA02 CHINA LOCAL BASIC  
0 NTXB17AA02 ATTENDANT PAY STATION LOCAL  
0 NTXB83AA01 ITOPS TO INTL R2 INTERWORKING  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTXB95AA01 DOWNLOADABLE TONES - CHINA (  
0 REP. BY NTXH09AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE

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0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482CA03 CHINA LINE CARD DIAGNOSTICS  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX651AA01 IRLCM  
0 NTX652AA02 INTRASWITCHING ON THE IRLCM  
0 NTX653AA01 IRLCM - EMERGENCY STAND ALONE  
0 (ESA)  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX909AA01 ANI TOLL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490GD07 STATUS A+M

0 CHINA DMS100/200 COMBINED

0 LOCAL/TOLL(UPG. BY NTX490GE)

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS

0 NTXB00AA01 INTL - TRAFFIC SEPARATION

0 NTXB01AA01 INTL - TRAFFIC SEPARATION

0 REPORT

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS

0 - BASIC

0 NTXB03AA01 SERVICE ANALYSIS - LOCAL

0 NTXB04AA01 PBX LINE SUPPORT

0 NTXB05AA01 ITOPS COMMON BASIC

0 NTXB08AA02 ITOPS FOR CEP

0 NTXB10AA03 CHINA COMMON BASIC

0 NTXB11AA02 DP REGISTER SIGNALLING

0 NTXB12AA01 ITOPS LOCAL BASIC

0 NTXB13AA06 ITOPS TOLL BASIC(UPG. BY

0 NTXB13AB)

0 NTXB14AA02 CHINA LOCAL BASIC

0 NTXB17AA02 ATTENDANT PAY STATION LOCAL

0 NTXB83AA01 ITOPS TO INTL R2 INTERWORKING

0 NTXB84AA04 INTERNATIONAL RATING SYSTEM

0 NTXB95AA01 DOWNLOADABLE TONES - CHINA (

0 REP. BY NTXH09AA)

0 NTXH22AA01 INTERNATIONAL LOCAL METERING

0 NTXH71AA01 ITOPS INTRUSION TONES

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX048AA06 SYNCHRONIZATION

0 NTX048BA02 SYNCHRONIZATION - STRATUM 3

0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

0 NTX056AA05 ENHANCED ADMINISTRATION

0 NTX074AA09 DISK DATA STORAGE SYSTEM

0 NTX120AA01 OFFICE HARDWARE INVENTORY

0 PACKAGE

0 NTX176AA05 NON RESIDENT ADMINISTRATIVE

0 AIDS

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0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482CA03 CHINA LINE CARD DIAGNOSTICS  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX651AA01 IRLCM  
0 NTX652AA02 INTRASWITCHING ON THE IRLCM  
0 NTX653AA01 IRLCM - EMERGENCY STAND ALONE  
0 (ESA)  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT

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0 NTX738AB02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPGRADE OF NTX738AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX909AA01 ANI TOLL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490GE05 STATUS A+M  
0 CHINA DMS100/200 COMBINED  
0 LOCAL/TOLL(UPG. BY NTX490GF)

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXB00AA01 INTL - TRAFFIC SEPARATION  
0 NTXB01AA01 INTL - TRAFFIC SEPARATION  
0 REPORT  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB08AA02 ITOPS FOR CEP  
0 NTXB10AA03 CHINA COMMON BASIC  
0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTXB12AA01 ITOPS LOCAL BASIC  
0 NTXB13AA06 ITOPS TOLL BASIC(UPG. BY  
0 NTXB13AB)  
0 NTXB14AA02 CHINA LOCAL BASIC  
0 NTXB17AA02 ATTENDANT PAY STATION LOCAL  
0 NTXB83AA01 ITOPS TO INTL R2 INTERWORKING  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTXH09AA02 DOWNLOADABLE TONE  
0 NTXH17AA01 INTERNATIONAL ATME 2 FOR  
0 DMS100/200I  
0 NTXH22AA01 INTERNATIONAL LOCAL METERING  
0 NTXH71AA01 ITOPS INTRUSION TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION



|   |            |                                                                  |
|---|------------|------------------------------------------------------------------|
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3                                      |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE                                   |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION                                          |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM                                         |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY<br>PACKAGE                             |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE<br>AIDS                              |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES                                   |
| 0 | NTX178AA01 | NON RESIDENT DIAGNOSTIC<br>UTILITIES                             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE<br>PACKAGE                            |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE                                             |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT<br>PASSWORD ENCRYPTION               |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE<br>OF NTX445AA)                   |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC                                     |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC<br>(UPGR NTX472AA)                   |
| 0 | NTX474AA07 | INTERNATIONAL BASE METERING                                      |
| 0 | NTX478AA04 | CCITT PCM (30+2) DIGITAL<br>SIGNALLING AND MAINTENANCE           |
| 0 | NTX479AA03 | INTL UNIV TONE RCVR SUPPORT                                      |
| 0 | NTX482CA03 | CHINA LINE CARD DIAGNOSTICS                                      |
| 0 | NTX484AA01 | MALICIOUS CALL TRACE - INTL<br>TOLL/TRANSIT                      |
| 0 | NTX486AA01 | MF-3 REGISTER SIGNALLING                                         |
| 0 | NTX487AA03 | MALICIOUS CALL TRACE - INTL<br>LOCAL                             |
| 0 | NTX488AA01 | INTERNATIONAL TIME OF DAY<br>ROUTING                             |
| 0 | NTX492AA03 | OPERATOR TOLL BREAK-IN                                           |
| 0 | NTX494AA03 | AUTOMATIC CALL RECORDING                                         |
| 0 | NTX499AA10 | CEPT SUBSCRIBER SERVICES - I                                     |
| 0 | NTX651AA01 | IRLCM                                                            |
| 0 | NTX652AA02 | INTRASWITCHING ON THE IRLCM                                      |
| 0 | NTX653AA01 | IRLCM - EMERGENCY STAND ALONE<br>(ESA)                           |
| 0 | NTX657AA01 | INTERNATIONAL CAMA                                               |
| 0 | NTX660AA01 | INTERNATIONAL FEATURE<br>PROCESSING ENVIRONMENT (FPE) -<br>BASIC |
| 0 | NTX661AA01 | INTERNATIONAL FEATURE<br>PROCESSING ENVIRONMENT (FPE)<br>LOCAL   |

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0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX909AA01 ANI TOLL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490GF04 STATUS RTM  
0 CHINA DMS100/200 COMBINED  
0 LOCAL/TOLL(UPG.FR. NTX490GE)  
  
0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXB00AA01 INTL - TRAFFIC SEPARATION  
0 NTXB01AA01 INTL - TRAFFIC SEPARATION  
0 REPORT  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB08AA02 ITOPS FOR CEP  
0 NTXB10AA03 CHINA COMMON BASIC  
0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTXB12AA01 ITOPS LOCAL BASIC  
0 NTXB13AB01 ITOPS TOLL - ENHANCED  
0 QUEUEING(UPG.FR. NTXB13AA)  
0 NTXB14AA02 CHINA LOCAL BASIC  
0 NTXB17AA02 ATTENDANT PAY STATION LOCAL  
0 NTXB83AA01 ITOPS TO INTL R2 INTERWORKING  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXH09AA02 | DOWNLOADABLE TONE              |
| 0 | NTXH16AA01 | ESTIMATED CALL CHARGES FOR     |
| 0 |            | ITOPS                          |
| 0 | NTXH17AA01 | INTERNATIONAL ATME 2 FOR       |
| 0 |            | DMS100/200I                    |
| 0 | NTXH22AA01 | INTERNATIONAL LOCAL METERING   |
| 0 | NTXH54AA02 | ITOPS - ACCOUNT CODE ACCESS    |
| 0 | NTXH71AA01 | ITOPS INTRUSION TONES          |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES |
| 0 | NTX178AA01 | NON RESIDENT DIAGNOSTIC        |
| 0 |            | UTILITIES                      |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT    |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC   |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC    |
| 0 |            | (UPGR NTX472AA)                |
| 0 | NTX474AA07 | INTERNATIONAL BASE METERING    |
| 0 | NTX478AA04 | CCITT PCM (30+2) DIGITAL       |
| 0 |            | SIGNALLING AND MAINTENANCE     |
| 0 | NTX479AA03 | INTL UNIV TONE RCVR SUPPORT    |
| 0 | NTX482CA03 | CHINA LINE CARD DIAGNOSTICS    |
| 0 | NTX483AB01 | INTERNATIONAL 101              |
| 0 |            | COMMUNICATION TEST             |
| 0 |            | LINE(UPG.FR. NTX483AA)         |
| 0 | NTX484AA01 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | TOLL/TRANSIT                   |
| 0 | NTX486AA01 | MF-3 REGISTER SIGNALLING       |
| 0 | NTX487AA03 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | LOCAL                          |
| 0 | NTX488AA01 | INTERNATIONAL TIME OF DAY      |

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0  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX651AA01 IRLCM  
0 NTX652AA02 INTRASWITCHING ON THE IRLCM  
0 NTX653AA01 IRLCM - EMERGENCY STAND ALONE  
0 (ESA)  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX738AC02 SWITCH PERFORMANCE MONITORING  
0 SYSTEM (UPG NTX738AB V.O.30)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX909AA01 ANI TOLL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490HA08 STATUS A+M  
0 MOROCCO DMS-100 LOCAL STANDARD  
  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT

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0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTXB69AA04 R2 FOR DMS-100 INTL  
0 NTXH00AA01 MOROCCAN TONES  
0 NTXH01AA02 MOROCCAN LINE CARD DIAGNOSTICS  
0 NTXH02AA01 MOROCCAN PHYSICAL RINGING  
0 NTXH03AA01 SOCOTEL BASE SIGNALLING  
0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING  
0 NTXH05AA03 MOROCCAN LOCAL SIGNALLING  
0 NTXH06AA03 MOROCCAN TOLL SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX066AA02 BILINGUAL INTERFACE(UPG BY.  
0 NTX066AB)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)

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0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490HB04 STATUS A+M  
0 MOROCCO DMS-100 LOCAL  
0 STANADARD(UPG. BY NTX490HC01)  
  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT

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0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTXB69AA04 R2 FOR DMS-100 INTL  
0 NTXH00AA01 MOROCCAN TONES  
0 NTXH01AA02 MOROCCAN LINE CARD DIAGNOSTICS  
0 NTXH02AA01 MOROCCAN PHYSICAL RINGING  
0 NTXH03AA01 SOCOTEL BASE SIGNALLING  
0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING  
0 NTXH05AA03 MOROCCAN LOCAL SIGNALLING  
0 NTXH06AA03 MOROCCAN TOLL SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX066AA02 BILINGUAL INTERFACE(UPG BY.  
0 NTX066AB)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)

0 RELEASE 28.01  
0 93 12 03  
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0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490HC03 STATUS RTM  
0 MOROCCO DMS-100 LOCAL  
0 STANADARD(UPG. FR. NTX490HB01)  
  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT



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0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTXB69AA04 R2 FOR DMS-100 INTL  
0 NTXH00AA01 MOROCCAN TONES  
0 NTXH01AA02 MOROCCAN LINE CARD DIAGNOSTICS  
0 NTXH02AA01 MOROCCAN PHYSICAL RINGING  
0 NTXH03AA01 SOCOTEL BASE SIGNALLING  
0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING  
0 NTXH05AA03 MOROCCAN LOCAL SIGNALLING  
0 NTXH06AA03 MOROCCAN TOLL SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)

0 RELEASE 28.01  
0 93 12 03  
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0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490JA07 STATUS A+M  
0 MOROCCO DMS-100 LOCAL STANDARD  
0 WITH IRLCM  
  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT

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0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTXB69AA04 R2 FOR DMS-100 INTL  
0 NTXH00AA01 MOROCCAN TONES  
0 NTXH01AA02 MOROCCAN LINE CARD DIAGNOSTICS  
0 NTXH02AA01 MOROCCAN PHYSICAL RINGING  
0 NTXH03AA01 SOCOTEL BASE SIGNALLING  
0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING  
0 NTXH05AA03 MOROCCAN LOCAL SIGNALLING  
0 NTXH06AA03 MOROCCAN TOLL SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX066AA02 BILINGUAL INTERFACE(UPG BY.  
0 NTX066AB)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)

0  
0 RELEASE 28.01  
0 93 12 03

0 NTX483AA03 INTERNATIONAL 101  
0 COMMUNICATION TEST LINE(UPG.BY  
0 NTX483AB)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX651AA01 IRLCM  
0 NTX652AA02 INTRASWITCHING ON THE IRLCM  
0 NTX653AA01 IRLCM - EMERGENCY STAND ALONE  
0 (ESA)  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490JB04 STATUS A+M  
0 MOROCCO DMS-100 LOCAL STANDARD  
0 WITH IRLCM(UPG. BY NTX490JC)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXB02AA01 | INTERNATIONAL SERVICE ANALYSIS |
| 0 |            | - BASIC                        |
| 0 | NTXB03AA01 | SERVICE ANALYSIS - LOCAL       |
| 0 | NTXB04AA01 | PBX LINE SUPPORT               |
| 0 | NTXB11AA02 | DP REGISTER SIGNALLING         |
| 0 | NTXB69AA04 | R2 FOR DMS-100 INTL            |
| 0 | NTXH00AA01 | MOROCCAN TONES                 |
| 0 | NTXH01AA02 | MOROCCAN LINE CARD DIAGNOSTICS |
| 0 | NTXH02AA01 | MOROCCAN PHYSICAL RINGING      |
| 0 | NTXH03AA01 | SOCOTEL BASE SIGNALLING        |
| 0 | NTXH04AA01 | CCITT 2-BIT LINE SIGNALLING    |
| 0 | NTXH05AA03 | MOROCCAN LOCAL SIGNALLING      |
| 0 | NTXH06AA03 | MOROCCAN TOLL SIGNALLING       |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX066AA02 | BILINGUAL INTERFACE(UPG BY.    |
| 0 |            | NTX066AB)                      |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES |
| 0 | NTX178AA01 | NON RESIDENT DIAGNOSTIC        |
| 0 |            | UTILITIES                      |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT    |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC   |
| 0 | NTX471AA01 | A-LAW COMPANDING               |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC    |
| 0 |            | (UPGR NTX472AA)                |
| 0 | NTX474AA07 | INTERNATIONAL BASE METERING    |
| 0 | NTX475AA01 | TURKISH TRK TRANSMN TESTING    |
| 0 | NTX476AA01 | WINK-1 LINE SIGNALLING         |
| 0 | NTX477AA04 | DELAY DIAL-1 SIGNALLING        |
| 0 | NTX478AA04 | CCITT PCM (30+2) DIGITAL       |

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | SIGNALLING AND MAINTENANCE     |
| 0 | NTX479AA03 | INTL UNIV TONE RCVR SUPPORT    |
| 0 | NTX482AB03 | TURKISH LINE CARD              |
| 0 |            | DIAGNOSTICS(REP. NTX482AA)     |
| 0 | NTX483AB01 | INTERNATIONAL 101              |
| 0 |            | COMMUNICATION TEST             |
| 0 |            | LINE(UPG.FR. NTX483AA)         |
| 0 | NTX484AA01 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | TOLL/TRANSIT                   |
| 0 | NTX485AA03 | INTL - CALL PROCESSING SYSTEM  |
| 0 | NTX486AA01 | MF-3 REGISTER SIGNALLING       |
| 0 | NTX487AA03 | MALICIOUS CALL TRACE - INTL    |
| 0 |            | LOCAL                          |
| 0 | NTX488AA01 | INTERNATIONAL TIME OF DAY      |
| 0 |            | ROUTING                        |
| 0 | NTX492AA03 | OPERATOR TOLL BREAK-IN         |
| 0 | NTX494AA03 | AUTOMATIC CALL RECORDING       |
| 0 | NTX499AA10 | CEPT SUBSCRIBER SERVICES - I   |
| 0 | NTX651AA01 | IRLCM                          |
| 0 | NTX652AA02 | INTRASWITCHING ON THE IRLCM    |
| 0 | NTX653AA01 | IRLCM - EMERGENCY STAND ALONE  |
| 0 |            | (ESA)                          |
| 0 | NTX660AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE) - |
| 0 |            | BASIC                          |
| 0 | NTX661AA01 | INTERNATIONAL FEATURE          |
| 0 |            | PROCESSING ENVIRONMENT (FPE)   |
| 0 |            | LOCAL                          |
| 0 | NTX662AA01 | EMERGENCY CUT-OFF              |
| 0 | NTX665AA02 | SEMI-PERMANENT CONNECTIONS -   |
| 0 |            | BASIC                          |
| 0 | NTX666AA02 | SEMI-PERMANENT CONNECTIONS -   |
| 0 |            | LOCAL                          |
| 0 | NTX667AA01 | PRINTED METER CHECK            |
| 0 | NTX901AA24 | LOCAL FEATURES I               |
| 0 | NTX904AA04 | R2 SIGNALLING BASE             |
| 0 | NTX980AA01 | INTERNATIONAL TRUNK TST        |
| 0 |            | POSITION (ITTP)                |

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0 NTX490JC03 STATUS RTM  
0 MOROCCO DMS-100 LOCAL STANDARD  
0 WITH IRLCM(UPG.FR. NTX490JB)

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB04AA01 PBX LINE SUPPORT  
0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTXB69AA04 R2 FOR DMS-100 INTL  
0 NTXH00AA01 MOROCCAN TONES  
0 NTXH01AA02 MOROCCAN LINE CARD DIAGNOSTICS  
0 NTXH02AA01 MOROCCAN PHYSICAL RINGING  
0 NTXH03AA01 SOCOTEL BASE SIGNALLING  
0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING  
0 NTXH05AA03 MOROCCAN LOCAL SIGNALLING  
0 NTXH06AA03 MOROCCAN TOLL SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING

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0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX482AB03 TURKISH LINE CARD  
0 DIAGNOSTICS(REP. NTX482AA)  
0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX651AA01 IRLCM  
0 NTX652AA02 INTRASWITCHING ON THE IRLCM  
0 NTX653AA01 IRLCM - EMERGENCY STAND ALONE  
0 (ESA)  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE)  
0 LOCAL  
0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -  
0 LOCAL  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490KA04 STATUS A+M  
0 MOROCCO DMS-200 STD(UPG. BY  
0 NTX490KB01)

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB69AA04 R2 FOR DMS-100 INTL  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTXH00AA01 MOROCCAN TONES  
0 NTXH03AA01 SOCOTEL BASE SIGNALLING  
0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING  
0 NTXH05AA03 MOROCCAN LOCAL SIGNALLING  
0 NTXH06AA03 MOROCCAN TOLL SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX066AA02 BILINGUAL INTERFACE(UPG BY.  
0 NTX066AB)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING

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0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490KB03 STATUS RTM

0 MOROCCO DMS-200 STD(UPG. FR.  
0 NTX490KA01)

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC

0 NTXB69AA04 R2 FOR DMS-100 INTL

0 NTXB84AA04 INTERNATIONAL RATING SYSTEM

0 NTXH00AA01 MOROCCAN TONES

0 NTXH03AA01 SOCOTEL BASE SIGNALLING

0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING

0 NTXH05AA03 MOROCCAN LOCAL SIGNALLING

0 NTXH06AA03 MOROCCAN TOLL SIGNALLING

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX048AA06 SYNCHRONIZATION

0 NTX051AA02 AUTOMATIC TRUNK TESTING

0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

0 NTX055AA03 TRUNK TEST POSITION (TTP)

0 NTX056AA05 ENHANCED ADMINISTRATION

0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)

0 NTX074AA09 DISK DATA STORAGE SYSTEM

0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE

0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS

0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES

0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE

0 NTX272AA02 FOCUSED MAINTENANCE

0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION

0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)

0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX471AA01 A-LAW COMPANDING

0 NTX472AB08 INTERNATIONAL - LOCAL BASIC  
0 (UPGR NTX472AA)

0 NTX474AA07 INTERNATIONAL BASE METERING

0 NTX475AA01 TURKISH TRK TRANSMN TESTING

0 NTX476AA01 WINK-1 LINE SIGNALLING

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0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490MA04 STATUS A+M  
0 MOROCCO DMS-200 WITH  
0 ITOPS(UPG. BY NTX490MB01)  
  
0 NTXB00AA01 INTL - TRAFFIC SEPARATION  
0 NTXB01AA01 INTL - TRAFFIC SEPARATION  
0 REPORT

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTXB02AA01 | INTERNATIONAL SERVICE ANALYSIS |
| 0 |            | - BASIC                        |
| 0 | NTXB05AA01 | ITOPS COMMON BASIC             |
| 0 | NTXB08AA02 | ITOPS FOR CEP                  |
| 0 | NTXB13AB01 | ITOPS TOLL - ENHANCED          |
| 0 |            | QUEUEING(UPG.FR. NTXB13AA)     |
| 0 | NTXB69AA04 | R2 FOR DMS-100 INTL            |
| 0 | NTXB83AA01 | ITOPS TO INTL R2 INTERWORKING  |
| 0 | NTXB84AA04 | INTERNATIONAL RATING SYSTEM    |
| 0 | NTXH00AA01 | MOROCCAN TONES                 |
| 0 | NTXH03AA01 | SOCOTEL BASE SIGNALLING        |
| 0 | NTXH04AA01 | CCITT 2-BIT LINE SIGNALLING    |
| 0 | NTXH05AA03 | MOROCCAN LOCAL SIGNALLING      |
| 0 | NTXH06AA03 | MOROCCAN TOLL SIGNALLING       |
| 0 | NTXH16AA01 | ESTIMATED CALL CHARGES FOR     |
| 0 |            | ITOPS                          |
| 0 | NTXH71AA01 | ITOPS INTRUSION TONES          |
| 0 | NTX000AA19 | BILGE                          |
| 0 | NTX001AA29 | COMMON BASIC                   |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX066AA02 | BILINGUAL INTERFACE(UPG BY.    |
| 0 |            | NTX066AB)                      |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY      |
| 0 |            | PACKAGE                        |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES |
| 0 | NTX178AA01 | NON RESIDENT DIAGNOSTIC        |
| 0 |            | UTILITIES                      |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE           |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT    |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC   |
| 0 | NTX471AA01 | A-LAW COMPANDING               |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC    |
| 0 |            | (UPGR NTX472AA)                |
| 0 | NTX474AA07 | INTERNATIONAL BASE METERING    |
| 0 | NTX475AA01 | TURKISH TRK TRANSMN TESTING    |

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0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX909AA01 ANI TOLL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490MB03 STATUS RTM  
0 MOROCCO DMS-200 WITH  
0 ITOPS(UPG. FR. NTX490MA01)

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0 NTXB00AA01 INTL - TRAFFIC SEPARATION  
0 NTXB01AA01 INTL - TRAFFIC SEPARATION  
0 REPORT  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB08AA02 ITOPS FOR CEP  
0 NTXB13AB01 ITOPS TOLL - ENHANCED  
0 QUEUEING(UPG.FR. NTXB13AA)  
0 NTXB69AA04 R2 FOR DMS-100 INTL  
0 NTXB83AA01 ITOPS TO INTL R2 INTERWORKING  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTXH00AA01 MOROCCAN TONES  
0 NTXH03AA01 SOCOTEL BASE SIGNALLING  
0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING  
0 NTXH05AA03 MOROCCAN LOCAL SIGNALLING  
0 NTXH06AA03 MOROCCAN TOLL SIGNALLING  
0 NTXH16AA01 ESTIMATED CALL CHARGES FOR  
0 ITOPS  
0 NTXH71AA01 ITOPS INTRUSION TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX066AB01 BILINGUAL INTERFACE(UPG FR.  
0 NTX066AA)  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX120AA01 OFFICE HARDWARE INVENTORY  
0 PACKAGE  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX292BA03 ENHANCED SECURITY - WITHOUT  
0 PASSWORD ENCRYPTION  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX471AA01 A-LAW COMPANDING  
0 NTX472AB08 INTERNATIONAL - LOCAL BASIC

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0 (UPGR NTX472AA)  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL  
0 SIGNALLING AND MAINTENANCE  
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX480AA02 TURKISH TONE PLAN  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD  
0 SIGNALLING  
0 NTX483AB01 INTERNATIONAL 101  
0 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL  
0 TOLL/TRANSIT  
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX487AA03 MALICIOUS CALL TRACE - INTL  
0 LOCAL  
0 NTX488AA01 INTERNATIONAL TIME OF DAY  
0 ROUTING  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX660AA01 INTERNATIONAL FEATURE  
0 PROCESSING ENVIRONMENT (FPE) -  
0 BASIC  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -  
0 BASIC  
0 NTX669AA01 INTERNATIONAL NETWORK  
0 MANAGEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX909AA01 ANI TOLL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490PA04 STATUS A+M TARGET SUPERNODE  
0 AUSTRALLIAN IN MASTER  
0 PACKAGE(UPG. BY NTX490PB)

0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING

0 NTXB57AA02 OPEN NUMBER TRANSLATIONS

0 NTXF20AA02 LMS ON LPP

0 NTXF71AA01 SUPERNODE ENHANCED  
0 MESSAGING(UPG.BY NTXF71AB)

0 NTXH40AA03 CCITT NO.7 TUP BASIC

0 NTXH44AA01 AUSTRALIAN TUP FOR DMS100(UPG.  
0 BY NTXH44AB)

0 NTXK33AA01 DOWNLOADABLE TONES FOR DMS100

0 NTXN18AA04 FBUS - LIU BASE

0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS

0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)

0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)

0 NTX048AA06 SYNCHRONIZATION

0 NTX048CA02 SYNCHRONIZATION - STRATUM 2

0 NTX051AA02 AUTOMATIC TRUNK TESTING

0 NTX054AA05 LINE TEST POSITION (LTP)

0 NTX055AA03 TRUNK TEST POSITION (TTP)

0 NTX055AB03 TTP-DIGIT VERIFICATION

0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT

0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD)

0 NTX074AA09 DISK DATA STORAGE SYSTEM

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)

0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES

0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING

0 NTX103AA12 IBN - SMDR ENHANCED

0 NTX105AA03 TRUNK QUEUING

0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

0 NTX108AA05 IBN - DISPLAY FEATURES

0 NTX110AA01 IBN - HOSPITAL

0 NTX111AA03 IBN - LARGE CONFERENCE

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0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX412AA01 IBN - CUSTOMER STATION  
0 CHANGE(REP. BY NTX412CA IN  
0 BCS31)  
0 NTX412BA01 IBN - CUSTOMER STATION  
0 CHANGE(REP. BY NTX412CA IN  
0 BCS31)  
0 NTX412CA04 IBN - CUSTOMER DATA  
0 CHANGE(UPG. BY NTX412CB)  
0 NTX415AA07 ACD BASIC  
0 NTX416AF01 ACD ENHANCED II (UPG. BY  
0 NTX416AG)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX482DA02 AUSTRALIA LINE CARD  
0 DIAGNOSTICS

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0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX728AA02 SMDR DATA ACCESS  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX753AA06 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES(UPG BY NTX753AB)  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX913AA04 MERCURY CENTREX PCM-30  
0 PERIPHERALS

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0 NTX490PB03 STATUS A+M TARGET SUPERNODE  
0 AUSTRALIAN IN MASTER  
0 PACKAGE(UPG. BY NTX490PC)  
  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXF20AA02 LMS ON LPP  
0 NTXF71AA01 SUPERNODE ENHANCED  
0 MESSAGING(UPG.BY NTXF71AB)  
0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTXH44AB02 AUSTRALIAN TUP FOR DMS100(UPG.  
0 FR NTXH44AA)  
0 NTXH48AA02 AUSTRALIAN ACCS SUPPORT  
0 NTXH49AA02 AUSTRALIAN VPN - SSP(UPG. BY  
0 NTXH49AB)  
0 NTXH51AA02 PCM-30 LGCO/DTCO SUPPORT  
0 NTXH52AA01 PCM30 RSCO SUPPORT  
0 NTXH53AA01 FLEXIBLE NUMBERING PLAN FOR  
0 BELLCORE AMA  
0 NTXK33AA01 DOWNLOADABLE TONES FOR DMS100  
0 NTXK56AA01 PCM30 TIME SLOT FLEXIBILITY  
0 NTXN18AA04 FBUS - LIU BASE

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0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX237AA02 DMS-250 NAILED UP CONNECTIONS  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | PACKAGE                        |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |
| 0 | NTX274AA04 | DTC 30 CARRIER MAINTENANCE     |
| 0 | NTX292AB04 | ENHANCED SECURITY - WITH       |
| 0 |            | PASSWORD ENCRYPTION            |
| 0 | NTX407AB01 | ACD - CALL PROCESSING          |
| 0 |            | (REP.NTX407AA)                 |
| 0 | NTX412CA04 | IBN - CUSTOMER DATA            |
| 0 |            | CHANGE(UPG. BY NTX412CB)       |
| 0 | NTX415AA07 | ACD BASIC                      |
| 0 | NTX416AG01 | ACD ENHANCED II(UPG. OF        |
| 0 |            | NTX416AF)                      |
| 0 | NTX417AA03 | ACD MANAGEMENT REPORT DATA     |
| 0 |            | STREAM                         |
| 0 | NTX427AA04 | END USER TESTING OF TRUNKS     |
| 0 | NTX430AA02 | ESN                            |
| 0 | NTX431AA03 | IBN - CUT THROUGH DIALING      |
| 0 | NTX432AA01 | NETWORK SPEED CALLING          |
| 0 | NTX433AA01 | TIME OF DAY ROUTING            |
| 0 | NTX434AA01 | TIME OF DAY NCOS               |
| 0 | NTX435AA03 | IBN SUPERSET                   |
| 0 | NTX436AA01 | IBN ENHANCED DIAL PLAN         |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE |
| 0 |            | OF NTX445AA)                   |
| 0 | NTX482DA02 | AUSTRALIA LINE CARD            |
| 0 |            | DIAGNOSTICS                    |
| 0 | NTX550AA02 | CCS7 - TRANSACTION SERVICE     |
| 0 |            | SUPPORT                        |
| 0 | NTX560AB03 | NOP - GENERIC RO SERVICE(REP   |
| 0 |            | NTX560AA)                      |
| 0 | NTX562AA03 | NOS - DATA COLLECTION          |
| 0 | NTX563AA05 | BNM - STATION ADMINISTRATION   |
| 0 | NTX728AA02 | SMDR DATA ACCESS               |
| 0 | NTX730AA02 | MULTILINK ASCII DEVICE DRIVER  |
| 0 | NTX732AA06 | SIMPLIFIED MESSAGE DESK        |
| 0 |            | INTERFACE(SMDI)                |
| 0 | NTX753AA06 | ISDN FUNCTIONAL MODE BASIC     |
| 0 |            | RATE SERVICES(UPG BY NTX753AB) |
| 0 | NTX812AA03 | CENTRALIZED MAP                |
| 0 | NTX820AA01 | ENHANCED 3-WAY CALLING - IBN   |
| 0 | NTX824AB01 | ENHANCED CALL WAITING -        |
| 0 |            | IBN(UPGR. OF NTX824AA)         |
| 0 | NTX898AA01 | VARIABLE SPEED CALL ACCESS     |
| 0 |            | CODE - IBN                     |
| 0 | NTX913AA04 | MERCURY CENTREX PCM-30         |
| 0 |            | PERIPHERALS                    |

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0 NTX490PC02 STATUS A+M TARGET SUPERNODE  
0 AUSTRALIAN IN MASTER  
0 PACKAGE(UPG.BY NTX490PD)

0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXB74AA03 EBI/A-LAW  
0 NTXF20AA02 LMS ON LPP  
0 NTXF71AA01 SUPERNODE ENHANCED  
0 MESSAGING(UPG.BY NTXF71AB)  
0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTXH44AB02 AUSTRALIAN TUP FOR DMS100(UPG.  
0 FR NTXH44AA)  
0 NTXH48AA02 AUSTRALIAN ACCS SUPPORT  
0 NTXH49AA02 AUSTRALIAN VPN - SSP(UPG. BY  
0 NTXH49AB)  
0 NTXH51AA02 PCM-30 LGCO/DTCO SUPPORT  
0 NTXH52AA01 PCM30 RSCO SUPPORT  
0 NTXH53AA01 FLEXIBLE NUMBERING PLAN FOR  
0 BELLCORE AMA  
0 NTXH78AA02 AUSTRALIAN ISUP FOR DMS-  
0 100(UPG BY NTXH78AB)  
0 NTXH84AA02 ENHANCED 008 FOR AUSTRALIA  
0 NTXK33AA01 DOWNLOADABLE TONES FOR DMS100  
0 NTXK55AA01 EMERGENCY SERVICES OVER ISDN  
0 NTXK56AA01 PCM30 TIME SLOT FLEXIBILTY  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)

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0 NTX048AA06 SYNCHRONIZATION  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX237AA02 DMS-250 NAILED UP CONNECTIONS  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH

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0 PASSWORD ENCRYPTION
0 NTX407AB01 ACD - CALL PROCESSING
0 (REP.NTX407AA)
0 NTX412CA04 IBN - CUSTOMER DATA
0 CHANGE(UPG. BY NTX412CB)
0 NTX415AA07 ACD BASIC
0 NTX416AH01 ACD ENHANCED II(UPG. OF
0 NTX416AG IN BCS32)
0 NTX417AA03 ACD MANAGEMENT REPORT DATA
0 STREAM
0 NTX427AA04 END USER TESTING OF TRUNKS
0 NTX430AA02 ESN
0 NTX431AA03 IBN - CUT THROUGH DIALING
0 NTX432AA01 NETWORK SPEED CALLING
0 NTX433AA01 TIME OF DAY ROUTING
0 NTX434AA01 TIME OF DAY NCOS
0 NTX435AA03 IBN SUPERSET
0 NTX436AA01 IBN ENHANCED DIAL PLAN
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE
0 OF NTX445AA)
0 NTX482DA02 AUSTRALIA LINE CARD
0 DIAGNOSTICS
0 NTX550AA02 CCS7 - TRANSACTION SERVICE
0 SUPPORT
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP
0 NTX560AA)
0 NTX562AA03 NOS - DATA COLLECTION
0 NTX563AA05 BNM - STATION ADMINISTRATION
0 NTX728AA02 SMDR DATA ACCESS
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER
0 NTX732AA06 SIMPLIFIED MESSAGE DESK
0 INTERFACE(SMDI)
0 NTX753AA06 ISDN FUNCTIONAL MODE BASIC
0 RATE SERVICES(UPG BY NTX753AB)
0 NTX757AA02 TR444 ISUP INTERWORKING
0 NTX801AA01 TOLL FEATURES I
0 NTX802AA04 TOLL FEATURES II
0 NTX812AA03 CENTRALIZED MAP
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN
0 NTX824AB01 ENHANCED CALL WAITING -
0 IBN(UPGR. OF NTX824AA)
0 NTX851AA01 SMDR DERIVED FROM BCR AMA
0 NTX898AA01 VARIABLE SPEED CALL ACCESS
0 CODE - IBN
0 NTX901AA24 LOCAL FEATURES I
0 NTX902AA07 LOCAL FEATURES II

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0 NTX913AA04 MERCURY CENTREX PCM-30  
0 PERIPHERALS

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0 NTX490PD02 STATUS A+M TARGET SUPERNODE  
0 AUSTRALIAN IN MASTER  
0 PACKAGE(UPG.BY NTX490PE)

0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXB74AA03 EBI/A-LAW  
0 NTXF20AA02 LMS ON LPP  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTXH44AB02 AUSTRALIAN TUP FOR DMS100(UPG.  
0 FR NTXH44AA)  
0 NTXH48AA02 AUSTRALIAN ACCS SUPPORT  
0 NTXH49AA02 AUSTRALIAN VPN - SSP(UPG. BY  
0 NTXH49AB)  
0 NTXH51AA02 PCM-30 LGCO/DTCO SUPPORT  
0 NTXH52AA01 PCM30 RSCO SUPPORT  
0 NTXH53AA01 FLEXIBLE NUMBERING PLAN FOR  
0 BELLCORE AMA  
0 NTXH78AA02 AUSTRALIAN ISUP FOR DMS-  
0 100(UPG BY NTXH78AB)  
0 NTXH84AA02 ENHANCED 008 FOR AUSTRALIA  
0 NTXK33AA01 DOWNLOADABLE TONES FOR DMS100  
0 NTXK55AA01 EMERGENCY SERVICES OVER ISDN  
0 NTXK56AA01 PCM30 TIME SLOT FLEXIBILTY  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)

|   |            |                                |
|---|------------|--------------------------------|
| 0 | NTX041AB09 | CCS7 - MTP/SCCP(SEE NTXR72AA   |
| 0 |            | FOR LPP APPLICATION)           |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX165AA06 | BELLCore - IBN/ESN DETAIL      |
| 0 |            | RECORDING                      |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX237AA02 | DMS-250 NAILED UP CONNECTIONS  |
| 0 | NTX260AA02 | IBN - PRESET CONFERENCE        |
| 0 | NTX262AA01 | IBN PRIORITY CONSOLE ALERTING  |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE     |
| 0 |            | PACKAGE                        |
| 0 | NTX273AA07 | MULTI - PROTOCOL CONTROLLER    |
| 0 |            | BX.25                          |

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0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AI01 ACD ENHANCED II(UPG. OF  
0 NTX416AH)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX482DA02 AUSTRALIA LINE CARD  
0 DIAGNOSTICS  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX728AA02 SMDR DATA ACCESS  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX753AA06 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES(UPG BY NTX753AB)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS

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0 CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX913AA04 MERCURY CENTREX PCM-30  
0 PERIPHERALS

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0 NTX490PE01 STATUS A+M TARGET SUPERNODE  
0 AUSTRALIAN IN MASTER  
0 PACKAGE(UPG.FR NTX490PD)

0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXB74AA03 EBI/A-LAW  
0 NTXF20AA02 LMS ON LPP  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTXH44AB02 AUSTRALIAN TUP FOR DMS100(UPG.  
0 FR NTXH44AA)  
0 NTXH48AA02 AUSTRALIAN ACCS SUPPORT  
0 NTXH49AB01 AUSTRALIAN VPN - SSP (UPG FR.  
0 NTXH49AA)  
0 NTXH51AA02 PCM-30 LGCO/DTCO SUPPORT  
0 NTXH52AA01 PCM30 RSCO SUPPORT  
0 NTXH53AA01 FLEXIBLE NUMBERING PLAN FOR  
0 BELLCORE AMA  
0 NTXH78AB01 AUSTRALIAN ISUP FOR DMS-  
0 100(UPG FR. NTXH78AA)  
0 NTXH84AA02 ENHANCED 008 FOR AUSTRALIA  
0 NTXK33AA01 DOWNLOADABLE TONES FOR DMS100  
0 NTXK55AA01 EMERGENCY SERVICES OVER ISDN  
0 NTXK56AA01 PCM30 TIME SLOT FLEXIBILITY  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS

0 RELEASE 28.01  
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0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX237AA02 DMS-250 NAILED UP CONNECTIONS  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE

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0 PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX482DA02 AUSTRALIA LINE CARD  
0 DIAGNOSTICS  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX728AA02 SMDR DATA ACCESS  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN

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0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX913AA04 MERCURY CENTREX PCM-30  
0 PERIPHERALS

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0 NTX490PF01 STATUS A+M TARGET SUPERNODE  
0 AUSTRALIAN IN MASTER  
0 PACKAGE(UPG. OF NTX490PE)  
  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXB74AA03 EBI/A-LAW  
0 NTXF20AA02 LMS ON LPP  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTXH44AB02 AUSTRALIAN TUP FOR DMS100(UPG.  
0 FR NTXH44AA)  
0 NTXH48AA02 AUSTRALIAN ACCS SUPPORT  
0 NTXH49AB01 AUSTRALIAN VPN - SSP (UPG FR.  
0 NTXH49AA)  
0 NTXH51AA02 PCM-30 LGCO/DTCO SUPPORT  
0 NTXH52AA01 PCM30 RSCO SUPPORT  
0 NTXH53AA01 FLEXIBLE NUMBERING PLAN FOR  
0 BELLCORE AMA  
0 NTXH78AB01 AUSTRALIAN ISUP FOR DMS-  
0 100(UPG FR. NTXH78AA)  
0 NTXH84AA02 ENHANCED 008 FOR AUSTRALIA  
0 NTXK33AA01 DOWNLOADABLE TONES FOR DMS100  
0 NTXK55AA01 EMERGENCY SERVICES OVER ISDN

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0 NTXK56AA01 PCM30 TIME SLOT FLEXIBILTY  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA  
0 FOR LPP APPLICATION)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX237AA02 DMS-250 NAILED UP CONNECTIONS  
0 NTX260AA02 IBN - PRESET CONFERENCE



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0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX482DA02 AUSTRALIA LINE CARD  
0 DIAGNOSTICS  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX728AA02 SMDR DATA ACCESS  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF

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0 NTX753AA)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX913AA04 MERCURY CENTREX PCM-30  
0 PERIPHERALS

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0 NTX490PG01 STATUS A+M TARGET SUPERNODE  
0 AUSTRALIAN IN MASTER  
0 PACKAGE(UPG. OF NTX490PF)  
  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXB74AA03 EBI/A-LAW  
0 NTXF20AA02 LMS ON LPP  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTXH44AB02 AUSTRALIAN TUP FOR DMS100(UPG.  
0 FR NTXH44AA)  
0 NTXH48AA02 AUSTRALIAN ACCS SUPPORT  
0 NTXH49AB01 AUSTRALIAN VPN - SSP (UPG FR.  
0 NTXH49AA)  
0 NTXH51AA02 PCM-30 LGCO/DTCO SUPPORT  
0 NTXH52AA01 PCM30 RSCO SUPPORT  
0 NTXH53AA01 FLEXIBLE NUMBERING PLAN FOR

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | BELLCORE AMA                   |
| 0 | NTXH78AB01 | AUSTRALIAN ISUP FOR DMS-       |
| 0 |            | 100(UPG FR. NTXH78AA)          |
| 0 | NTXH84AA02 | ENHANCED 008 FOR AUSTRALIA     |
| 0 | NTXK33AB01 | DOWNLOADABLE TONES FOR DMS-    |
| 0 |            | 100(UPG OF NTXK33AA)           |
| 0 | NTXK55AA01 | EMERGENCY SERVICES OVER ISDN   |
| 0 | NTXK56AA01 | PCM30 TIME SLOT FLEXIBILT      |
| 0 | NTXN18AA04 | FBUS - LIU BASE                |
| 0 | NTXN19AA02 | LIU7 FOR LPP BASED CCS7        |
| 0 |            | APPLICATIONS                   |
| 0 | NTX006AA04 | BUSINESS LINES                 |
| 0 | NTX007AB02 | PBX INTERFACE I (UPGRADE OF    |
| 0 |            | NTX007AA)                      |
| 0 | NTX041AB09 | CCS7 - MTP/SCCP(SEE NTXR72AA   |
| 0 |            | FOR LPP APPLICATION)           |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048CA02 | SYNCHRONIZATION - STRATUM 2    |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX055AB03 | TTP-DIGIT VERIFICATION         |
| 0 | NTX055AC02 | TTP-TRANSMISSION MEASUREMENT   |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX059AB04 | POLLING OM & AUT.MSG           |
| 0 |            | ACCTG.DATA VIA DATAPAC(UPG.OF  |
| 0 |            | NTX058AD                       |
| 0 | NTX060AB11 | NETWORK MANAGEMENT             |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX101AA14 | IBN - ENHANCED BUSINESS        |
| 0 |            | SERVICES                       |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX103AA12 | IBN - SMDR ENHANCED            |
| 0 | NTX105AA03 | TRUNK QUEUING                  |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX108AA05 | IBN - DISPLAY FEATURES         |
| 0 | NTX110AA01 | IBN - HOSPITAL                 |
| 0 | NTX111AA03 | IBN - LARGE CONFERENCE         |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX119AA05 | IBN-MESSAGE SERVICE            |
| 0 | NTX142AA02 | DS-1 64 Kbps CLEAR             |
| 0 | NTX165AA06 | BELLCORE - IBN/ESN DETAIL      |

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0  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX237AA02 DMS-250 NAILED UP CONNECTIONS  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX482DA02 AUSTRALIA LINE CARD  
0 DIAGNOSTICS  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE  
0 SUPPORT  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX728AA02 SMDR DATA ACCESS

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0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX750AD01 ISDN BASIC ACCESS (UPG FROM  
0 NTX750AC)  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX913AA04 MERCURY CENTREX PCM-30  
0 PERIPHERALS

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0 NTX490PH01 STATUS RTM TARGET SUPERNODE  
0 AUSTRALIAN IN MASTER PKG (UPG  
0 OF 490PG)

0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTXA79AA03 IBN TRUNKS WITH ISUP  
0 SIGNALLING  
0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXB74AA03 EBI/A-LAW  
0 NTXF20AA02 LMS ON LPP  
0 NTXF71AB02 SUPERNODE ENHANCED  
0 MESSAGING(UPG. OF NTXF71AA)  
0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTXH48AA02 AUSTRALIAN ACCS SUPPORT

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0 NTXH49AB01 AUSTRALIAN VPN - SSP (UPG FR.  
0 NTXH49AA)  
0 NTXH51AA02 PCM-30 LGCO/DTCO SUPPORT  
0 NTXH52AA01 PCM30 RSCO SUPPORT  
0 NTXH53AA01 FLEXIBLE NUMBERING PLAN FOR  
0 BELLCORE AMA  
0 NTXH57AB01 AUSTRALIAN BASIC RATE ACCESS  
0 NTXH78AB01 AUSTRALIAN ISUP FOR DMS-  
0 100(UPG FR. NTXH78AA)  
0 NTXH84AA02 ENHANCED 008 FOR AUSTRALIA  
0 NTXK33AB01 DOWNLOADABLE TONES FOR DMS-  
0 100(UPG OF NTXK33AA)  
0 NTXK55AA01 EMERGENCY SERVICES OVER ISDN  
0 NTXK56AA01 PCM30 TIME SLOT FLEXIBILITY  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7  
0 APPLICATIONS  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED  
0 PLATFORMS  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX059AB04 POLLING OM & AUT.MSG  
0 ACCTG.DATA VIA DATAPAC(UPG.OF  
0 NTX058AD)  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS -  
0 BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS  
0 SERVICES  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL  
0 RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX105AA03 TRUNK QUEUING  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX110AA01 IBN - HOSPITAL

0  
0 RELEASE 28.01  
0 93 12 03

0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS  
0 (UPG FROM NTX112AA)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL  
0 RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING (  
0 REP.OF NTX167AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX237AA02 DMS-250 NAILED UP CONNECTIONS  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX292AB04 ENHANCED SECURITY - WITH  
0 PASSWORD ENCRYPTION  
0 NTX407AB01 ACD - CALL PROCESSING  
0 (REP.NTX407AA)  
0 NTX412CB01 IBN - CUSTOMER DATA CHANGE  
0 (UPG. OF NTX412CA)  
0 NTX413AB01 IBN - ENHANCED CALL  
0 FORWARDING(UPGR. OF NTX413AA)  
0 NTX415AA07 ACD BASIC  
0 NTX416AJ01 ACD ENHANCED II (UPG. OF  
0 NTX416AI)  
0 NTX417AA03 ACD MANAGEMENT REPORT DATA  
0 STREAM  
0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX430AA02 ESN  
0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX434AA01 TIME OF DAY NCOS  
0 NTX435AA03 IBN SUPERSET  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE  
0 OF NTX445AA)  
0 NTX482DA02 AUSTRALIA LINE CARD  
0 DIAGNOSTICS  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE

0  
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0  
0 SUPPORT  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX728AA02 SMDR DATA ACCESS  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK  
0 INTERFACE(SMDI)  
0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM  
0 NTX750AB  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC  
0 RATE SERVICES (UPG OF  
0 NTX753AA)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX824AB01 ENHANCED CALL WAITING -  
0 IBN(UPGR. OF NTX824AA)  
0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS  
0 CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 NTX913AA04 MERCURY CENTREX PCM-30  
0 PERIPHERALS

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0 NTX490QA03 STATUS RTM  
0 MOROCCO DMS-100/200

0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTXB00AA01 INTL - TRAFFIC SEPARATION  
0 NTXB01AA01 INTL - TRAFFIC SEPARATION  
0 REPORT  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS  
0 - BASIC  
0 NTXB03AA01 SERVICE ANALYSIS - LOCAL



|   |            |                                                    |
|---|------------|----------------------------------------------------|
| 0 | NTXB04AA01 | PBX LINE SUPPORT                                   |
| 0 | NTXB11AA02 | DP REGISTER SIGNALLING                             |
| 0 | NTXB17AA02 | ATTENDANT PAY STATION LOCAL                        |
| 0 | NTXB69AA04 | R2 FOR DMS-100 INTL                                |
| 0 | NTXB84AA04 | INTERNATIONAL RATING SYSTEM                        |
| 0 | NTXH00AA01 | MOROCCAN TONES                                     |
| 0 | NTXH01AA02 | MOROCCAN LINE CARD DIAGNOSTICS                     |
| 0 | NTXH02AA01 | MOROCCAN PHYSICAL RINGING                          |
| 0 | NTXH03AA01 | SOCOTEL BASE SIGNALLING                            |
| 0 | NTXH04AA01 | CCITT 2-BIT LINE SIGNALLING                        |
| 0 | NTXH05AA03 | MOROCCAN LOCAL SIGNALLING                          |
| 0 | NTXH06AA03 | MOROCCAN TOLL SIGNALLING                           |
| 0 | NTXH09AA02 | DOWNLOADABLE TONE                                  |
| 0 | NTXH22AA01 | INTERNATIONAL LOCAL METERING                       |
| 0 | NTXJ35AA02 | MAINTENANCE MANAGERS REPORT                        |
| 0 | NTX000AA19 | BILGE                                              |
| 0 | NTX001AA29 | COMMON BASIC                                       |
| 0 | NTX048AA06 | SYNCHRONIZATION                                    |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING                            |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE                     |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)                           |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)                          |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION                            |
| 0 | NTX060AB11 | NETWORK MANAGEMENT                                 |
| 0 | NTX060BB01 | NETWORK MANAGEMENT - ENHANCED                      |
| 0 | NTX066AB01 | BILINGUAL INTERFACE(UPG FR.<br>NTX066AA)           |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM                           |
| 0 | NTX120AA01 | OFFICE HARDWARE INVENTORY<br>PACKAGE               |
| 0 | NTX122AA02 | OM - CALL ATTEMPTS SUMMARY                         |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE<br>AIDS                |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES                     |
| 0 | NTX178AA01 | NON RESIDENT DIAGNOSTIC<br>UTILITIES               |
| 0 | NTX270AA19 | NEW PERIPHERAL MAINTENANCE<br>PACKAGE              |
| 0 | NTX272AA02 | FOCUSSED MAINTENANCE                               |
| 0 | NTX291AA04 | ENHANCED REAL TIME INDICATOR                       |
| 0 | NTX292BA03 | ENHANCED SECURITY - WITHOUT<br>PASSWORD ENCRYPTION |
| 0 | NTX445AB01 | O.M. SELECTIVE OUTPUT (UPGRADE<br>OF NTX445AA)     |
| 0 | NTX470AA13 | INTERNATIONAL - COMMON BASIC                       |
| 0 | NTX471AA01 | A-LAW COMPANDING                                   |
| 0 | NTX472AB08 | INTERNATIONAL - LOCAL BASIC                        |

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0 NTX474AA07 UPRGR NTX472AA) INTERNATIONAL BASE METERING
0 NTX475AA01 TURKISH TRK TRANSMN TESTING
0 NTX476AA01 WINK-1 LINE SIGNALLING
0 NTX477AA04 DELAY DIAL-1 SIGNALLING
0 NTX478AA04 CCITT PCM (30+2) DIGITAL
0 SIGNALLING AND MAINTENANCE
0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT
0 NTX482AB03 TURKISH LINE CARD
0 DIAGNOSTICS(REP. NTX482AA)
0 NTX483AB01 INTERNATIONAL 101
0 COMMUNICATION TEST
0 LINE(UPG.FR. NTX483AA)
0 NTX484AA01 MALICIOUS CALL TRACE - INTL
0 TOLL/TRANSIT
0 NTX485AA03 INTL - CALL PROCESSING SYSTEM
0 NTX486AA01 MF-3 REGISTER SIGNALLING
0 NTX487AA03 MALICIOUS CALL TRACE - INTL
0 LOCAL
0 NTX488AA01 INTERNATIONAL TIME OF DAY
0 ROUTING
0 NTX492AA03 OPERATOR TOLL BREAK-IN
0 NTX493AA01 ADMINISTRATIVE CALL DIVERSION
0 FEATURES
0 NTX494AA03 AUTOMATIC CALL RECORDING
0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I
0 NTX657AA01 INTERNATIONAL CAMA
0 NTX660AA01 INTERNATIONAL FEATURE
0 PROCESSING ENVIRONMENT (FPE) -
0 BASIC
0 NTX661AA01 INTERNATIONAL FEATURE
0 PROCESSING ENVIRONMENT (FPE)
0 LOCAL
0 NTX662AA01 EMERGENCY CUT-OFF
0 NTX664AA02 OMS IN ERLANGS
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS -
0 BASIC
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS -
0 LOCAL
0 NTX667AA01 PRINTED METER CHECK
0 NTX669AA01 INTERNATIONAL NETWORK
0 MANAGEMENT
0 NTX738AC02 SWITCH PERFORMANCE MONITORING
0 SYSTEM (UPG NTX738AB V.O.30)
0 NTX801AA01 TOLL FEATURES I
0 NTX901AA24 LOCAL FEATURES I
0 NTX904AA04 R2 SIGNALLING BASE

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0 NTX909AA01 ANI TOLL  
0 NTX980AA01 INTERNATIONAL TRUNK TST  
0 POSITION (ITTP)

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0 NTX490RA01 STATUS RTM  
0 MOROCCO IRLCM

0 NTX651AA01 IRLCM  
0 NTX652AA02 INTRASWITCHING ON THE IRLCM  
0 NTX653AA01 IRLCM - EMERGENCY STAND ALONE  
0 (ESA)

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0 NTX490SA02 STATUS RTM  
0 MOROCCO ITOPS

0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB08AA02 ITOPS FOR CEP  
0 NTXB12AA01 ITOPS LOCAL BASIC  
0 NTXB13AB01 ITOPS TOLL - ENHANCED  
0 QUEUEING(UPG.FR. NTXB13AA)  
0 NTXB83AA01 ITOPS TO INTL R2 INTERWORKING  
0 NTXH13AA01 FIXED DURATION CALLS  
0 NTXH16AA01 ESTIMATED CALL CHARGES FOR  
0 ITOPS  
0 NTXH60AA01 MOROCCO ITOPS TRUNK  
0 INTERWORKING  
0 NTXH71AA01 ITOPS INTRUSION TONES

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0 NTX520AA21 STATUS A+M  
0 ATT - DMS 100/200 STANDARD

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX076AA01 AMA - ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX520AB14 STATUS A+M  
0 ATT - DMS 100/200 STANDARD  
0 (REP. BY NTX520AD02)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX076AA01 AMA - ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AA01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPG. BY NTX147AB)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE

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0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX520AD05 STATUS A+M  
0 BOC - DMS 100/200  
0 STANDARD(UPG.BY NTX520AE)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)

0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)

0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX076AA01 AMA - ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX146AA03 REMOTE LINE CONCENTRATING

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0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AB04 SMU - SUBSCRIBER MODULE URBAN  
0 ( REP NTX387AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX520AE01 STATUS RTM  
0 BOC - DMS 100/200 STANDARD(UPG  
0 FR NTX520AD)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)

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0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX076AA01 AMA - ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AC02 SMU - SUBSCRIBER MODULE  
0 URBAN(UPG.FR NTX387AB)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX520AF01 STATUS LTD  
0 BOC - DMS 100/200 STANDARD(UPG  
0 FR NTX520AE)

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0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX076AA01 AMA - ENHANCED  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX521AA21 STATUS A+M  
0 ATT - DMS 100 STANDARD

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX521AB14 STATUS A+M  
0 ATT - DMS 100 STANDARD (REP.  
0 BY NTX521AD)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)

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0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AA01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPG. BY NTX147AB)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX521AD05 STATUS A+M  
0 BOC - DMS 100 STANDARD(UPG.BY  
0 NTX521AE)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS

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0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AB04 SMU - SUBSCRIBER MODULE URBAN  
0 ( REP NTX387AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX521AE01 STATUS RTM  
0 BOC - DMS 100 STANDARD(UPG.FR  
0 NTX521AD)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS

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0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AC02 SMU - SUBSCRIBER MODULE  
0 URBAN(UPG.FR NTX387AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX521AF01 STATUS LTD  
0 BOC - DMS 100 STANDARD(UPG.FR  
0 NTX521AE)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS

0 RELEASE 28.01  
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0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX522AA21 STATUS A+M  
0 ATT - DMS 200 STANDARD(REP.BY  
0 NTX522AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT

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0 RELEASE 28.01  
0 93 12 03

0 NTX076AA01 AMA - ENHANCED  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS  
0 ENHANCEMENTS  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX522AB14 STATUS A+M  
0 ATT - DMS 200 STANDARD(REP. BY  
0 NTX522AD)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX076AA01 AMA - ENHANCED  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX099AA01 OPERATIONAL MEASUREMENTS

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0 NTX522AD05 STATUS RTM
0 BOC - DMS 200 STANDARD (REP.
0 NTX522AC)

0 NTXA11AA01 PATCH ADMINISTRATION &
0 DOWNLOADING VIA X.25
0 NTX000AA19 BILGE
0 NTX001AA29 COMMON BASIC
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE
0 ACCOUNTING (CAMA)
0 NTX048AA06 SYNCHRONIZATION
0 NTX051AA02 AUTOMATIC TRUNK TESTING
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE
0 NTX055AA03 TRUNK TEST POSITION (TTP)
0 NTX055AB03 TTP-DIGIT VERIFICATION
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT
0 NTX056AA05 ENHANCED ADMINISTRATION
0 NTX060AB11 NETWORK MANAGEMENT
0 NTX076AA01 AMA - ENHANCED
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT
0 NTX087AA04 TRAFFIC SEPARATION USAGE
0 NTX088AA04 TRAFFIC SEPARATION REPORT
0 NTX098AA07 BELLCORE CAMA FORMAT
0 NTX099AA01 OPERATIONAL MEASUREMENTS
0 ENHANCEMENTS
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE
0 AIDS
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

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0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX530AA21 STATUS A+M  
0 DMS 100/200 STANDARD(U.S.)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES

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0 93 12 03

0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX530AB14 STATUS A+M  
0 DMS 100/200  
0 STANDARD(U.S.)(REP. BY  
0 NTX530AD)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AA01 OUTSIDE PLANT MODULE

0 RELEASE 28.01  
0 93 12 03  
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0 MAINTENANCE(UPG. BY NTX147AB)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX530AD05 STATUS A+M  
0 DMS 100/200 STANDARD(IOC)(UPG  
0 BY NTX530AE)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT

0 RELEASE 28.01  
0 93 12 03  
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0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AB04 SMU - SUBSCRIBER MODULE URBAN  
0 ( REP NTX387AA)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX530AE01 STATUS RTM  
0 DMS 100/200 STANDARD(IOC)(UPG  
0 FR NTX530AD)  
  
0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)

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0 RELEASE 28.01  
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0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AC02 SMU - SUBSCRIBER MODULE  
0 URBAN(UPG.FR NTX387AB)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 RELEASE 28.01  
0 93 12 03

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0 NTX530AF01 STATUS LTD

0 DMS 100/200 STANDARD(IOC)(UPG  
0 FR NTX530AE)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE  
0 ACCOUNTING (LAMA)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR

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0 RELEASE 28.01  
0 93 12 03

0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX531AA21 STATUS A+M  
0 DMS 100 STANDARD(U.S.)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AA02 PBX INTERFACE I(REP.BY  
0 NTX007AB)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX531AB14 STATUS A+M  
0 DMS 100 STANDARD (U.S.)(REP.  
0 BY NTX531AD)

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0 RELEASE 28.01  
0 93 12 03  
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0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AA01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPG. BY NTX147AB)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX531AD05 STATUS A+M  
0 DMS 100 STANDARD(IOC)(UPG BY  
0 NTX531AE)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)



0 RELEASE 28.01  
0 93 12 03  
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0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AB04 SMU - SUBSCRIBER MODULE URBAN  
0 ( REP NTX387AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX531AE01 STATUS RTM  
0 DMS 100 STANDARD(IOC)(UPG FR  
0 NTX531AD)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)

0 RELEASE 28.01  
0 93 12 03  
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0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AC02 SMU - SUBSCRIBER MODULE  
0 URBAN(UPG.FR NTX387AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX531AF01 STATUS LTD  
0 DMS 100 STANDARD(IOC)(UPG FR  
0 NTX531AE)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)

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0 RELEASE 28.01  
0 93 12 03

0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX054AA05 LINE TEST POSITION (LTP)  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX146AA03 REMOTE LINE CONCENTRATING  
0 MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE  
0 MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX387AD01 SMU AND ISDN/MBS SMU  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX532AA21 STATUS A+M  
0 DMS 200 STANDARD(U.S)(REP.BY  
0 NTX532AB)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

0 RELEASE 28.01  
0 93 12 03  
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0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX532AB14 STATUS A+M  
0 DMS 200 STANDARD(U.S)(REP. BY  
0 NTX532AD)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS

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0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX532AD05 STATUS RTM  
0 DMS 200 STANDARD(IOC)(REP.  
0 NTX532AC)

0 NTXA11AA01 PATCH ADMINISTRATION &  
0 DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE  
0 ACCOUNTING (CAMA)  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX176AA05 NON RESIDENT ADMINISTRATIVE  
0 AIDS  
0 NTX177AA01 NON RESIDENT GENERAL UTILITIES  
0 NTX178AA01 NON RESIDENT DIAGNOSTIC  
0 UTILITIES  
0 NTX269AA07 UNIVERSAL TONE  
0 RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR

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0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX601AA07 STATUS RTM  
0 SCOPE-DIAL BASIC

0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX601CA03 SCOPE-DIAL INTERSWITCH - PBX

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0 NTX700AA14 STATUS LTD  
0 DSN INTERFACE I

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II

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0 NTX701AA09 STATUS RTM  
0 AUTOVON FEATURES I

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0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND  
0 ACCESS LINE INTERFACE

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0 NTX704AA12 STATUS A+M  
0 TOPS MP STANDARD(UPG. BY  
0 NTX704AB)  
  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX731AA06 TOPS MP - TERMINAL  
0 HANDLER(ORDER VIA MP NTX704)

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0 NTX704AB08 STATUS RTM  
0 TOPS MP STANDARD(UPG.OF  
0 NTX704AA IN BCS27)  
  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA

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0 MP NTX704,706,708 OR 709)  
0 NTX731AA06 TOPS MP - TERMINAL  
0 HANDLER(ORDER VIA MP NTX704)

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0 NTX706AA11 STATUS A+M  
0 TOPS MP REMOTE(UPG.BY  
0 NTX706AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING

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0 NTX706AB08 STATUS RTM  
0 TOPS MP REMOTE(UPG.OF NTX706AA  
0 IN BCS27)

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA



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0 MP NTX704,706,708 OR 709)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING

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0 NTX708AA08 STATUS RTM  
0 TOPS MP - TOLL & DIR. ASS.  
0 OPERATION (CCI INTERFACE)

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH  
0 SPEED  
0 NTXA91AA02 STANDARD INTERFACE FOR DA/  
0 INTERCEPT APPLICATIONS  
0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTX709AA07 STATUS RTM  
0 TOPS MP - TOLL & DIR. ASS.  
0 OPRTN - REMOTE (CCI INTERFACE)

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE  
0 CALL HANDLING  
0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT  
0 CC MESSAGING  
0 NTX030CC16 TOPS CALL PROCESSING  
0 FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION  
0 DATA LINK HANDLING  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA  
0 MP NTX704,706,708 OR 709)  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK  
0 HANDLING  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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0 NTX810AD08 STATUS A+M  
0 LBR MASTER SOFTWARE PKG (UPG.  
0 OF NTX810AC)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF  
0 NTX007AA)  
0 NTX008AB02 PBX INTERFACE II(UPG. OF  
0 NTX008AA)  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE  
0 FROM NTX020AB)  
0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA

|   |            |                                |
|---|------------|--------------------------------|
| 0 |            | FOR LPP APPLICATION)           |
| 0 | NTX042AA04 | LOCAL AUTOMATIC MESSAGE        |
| 0 |            | ACCOUNTING (LAMA)              |
| 0 | NTX043AA03 | LOCAL CALL DETAIL RECORDING    |
| 0 | NTX048AA06 | SYNCHRONIZATION                |
| 0 | NTX048BA02 | SYNCHRONIZATION - STRATUM 3    |
| 0 | NTX051AA02 | AUTOMATIC TRUNK TESTING        |
| 0 | NTX052AB02 | REMOTE OFFICE TEST LINE (ROTL) |
| 0 | NTX053AA05 | MAINTENANCE ASSISTANCE PACKAGE |
| 0 | NTX054AA05 | LINE TEST POSITION (LTP)       |
| 0 | NTX055AA03 | TRUNK TEST POSITION (TTP)      |
| 0 | NTX056AA05 | ENHANCED ADMINISTRATION        |
| 0 | NTX057EA04 | CUTOVER ASSISTANCE IV(NRES)    |
| 0 |            | (UPG. OF NTX057DA)             |
| 0 | NTX072AA01 | INTERNATIONAL DIRECT DISTANCE  |
| 0 |            | DIALLING (IDDD)                |
| 0 | NTX074AA09 | DISK DATA STORAGE SYSTEM       |
| 0 | NTX082AA01 | SUBSCRIBER LINE MEASUREMENTS   |
| 0 | NTX085AA05 | TRAFFIC SEPARATION PEG COUNT   |
| 0 | NTX087AA04 | TRAFFIC SEPARATION USAGE       |
| 0 | NTX088AA04 | TRAFFIC SEPARATION REPORT      |
| 0 | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - |
| 0 |            | BASIC (IBN)                    |
| 0 | NTX102AA05 | IBN - STATION MESSAGE DETAIL   |
| 0 |            | RECORDING                      |
| 0 | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET |
| 0 | NTX112AB03 | IBN - VIRTUAL FACILITY GROUPS  |
| 0 |            | (UPG FROM NTX112AA)            |
| 0 | NTX145AA06 | REMOTE SWITCHING CENTER        |
| 0 | NTX146AA03 | REMOTE LINE CONCENTRATING      |
| 0 |            | MODULE (RLCM)                  |
| 0 | NTX147AB01 | OUTSIDE PLANT MODULE           |
| 0 |            | MAINTENANCE(UPGRADE OF         |
| 0 |            | NTX147AA)                      |
| 0 | NTX159AA12 | BELLCORE LAMA FORMAT           |
| 0 | NTX167AB11 | CCS7 - TRUNK SIGNALLING (      |
| 0 |            | REP.OF NTX167AA)               |
| 0 | NTX176AA05 | NON RESIDENT ADMINISTRATIVE    |
| 0 |            | AIDS                           |
| 0 | NTX177AA01 | NON RESIDENT GENERAL UTILITIES |
| 0 | NTX178AA01 | NON RESIDENT DIAGNOSTIC        |
| 0 |            | UTILITIES                      |
| 0 | NTX186AA08 | EQUAL ACCESS END OFFICE(UPG BY |
| 0 |            | NTX186AB)                      |
| 0 | NTX250AA15 | DATAPATH - BASIC               |
| 0 | NTX269AA07 | UNIVERSAL TONE                 |
| 0 |            | RECEIVER(DOMESTIC)             |

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0 NTX270AA19 NEW PERIPHERAL MAINTENANCE  
0 PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER  
0 BX.25  
0 NTX291AA04 ENHANCED REAL TIME INDICATOR  
0 NTX430AA02 ESN  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP  
0 NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

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0 NTX811AA12 STATUS RTM  
0 LBR/HOST - NETWORK ACCESS  
0 POINT

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX803AA02 EQUAL ACCESS ALTERNATE  
0 SWITCHING POINT  
0 NTX812AA03 CENTRALIZED MAP  
0 NTX813AA01 CENTRALIZED ALARMS

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0 NTX960AD02 STATUS RTM TARGET SUPERNODE  
0 DMS - SUPERNODE SERIES 20  
0 PROCESSOR(UPG. FR NTX960AC)

0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR

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0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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## 0 NTG001AA01 DNC BASE

0 NTG000AA01 DVS BASE  
0 NTG000AA01 DVS BASE

## 0 NTG001AA02 DNC BASE

0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE

## 0 NTG001AA03 DNC BASE

0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE

## 0 NTG001AA04 DNC BASE

0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
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0 NTG000AA02 DVS BASE

## 0 NTG002AA01 DNC-500/BNM BASE

0 NTG001AA01 DNC BASE  
0 NTG001AA01 DNC BASE

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0 RELEASE 28.01  
0 93 12 030 NTG002AA02 DNC-500/BNM BASE  
0 NTG001AA02 DNC BASE  
0 NTG001AA02 DNC BASE0 NTG002AA03 DNC-500/BNM BASE  
0 NTG001AA03 DNC BASE  
0 NTG001AA04 DNC BASE  
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0 NTG001AA01 DNC BASE  
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0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE0 NTG005AA01 DNC-50/SDS BASE  
0 NTG001AA01 DNC BASE  
0 NTG001AA01 DNC BASE

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0 NTG005AA02 DNC-50/SDS BASE  
0 NTG001AA02 DNC BASE  
0 NTG001AA02 DNC BASE

0 NTG005AA03 DNC-50/SDS BASE  
0 NTG001AA03 DNC BASE  
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0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE

0 NTG100AA01 SMDR COLLECTOR  
0 EITHER NTG002AA01 DNC-500/BNM BASE  
0 OR NTG002AA01 DNC-500/BNM BASE  
0 OR NTG005AA01 DNC-50/SDS BASE  
0 OR NTG005AA01 DNC-50/SDS BASE

0 NTG100AA02 SMDR COLLECTOR  
0 OR NTG002AA02 DNC-500/BNM BASE  
0 OR NTG002AA02 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG005AA02 DNC-50/SDS BASE  
0 OR NTG005AA02 DNC-50/SDS BASE  
0 OR NTG005AA03 DNC-50/SDS BASE  
0 OR NTG005AA03 DNC-50/SDS BASE  
0 OR NTG005AA03 DNC-50/SDS BASE  
0 OR NTG005AA03 DNC-50/SDS BASE

0 NTG100AA03 SMDR COLLECTOR  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE



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|---|----|------------|------------------|
| 0 | OR | NTG002AA03 | DNC-500/BNM BASE |
| 0 | OR | NTG002AA03 | DNC-500/BNM BASE |
| 0 | OR | NTG002AA03 | DNC-500/BNM BASE |
| 0 | OR | NTG002AA03 | DNC-500/BNM BASE |
| 0 | OR | NTG002AA03 | DNC-500/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |

|   |                         |            |                        |
|---|-------------------------|------------|------------------------|
| 0 | NTG101AA01 SMDR MASKING |            |                        |
| 0 | OR                      | NTG100AA01 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA01 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA02 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA02 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA02 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA02 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR                      | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR                      | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR                      | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR                      | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR                      | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR                      | NTG115AA01 | DNC-100 DATA COLLECTOR |

|   |            |                        |      |
|---|------------|------------------------|------|
| 0 | NTG102AA01 | STATION ADMINISTRATION |      |
| 0 | NTG002AA01 | DNC-500/BNM            | BASE |
| 0 | NTG002AA01 | DNC-500/BNM            | BASE |
| 0 | NTG002AA02 | DNC-500/BNM            | BASE |
| 0 | NTG002AA02 | DNC-500/BNM            | BASE |
| 0 | NTG002AA03 | DNC-500/BNM            | BASE |
| 0 | NTG002AA03 | DNC-500/BNM            | BASE |
| 0 | NTG002AA03 | DNC-500/BNM            | BASE |
| 0 | NTG002AA03 | DNC-500/BNM            | BASE |

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|   |            |             |      |
|---|------------|-------------|------|
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA04 | DNC-500/BNM | BASE |

## 0 NTG102AB01 STATION ADMINISTRATION II (UPGRADE OF NTG102AA)

|   |            |             |      |
|---|------------|-------------|------|
| 0 | NTG002AA02 | DNC-500/BNM | BASE |
| 0 | NTG002AA02 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA04 | DNC-500/BNM | BASE |

## 0 NTG102AC01 STATION ADMINISTRATION II (UPGRADE OF NTG102AB)

|   |            |             |      |
|---|------------|-------------|------|
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |

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|   |            |             |      |
|---|------------|-------------|------|
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA04 | DNC-500/BNM | BASE |

## 0 NTG102AD01 STATION ADMINISTRATION II (UPGRADE OF NTG102AC)

|   |            |             |      |
|---|------------|-------------|------|
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |

## 0 NTG102AE01 STATION ADMINISTRATION II (UPGRADE OF NTG102AD)

|   |            |             |      |
|---|------------|-------------|------|
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |

## 0 NTG103AA01 STATION DATA UPLOAD

|   |            |                           |
|---|------------|---------------------------|
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |

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|   |            |                           |
|---|------------|---------------------------|
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |
| 0 | NTG102AA01 | STATION ADMINISTRATION    |
| 0 | NTG102AA01 | STATION ADMINISTRATION II |

|   |                         |                       |
|---|-------------------------|-----------------------|
| 0 | NTG104AA01 OM COLLECTOR |                       |
| 0 | NTG002AA01              | DNC-500/BNM BASE      |
| 0 | NTG002AA01              | DNC-500/BNM BASE      |
| 0 | NTG002AA02              | DNC-500/BNM BASE      |
| 0 | NTG002AA02              | DNC-500/BNM BASE      |
| 0 | NTG002AA03              | DNC-500/BNM BASE      |
| 0 | NTG002AA03              | DNC-500/BNM BASE      |
| 0 | NTG002AA03              | DNC-500/BNM BASE      |
| 0 | NTG002AA03              | DNC-500/BNM BASE      |
| 0 | NTG104AB01 OM COLLECTOR | (UPGRADE OF NTG104AA) |
| 0 | NTG002AA03              | DNC-500/BNM BASE      |

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|   |            |             |      |
|---|------------|-------------|------|
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |

## 0 NTG105AA01 OM FIXED FORMAT REPORTS - DNC-500

|   |            |              |                                    |
|---|------------|--------------|------------------------------------|
| 0 | NTG104AA01 | OM COLLECTOR |                                    |
| 0 | NTG104AA01 | OM COLLECTOR |                                    |
| 0 | NTG104AA01 | OM COLLECTOR |                                    |
| 0 | NTG104AA01 | OM COLLECTOR |                                    |
| 0 | NTG104AA01 | OM COLLECTOR |                                    |
| 0 | NTG104AA01 | OM COLLECTOR |                                    |
| 0 | NTG104AA01 | OM COLLECTOR |                                    |
| 0 | NTG104AA01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR | (UPGRADE OF NTG104AA)              |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR | (UPGRADE OF NTG104AA)              |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR | (UPGRADE OF NTG104AA)              |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | NTG104AB01 | OM COLLECTOR |                                    |
| 0 | EITHER     | NTG104AA01   | OM COLLECTOR                       |
| 0 | OR         | NTG104AA01   | OM COLLECTOR                       |
| 0 | OR         | NTG104AA01   | OM COLLECTOR                       |
| 0 | OR         | NTG104AA01   | OM COLLECTOR                       |
| 0 | OR         | NTG104AB01   | OM COLLECTOR (UPGRADE OF NTG104AA) |
| 0 | OR         | NTG104AB01   | OM COLLECTOR                       |
| 0 | OR         | NTG104AB01   | OM COLLECTOR                       |

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0 RELEASE 28.01  
0 93 12 030 OR NTG104AB01 OM COLLECTOR  
0 OR NTG104AB01 OM COLLECTOR

## 0 NTG106AA01 MAINTENANCE COLLECTOR

0 NTG002AA01 DNC-500/BNM BASE  
0 NTG002AA01 DNC-500/BNM BASE  
0 NTG002AA02 DNC-500/BNM BASE  
0 NTG002AA02 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE

## 0 NTG106AA02 MAINTENANCE COLLECTOR

0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE  
0 NTG002AA03 DNC-500/BNM BASE

## 0 NTG107AA01 MAINTENANCE FIXED FORMAT REPORTS - DNC-500

0 NTG106AA01 MAINTENANCE COLLECTOR  
0 NTG106AA01 MAINTENANCE COLLECTOR  
0 NTG106AA01 MAINTENANCE COLLECTOR  
0 NTG106AA01 MAINTENANCE COLLECTOR  
0 NTG106AA01 MAINTENANCE COLLECTOR  
0 NTG106AA01 MAINTENANCE COLLECTOR  
0 NTG106AA01 MAINTENANCE COLLECTOR  
0 NTG106AA01 MAINTENANCE COLLECTOR  
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0 NTG106AA01 MAINTENANCE COLLECTOR  
0 NTG106AA01 MAINTENANCE COLLECTOR  
0 NTG106AA01 MAINTENANCE COLLECTOR  
0 NTG106AA02 MAINTENANCE COLLECTOR  
0 NTG106AA02 MAINTENANCE COLLECTOR  
0 NTG106AA02 MAINTENANCE COLLECTOR

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|   |    |            |                        |
|---|----|------------|------------------------|
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |

## 0 NTG109AA01 SMDR SPOOLING

|   |    |            |                        |
|---|----|------------|------------------------|
| 0 | OR | NTG100AA01 | SMDR COLLECTOR         |
| 0 | OR | NTG100AA01 | SMDR COLLECTOR         |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |

## 0 NTG109AA02 SMDR SPOOLING

|   |    |            |                        |
|---|----|------------|------------------------|
| 0 | OR | NTG100AA02 | SMDR COLLECTOR         |
| 0 | OR | NTG100AA02 | SMDR COLLECTOR         |
| 0 | OR | NTG100AA02 | SMDR COLLECTOR         |
| 0 | OR | NTG100AA02 | SMDR COLLECTOR         |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |

```
0 OR NTG115AA01 DNC-100 DATA COLLECTOR
0 OR NTG115AA01 DNC-100 DATA COLLECTOR
```

0 NTG109AA03 SMDR SPOOLING

[illegible]

**0 NTG110AA01 CALL TRACKING**

|   |    |            |                |
|---|----|------------|----------------|
| 0 | OR | NTG100AA01 | SMDR COLLECTOR |
| 0 | OR | NTG100AA01 | SMDR COLLECTOR |
| 0 | OR | NTG100AA02 | SMDR COLLECTOR |
| 0 | OR | NTG100AA02 | SMDR COLLECTOR |
| 0 | OR | NTG100AA02 | SMDR COLLECTOR |
| 0 | OR | NTG100AA02 | SMDR COLLECTOR |
| 0 | OR | NTG100AA03 | SMDR COLLECTOR |
| 0 | OR | NTG100AA03 | SMDR COLLECTOR |

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|   |    |            |                        |
|---|----|------------|------------------------|
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |

## 0 NTG111AA01 REMOTE DNC APPLICATION ACCESS

|   |            |          |
|---|------------|----------|
| 0 | NTG001AA01 | DNC BASE |
| 0 | NTG001AA01 | DNC BASE |
| 0 | NTG001AA02 | DNC BASE |
| 0 | NTG001AA02 | DNC BASE |
| 0 | NTG001AA03 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |

## 0 NTG112AA01 DNC-100 SUPPORT

|   |            |                  |
|---|------------|------------------|
| 0 | NTG002AA01 | DNC-500/BNM BASE |
| 0 | NTG002AA01 | DNC-500/BNM BASE |
| 0 | NTG002AA02 | DNC-500/BNM BASE |
| 0 | NTG002AA02 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |
| 0 | NTG002AA03 | DNC-500/BNM BASE |

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## 0 NTG114AA01 DMS-100 MAP REACHTHROUGH

|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG001AA01 | DNC | BASE |
| 0 | NTG001AA01 | DNC | BASE |
| 0 | NTG001AA02 | DNC | BASE |
| 0 | NTG001AA02 | DNC | BASE |
| 0 | NTG001AA03 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |

## 0 NTG115AA01 DNC-100 DATA COLLECTOR

|   |            |             |      |
|---|------------|-------------|------|
| 0 | NTG004AA01 | DNC-100/BNM | BASE |
| 0 | NTG004AA01 | DNC-100/BNM | BASE |
| 0 | NTG004AA02 | DNC-100/BNM | BASE |
| 0 | NTG004AA02 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |
| 0 | NTG004AA03 | DNC-100/BNM | BASE |

## 0 NTG138AA01 NETWORK ADMINISTRATION

|   |            |             |      |
|---|------------|-------------|------|
| 0 | NTG002AA02 | DNC-500/BNM | BASE |
|---|------------|-------------|------|

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|   |            |             |      |
|---|------------|-------------|------|
| 0 | NTG002AA02 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |
| 0 | NTG002AA03 | DNC-500/BNM | BASE |

## 0 NTG158AA01 HOST REACHTHROUGH - IBM 3274 EMULATION

|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG000AA01 | DVS | BASE |
| 0 | NTG000AA01 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |

```
0 NTG000AA02 DVS BASE
0 NTG000AA02 DVS BASE
0 NTG000AA02 DVS BASE
0 NTG000AA02 DVS BASE
```

0 NTG159AA01 HOST REACHTHROUGH - ASCII (X.25)

[illegible]

0 NTG160AA01 ASCII COMMUNICATIONS

```
0 NTG000AA01 DVS BASE
0 NTG000AA01 DVS BASE
```

0 NTG160AA02 ASCII COMMUNICATIONS

|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |

[illegible][illegible]



[illegible]

0 NTG163AA01 FOREIGN OPERATING SYSTEM

[illegible]

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## 0 NTG164AA01 LOG CONSOLE TASK

|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG001AA01 | DNC | BASE |
| 0 | NTG001AA01 | DNC | BASE |
| 0 | NTG001AA02 | DNC | BASE |
| 0 | NTG001AA02 | DNC | BASE |
| 0 | NTG001AA03 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |

## 0 NTG165AA01 DNC JOB SCHEDULER

|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG001AA01 | DNC | BASE |
| 0 | NTG001AA01 | DNC | BASE |
| 0 | NTG001AA02 | DNC | BASE |
| 0 | NTG001AA02 | DNC | BASE |
| 0 | NTG001AA03 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |

## 0 NTG166AA01 DNC TABLE CONTROL - GENERIC

|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG001AA01 | DNC | BASE |
| 0 | NTG001AA01 | DNC | BASE |
| 0 | NTG001AA02 | DNC | BASE |
| 0 | NTG001AA02 | DNC | BASE |
| 0 | NTG001AA03 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |

|   |            |          |
|---|------------|----------|
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |

```
0 NTG171AA01 CENTRALIZED ALARMS (COAM)
0 NTG001AA01 DNC BASE
0 NTG001AA01 DNC BASE
```

```
0 NTG172AA01 CENTRALIZED AMA COLLECTION (COAM)
0 NTG001AA01 DNC BASE
0 NTG001AA01 DNC BASE
```

```

0 NTG176AA01 XSUR APPLICATION
0
0 NTG000AA02 DVS BASE
0 NTG000AA02 DVS BASE
0 NTG000AA02 DVS BASE
0 NTG000AA02 DVS BASE
0 NTG000AA02 DVS BASE
0 NTG000AA02 DVS BASE

```

[illegible]

```
0 NTG177AA01 HOST REACHTHROUGH - ASCII (ASYNC)
0 NTG160AA01 ASCII COMMUNICATIONS
```

[illegible][illegible]

[illegible]

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|   |            |                        |
|---|------------|------------------------|
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | NTG115AA01 | DNC-100 DATA COLLECTOR |

## 0 NTG182AA01 COMMUNICATIONS - CAMPUSNET

|   |            |          |
|---|------------|----------|
| 0 | NTG001AA02 | DNC BASE |
| 0 | NTG001AA02 | DNC BASE |
| 0 | NTG001AA03 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |
| 0 | NTG001AA04 | DNC BASE |

## 0 NTG183AA01 CUSTOMER PROGRAMMING

|   |            |          |
|---|------------|----------|
| 0 | NTG001AA02 | DNC BASE |
| 0 | NTG001AA02 | DNC BASE |
| 0 | NTG001AA03 | DNC BASE |

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|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |

## 0 NTG186AA01 UMPIRE

|   |            |         |                  |
|---|------------|---------|------------------|
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG001AA04 | DNC     | BASE             |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN | OPERATING SYSTEM |

## 0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)

|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG001AA04 | DNC | BASE |
|---|------------|-----|------|

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|   |            |                          |
|---|------------|--------------------------|
| 0 | NTG001AA04 | DNC BASE                 |
| 0 | NTG001AA04 | DNC BASE                 |
| 0 | NTG001AA04 | DNC BASE                 |
| 0 | NTG001AA04 | DNC BASE                 |
| 0 | NTG001AA04 | DNC BASE                 |
| 0 | NTG001AA04 | DNC BASE                 |
| 0 | NTG001AA04 | DNC BASE                 |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |
| 0 | NTG163AA01 | FOREIGN OPERATING SYSTEM |

|   |            |              |                  |
|---|------------|--------------|------------------|
| 0 | NTG212AA01 | NETWORK NODE | SMDR COLLECTION  |
| 0 | EITHER     | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG002AA03   | DNC-500/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |
| 0 | OR         | NTG004AA03   | DNC-100/BNM BASE |



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## 0 NTG213AA01 PBX SMDR COLLECTION

|   |        |            |             |           |
|---|--------|------------|-------------|-----------|
| 0 | EITHER | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG002AA03 | DNC-500/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG004AA03 | DNC-100/BNM | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | OR     | NTG005AA03 | DNC-50/SDS  | BASE      |
| 0 | EITHER | NTG100AA03 | SMDR        | COLLECTOR |
| 0 | OR     | NTG100AA03 | SMDR        | COLLECTOR |
| 0 | OR     | NTG100AA03 | SMDR        | COLLECTOR |
| 0 | OR     | NTG100AA03 | SMDR        | COLLECTOR |
| 0 | OR     | NTG100AA03 | SMDR        | COLLECTOR |
| 0 | OR     | NTG100AA03 | SMDR        | COLLECTOR |
| 0 | OR     | NTG100AA03 | SMDR        | COLLECTOR |

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|   |    |            |                        |
|---|----|------------|------------------------|
| 0 | OR | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR | NTG100AA03 | SMDR COLLECTOR         |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |
| 0 | OR | NTG115AA01 | DNC-100 DATA COLLECTOR |

|   |            |                                            |
|---|------------|--------------------------------------------|
| 0 | NTG230AA01 | TOPS VOICE SERVICE NODE FOR AABS (GENERIC) |
| 0 |            | NTG000AA02 DVS BASE                        |
| 0 |            | NTG000AA02 DVS BASE                        |
| 0 |            | NTG000AA02 DVS BASE                        |
| 0 |            | NTG000AA02 DVS BASE                        |
| 0 |            | NTG000AA02 DVS BASE                        |
| 0 |            | NTG000AA02 DVS BASE                        |

|   |            |                                                            |
|---|------------|------------------------------------------------------------|
| 0 | NTG240AA01 | ISDN STATION ADMINISTRATION                                |
| 0 |            | NTG102AD01 STATION ADMINISTRATION II (UPGRADE OF NTG102AC) |
| 0 |            | NTG102AD01 STATION ADMINISTRATION II (UPGRADE OF NTG102AC) |
| 0 |            | NTG102AD01 STATION ADMINISTRATION II (UPGRADE OF NTG102AC) |
| 0 |            | NTG102AD01 STATION ADMINISTRATION II (UPGRADE OF NTG102AC) |
| 0 |            | NTG102AD01 STATION ADMINISTRATION II (UPGRADE OF NTG102AC) |

|   |            |                                                  |
|---|------------|--------------------------------------------------|
| 0 | NTG240AA02 | ISDN STATION ADMINISTRATION                      |
| 0 |            | NTG102AE01 STATION ADMINISTRATION II (UPGRADE OF |

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0 NTG102AD)  
0 NTG102AE01 STATION ADMINISTRATION II (UPGRADE OF  
0 NTG102AD)  
0 NTG102AE01 STATION ADMINISTRATION II (UPGRADE OF  
0 NTG102AD)  
0 NTG102AE01 STATION ADMINISTRATION II (UPGRADE OF  
0 NTG102AD)  
0 NTG102AE01 STATION ADMINISTRATION II (UPGRADE OF  
0 NTG102AD)  
0 NTG102AE01 STATION ADMINISTRATION II (UPGRADE OF  
0 NTG102AD)

0 NTG241AA01 BNM CONNECT TIME DATA COLLECTION  
0 NTG240AA01 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION

0 NTG242AA01 ISDN COSMOS/LMOS (THROUGH CRAS) INTERFACE  
0 NTG240AA01 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION

0 NTG243AA01 IBT BNM/ISDN BILLING I/F  
0 NTG240AA01 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION  
0 NTG240AA02 ISDN STATION ADMINISTRATION

0 NTG247AA01 OPTIONAL SHADOW DISKS  
0 EITHER NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE  
0 OR NTG002AA03 DNC-500/BNM BASE

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|   |    |            |                  |
|---|----|------------|------------------|
| 0 | OR | NTG002AA03 | DNC-500/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG004AA03 | DNC-100/BNM BASE |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |
| 0 | OR | NTG005AA03 | DNC-50/SDS BASE  |

|   |            |               |                                       |
|---|------------|---------------|---------------------------------------|
| 0 | NTG248AA01 | OSI MEDIATION | I/F FOR BNM/COSMOS                    |
| 0 |            | NTG102AD01    | STATION ADMINISTRATION II (UPGRADE OF |
| 0 |            |               | NTG102AC)                             |
| 0 |            | NTG102AD01    | STATION ADMINISTRATION II (UPGRADE OF |
| 0 |            |               | NTG102AC)                             |
| 0 |            | NTG102AD01    | STATION ADMINISTRATION II (UPGRADE OF |
| 0 |            |               | NTG102AC)                             |
| 0 |            | NTG102AD01    | STATION ADMINISTRATION II (UPGRADE OF |
| 0 |            |               | NTG102AC)                             |
| 0 |            | NTG102AD01    | STATION ADMINISTRATION II (UPGRADE OF |
| 0 |            |               | NTG102AC)                             |
| 0 |            | NTG102AD01    | STATION ADMINISTRATION II (UPGRADE OF |
| 0 |            |               | NTG102AC)                             |
| 0 |            | NTG102AD01    | STATION ADMINISTRATION II (UPGRADE OF |
| 0 |            |               | NTG102AC)                             |
| 0 |            | NTG102AD01    | STATION ADMINISTRATION II (UPGRADE OF |
| 0 |            |               | NTG102AC)                             |
| 0 |            | NTG102AD01    | STATION ADMINISTRATION II (UPGRADE OF |
| 0 |            |               | NTG102AC)                             |
| 0 |            | NTG102AD01    | STATION ADMINISTRATION II (UPGRADE OF |
| 0 |            |               | NTG102AC)                             |
| 0 |            | NTG186AA01    | UMPIRE                                |
| 0 |            | NTG186AA01    | UMPIRE                                |

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|   |            |                                                        |  |
|---|------------|--------------------------------------------------------|--|
| 0 | NTG186AA01 | UMPIRE                                                 |  |
| 0 | NTG186AA01 | UMPIRE                                                 |  |
| 0 | NTG186AA01 | UMPIRE                                                 |  |
| 0 | NTG186AA01 | UMPIRE                                                 |  |
| 0 | NTG186AA01 | UMPIRE                                                 |  |
| 0 | NTG186AA01 | UMPIRE                                                 |  |
| 0 | NTG186AA01 | UMPIRE                                                 |  |
| 0 | NTG186AA01 | UMPIRE                                                 |  |
| 0 | NTG186AA01 | UMPIRE                                                 |  |
| 0 | NTG186AA01 | UMPIRE                                                 |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG248AB01 | OSI MEDIATION I/F FOR BNM/COSMOS (UPGRADE OF NTG248AA) |  |
| 0 | NTG249AB01 | OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF NTG249AA)  |  |
| 0 | NTG249AB01 | OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF NTG249AA)  |  |
| 0 | NTG249AB01 | OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF NTG249AA)  |  |
| 0 | NTG249AB01 | OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF NTG249AA)  |  |
| 0 | NTG249AB01 | OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF NTG249AA)  |  |
| 0 | NTG249AB01 | OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF NTG249AA)  |  |
| 0 | NTG249AB01 | OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF NTG249AA)  |  |
| 0 | NTG249AA01 | OSS AUTOMATIC STN. ADMIN UPDATE                        |  |
| 0 | NTG102AD01 | STATION ADMINISTRATION II (UPGRADE OF NTG102AC)        |  |
| 0 | NTG102AD01 | STATION ADMINISTRATION II (UPGRADE OF NTG102AC)        |  |
| 0 | NTG102AD01 | STATION ADMINISTRATION II (UPGRADE OF NTG102AC)        |  |
| 0 | NTG102AD01 | STATION ADMINISTRATION II (UPGRADE OF NTG102AC)        |  |
| 0 | NTG102AD01 | STATION ADMINISTRATION II (UPGRADE OF NTG102AC)        |  |
| 0 | NTG102AD01 | STATION ADMINISTRATION II (UPGRADE OF NTG102AC)        |  |

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|   |                          |                                         |
|---|--------------------------|-----------------------------------------|
| 0 |                          | NTG102AC)                               |
| 0 | NTG102AD01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AC)                               |
| 0 | NTG102AD01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AC)                               |
| 0 | NTG102AD01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AC)                               |
| 0 | NTG102AD01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AC)                               |
| 0 | NTG102AD01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AC)                               |
| 0 | NTG102AD01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AC)                               |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG186AA01               | UMPIRE                                  |
| 0 | NTG249AB01 OSS AUTOMATIC | STN. ADMIN UPDATE (UPGRADE OF NTG249AA) |
| 0 | NTG102AE01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AD)                               |
| 0 | NTG102AE01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AD)                               |
| 0 | NTG102AE01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AD)                               |
| 0 | NTG102AE01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AD)                               |
| 0 | NTG102AE01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AD)                               |
| 0 | NTG102AE01               | STATION ADMINISTRATION II (UPGRADE OF   |
| 0 |                          | NTG102AD)                               |
| 0 | NTG186AB01               | UMPIRE (UPGRADE OF NTG186AA)            |
| 0 | NTG186AB01               | UMPIRE (UPGRADE OF NTG186AA)            |
| 0 | NTG186AB01               | UMPIRE (UPGRADE OF NTG186AA)            |
| 0 | NTG186AB01               | UMPIRE (UPGRADE OF NTG186AA)            |
| 0 | NTG186AB01               | UMPIRE (UPGRADE OF NTG186AA)            |
| 0 | NTG186AB01               | UMPIRE (UPGRADE OF NTG186AA)            |

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0  
0 NTG275AA01 GENERIC OSI MEDIATION I/F FOR BNM/LMOS  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)

## 0 NTG276AA01 3780 REMOTE FILE TRANSFER

0 NTG001AA03 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE

## 0 NTG277AA01 CHANNEL INTERFACE SOFTWARE

0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE  
0 NTG000AA02 DVS BASE



[illegible]

## 0 NTG278AA01 CPU - USAGE MONITOR

[illegible]

## 0 NTG279AA01 PC LAN/NETBIOS COMMUNICATIONS

[illegible]

|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |

## 0 NTG280AA01 VOICE SERVICES

[illegible]

## 0 NTG281AA01 ASYNCHRONOUS DIAL-UP

[illegible]

[illegible]

0 NTG282AA01 TRMS SOFTWARE

[illegible]

## 0 NTG283AA01 OPERATIONAL MEASUREMENTS

[illegible]

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|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG001AA03 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |

## 0 NTG284AA01 GENERAL UTILITIES

|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG000AA02 | DVS | BASE |
| 0 | NTG001AA03 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |

## 0 NTG285AA01 DATA BASE ACCESS

|   |            |     |      |
|---|------------|-----|------|
| 0 | NTG001AA03 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |
| 0 | NTG001AA04 | DNC | BASE |

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0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE  
0 NTG001AA04 DNC BASE

0 NTG287AA01 OSI MEDIATION I/F-BNM TO LMOS DIRECT LINK  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)

0 NTG288AA01 OSI MEDIATION I/F FOR BNM/COSMOS INTERACTIVE  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)  
0 NTG249AB01 OSS AUTOMATIC STN. ADMIN UPDATE (UPGRADE OF  
0 NTG249AA)

0 NTG289AA01 UMPIRE CUSTOMIZATION TOOL KIT  
0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)  
0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)  
0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)  
0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)  
0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)  
0 NTG186AB01 UMPIRE (UPGRADE OF NTG186AA)

0 NTXA00AB02 CLASS - CALL SETUP (UPGRADE OF NTXA00AA IN BCS32)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE

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0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA00AC01 CLASS - CALL SETUP  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED TRACE  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA03AA02 REMOTE DLM WITH ESA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX725AA03 REMOTE DLM WITH M2000  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX640AA06 DIGITAL PHONE M2000-BASIC  
0 OR NTX640AB04 DIGITAL PHONE M2000 - BASIC (UPG.OF  
0 NTX640AA)

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0 NTXA05AA03 SCOPEDIAL/ISUP INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX707AA03 AUTOVON CCS7 BASIC  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXA08AA01 CCC DP/DTMF TANDEM OFFICE TREATMENT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXA09AA01 SL-100 PAD PROVISIONING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTXA10AA01 MERIDIAN SL-100 CABINETIZED SOFTWARE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA11AA01 PATCH ADMINISTRATION & DOWNLOADING VIA X.25  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXA15AA01 CALL PROGRESS TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE DIALLING  
0 (IDDD)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)

0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING SERVICE  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX801AA01 TOLL FEATURES I  
0 NTX825AB01 EXCHANGE ALTERNATE BILLING SERVICE(UPG OF  
0 NTX825AA IN BCS34  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

0 NTXA18AA01 SUBSCRIBER ACTIVATED CODE BLOCKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA20AA01 TOPS MP OPEN INFORMATION ACCESS INTERFACE  
0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH SPEED  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTXA22AA01 ENHANCED ARS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX105AA03 TRUNK QUEUING  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA24AA01 EQUAL ACCESS ENHANCED CARRIER TOLL DENIAL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC



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0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)  
0 OR NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 OR NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTXA26AA01 TOPS INCOMING FEATURE GROUP D SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR SERV SIG

0 NTXA27AA01 EXECUTIVE CONFERENCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

0 NTXA30AA01 VIRTUAL FACILITY GROUP LOOK AHEAD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS (UPG FROM  
0 NTX112AA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA31AA01 DISA THIRD DIAL TONE - IBN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA32AA01 DISTINCTIVE CALL WAITING RINGBACK  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

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0 93 12 030 NTX435AA03 IBN SUPERSET  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXA33AA01 MADN RING FORWARD

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX878AB02 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG.BY NTX878AC)  
0 OR NTX878AC01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. BY NTX878AD)  
0 OR NTX878AD01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. BY NTX878AE)  
0 OR NTX878AE01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. FR. NTX878AD)

## 0 NTXA35AA03 NETWORK NUMBER DISPLAY

0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

## 0 NTXA36AA01 NETWORK WIDE RING AGAIN

0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

## 0 NTXA38AA03 SCOPEDIAL NAS

0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX610AA03 SCOPEDIAL - OVERSEAS  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX707AA03 AUTOVON CCS7 BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXA38AB01 SCOPEDIAL NAS (UPG OF NTXA38AA)  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX610AA03 SCOPEDIAL - OVERSEAS  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX707AA03 AUTOVON CCS7 BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXA39AA02 MERIDIAN NETWORK ATTENDANT SERVICE  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY BLOCKING ADMINISTRATION  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE

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0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA42AA01 CLASS DISTINCTIVE RINGING/CALL WAITING  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA43AA01 CALL FORWARD REMOTE ACTIVATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTXA45AA01 CLASS SELECTIVE CALL ACCEPTANCE  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA50AA01 RSC - DLM WITH ESA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX149AB03 RSC ESA OPERATION - LINE AND TRUNK  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

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0 93 12 030 NTX726AA02 RSC DLM MERIDIAN DIGITAL SETS  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXA52AB01 ACD REMOTE LOAD MANAGEMENT I (REP. NTXA52AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING (REP. NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX560AB03 NOP - GENERIC RO SERVICE (REP NTX560AA)  
0 EITHER NTX991AB02 ACD-MGMT REP 2 WAY DATA STREAM (UPG BY  
0 NTX991AC)  
0 OR NTX991AC01 ACD-MGMT REP 2 WAY DATA STREAM (UPG. BY  
0 NTX991AD)  
0 OR NTX991AD01 ACD-MGMT REP 2 WAY DATA STREAM (UPG.. BY  
0 NTX991AE)  
0 OR NTX991AE01 ACD-MGMT REP 2 WAY DATA STREAM (UPG. BY  
0 NTX991AF)  
0 OR NTX991AF01 ACD-MGMT REP 2 WAY DATA STREAM (UPG OF  
0 NTX991AE IN BCS32)  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTXA53AA01 MILITARY NETWORK MANAGEMENT VIA X.25

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND ACCESS LINE  
0 INTERFACE  
0 NTX716AA05 DSN NETWORK MANAGEMENT ENHANCEMENT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

## 0 NTXA54AA01 MOST ECONOMICAL ROUTING PHASE II

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX006AA04 BUSINESS LINES  
0 NTX007AB02 PBX INTERFACE I (UPGRADE OF NTX007AA)  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX607AA04 PBX ACCESS TO AUTOVON  
0 NTX701BA08 AUTOVON BASIC FEATURES

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0 NTX801AA01 TOLL FEATURES I  
0 NTX802AA04 TOLL FEATURES II  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II  
0 EITHER NTX601CA03 SCOPE-DIAL INTERSWITCH - PBX  
0 OR NTX605AA01 DUAL FUNCTION CAPABILITY

0 NTXA55AA01 SCP COMMON  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXA56AA02 DVI MODE MAINTENANCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXA60AA02 TOPS CLOSEDOWN(REPLACES NTX134BB AND NTX039AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE CALL HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX801AA01 TOLL FEATURES I  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

0 NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT CC MESSAGING  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE CALL HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX824AB01 ENHANCED CALL WAITING - IBN(UPGR. OF  
0 NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXA67AA01 EXTENDED XPM DIAGNOSTICS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXA72AA01 SECONDARY MADN CALL FORWARDING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX878AB02 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG.BY NTX878AC)  
0 OR NTX878AC01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. BY NTX878AD)  
0 OR NTX878AD01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. BY NTX878AE)  
0 OR NTX878AE01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. FR. NTX878AD)

0 NTXA73AA01 LOUDSPEAKER PAGING ANSWER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA74AA01 OUTGOING RESTRICTION CONTROL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

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0 93 12 030 NTX110AA01 IBN - HOSPITAL  
0 NTX901AA24 LOCAL FEATURES I0 NTXA77AA01 ENHANCED UCD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)0 NTXA80AA02 NETWORK NAME DISPLAY  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX946AA01 EBS - CALL NAME DISPLAY(UPG. BY NTX946AB)  
0 OR NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF NTX946AA IN  
0 BCS26)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)0 NTXA81AA01 EXTENSION BRIDGED SERVICES  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)



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0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX878AB02 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG.BY NTX878AC)  
0 OR NTX878AC01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. BY NTX878AD)  
0 OR NTX878AD01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. BY NTX878AE)  
0 OR NTX878AE01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. FR. NTX878AD)

0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX801AA01 TOLL FEATURES I

0 NTXA84AA01 EBS - MUSIC ON HOLD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 EITHER NTX878AB02 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG.BY NTX878AC)  
0 OR NTX878AC01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. BY NTX878AD)  
0 OR NTX878AD01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. BY NTX878AE)  
0 OR NTX878AE01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. FR. NTX878AD)  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)  
0 OR NTX101AA14 IBN - ENHANCED BUSINESS SERVICES

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0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/REMOTE (UPG OF NTXA85AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX398AA12 SCM - 100S  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA86AA01 SUBSCRIBER CARRIER MODULE SLC-96/REMOTE: SPECIAL SERVICES  
0 NTXA85AB02 SUBSCRIBER MODULE SLC-96/REMOTE (UPG OF  
0 NTXA85AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX398AA12 SCM - 100S  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA87AA01 CMS LONG DISTANCE INDICATOR  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA88AA02 MDR VIA AMA STREAM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

0 NTXA89AA01 SMDR TIME DUMP FOR BNM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX901AA24 LOCAL FEATURES I

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## 0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH SPEED

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA MP  
0 NTX704,706,708 OR 709)  
0 NTX801AA01 TOLL FEATURES I

## 0 NTXA91AA02 STANDARD INTERFACE FOR DA/INTERCEPT APPLICATIONS

0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH SPEED  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA MP  
0 NTX704,706,708 OR 709)  
0 NTX801AA01 TOLL FEATURES I

## 0 NTXA92AA01 SL100 FEATURE GROUP D

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXA94AA01 RES FEATURES

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXA95AA01 CLASS SELECTIVE CALL FORWARDING

0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION

0 NTXA82AA03 CLASS LINE OFFICE DATA

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0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXB00AA01 INTL - TRAFFIC SEPARATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB01AA01 INTL - TRAFFIC SEPARATION REPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS - BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB03AA01 SERVICE ANALYSIS - LOCAL  
0 NTXB02AA01 INTERNATIONAL SERVICE ANALYSIS - BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTXB04AA01 PBX LINE SUPPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX909AA01 ANI TOLL

0 NTXB07AA01 INTER ADMINISTRATION ACCOUNTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX657AA01 INTERNATIONAL CAMA

0 NTXB08AA02 ITOPS FOR CEP  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX909AA01 ANI TOLL  
0 EITHER NTXB13AA06 ITOPS TOLL BASIC(UPG. BY NTXB13AB)  
0 OR NTXB13AB01 ITOPS TOLL - ENHANCED QUEUEING(UPG.FR.  
0 NTXB13AA)

0 NTXB10AA03 CHINA COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTXB11AA02 DP REGISTER SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB12AA01 ITOPS LOCAL BASIC  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS - BASIC  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX909AA01 ANI TOLL  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTXB13AA06 ITOPS TOLL BASIC(UPG. BY NTXB13AB)  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX657AA01 INTERNATIONAL CAMA

0 NTXB13AB01 ITOPS TOLL - ENHANCED QUEUEING(UPG.FR. NTXB13AA)  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS - BASIC

0 NTXB14AA02 CHINA LOCAL BASIC  
0 NTXB10AA03 CHINA COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX492AA03 OPERATOR TOLL BREAK-IN  
0 NTX661AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) LOCAL  
0 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTXB17AA02 ATTENDANT PAY STATION LOCAL  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTXB20AA01 COEXISTENCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)  
0 EITHER NTX483AA03 INTERNATIONAL 101 COMMUNICATION TEST  
0 LINE(UPG.BY NTX483AB)  
0 OR NTX483AB01 INTERNATIONAL 101 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)

0 NTXB21AA01 COEXISTENCE (TRUNK TYPE)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) - BASIC  
0 EITHER NTX483AA03 INTERNATIONAL 101 COMMUNICATION TEST  
0 LINE(UPG.BY NTX483AB)  
0 OR NTX483AB01 INTERNATIONAL 101 COMMUNICATION TEST  
0 LINE(UPG.FR. NTX483AA)

0 NTXB22AA02 OM ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB50AA01 CCITT SCCP ON LPP  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX001AA29 COMMON BASIC

0 NTXB55AA01 DPNSS FEATURES II(UPG BY NTXB55AB)  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX958AA05 DPNSS BASIC  
0 OR NTX958AB01 DPNSS BASIC

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0 NTXB55AB01 DPNSS FEATURES II(UPG FR. NTXB55AA)  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX958AA05 DPNSS BASIC  
0 OR NTX958AB01 DPNSS BASIC

0 NTXB55AC01 DPNSS FEATURES II(UPG FR. NTXB55AB)  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX958AA05 DPNSS BASIC  
0 OR NTX958AB01 DPNSS BASIC

0 NTXB56AA01 CDR BILLING ON CENTREX  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTXB58AA01 CC MNTCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXB59AA01 IBN TRUNK UK 3J III/IV SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)



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0 93 12 030 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I0 NTXB68AA01 ISC ARTER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTXB69AA04 R2 FOR DMS-100 INTL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX904AA04 R2 SIGNALLING BASE0 NTXB70AA01 VARIABLE H/W PAD SETTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I0 NTXB74AA03 EBI/A-LAW  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE0 NTXB75AA01 IMPLEMENTATION OF RMM ON IRLCM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTXB81AA01 EBI ON MSB7  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTXB83AA01 ITOPS TO INTL R2 INTERWORKING  
0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX904AA04 R2 SIGNALLING BASE  
0 EITHER NTXB13AA06 ITOPS TOLL BASIC(UPG. BY NTXB13AB)  
0 OR NTXB13AB01 ITOPS TOLL - ENHANCED QUEUEING(UPG.FR.  
0 NTXB13AA)0 NTXB84AA04 INTERNATIONAL RATING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB85AA01 ISDN INTERNATIONAL - MAINTENANCE  
0 NTXB20AA01 COEXISTENCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB87AA01 DOWNLOADABLE TONES - AUSTRIA ( REP. BY NTXH09AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB88AA01 DOWNLOADABLE TONES - NORTH AMERICA ( REP. BY NTXH09AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXB89AA02 DOWNLOADABLE TONES - TURKEY ( REP. BY NTXH09AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB90AA01 DOWNLOADABLE TONES - UK( REP. BY NTXU17AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXB91AA01 DOWNLOADABLE TONES - MCL( REP. BY NTXU17AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXB92AA01 DOWNLOADABLE TONES - SPAIN ( REP. BY NTXH09AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB93AA01 DOWNLOADABLE TONES - CEP ( REP. BY NTXH09AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB94AA01 DOWNLOADABLE TONES - HUNGARY ( REP. BY NTXH09AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXB95AA01 DOWNLOADABLE TONES - CHINA ( REP. BY NTXH09AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTXE00AA01 TOPS OPERATOR PASSWORD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXF71AA01 SUPERNODE ENHANCED MESSAGING(UPG.BY  
0 NTXF71AB)  
0 OR NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)

0 NTXE04AA02 SCREENED SERVICE ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

0 NTXE05AA01 TOPS - MP DA/INTERCEPT MESSAGING - OPEN  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE CALL HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX801AA01 TOLL FEATURES I  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

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## 0 NTXE09AA01 ACD ON 2500 SET(UPG. BY NTXE09AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)  
0 OR NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTXE09AB01 ACD ON 2500 SET (UPG OF NTXE09AA IN BCS32)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)  
0 OR NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION EAE0 (REP. NTXE13AA)

0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

## 0 NTXE14AB03 CCS7 ISUP INTERLATA CONN ACCESS TANDEM (REP. NTXE14AA)

0 NTXE66AA02 CCS7 ISUP OPTION CONTROLS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX801AA01 TOLL FEATURES I  
0 EITHER NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

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0 NTXE18AA01 TOPS AMA ENHANCEMENTS  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA FORMAT(EBAF)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX188AA02 TOPS - BCR AMA FORMAT0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA FORMAT(EBAF)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX801AA01 TOLL FEATURES I0 NTXE21AA01 CMS NAC INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)0 NTXE22AA02 ACD SUPERGROUP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)  
0 OR NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)  
0 OR NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)  
0 OR NTX416AF01 ACD ENHANCED II (UPG. BY NTX416AG)  
0 OR NTX416AG01 ACD ENHANCED II(UPG. OF NTX416AF)  
0 OR NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)  
0 OR NTX416AI01 ACD ENHANCED II(UPG. OF NTX416AH)  
0 OR NTX416AJ01 ACD ENHANCED II (UPG. OF NTX416AI)0 NTXE23AA01 CELLULAR INTERCONNECT - END OFFICE  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE24AB01 STP SEAS INTERFACE RELEASE 3.0 (UPG. OF NTXE24AA)  
0 NTXE55AB01 STP SEAS INTERFACE RELEASE 2.0 (REPLACES  
0 NTXE55AA IN BCS31)  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX001AA29 COMMON BASIC  
0 NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)  
0 NTX835AA03 STP - SEAS (1.1) OPERATIONS  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

0 NTXE25AA01 ISDN CIRCUIT SWITCH MODEM POOLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXE28AA02 AMA MOD (LAMA MODULES)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT

0 NTXE29AA03 BCS PROCESS ENHANCED  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXE30AA01 CCS7 SIGNALING LINK ENHANCED MAINTENANCE FOR MSB7  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXE32AA01 CCS7 PREVENTATIVE CYCLICAL RETRANSMISSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXE33AA02 IBN ATTENDANT CONSOLE ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE MEASUREMENTS  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE34AA01 TOPS E911  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTXE35AA01 ALTERNATE CARRIER SELECTION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT

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0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE  
0 NTX801AA01 TOLL FEATURES I  
0 EITHER NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)

0 NTXE36AA01 AUTOMATIC DA CALL COMPLETION  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE CALL HANDLING  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA FORMAT(EBAF)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA MP  
0 NTX704,706,708 OR 709)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

0 NTXE36AB01 AUTOMATIC DA CALL COMPLETION (UPG OF NTXE36AA)  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE CALL HANDLING  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA FORMAT(EBAF)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA MP  
0 NTX704,706,708 OR 709)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

0 NTXE38AB01 CLASS: CND ON SCMS/SMSR(UPG.OF NTXE38AA)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX824AB01 ENHANCED CALL WAITING - IBN(UPGR. OF  
0 NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXA85AB02 SUBSCRIBER MODULE SLC-96/REMOTE (UPG OF  
0 NTXA85AA)  
0 OR NTX398AA12 SCM - 100S



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0 EITHER NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 OR NTXE52AA01 CALLING NAME DELIVERY SWITCH BASED  
0 OR NTXF55AA02 CLASS BULK CALLING LINE IDENTIFICATION  
0 OR NTXJ39AA01 CLASS VISUAL MESSAGE WAITING INDICATOR

0 NTXE39AA01 CALL FORWARD BUSY/DO NOT ANSWER SPLITS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE40AA01 MERIDIAN BUSINESS SET INSPECT KEY (UPG. BY NTXE40AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE40AB01 MERIDIAN BUSINESS SET INSPECT KEY (UPG. FROM NTXE40AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE44AA01 EXECUTIVE BUSY OVERRIDE ENHANCEMENT  
0 NTX000AA19 BILGE  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

0 NTXE46AA01 CALLING NAME/NUMBER DELIVERY BLOCKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

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## 0 NTXE47AA02 MERIDIAN DISPLAY COMMUNICATION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXE52AA01 CALLING NAME DELIVERY SWITCH BASED

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXE54AA01 SYSTEM LOAD MODULE II

0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

## 0 NTXE55AB01 STP SEAS INTERFACE RELEASE 2.0 (REPLACES NTXE55AA IN BCS31)

0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX001AA29 COMMON BASIC  
0 NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)  
0 NTX835AA03 STP - SEAS (1.1) OPERATIONS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

## 0 NTXE56AA02 CLASS SCREENING LIST EDITING

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

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0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXA00AB02 CLASS - CALL SETUP (UPGRADE OF NTXA00AA IN  
0 BCS32)  
0 OR NTXA00AC01 CLASS - CALL SETUP

0 NTXE58AA01 CLASS ON MVP  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE60AA01 DATAPATH - CLOSED USER GROUPS (U.S.)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE62AA01 EBS CALL FORWARD UNIVERSAL PER KEY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE64AA02 #4ESS AT&T INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)

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0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX801AA01 TOLL FEATURES I  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 EITHER NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT CC MESSAGING  
0 OR NTXE05AA01 TOPS - MP DA/INTERCEPT MESSAGING - OPEN

0 NTXE71AA01 TOPS DIRECTORY ASSISTANCE/TOLL BRANDING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTXE72AA01 TOPS EXPANDED CALLING CARD FORMAT - CCS7 VALIDATION (U.S.)  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA FORMAT(EBAF)  
0 NTXE68AA01 TOPS EXPANDED CALLING CARD FORMAT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX801AA01 TOLL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
APPLICATION)  
0 EITHER NTX552AC02 CUSTOM CHARGE CALLING(CCC)(UPG. FR  
0 NTX552AB)  
0 OR NTX552AD01 CUSTOM CHARGE CALLING (UPGRADE OF NTX552AC  
0 OR NTX825AB01 EXCHANGE ALTERNATE BILLING SERVICE(UPG OF  
0 NTX825AA IN BCS34

0 NTXE73AA01 IMPROVED STATSPAC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTXE74AA01 PRESET CONFERENCE - EXPANDED CAPACITY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXE75AA05 OFFNET ACCESS SERVICES(UPG. BY NTXE75AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE75AB01 OFFNET ACCESS SERVICES (UPG OF NTXE75AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE76AA01 TRAVEL CARD SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXE75AA05 OFFNET ACCESS SERVICES(UPG. BY NTXE75AB)  
0 OR NTXE75AB01 OFFNET ACCESS SERVICES (UPG OF NTXE75AA)

0 NTXE77AA01 700/800/900 SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXE75AA05 OFFNET ACCESS SERVICES(UPG. BY NTXE75AB)  
0 OR NTXE75AB01 OFFNET ACCESS SERVICES (UPG OF NTXE75AA)

0 NTXE78AA04 SL-100 ENHANCED TANDEM SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXE75AA05 OFFNET ACCESS SERVICES(UPG. BY NTXE75AB)  
0 OR NTXE75AB01 OFFNET ACCESS SERVICES (UPG OF NTXE75AA)

0 NTXE94AA02 SECONDARY DIRECTORY NUMBERS WITH OPTIONS  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX219AB03 TEEN SERVICE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXA43AA01 CALL FORWARD REMOTE ACTIVATION  
0 OR NTXN75AA01 REMOTE CALL FORWARD WITHOUT UNIQUE PIN

0 NTXE96AA01 ENHANCED MDC WATS  
0 NTXA16AA01 ENHANCED WATS OPERATION (POTS)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXE98AA02 HIGH SPEED MPC  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC  
0 EITHER NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 OR NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXN18AA04 FBUS - LIU BASE  
0 OR NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

0 NTXF10AA01 AUTOMATED DA CALL COMPLETION WITH ALTERNATE BILLING  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE CALL HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA MP  
0 NTX704,706,708 OR 709)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 EITHER NTXE36AA01 AUTOMATIC DA CALL COMPLETION  
0 OR NTXE36AB01 AUTOMATIC DA CALL COMPLETION (UPG OF  
0 NTXE36AA)

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0 NTXF14AA01 HIGH CAPACITY DPP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX243AA07 AMA TELEPROCESSING SYSTEM(AMATPS)  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT

0 NTXF15AA01 DMS-CORE MC68030 33MHZ PROCESSOR  
0 NTX951AA08 MS COMMON

0 NTXF16AA01 DMS-CORE MC68030 40 MHZ PROCESSOR  
0 NTX951AA08 MS COMMON

0 NTXF17AA02 CALL RE-ORIGINATION/RESET DIALING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXE75AA05 OFFNET ACCESS SERVICES(UPG. BY NTXE75AB)  
0 OR NTXE75AB01 OFFNET ACCESS SERVICES (UPG OF NTXE75AA)

0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXN18AA04 FBUS - LIU BASE  
0 OR NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

0 NTXF20AA02 LMS ON LPP  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXF71AA01 SUPERNODE ENHANCED MESSAGING(UPG.BY



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0 NTXF71AB)  
0 OR NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
  
0 NTXF25AC01 FRAME RELAY BASIC (UPG FR. NTXF25AB) (FOR BCS35 REL)  
0 NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXF15AA01 DMS-CORE MC68030 33MHZ PROCESSOR  
0 OR NTXF16AA01 DMS-CORE MC68030 40 MHZ PROCESSOR  
0 OR NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 OR NTXF97AA02 BRISC SERIES SUPERNODE BASE

0 NTXF25AD01 FRAME RELAY BASIC (UPG FR NTXF25AC)  
0 NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

0 NTXF26AA01 SYNCHRONIZATION - BITS COMPOSITE MASTER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

0 NTXF27AA01 SYNCHRONIZATION - CESIUM, LORAN - C MASTER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

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## 0 NTXF40AA01 DSN PRIMARY RATE ACCESS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX801AA01 TOLL FEATURES I

## 0 NTXF42AA01 MONITOR OF MAP TERMINAL ACTIVITY

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTXF43AA01 DSN DYNAMIC OVERLOAD CONTROL VIA CCS7

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND ACCESS LINE  
0 INTERFACE  
0 NTX707AA03 AUTOVON CCS7 BASIC  
0 NTX716AA05 DSN NETWORK MANAGEMENT ENHANCEMENT  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

## 0 NTXF44AA01 DSN ISDN BRA

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

## 0 NTXF46AA04 SUBSCRIBER CARRIER MODULE-100 ACCESS(SMA)

0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON

## 0 NTXF51AA02 DPN-100/PEGASUS II

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXF71AA01 SUPERNODE ENHANCED MESSAGING(UPG.BY  
0 NTXF71AB)  
0 OR NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
  
0 NTXF55AA02 CLASS BULK CALLING LINE IDENTIFICATION  
0 OR NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 OR NTXA82AA03 CLASS LINE OFFICE DATA  
0 OR NTX000AA19 BILGE  
0 OR NTX001AA29 COMMON BASIC  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 OR NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 OR NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 OR NTX824AB01 ENHANCED CALL WAITING - IBN(UPGR. OF  
0 NTX824AA)  
0 OR NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 OR NTX901AA24 LOCAL FEATURES I  
  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 OR NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 OR NTXA82AA03 CLASS LINE OFFICE DATA  
0 OR NTXE58AA01 CLASS ON MVP  
0 OR NTX000AA19 BILGE  
0 OR NTX001AA29 COMMON BASIC  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 OR NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 OR NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 OR NTX901AA24 LOCAL FEATURES I  
  
0 NTXF58AA01 POTS - INTRALATA PIC IN EAEO  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE DIALLING  
0 (IDDD)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX711AB02 EQUAL ACCESS END OFFICE ENHANCEMENTS (UPG.  
0 OF NTX711AA)  
0 NTX901AA24 LOCAL FEATURES I

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0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)

0 NTXF60AA01 CLASS ON MVP II  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

0 NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX877AA01 INTERFACE TO NON-DATA LINK CONSOLE(UPG. BY  
0 NTX877AB)  
0 OR NTX877AB01 INTERFACE TO NON-DATA LINK CONSOLE(UPG. OF  
0 NTX877AA)

0 NTXF69AA01 IBN - INTRALATA PIC IN EAEO  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE DIALLING  
0 (IDDD)  
0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)

0 NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON

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0 93 12 030 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

## 0 NTXF71AA01 SUPERNODE ENHANCED MESSAGING(UPG.BY NTXF71AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

## 0 NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF NTXF71AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

## 0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)

0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXF82AA01 RES SINGLE LINE VARIETY PACKAGE

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX824AB01 ENHANCED CALL WAITING - IBN(UPGR. OF  
0 NTX824AA)

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0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX413AA01 IBN - ENHANCED CALL FORWARDING(UPG. BY  
0 NTX413AB)  
0 OR NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)

0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX733AD01 ENHANCED SERVICE ORDER(UPG.BY NTX733AE)  
0 OR NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF NTX733AD IN  
0 BCS29)

0 NTXF88AA03 MBS INTERACTIVE DISPLAYS(UPG BY NTXF88AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX901AA24 LOCAL FEATURES I

0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG OF NTXF88AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX901AA24 LOCAL FEATURES I

0 NTXF92AA02 ISDN OAM BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX733AD01 ENHANCED SERVICE ORDER(UPG.BY NTX733AE)  
0 OR NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF NTX733AD IN  
0 BCS29)

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0 EITHER NTXF750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTXF750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXF93AA02 ISDN PROVISIONING  
0 NTXF92AA02 ISDN OAM BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX733AD01 ENHANCED SERVICE ORDER(UPG.BY NTX733AE)  
0 OR NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF NTX733AD IN  
0 BCS29)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE W/O OAMP(REP NTXF94AA)  
0 NTXF92AA02 ISDN OAM BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX733AD01 ENHANCED SERVICE ORDER(UPG.BY NTX733AE)  
0 OR NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF NTX733AD IN  
0 BCS29)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXF95AA03 ISDN OAM PROCESSOR  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES

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0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX733AD01 ENHANCED SERVICE ORDER(UPG.BY NTX733AE)  
0 OR NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF NTX733AD IN  
0 BCS29)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXF97AA02 BRISC SERIES SUPERNODE BASE  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

0 NTXG01AA06 DMS-250 PRA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX239BA02 DMS-250 TRANSLATION VERIFICATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX340BA01 DMS-250 ADAPTIVE ROUTING  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXG01CA07 DMS-250 PRA (TYPE III)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX340CA01 DMS-250 ADAPTIVE ROUTING  
0 NTX361CA07 DMS-250 CCS7 IMTS  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXG03AA02 DMS-250 CC BILLING SERVER (TYPE II)  
0 NTXG06AA02 DMS-250 EIOC MAP IMPLEMENTATION & NODE MTCE  
0 NTX000AA19 BILGE



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0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX221BA08 DMS-250 CALL DETAIL RECORDING (TYPE II)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTXG05AA02 DMS-250 CC BILLING SERVER (TYPE III)  
0 NTXG06AA02 DMS-250 EIOC MAP IMPLEMENTATION & NODE MTCE  
0 NTXG12CA06 DMS-250 EOPS (TYPE III)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX221CA05 DMS-250 CALL DETAIL RECORDING (TYPE III)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTXG06AA02 DMS-250 EIOC MAP IMPLEMENTATION & NODE MTCE  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXG07AA01 DMS-250 EIOC/CC RASL ACCESS TYPES  
0 NTXG06AA02 DMS-250 EIOC MAP IMPLEMENTATION & NODE MTCE  
0 NTX000AA19 BILGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXG08AA01 DMS-250 CCS7 MTP TEST DRIVER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 EITHER NTX221BA08 DMS-250 CALL DETAIL RECORDING (TYPE II)  
0 OR NTX221CA05 DMS-250 CALL DETAIL RECORDING (TYPE III)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXG10AA01 DMS-250/MTX CNS CCITT 1984 X.25 DATACOM SOFTWARE  
0 NTX000AA19 BILGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

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0 NTXG11AA01 DMS-250 NRAG ON DMS250 PRA/ISUP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXG01AA06 DMS-250 PRA  
0 OR NTXG01CA07 DMS-250 PRA (TYPE III)  
0 OR NTXL09AA02 DMS-250 UCS PRA  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXG12AA06 DMS-250 EOPS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTXG12CA06 DMS-250 EOPS (TYPE III)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION (DAIS)  
0 NTX000AA19 BILGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXG16AA01 DMS-250 EIOC MAP PASS-THRU  
0 NTX000AA19 BILGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXG18AA02 DMS-250 SAFE STORE TAP  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTX000AA19 BILGE

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0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXG18BA01 DMS-250 SAFE STORE TAP  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTX000AA19 BILGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXG19AA01 DMS-250 LOG TAP  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTX000AA19 BILGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXG20AA02 DMS-250 SS7 FGD (TR-394)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 EITHER NTXG49AA03 DMS-250 UCS SS#7 UNIVERSAL CARRIER PROTOCOL  
0 (BASE ISUP)  
0 OR NTX361BA05 DMS-250 CCS7 IMTS  
0 OR NTX361CA07 DMS-250 CCS7 IMTS

0 NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 NTX000AA19 BILGE

0 NTXG22AA01 DMS-250 UCS OUTGOING FGD ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXG23AA01 DMS-250 TCN LOG ENHANCEMENT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXG24AA03 DMS-250 INTEGRATED ECHO CANCELLOR  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXG25AA01 DMS-250 BLUE BOX FRAUD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXG26AA01 DMS-250 MULTIPLE OPERATOR CENTER CALL ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXG27AA01 DMS-250 DBLOCK CI COMMAND  
0 NTXG28AA01 DMS-250 ENHANCED COS SCREENING  
0 NTXG76AA01 DMS-250 PRETRANSLATOR AND CALL TYPING  
0 ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXG28AA01 DMS-250 ENHANCED COS SCREENING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)

0 NTXG29AA02 DMS-250 DISTRIBUTED OM SYSTEM  
0 NTXG06AA02 DMS-250 EIOC MAP IMPLEMENTATION & NODE MTCE  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX202AA01 DMS-250 OPERATIONAL MEASUREMENTS ON TAPE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTXG30AA02 DMS-250 UCS SINGLE RELEASE LINK TRUNK  
0 NTXG12AA06 DMS-250 EOPS  
0 NTXG49AA03 DMS-250 UCS SS#7 UNIVERSAL CARRIER PROTOCOL  
0 (BASE ISUP)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

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0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXG30CA02 DMS-250 SINGLE RELEASE LINK TRUNK (TYPE III)  
0 NTXG12CA06 DMS-250 EOPS (TYPE III)  
0 NTXG49AA03 DMS-250 UCS SS#7 UNIVERSAL CARRIER PROTOCOL  
0 (BASE ISUP)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX361CA07 DMS-250 CCS7 IMTS  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXG31AA01 DMS-250 EOPS COIN CONTROL  
0 NTXG12AA06 DMS-250 EOPS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE  
0 EITHER NTX208AA02 AUTOMATIC COIN TOLL SERVICE(ACTS)(UPG. BY  
0 NTX208AB)  
0 OR NTX208AB01 AUTOMATIC COIN TOLL SERVICE (ACTS) (UPG OF  
0 NTX208AA)

0 NTXG32AA01 DMS-250 PRA INTERWORKING WITH SYSTEM-85 PRI  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXG01AA06 DMS-250 PRA  
0 OR NTXG01CA07 DMS-250 PRA (TYPE III)  
0 OR NTXL09AA02 DMS-250 UCS PRA  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXG33AA01 DMS-250 PRA D-CHANNEL BACKUP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXG01AA06 DMS-250 PRA

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0 OR NTXG01CA07 DMS-250 PRA (TYPE III)  
0 OR NTXL09AA02 DMS-250 UCS PRA

0 NTXG34AA01 DMS-250 TRUNK GROUP AND CLLI NAME ANALYSIS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXG35AA01 DMS-250 PAY STATION PRETRANSLATOR  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE

0 NTXG35BA01 DMS-250 PAY STATION PRETRANSLATOR (TYPE II)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE

0 NTXG36AA01 DMS-250 OP250 COIN CONTROL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE

0 NTXG37AA01 DMS-250 EOPS CALL CHARGE/QUOTATION INTERFACE  
0 NTXG12AA06 DMS-250 EOPS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTXG38AA01 DMS-250 EOPS CALL SEQUENCING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXG40AA02 DMS-250 TRUNK GROUP UTILIZATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXG41BA05 DMS-250 OPERATOR SERVICES  
0 NTXG01AA06 DMS-250 PRA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX364BA02 DMS-250 CCS7 TCAP BASED TCN SERVICE

0 NTXG42AA01 DMS-250 SS7 IMT TERMINATIONS TO DTU  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXG43AA05 DMS-250 3-WAY CALLING ON FONCARD  
0 NTXM69AA01 DMS250 BLUE BOX FRAUD (BBF) ON TR394  
0 NTXM91AA01 TRIGGER EVENT PROCESSING - CONVERSATIONAL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXG44AA01 DMS-250 INTER VPN DIALING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXG45AA06 DMS-250 INTERNATIONAL SERVICE CALL FEATURES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXG46AA01 DMS-250 DIRECT TERMINATION SERVICE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXG47AA02 DMS-250 LEC CALLING CARD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXG48AA02 DMS-250 VARIABLE LEGNTH CALLING CARD 2  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)  
0 NTX364BA02 DMS-250 CCS7 TCAP BASED TCN SERVICE

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0 NTXG49AA03 DMS-250 UCS SS#7 UNIVERSAL CARRIER PROTOCOL (BASE ISUP)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXG52AA04 MTX INTEGRATED CELLULAR PERIPHERAL (ANALOG)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX901AA24 LOCAL FEATURES I

0 NTXG60AA02 DMS-250 INTERNATIONAL CP CORE (IDC)  
0 NTXG06AA02 DMS-250 EIOC MAP IMPLEMENTATION & NODE MTCE  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXG61AA02 DMS-250 INTERNATIONAL EIOC (IDC)  
0 NTXG06AA02 DMS-250 EIOC MAP IMPLEMENTATION & NODE MTCE  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTX000AA19 BILGE  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXG62AA01 MANUAL FILE TRANSFER OVER X.25  
0 NTX000AA19 BILGE



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0 93 12 030 NTX001AA29 COMMON BASIC  
0 NTX074AA09 DISK DATA STORAGE SYSTEM0 NTXG68AA01 S/DMS OM BASE (NODES: CM, EIOC, FP, & AP)  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC0 NTXG70AA01 DMS-250 ISDN ISA ON SS7  
0 NTXG01AA06 DMS-250 PRA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)0 NTXG71AA01 DMS-250 ISDN ISA ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTXG72AA01 DMS-250 ISDN ISA CALLTYPE THROTTLING  
0 NTXG01AA06 DMS-250 PRA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)0 NTXG73AA01 DMS-250 PRA ANI DELIVERY  
0 NTXG01AA06 DMS-250 PRA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX361BA05 DMS-250 CCS7 IMTS0 NTXG74AA02 DMS-250 ISDN/SS7 BEARER CAPABILITY  
0 NTXG01AA06 DMS-250 PRA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)0 NTXG75AA02 DMS-250 ISDN CALL FORWARD RELEASE LINK  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)0 NTXG76AA01 DMS-250 PRETRANSLATOR AND CALL TYPING ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 93 12 030 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX230BA01 DMS-250 GENERIC SPEED NUMBERS0 NTXG77AA01 DMS-250 LONG CALL CDR AUDIT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)0 NTXG78AA02 DMS-250 TCAP BASED LOCAL EXCH. CARRIER (LEC) CALLING CARD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT0 NTXG80AA03 MTX DIGITAL CELLULAR  
0 NTXL27AA02 MTX ICRM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX901AA24 LOCAL FEATURES I0 NTXG83AA02 MTX UNIVERSAL NETWORK MESSAGING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX901AA24 LOCAL FEATURES I0 NTXG84AA01 MTX NORTH AMERICAN DIALLING PLAN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX901AA24 LOCAL FEATURES I0 NTXG85AA01 MTX UNIVERSAL DIALLING PLAN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX901AA24 LOCAL FEATURES I0 NTXG97AA02 ACD FORCE MANAGEMENT DOCUMENTATION PACKAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTXG97BA01 ACD FORCE MANAGEMENT TERMINAL EMULATOR DOCUMENTATION PKG.  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXG97CA01 ACD FORCE MANAGEMENT WINDOWS DOCUMENTATION PACKAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXG97DA01 ACD FORCE MANAGEMENT MIS REDUNDANCY DOCUMENTATION PACKAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXG97EA01 ACD FORCE MANAGEMENT LOCAL PRINT DOCUMENTATION PACKAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXH00AA01 MOROCCAN TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXH01AA02 MOROCCAN LINE CARD DIAGNOSTICS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTXH02AA01 MOROCCAN PHYSICAL RINGING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTXH03AA01 SOCOTEL BASE SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX904AA04 R2 SIGNALLING BASE

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## 0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

## 0 NTXH05AA03 MOROCCAN LOCAL SIGNALLING

0 NTXH03AA01 SOCOTEL BASE SIGNALLING  
0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

## 0 NTXH06AA03 MOROCCAN TOLL SIGNALLING

0 NTXH03AA01 SOCOTEL BASE SIGNALLING  
0 NTXH04AA01 CCITT 2-BIT LINE SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX904AA04 R2 SIGNALLING BASE

## 0 NTXH07AA01 BERLIZE R2 SIGNALLING

0 NTXB83AA01 ITOPS TO INTL R2 INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

## 0 NTXH09AA02 DOWNLOADABLE TONE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

## 0 NTXH10AA02 PCM300 MAINTENANCE ENHANCEMENTS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

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## 0 NTXH11AA01 M20 MAINTENANCE

0 NTXH10AA02 PCM300 MAINTENANCE ENHANCEMENTS  
0 NTXZ11AA01 JAPANESE TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTXH12AA01 ITOPS ENHANCEMENTS FOR JAPAN

0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 EITHER NTXB13AA06 ITOPS TOLL BASIC(UPG. BY NTXB13AB)  
0 OR NTXB13AB01 ITOPS TOLL - ENHANCED QUEUEING(UPG.FR.  
0 NTXB13AA)

## 0 NTXH13AA01 FIXED DURATION CALLS

0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 EITHER NTXB13AA06 ITOPS TOLL BASIC(UPG. BY NTXB13AB)  
0 OR NTXB13AB01 ITOPS TOLL - ENHANCED QUEUEING(UPG.FR.  
0 NTXB13AA)

## 0 NTXH14AA01 NTT NCCI CCITT #7 MTP

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

## 0 NTXH16AA01 ESTIMATED CALL CHARGES FOR ITOPS

0 NTXB05AA01 ITOPS COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 EITHER NTXB13AA06 ITOPS TOLL BASIC(UPG. BY NTXB13AB)  
0 OR NTXB13AB01 ITOPS TOLL - ENHANCED QUEUEING(UPG.FR.  
0 NTXB13AA)

## 0 NTXH17AA01 INTERNATIONAL ATME 2 FOR DMS100/200I

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

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0 NTXH22AA01 INTERNATIONAL LOCAL METERING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTXH23AA02 METERING OVER JUNCTION(MOJ)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX474AA07 INTERNATIONAL BASE METERING

0 NTXH38AA03 GLOBAL TOPS - BASIC  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA FORMAT (EBAF)  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES (REP NTX030CB)

0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP (SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXH44AA01 AUSTRALIAN TUP FOR DMS100 (UPG. BY NTXH44AB)  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP (SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXH44AB02 AUSTRALIAN TUP FOR DMS100 (UPG. FR NTXH44AA)  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 93 12 030 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXH45AA01 OTC TONES

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE

## 0 NTXH48AA02 AUSTRALIAN ACCS SUPPORT

0 NTXH40AA03 CCITT NO.7 TUP BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXH44AA01 AUSTRALIAN TUP FOR DMS100(UPG. BY NTXH44AB)  
0 OR NTXH44AB02 AUSTRALIAN TUP FOR DMS100(UPG. FR NTXH44AA)

## 0 NTXH49AA02 AUSTRALIAN VPN - SSP(UPG. BY NTXH49AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXH44AA01 AUSTRALIAN TUP FOR DMS100(UPG. BY NTXH44AB)  
0 OR NTXH44AB02 AUSTRALIAN TUP FOR DMS100(UPG. FR NTXH44AA)

## 0 NTXH49AB01 AUSTRALIAN VPN - SSP (UPG FR. NTXH49AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXH44AA01 AUSTRALIAN TUP FOR DMS100(UPG. BY NTXH44AB)  
0 OR NTXH44AB02 AUSTRALIAN TUP FOR DMS100(UPG. FR NTXH44AA)

## 0 NTXH51AA02 PCM-30 LGCO/DTCO SUPPORT

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP

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0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTXH52AA01 PCM30 RSC0 SUPPORT

0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX269AA07 UNIVERSAL TONE RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXH53AA01 FLEXIBLE NUMBERING PLAN FOR BELLCORE AMA

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX159AA12 BELLCORE LAMA FORMAT

## 0 NTXH54AA02 ITOPS - ACCOUNT CODE ACCESS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXB13AA06 ITOPS TOLL BASIC(UPG. BY NTXB13AB)  
0 OR NTXB13AB01 ITOPS TOLL - ENHANCED QUEUEING(UPG.FR.  
0 NTXB13AA)

## 0 NTXH57AB01 AUSTRALIAN BASIC RATE ACCESS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

## 0 NTXH58AA01 GUYANA R2 SIGNALLING

0 NTXB69AA04 R2 FOR DMS-100 INTL  
0 NTX001AA29 COMMON BASIC  
0 NTX904AA04 R2 SIGNALLING BASE  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)



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0 NTXH62AA01 PERFORM ON PLGC/PDTC/PRCC  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE

0 NTXH70AA01 C7 SUPPORT FOR CHANNELIZED ACCESS  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX941AA12 CM COMMON  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXH71AA01 ITOPS INTRUSION TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 EITHER NTXB13AA06 ITOPS TOLL BASIC(UPG. BY NTXB13AB)  
0 OR NTXB13AB01 ITOPS TOLL - ENHANCED QUEUEING(UPG.FR.  
0 NTXB13AA)

0 NTXH74AA01 JAPAN DID INTERFACE  
0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXH86AA01 JAPAN LINE INTERFACE  
0 OR NTXH86AB01 JAPAN LINE INTERFACE

0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 EITHER NTXF20AA02 LMS ON LPP  
0 OR NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY ON MS

0 NTXH78AA02 AUSTRALIAN ISUP FOR DMS-100(UPG BY NTXH78AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXH78AB01 AUSTRALIAN ISUP FOR DMS-100(UPG FR. NTXH78AA)  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX901AA24 LOCAL FEATURES I

0 NTXH79AA01 BRAZIL SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX904AA04 R2 SIGNALLING BASE

0 NTXH80AA02 MEXICO SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX904AA04 R2 SIGNALLING BASE

0 NTXH84AA02 ENHANCED 008 FOR AUSTRALIA  
0 NTXH53AA01 FLEXIBLE NUMBERING PLAN FOR BELLCORE AMA  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXH85AA02 CCITT #7 AND NCCI #7 FOR DMS-100  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXH86AA01 JAPAN LINE INTERFACE  
0 NTXZ11AA01 JAPANESE TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

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## 0 NTXH86AB01 JAPAN LINE INTERFACE

0 NTXZ11AA01 JAPANESE TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTXH87AA01 OUTPULSING CLI

0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXH88AA01 NETWORK MANAGEMENT FOR UNIVERSAL XLA

0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX060AB11 NETWORK MANAGEMENT

## 0 NTXH89AA01 RING BACK PRICE FOR VPN

0 EITHER NTXH49AA02 AUSTRALIAN VPN - SSP(UPG. BY NTXH49AB)  
0 OR NTXH49AB01 AUSTRALIAN VPN - SSP (UPG FR. NTXH49AA)

## 0 NTXH96AA01 SRU BASIC

0 NTX001AA29 COMMON BASIC  
0 NTX146AA03 REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 NTX147AB01 OUTSIDE PLANT MODULE MAINTENANCE(UPGRADE OF  
0 NTX147AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX941AA12 CM COMMON  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB)

## 0 NTXH98AA01 CHINESE NO.1 SIGNALLING

0 NTXB10AA03 CHINA COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX904AA04 R2 SIGNALLING BASE  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

## 0 NTXJ00AA03 ISDN ON RSC (REP BY NTXJ00AB)

0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)

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0 BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX269AA07 UNIVERSAL TONE RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXJ00AB01 ISDN ON RSC (UPG OF NTXJ00AA)  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX269AA07 UNIVERSAL TONE RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXJ10AA01 OPERATOR HAND OFF TO AABS  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING SERVICE  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX801AA01 TOLL FEATURES I  
0 NTX825AB01 EXCHANGE ALTERNATE BILLING SERVICE(UPG OF  
0 NTX825AA IN BCS34  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

0 NTXJ35AA02 MAINTENANCE MANAGERS REPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE

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## 0 NTXJ36AA02 AUTO SET RELOCATE

|   |        |            |                                                                 |
|---|--------|------------|-----------------------------------------------------------------|
| 0 |        | NTX000AA19 | BILGE                                                           |
| 0 |        | NTX001AA29 | COMMON BASIC                                                    |
| 0 |        | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - BASIC (IBN)                      |
| 0 |        | NTX103AA12 | IBN - SMDR ENHANCED                                             |
| 0 |        | NTX106AA10 | IBN - PROPRIETARY BUSINESS SET                                  |
| 0 |        | NTX270AA19 | NEW PERIPHERAL MAINTENANCE PACKAGE                              |
| 0 |        | NTX901AA24 | LOCAL FEATURES I                                                |
| 0 | EITHER | NTX640AA06 | DIGITAL PHONE M2000-BASIC                                       |
| 0 | OR     | NTX640AB04 | DIGITAL PHONE M2000 - BASIC (UPG.OF<br>NTX640AA)                |
| 0 | EITHER | NTX878AB02 | ENHANCED ELECTRONIC BUSINESS SET<br>SERVICES(UPG.BY NTX878AC)   |
| 0 | OR     | NTX878AC01 | ENHANCED ELECTRONIC BUSINESS SET<br>SERVICES(UPG. BY NTX878AD)  |
| 0 | OR     | NTX878AD01 | ENHANCED ELECTRONIC BUSINESS SET<br>SERVICES(UPG. BY NTX878AE)  |
| 0 | OR     | NTX878AE01 | ENHANCED ELECTRONIC BUSINESS SET<br>SERVICES(UPG. FR. NTX878AD) |

## 0 NTXJ37AA01 TOPS EXTERNAL PERSONAL AUDIO RESPONSE SYSTEM (PARS)

|   |  |            |                                             |
|---|--|------------|---------------------------------------------|
| 0 |  | NTX000AA19 | BILGE                                       |
| 0 |  | NTX001AA29 | COMMON BASIC                                |
| 0 |  | NTX030BA03 | TOPS ACD FEATURES                           |
| 0 |  | NTX030CC16 | TOPS CALL PROCESSING FEATURES(REP NTX030CB) |
| 0 |  | NTX273AA07 | MULTI - PROTOCOL CONTROLLER BX.25           |
| 0 |  | NTX801AA01 | TOLL FEATURES I                             |
| 0 |  | NTX892AA04 | MPC MULTILINK MANAGEMENT                    |

## 0 NTXJ38AA01 MDC WARM LINE

|   |  |            |                                            |
|---|--|------------|--------------------------------------------|
| 0 |  | NTX000AA19 | BILGE                                      |
| 0 |  | NTX001AA29 | COMMON BASIC                               |
| 0 |  | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - BASIC (IBN) |
| 0 |  | NTX127AA01 | WARM LINE                                  |
| 0 |  | NTX901AA24 | LOCAL FEATURES I                           |

## 0 NTXJ39AA01 CLASS VISUAL MESSAGE WAITING INDICATOR

|   |  |            |                                                      |
|---|--|------------|------------------------------------------------------|
| 0 |  | NTXA64AA05 | RES(RESIDENTIAL ENHANCED SERVICES) BASE              |
| 0 |  | NTXA82AA03 | CLASS LINE OFFICE DATA                               |
| 0 |  | NTX000AA19 | BILGE                                                |
| 0 |  | NTX001AA29 | COMMON BASIC                                         |
| 0 |  | NTX100AA27 | INTEGRATED BUSINESS NETWORKS - BASIC (IBN)           |
| 0 |  | NTX119AA05 | IBN-MESSAGE SERVICE                                  |
| 0 |  | NTX270AA19 | NEW PERIPHERAL MAINTENANCE PACKAGE                   |
| 0 |  | NTX413AB01 | IBN - ENHANCED CALL FORWARDING(UPGR. OF<br>NTX413AA) |
| 0 |  | NTX824AB01 | ENHANCED CALL WAITING - IBN(UPGR. OF                 |

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0 NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXA68AA01 NETWORK MESSAGE SERVICE  
0 OR NTX732AA06 SIMPLIFIED MESSAGE DESK INTERFACE(SMDI)

0 NTXJ40AA02 LIU7 GATEWAY VERIFICATION TOOLS  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX001AA29 COMMON BASIC  
0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXN19AA02 LIU7 FOR LPP BASED CCS7 APPLICATIONS  
0 OR NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

0 NTXJ41AA01 CCS7 TEST TOOLS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXJ42AA02 FEATURE GROUP D ON MDC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXJ43AA02 #5ESS AT&T INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXJ44AA01 SLM FILE SYSTEM  
0 NTXE54AA01 SYSTEM LOAD MODULE II  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON

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0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

0 NTXJ47AA01 TEEN SERVICE ON MDC  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX219AB03 TEEN SERVICE  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

0 NTXJ48AA01 ISDN INTEGRATED PH MAINTENANCE WITH OAMP REQUIRED  
0 NTXF92AA02 ISDN OAM BASE  
0 NTXF94AB01 ISDN INTEGRATED PH MAINTENANCE W/O OAMP(REP  
0 NTXF94AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXJ51AA02 ISDN DIGITAL TEST ACCESS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXJ54AA01 ISUP FGD MF/CCS7 INTERWORKING OPTIONS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTRX72AA FOR LPP  
0 APPLICATION)

0 NTXJ55AA02 ISDNAP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

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0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXJ57AA02 NSS DATABASE CONTROL POINT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXJ58AA01 CANCEL CALL WAITING PER LINE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX807AB01 ENHANCED CALL WAITING - POTS(UPG. OF  
0 NTX807AA)  
0 OR NTX824AB01 ENHANCED CALL WAITING - IBN(UPGR. OF  
0 NTX824AA)

0 NTXJ59AB03 COMPUCALL BASE UTILITIES(UPG. FR. NTXJ59AA)  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG OF NTXJ59AB)  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA (UPG OF NTXJ60AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)



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0 EITHER NTXJ59AB03 COMPUCALL BASE UTILITIES(UPG. FR. NTXJ59AA)  
0 OR NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG OF NTXJ59AB)  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTXJ62AA02 THIRD PARTY CALL CONTROL

0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA (UPG OF  
0 NTXJ60AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXJ59AB03 COMPUCALL BASE UTILITIES(UPG. FR. NTXJ59AA)  
0 OR NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG OF NTXJ59AB)  
0 EITHER NTX055AB03 TTP-DIGIT VERIFICATION  
0 OR NTX980AA01 INTERNATIONAL TRUNK TST POSITION (ITTP)

## 0 NTXJ63AA01 VOICE PROCESSING INTEGRATION FOR DMS ISI

0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA (UPG OF  
0 NTXJ60AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXJ59AB03 COMPUCALL BASE UTILITIES(UPG. FR. NTXJ59AA)  
0 OR NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG OF NTXJ59AB)

## 0 NTXJ67AA01 TOPS DA SUBTENDING TMS

0 NTXE70AA01 TOPS TWO TERMINAL DIRECTORY ASSISTANCE/  
0 INTERCEPT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

## 0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS

0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

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0 93 12 030 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTXJ69AA01 RESIDENTIAL CALL HOLD

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX824AB01 ENHANCED CALL WAITING - IBN(UPGR. OF  
0 NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXJ70AA01 CALL FORWARD OF CALL WAITING CALLS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX824AB01 ENHANCED CALL WAITING - IBN(UPGR. OF  
0 NTX824AA)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXJ73AA01 TOPS ACCOUNT CODE BILLING

0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA FORMAT(EBAF)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX825AB01 EXCHANGE ALTERNATE BILLING SERVICE(UPG OF  
0 NTX825AA IN BCS34

## 0 NTXJ78AA02 CLASS II ON MDC

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXE58AA01 CLASS ON MVP  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTXF60AA01 CLASS ON MVP II  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXJ82AA02 CALL HUNTING- 1A TRANSPARENCY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXJ84AA02 CALL FORWARDING- 1A TRANSPARENCY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 OR NTX806AA01 ENHANCED CALL FORWARDING - POTS

0 NTXJ90AA01 PRECEDENCE PROGRESSIVE CONFERENCING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX901AA24 LOCAL FEATURES I

0 NTXJ91AA01 CCS7 MESSAGE DETAIL RECORDING  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

0 NTXJ93AA01 SERVICE ORDER SIMPLIFICATION FOR HUNT GROUPS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX008AB02 PBX INTERFACE II(UPG. OF NTX008AA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXJ94AA01 MANDATORY PARALLEL AMA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXJ96AA01 ENHANCED MFADS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

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0 NTXJ97AA01 DIRECT STATION SELECTION/BUSY LAMP FIELD FOR MBS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I

0 NTXJ98AA01 MERIDIAN BUSINESS SET CAMP ON  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX901AA24 LOCAL FEATURES I

0 NTXK00AA02 PCM 30 LINE DRAWER(UPG.BY NTXK00AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX913AA04 MERCURY CENTREX PCM-30 PERIPHERALS

0 NTXK00AB01 PCM 30 LINE DRAWER(UPG.FR NTXK00AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX913AA04 MERCURY CENTREX PCM-30 PERIPHERALS

0 NTXK01AA01 DIRECTORY NUMBER FORMATTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I

0 NTXK02AA01 MCL STANDARD CALL DETAIL RECORD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXK03AA01 PABX ACCESS TRUNK WITH DC5 AND AC15  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTXK12AA01 IRISH R2 SIGNALLING PROTOCOL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX904AA04 R2 SIGNALLING BASE

## 0 NTXK13AA01 IRISH DOWNLOADABLE TONES

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

## 0 NTXK18AA01 DPNSS/BTUP INTERWORKING WITH OVERLAP (REP BY NTXK18AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTXK96AA01 BT #7 TUP VERSION 2+ (DMS-100)  
0 OR NTX937AA06 BT #7 TUP(DMS-100)(UPG. BY NTX937AB)  
0 OR NTX937AB01 BT #7 TUP (DMS-100) (UPG OF NTX937AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTX958AA05 DPNSS BASIC  
0 OR NTX958AB01 DPNSS BASIC

## 0 NTXK18AB01 DPNSS/BTUP INTERWORKING WITH OVERLAP (UPG OF NTXK18AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTXK96AA01 BT #7 TUP VERSION 2+ (DMS-100)  
0 OR NTX937AA06 BT #7 TUP(DMS-100)(UPG. BY NTX937AB)  
0 OR NTX937AB01 BT #7 TUP (DMS-100) (UPG OF NTX937AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTX958AA05 DPNSS BASIC  
0 OR NTX958AB01 DPNSS BASIC

## 0 NTXK21AA01 TOPS - BT7 INTERWORKING

0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 EITHER NTX937AA06 BT #7 TUP(DMS-100)(UPG. BY NTX937AB)  
0 OR NTX937AB01 BT #7 TUP (DMS-100) (UPG OF NTX937AA)

## 0 NTXK32AA01 DOWNLOADABLE TONES-BT(REP. U17AA OR K58AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

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0 NTXK33AA01 DOWNLOADABLE TONES FOR DMS100  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXK33AB01 DOWNLOADABLE TONES FOR DMS-100(UPG OF NTXK33AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXK34AA01 3J1 INCOMING TRUNK WITH TWO STAGE CALL SETUP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX901AA24 LOCAL FEATURES I

0 NTXK35AA01 3J2 INCOMING TRUNK AND 3J4 OUTGOING TRUNK  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTXK43AA01 DPNSS TRANSPARENCY OVER CCS7  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTX958AA05 DPNSS BASIC  
0 OR NTX958AB01 DPNSS BASIC

0 NTXK43AB01 DPNSS TRANSPARENCY OVER CCS7  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS

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0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTX958AA05 DPNSS BASIC  
0 OR NTX958AB01 DPNSS BASIC

0 NTXK44AA01 DPNSS TEST UNIT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE SIGNALLING -  
0 BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTX958AA05 DPNSS BASIC  
0 OR NTX958AB01 DPNSS BASIC

0 NTXK45AA01 ANSI ISUP - DPNSS BASIC CALL INTERWORKING(UPG.BY NTXK47AB)  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTX958AA05 DPNSS BASIC  
0 OR NTX958AB01 DPNSS BASIC

0 NTXK45AB01 ANSI ISUP - DPNSS BASIC CALL INTERWORKING(UPG.FR NTXK45AA)  
0 NTXA36AA01 NETWORK WIDE RING AGAIN  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTX958AA05 DPNSS BASIC  
0 OR NTX958AB01 DPNSS BASIC

0 NTXK48AA01 ECHO CONTROL FOR CCS7 - DMS300  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXK49AA02 CCS7 TEST MAINTENANCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTXK96AA01 BT #7 TUP VERSION 2+ (DMS-100)  
0 OR NTX937AA06 BT #7 TUP(DMS-100)(UPG. BY NTX937AB)

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0 OR NTX937AB01 BT #7 TUP (DMS-100) (UPG OF NTX937AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXK50AA01 TTP - DIGITAL JACK - ENDED TRUNKS(UPG.BY NTXK50AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXK50AB02 ENHANCED JACK AND MONITORING  
0 NTXK65AA02 EIGHT PORT NDS0 CARRIER MAINTENANCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX055AA03 TRUNK TEST POSITION (TTP)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXK54AA01 BT7 MALICIOUS CALL INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXK96AA01 BT #7 TUP VERSION 2+ (DMS-100)  
0 OR NTX937AA06 BT #7 TUP(DMS-100)(UPG. BY NTX937AB)  
0 OR NTX937AB01 BT #7 TUP (DMS-100) (UPG OF NTX937AA)

0 NTXK55AA01 EMERGENCY SERVICES OVER ISDN  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXK56AA01 PCM30 TIME SLOT FLEXIBILITY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE

0 NTXK61AA02 REAL TIME ROUTE STATUS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC



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0 NTXK63AA01 INTERNATIONAL BERT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXK65AA02 EIGHT PORT NDS0 CARRIER MAINTENANCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXK67AA01 DCP/EIU ON DMS-300  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTXG18AA02 DMS-250 SAFE STORE TAP  
0 NTX001AA29 COMMON BASIC  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTX303AB01 ISC - CALL DETAIL RECORDING  
0 ENHANCEMENTS(UPG.BY NTX303AC)

0 NTXK68AA01 LPP USING DS0 ON PDTC  
0 NTXK65AA02 EIGHT PORT NDS0 CARRIER MAINTENANCE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7 APPLICATIONS  
0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXK75AA01 INTL CCS7 USER/GROUP ENHANCEMENTS  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXK76AA02 INTERNATIONAL BASIC RATE ACCESS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR

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0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXK77AA02 PCM-30 RSC0-S SUPPORT  
0 NTXH52AA01 PCM30 RSC0 SUPPORT  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXP92AA01 RSC-S BASIC  
0 OR NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 EITHER NTX149AA03 RSC EMERGENCY STAND ALONE OPERATION - LINES  
0 OR NTX149AB03 RSC ESA OPERATION - LINE AND TRUNK

0 NTXK79AB01 PCM30 UNIFIED PROCESSOR (UP) SUPPORT (UPG OF NTXK79AA)  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXK79AC01 PCM30 UNIFIED PROCESSOR (UP) SUPPORT (UPG OF K79AB)  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXK84AA01 DMS100 ECHO CANCELLER CONTROL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXK85AA01 DMS100 A/MU LAW PER CALL CONVERSION  
0 NTXB74AA03 EBI/A-LAW  
0 NTXB81AA01 EBI ON MSB7

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0 NTXH51AA02 PCM-30 LGCO/DTCO SUPPORT  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

0 NTXK93AA01 ATUP - ANSI ISUP/AISUP INTERWORKING  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXH78AA02 AUSTRALIAN ISUP FOR DMS-100(UPG BY  
0 NTXH78AB)  
0 OR NTXH78AB01 AUSTRALIAN ISUP FOR DMS-100(UPG FR.  
0 NTXH78AA)  
0 EITHER NTXH44AB02 AUSTRALIAN TUP FOR DMS100(UPG. FR NTXH44AA)

0 NTXK94AA01 ANSI ISUP APPLICATION ON CCITT MTP  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

0 NTXK95AA01 AUTOMATIC CONGESTION CONTROL  
0 NTX001AA29 COMMON BASIC  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXK96AA01 BT #7 TUP VERSION 2+ (DMS-100)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXK97AA01 DMS-300 ECHO CONTROL  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTX304AA01 NX64 KBIT/SEC SEMI-PERMANENT CONNECTIONS

0 NTXL02AA03 DMS-250 UCS DIALLING PLAN ENHANCEMENTS  
0 NTXL05AA01 DMS-250 UCS ROAMING PINS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTXL04AA02 DMS-250 UCS SS7 INTRA/INTER-NETWORKING  
0 NTXG49AA03 DMS-250 UCS SS#7 UNIVERSAL CARRIER PROTOCOL  
0 (BASE ISUP)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX361BA05 DMS-250 CCS7 IMTS

0 NTXL05AA01 DMS-250 UCS ROAMING PINS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL06AA01 DMS-250 EOPS FGD ROUTING ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL11AA01 DMS-250 UCS TO MCI ISUP INTERWORKING  
0 NTXL04AA02 DMS-250 UCS SS7 INTRA/INTER-NETWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL12AA01 DMS-250 UCS TO FGD ISUP INTERWORKING  
0 NTXG20AA02 DMS-250 SS7 FGD (TR-394)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL14AA01 DMS-250 UCS INTERNATIONAL PARTITION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL15AA01 DMS-250 ACCESS TRANSPORT PRI/SS7  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 EITHER NTXG01AA06 DMS-250 PRA  
0 OR NTXG01CA07 DMS-250 PRA (TYPE III)  
0 OR NTXL09AA02 DMS-250 UCS PRA

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## 0 NTXL16AA01 DMS-250 UCS 800 NXX EXPANSION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX362BA02 DMS-250 INCOMING EXCLUSION FOR 800 SERVICES

## 0 NTXL17AA01 DMS-250 UCS DIALING PLAN ADDITION (MULTI PROMPT)

0 NTXL02AA03 DMS-250 UCS DIALING PLAN ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

## 0 NTXL20AA01 MTX ROYAL CANADIAN MOUNTED POLICE SURVEILLANCE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX325AA03 MTX VERTICAL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXL21AA02 MTX HANDOFF PARMS PER CELL PAIR

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX322AA18 MTX CALL PROCESSING

## 0 NTXL27AA02 MTX ICRM

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXL30AA01 CUSTOM ACD BASED BOC CALLING CARD (TYPE III)

0 NTXJ55AA02 ISDNAP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXL31AA01 CUSTOM ATR ENHANCEMENT FOR ACD PLATFORM (TYPE III)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

## 0 NTXL32AA01 CUSTOM PRIVATE NETWORK ENHANCEMENTS FOR SCAI (TYPE III)

0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

0 NTXL36AA01 DMS-250/ACD VNET OPERATOR SERVICES  
0 NTXG12CA06 DMS-250 EOPS (TYPE III)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXL39AA02 DMS-250 TCAP PROTOCOL TO NCS/DAP  
0 NTXG78AA02 DMS-250 TCAP BASED LOCAL EXCH. CARRIER  
0 (LEC) CALLING CARD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX353CA05 DMS-250 VIRTUAL PRIVATE NETWORK (VNET)

0 NTXL40AA01 DMS-250 INBAND ANI DELIVERY  
0 NTXG01AA06 DMS-250 PRA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL41AA01 DMS-250/300 TERMINAL PASSWORD ENHANCEMENTS  
0 NTX000AA19 BILGE

0 NTXL42AA01 DMS-250 CUSTOMER GROUP TRANSPORT ON PRI-GLOBAL  
0 NTXG01AA06 DMS-250 PRA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL43AA01 DMS-250/EIOC LOG FORMATTER  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL44AA01 DMS-250 LOG DATABASE  
0 NTXG41BA05 DMS-250 OPERATOR SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX221BA08 DMS-250 CALL DETAIL RECORDING (TYPE II)

0 NTXL45AA03 DMS-250 ISDN N X 64KB SERVICES  
0 NTXG01AA06 DMS-250 PRA

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0 93 12 030 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)0 NTXL46AA01 DMS-250 MULTIPLE STAGE OUTPULSING ON FG-D  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE0 NTXL47AA01 DMS-250 LOWER LAYER COMPATIBILITY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 EITHER NTXG01AA06 DMS-250 PRA  
0 OR NTXG01CA07 DMS-250 PRA (TYPE III)  
0 OR NTXL09AA02 DMS-250 UCS PRA0 NTXL64AA01 MTX CONTROL CHANNEL RSSI SCREENING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX322AA18 MTX CALL PROCESSING0 NTXL66AA02 MTX IS-41 REV A CALL DELIVERY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX322AA18 MTX CALL PROCESSING  
0 EITHER NTXG83AA02 MTX UNIVERSAL NETWORK MESSAGING  
0 OR NTX376AA05 MTX NETWORK MESSAGING0 NTXL70AA01 DMS-250 TR444  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)0 NTXL70CA01 DMS-250 TR444 (TYPE III)  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)0 NTXL71AA01 DMS-250 OPNET PHASE II  
0 NTXG26AA01 DMS-250 MULTIPLE OPERATOR CENTER CALL  
0 ROUTING  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)0 NTXL76AA03 DMS-250 NARS  
0 NTXG01CA07 DMS-250 PRA (TYPE III)  
0 NTXG30CA02 DMS-250 SINGLE RELEASE LINK TRUNK (TYPE  
0 III)

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0 NTXL77AA01 DMS-250 NCS ACCESS USING EMPC  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXL79AA02 DMS-250 XPM+ FOR DTC7/DTCI  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC  
0 OR NTX892AA04 MPC MULTILINK MANAGEMENT  
0 EITHER NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXL80AA01 DMS-250 AMBIGUOUS NPA CP & ROUTING  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXL81AA01 DMS-250 INTL OPER SUPERVISION ENHANCEMENTS  
0 NTXG45AA06 DMS-250 INTERNATIONAL SERVICE CALL FEATURES  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL82AA01 DMS-250 VPN HOTLINE EXPANSION  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)

0 NTXL83AA02 DMS-250 VOICE ACTIVATED CALLING PLATFORM (VAP)  
0 NTXG41BA05 DMS-250 OPERATOR SERVICES  
0 NTXL88AA01 DMS-250 GLOBAL FON CARD  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL84AA01 DMS-250 ANI TREATMENT AND LOGS ENHANCEMENTS  
0 NTXG01AA06 DMS-250 PRA  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL85AA01 DMS-250 NETWORK ANSWER TRANSPORT  
0 NTX001AA29 COMMON BASIC



0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)  
0 NTX361BA05 DMS-250 CCS7 IMTS

0 NTXL86AA01 DMS-250 N00 CALL REDIRECTION  
0 NTXG43AA05 DMS-250 3-WAY CALLING ON FONCARD  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)

0 NTXL88AA01 DMS-250 GLOBAL FON CARD  
0 NTXG48AA02 DMS-250 VARIABLE LEGNTH CALLING CARD  
0 2  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)

0 NTXL89AA01 DMS-250 OM ENHANCEMENT FOR N00 SERVICE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX365BA03 DMS-250 CCS7 TCAP BASED N00 SERVICE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXL90AA02 DMS-250 LISTAB EXPANSION  
0 OR NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXL91AA03 DMS-250 VPN DARWIN  
0 NTXG01AA06 DMS-250 PRA  
0 NTXG41BA05 DMS-250 OPERATOR SERVICES  
0 NTXG48AA02 DMS-250 VARIABLE LEGNTH CALLING CARD  
0 2  
0 NTXG76AA01 DMS-250 PRETRANSLATOR AND CALL TYPING  
0 ENHANCEMENTS  
0 NTXM90AA01 AIN GENERIC REMOTE DATABASE INTERFACE  
0 NTXM91AA01 TRIGGER EVENT PROCESSING - CONVERSATIONAL  
0 NTX001AA29 COMMON BASIC  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE  
0 NTX360BA02 DMS-250 TRAVEL CARD (IN SWITCH TCN  
0 DATABASE)  
0 NTX361BA05 DMS-250 CCS7 IMTS  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

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0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXL92AA01 DMS-250 FOCUSED TRUNK MAINTENANCE  
0 NTX001AA29 COMMON BASIC  
0 NTX272AA02 FOCUSED MAINTENANCE

0 NTXL93AA01 DMS-250 GLOBAL TITLE TRANSLATIONS  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL94AA01 DMS-250 FRAME RELAY BILLING FORMATTER/SEARCH (FOR CM & EIOC  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL95AA01 DMS-250 FRAME RELAY IEC BILLING (FOR CM ONLY)  
0 NTXL94AA01 DMS-250 FRAME RELAY BILLING FORMATTER/  
0 SEARCH (FOR CM & EIOC  
0 NTXQ34AA01 FRAME RELAY BILLING BASE PACKAGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTXF25AC01 FRAME RELAY BASIC (UPG FR. NTXF25AB) (FOR  
0 BCS35 REL)

0 NTXL96AA01 DMS-250 AUTOMATIC CODE GAPPING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXL97AA01 DMS-250 SELECTIVE INCOMING LOAD CONTROL ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXL98AA01 DMS-250 103330+ FON ACCESS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

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0 NTXL99AA01 DMS-250 SPECIAL FEATURE HOTLINE ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX230BA01 DMS-250 GENERIC SPEED NUMBERS

0 NTXM01AA01 DMS-250 MCI TO FGD ISUP INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXM02AA01 DMS-250 MCI TO DEX ISUP INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXM04AA01 DMS-250 MCI TO ACD ISUP INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXM05AA01 DMS-250 ANI/PANI ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX343BA01 DMS-250 EQUAL ACCESS (TYPE II)

0 NTXM06AA01 DMS-250 OFF-HOOK QUEUEING ENHANCEMENTS  
0 NTXM07AA01 DMS-250 RENAME TRUNK TYPE (RENAME CLLI)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXM07AA01 DMS-250 RENAME TRUNK TYPE (RENAME CLLI)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXM09AA01 DMS-250 USSPRINT(USP) TO UCS ISUP INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXM10AA01 DMS-250 SPRINT MULTIPLE CDR RECORDS  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

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0 93 12 030 NTXM11AA01 DMS-250 USSPRINT(USP) TO FGD ISUP INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)0 NTXM12AA01 DMS-250 USSPRINT(USP) TO ACD ISUP INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)0 NTXM13AA01 DMS-250 INTL SWITCH TRANSIT NETWORK SELECTION  
0 NTXG41BA05 DMS-250 OPERATOR SERVICES  
0 NTXL91AA03 DMS-250 VPN DARWIN  
0 NTX361BA05 DMS-250 CCS7 IMTS0 NTXM14AA01 DMS-250 TR444 BEARER CAPABILITIES  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE0 NTXM15AA01 DMS-250 CARRIER IDENTIFIER CODE EXPANSION  
0 NTXG20AA02 DMS-250 SS7 FGD (TR-394)0 NTXM32AA01 MTX VISITOR LOCATION REGISTER (VLR)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX901AA24 LOCAL FEATURES I0 NTXM36AA01 MTX DOWNLOADABLE TONE SET FOR CHILE, BRAZIL, GUYANA  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX322AA18 MTX CALL PROCESSING0 NTXM39AA01 MTX EXPANDED CALL FORWARD FEATURE CODES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX322AA18 MTX CALL PROCESSING0 NTXM42AA01 DMS250 DWS IEC/LEC SS7 FG-D INTERWORKING  
0 NTXS25AA01 DWS BASE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)0 NTXM46AA01 HIGH SPEED INTERFACE 2  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXM48AA02 S/DMS OM CENTRAL COLLECTOR (NODES: CM & EIOC)  
0 NTXG68AA01 S/DMS OM BASE (NODES: CM, EIOC, FP, & AP)  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXM49AA01 S/DMS OM MASTER (NODE: CM ONLY)  
0 NTXF07AA03 FAULT TOLERANT FILE SYSTEM (FTFS)  
0 NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
0 NTXG68AA01 S/DMS OM BASE (NODES: CM, EIOC, FP, & AP)  
0 NTXM48AA02 S/DMS OM CENTRAL COLLECTOR (NODES: CM &  
0 EIOC)  
0 NTX001AA29 COMMON BASIC  
0 NTX944AA03 BASE NODE MAINTENANCE

0 NTXM55AA01 DMS250 GVPN I/F FOR DMS300  
0 NTXG45AA06 DMS-250 INTERNATIONAL SERVICE CALL FEATURES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXM64AA01 DMS250 PASSWORD EXPANSION II  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXM69AA01 DMS250 BLUE BOX FRAUD (BBF) ON TR394  
0 NTXG25AA01 DMS-250 BLUE BOX FRAUD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTXM82AA01 DMS-300 CCITT7 SCCP/TCAP BASE  
0 NTXU25AA01 CCITT SCCP (0/1) AND CCITT TCAP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

0 NTXM90AA01 AIN GENERIC REMOTE DATABASE INTERFACE  
0 NTXM91AA01 TRIGGER EVENT PROCESSING - CONVERSATIONAL  
0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS

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0 93 12 030 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXM91AA01 TRIGGER EVENT PROCESSING - CONVERSATIONAL

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTXM99AA02 GSM-MSC BASE

0 NTXB57AA02 OPEN NUMBER TRANSLATIONS

0 NTXU25AA01 CCITT SCCP (0/1) AND CCITT TCAP

0 NTXY14AA01 GSM MAP BASE

0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)

0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25

0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

0 NTX901AA24 LOCAL FEATURES I

0 NTX941AA12 CM COMMON

0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS

0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXN00AA01 INTEGRATED SSP/STP - SINGLE POINT CODE

0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

0 NTX940AA13 CM BILGE

0 NTX941AA12 CM COMMON

0 NTX950AA06 MS BILGE

0 NTX951AA08 MS COMMON

0 NTXN01AA01 MULTI-LOCATION BUSINESS GROUPS(UPG BY NTXN01AB)

0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX901AA24 LOCAL FEATURES I

0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS

0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

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0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS (UPG OF NTXN01AA)  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXN04AA01 PARS REMOTE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION DATA LINK  
0 HANDLING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK HANDLING

0 NTXN07AA01 SMDI PRIVATE CLID SUPPRESSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK INTERFACE(SMDI)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXN07AB01 SMDI PRIVATE CLID SUPPRESSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK INTERFACE(SMDI)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXN10AA01 HIGH SPEED SMDI  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX732AA06 SIMPLIFIED MESSAGE DESK INTERFACE(SMDI)  
0 NTX901AA24 LOCAL FEATURES I

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0 NTXN11AA01 TEN DIGIT GTT FOR CLASS FEATURES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTXA00AB02 CLASS - CALL SETUP (UPGRADE OF NTXA00AA IN  
0 BCS32)  
0 OR NTXA00AC01 CLASS - CALL SETUP  
0 OR NTXE56AA02 CLASS SCREENING LIST EDITING

0 NTXN12AA01 NCEO/LEAS INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXN13AA01 CCS7 RELEASE LINE TRUNK  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXN14AA01 TRUNKS AS SCAI ACD AGENTS  
0 NTXJ55AA02 ISDNAP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXN16AA01 ENHANCED DRAM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXN17AA01 E911 DIRECT INTERFACE TO CCI ALI DATABASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET



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0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 OR NTX447AA01 E911 - TANDEM

## 0 NTXN18AA04 FBUS - LIU BASE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXF71AA01 SUPERNODE ENHANCED MESSAGING(UPG.BY  
0 NTXF71AB)  
0 OR NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)

## 0 NTXN19AA02 LIU7 FOR LPP BASED CCS7 APPLICATIONS

0 NTXN18AA04 FBUS - LIU BASE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXF71AA01 SUPERNODE ENHANCED MESSAGING(UPG.BY  
0 NTXF71AB)  
0 OR NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
0 EITHER NTXF20AA02 LMS ON LPP  
0 OR NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY ON MS

## 0 NTXN25AA02 EXTENDED PERIPHERAL EQUIPMENT

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX640AA06 DIGITAL PHONE M2000-BASIC  
0 OR NTX640AB04 DIGITAL PHONE M2000 - BASIC (UPG.OF  
0 NTX640AA)

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0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX983AB02 SERVICE SWITCHING POINT PRIVATE VIRTUAL  
0 NTWKG(REP NTX983AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXN27AA01 INTELLIGENT NETWORK OVERLOAD CONTROLS  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTX983AB02 SERVICE SWITCHING POINT PRIVATE VIRTUAL  
0 NTWKG(REP NTX983AA)

0 NTXN28AA01 INTELLIGENT NETWORK BILLING ATTRIBUTES  
0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTX001AA29 COMMON BASIC

0 NTXN29AA01 IBM DA TPC  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE CALL HANDLING  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXE05AA01 TOPS - MP DA/INTERCEPT MESSAGING - OPEN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX892AA04 MPC MULTILINK MANAGEMENT

0 NTXN31AA02 OSS INTERFACE ENHANCEMENT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX812AA03 CENTRALIZED MAP

0 NTXN33AA01 NSS TRAVEL CARD NUMBER VALIDATION  
0 NTXJ57AA02 NSS DATABASE CONTROL POINT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I

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0 EITHER NTXE75AA05 OFFNET ACCESS SERVICES(UPG. BY NTXE75AB)  
0 OR NTXE75AB01 OFFNET ACCESS SERVICES (UPG OF NTXE75AA)

## 0 NTXN35AA01 COT ENHANCEMENTS

0 NTXA02AA02 CLASS: CUSTOMER ORIGINATED TRACE  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX824AB01 ENHANCED CALL WAITING - IBN(UPGR. OF  
0 NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXN38AA01 VIP CALL SERVICES

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTXN46AA02 NETWORKED ACD ON CCS7

0 NTXE22AA02 ACD SUPERGROUP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

## 0 NTXN47AA01 NETWORKED ACD ON PRA

0 NTXE22AA02 ACD SUPERGROUP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I

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0 EITHER NTX244AA02 SEQUENTIAL TRUNK SELECTION(REP.BY NTX244AB)  
0 OR NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXN49AA01 AUTOMATED INTERCEPT CALL COMPLETION  
0 NTXA28AA02 TOPS AWT ENHANCEMENTS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE CALL HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA MP  
0 NTX704,706,708 OR 709)  
0 NTX801AA01 TOLL FEATURES I  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 EITHER NTXA63AA01 DIRECTORY ASSISTANCE/INTERCEPT CC MESSAGING  
0 OR NTXE05AA01 TOPS - MP DA/INTERCEPT MESSAGING - OPEN

0 NTXN50AA01 MDC SINGLE BUTTON TRANSFER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXN51AA01 TOPS MP SUPPORT OF INTERNAL DRAM  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE CALL HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTXN52AA01 TWO DIGIT ANI - TOPS OFFICE  
0 NTXE20AA01 TOPS EXTENDED BELLCORE AMA FORMAT(EBAF)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX801AA01 TOLL FEATURES I

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## 0 NTXN53AA02 ENHANCED PRA MAINTENANCE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

## 0 NTXN54AA01 HOST/REMOTE NETWORKING VIA CALL TYPE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION DATA LINK  
0 HANDLING  
0 NTX801AA01 TOLL FEATURES I  
0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK HANDLING

## 0 NTXN55AA01 TMS INTERWORKING

0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX801AA01 TOLL FEATURES I

## 0 NTXN59AA02 RINGBACK TO E911 CALLERS

0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 OR NTX447AA01 E911 - TANDEM

## 0 NTXN60AA01 DIAL UP INTO ALI DB FOR SRDB UPDATE

0 NTX001AA29 COMMON BASIC  
0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX451AA02 E-911 DATABASE  
0 EITHER NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 OR NTX447AA01 E911 - TANDEM

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## 0 NTXN65AA01 MDC FAST TRANSFER

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXN66AA01 E911 DIRECT ACCESS TO DATA MGT. SYSTEM ALI DATABASE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 OR NTX447AA01 E911 - TANDEM

## 0 NTXN67AA01 MERIDIAN AUTOMATIC ROUTE SELECTION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 OR NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)

## 0 NTXN68AA01 XPM BROADCAST PATCHING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

## 0 NTXN69AA01 SCOPE DIAL PRA SIGNALLING ON PAL TRUNKS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX607AA04 PBX ACCESS TO AUTOVON  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXN71AA01 NSS CDR BILLING

0 NTXA92AA01 SL100 FEATURE GROUP D  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED

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0 EITHER NTX901AA24 LOCAL FEATURES I  
0 OR NTXE75AA05 OFFNET ACCESS SERVICES(UPG. BY NTXE75AB)  
0 NTXE75AB01 OFFNET ACCESS SERVICES (UPG OF NTXE75AA)

0 NTXN75AA01 REMOTE CALL FORWARD WITHOUT UNIQUE PIN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTXN80AA01 ENHANCED TAPE HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXN81AA01 TWO DIGIT ANI ID - END OFFICE(LAMA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

0 NTXN82AB01 RSC ENHANCED ESA (LINES & TRUNKS)(UPG FR NTXN82AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX149AB03 RSC ESA OPERATION - LINE AND TRUNK  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY ON MS  
0 NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

0 NTXN84AA01 AUTOMATIC OIA SESSION START  
0 NTXA20AA01 TOPS MP OPEN INFORMATION ACCESS INTERFACE  
0 NTXA90AA07 TOPS-MP TERMINAL HANDLER HIGH SPEED  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 93 12 030 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

## 0 NTXN85AA01 MPC 1984 X.25

0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25

## 0 NTXN86AA01 E911 ACD PSAP MIS ENHANCEMENTS

0 NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX991AD01 ACD-MGMT REP 2 WAY DATA STREAM(UPG.. BY  
0 NTX991AE)  
0 OR NTX991AE01 ACD-MGMT REP 2 WAY DATA STREAM(UPG.BY  
0 NTX991AF)  
0 OR NTX991AF01 ACD-MGMT REP 2 WAY DATA STREAM(UPG OF  
0 NTX991AE IN BCS32)  
0 EITHER NTX877AA01 INTERFACE TO NON-DATA LINK CONSOLE(UPG. BY  
0 NTX877AB)  
0 OR NTX877AB01 INTERFACE TO NON-DATA LINK CONSOLE(UPG. OF  
0 NTX877AA)

## 0 NTXN87AB01 INTEGRATED TESTING BASE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXN89AA01 ISDN TESTING

0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

## 0 NTXN91AA01 TL 1 TESTING INTERFACE BASE

0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXN87AB01 INTEGRATED TESTING BASE



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0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX901AA24 LOCAL FEATURES I

0 NTXN93AA01 TL-1 TESTING ENHANCED BUSINESS  
0 NTXN87AB01 INTEGRATED TESTING BASE  
0 NTXN89AA01 ISDN TESTING  
0 NTXN91AA01 TL 1 TESTING INTERFACE BASE  
0 NTX001AA29 COMMON BASIC

0 NTXN97AA01 CALL WAITING DISPLAY  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXN99AA01 ISDN INBOUND MODEM POOLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXP00AA01 LINE CARD MONITOR  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTXP01AA03 INTELLIGENT NETWORK 0.0 BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX983AB02 SERVICE SWITCHING POINT PRIVATE VIRTUAL  
0 NTWKG(REP NTX983AA)  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)  
0 OR NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXP03AA01 NSS BILLING PLATFORM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXE75AA05 OFFNET ACCESS SERVICES(UPG. BY NTXE75AB)  
0 OR NTXE75AB01 OFFNET ACCESS SERVICES (UPG OF NTXE75AA)

0 NTXP04AA01 NSS UCS BCS26 CDR FORMATTER  
0 NTXP03AA01 NSS BILLING PLATFORM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXE75AA05 OFFNET ACCESS SERVICES(UPG. BY NTXE75AB)  
0 OR NTXE75AB01 OFFNET ACCESS SERVICES (UPG OF NTXE75AA)

0 NTXP08AA01 TRUNK GROUP MEMBER USAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX801AA01 TOLL FEATURES I

0 NTXP10AA01 NETWORK MODULE SOFTWARE  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

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0 NTXP12AA01 CLASS: ANONYMOUS CALLER REJECTION  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX824AB01 ENHANCED CALL WAITING - IBN(UPGR. OF  
0 NTX824AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

0 NTXP13AA02 ENET SWITCH PATH DIAGNOSTICS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXP14AA01 DIRP PARALLEL STORAGE SIZE INCREASE  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTXP15AA01 MAP ACCESS VIA MPC PHASE V  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXN85AA01 MPC 1984 X.25  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25

0 NTXP38AA01 BD CHANNEL LOOPBACK  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX733AD01 ENHANCED SERVICE ORDER(UPG.BY NTX733AE)  
0 OR NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF NTX733AD IN  
0 BCS29)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXP41AA01 TOPS HOST QUEUE MANAGEMENT SYSTEM  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER

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0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTXP42AA01 TOPS REMOTE QUEUE MANAGEMENT SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 OR NTXR61AA01 DMS SUPERNODE SERIES 60 PROCESSOR

0 NTXP47AA02 DMS PACKET HANDLER BASE  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS COMPLIANCE- END  
0 OFFICE  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXP47AB01 DMS PACKET HANDLER BASE (UPG OF NTXP47AA)  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)  
0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS COMPLIANCE- END  
0 OFFICE  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXP48AA01 CCS7 TWO WIRE EMULATION OF CONTINUITY TEST  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

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## 0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 EITHER NTXA83AA02 TOPS MESSAGE SWITCH  
0 OR NTX134BA02 REMOTE OPERATOR CENTRALIZATION DATA LINK  
0 HANDLING

## 0 NTXP53AA01 ACD ACCESS FEATURE GROUPING

0 NTXF87AA02 SERVICE ORDER SIMPLIFICATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX416AG01 ACD ENHANCED II(UPG. OF NTX416AF)  
0 OR NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)  
0 OR NTX416AI01 ACD ENHANCED II(UPG. OF NTX416AH)  
0 OR NTX416AJ01 ACD ENHANCED II (UPG. OF NTX416AI)

## 0 NTXP55AA01 DYNAMICALLY CONTROLLED ROUTING (DCR/LDR)

0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXP55AB01 DYNAMICALLY CONTROLLED ROUTING (DCR/LDR) (UPG OF P55AA)

0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXP56AA01 TWO DIGIT ANI - CAMA

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX801AA01 TOLL FEATURES I

## 0 NTXP57AA01 CALL WAKE-UP SERVICE

0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

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0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXP58AA01 VFG SPPRT FOR E911(LOC &/OR INC ISUP/ANI CALL)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 OR NTX447AA01 E911 - TANDEM  
0 EITHER NTX112AA01 IBN-VIRTUAL FACILITY.GRP. FOR INWATS/  
0 OUTWATS(UPG. BY NTX112AB  
0 OR NTX112AB03 IBN - VIRTUAL FACILITY GROUPS (UPG FROM  
0 NTX112AA)

0 NTXP72AA01 ENET 16K CONFIGURATION  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 OR NTXR61AA01 DMS SUPERNODE SERIES 60 PROCESSOR

0 NTXP73AA01 CNDB OFFICE-WIDE ACTIVATION  
0 NTXA41AA01 CLASS: CALLING NUMBER DELIVERY BLOCKING  
0 ADMINISTRATION  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXP75AA01 DMS PACKET HANDLER SERVORD  
0 NTXF93AA02 ISDN PROVISIONING  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXP47AA02 DMS PACKET HANDLER BASE  
0 OR NTXP47AB01 DMS PACKET HANDLER BASE (UPG OF NTXP47AA)

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## 0 NTXP78AA01 FGB CARRIER CODE EXPANSION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX187AA03 TOPS - EQUAL ACCESS

## 0 NTXP79AB01 TOPS FRENCH/ENGLISH AABS

0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING SERVICE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

## 0 NTXP80AA01 TWO LEVEL AUTOMATIC RECALL ENHANCEMENTS

0 NTXA01AA02 CLASS: CALLING NUMBER DISPLAY  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXE27AA01 CLASS DIALABLE NUMBER DELIVERY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXA00AB02 CLASS - CALL SETUP (UPGRADE OF NTXA00AA IN  
0 BCS32)  
0 OR NTXA00AC01 CLASS - CALL SETUP

## 0 NTXP81AA01 REMOTE ACTIVATION OF LINE LOAD CONTROL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX902AA07 LOCAL FEATURES II

## 0 NTXP82AA01 AMA MOD (CAMA MODULES)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX098AA07 BELLCORE CAMA FORMAT

## 0 NTXP85AA02 ISUP BROADCAST FAN OUT

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

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0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTP86AA01 ANI TO ISUP CONVERSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTP90AA01 MERIDIAN SUPERNODE OPTION 201  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

0 NTP92AA01 RSC-S BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX269AA07 UNIVERSAL TONE RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTP92AB01 RSC-S BASIC (UPG OF NTP92AA)  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX269AA07 UNIVERSAL TONE RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTP97AA01 IEM BASIC EVENT CONSOLIDATION  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON



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0 NTXP99AA01 E911 REMOTE CALL EVENT RECORD(UPG.BY NTXP99AB)  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 EITHER NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 OR NTX447AA01 E911 - TANDEM

0 NTXP99AB01 E911 REMOTE CALL EVENT RECORD(UPG.OF NTXP99AA)  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 EITHER NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 OR NTX447AA01 E911 - TANDEM

0 NTXQ12AA01 RSC ENHANCED ESA(LINES ONLY)(FOR BCS34 RELEASE)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX149AA03 RSC EMERGENCY STAND ALONE OPERATION - LINES  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXQ18AA01 SRDB MEMORY ADMINISTRATION  
0 NTX001AA29 COMMON BASIC  
0 NTX451AA02 E-911 DATABASE  
0 EITHER NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 OR NTX447AA01 E911 - TANDEM

0 NTXQ21AA01 MERIDIAN TELECENTER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX640AB04 DIGITAL PHONE M2000 - BASIC (UPG.OF  
0 NTX640AA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXQ23AA02 TOPS ADAS  
0 NTXA62AA01 TOPS MP - DA AUDIO RESPONSE CALL HANDLING  
0 NTXF20AA02 LMS ON LPP  
0 NTXH77AA01 CHANNELLIZED ACCESS ON LPP/LIS  
0 NTX001AA29 COMMON BASIC

0 NTXQ27AA02 MFT DISPLAY ENHANCEMENTS  
0 NTX001AA29 COMMON BASIC

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0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXQ29AA01 CLASS+ CALLING NAME DELIVERY BLOCKING FOR LINES  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXQ34AA01 FRAME RELAY BILLING BASE PACKAGE  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXF25AC01 FRAME RELAY BASIC (UPG FR. NTXF25AB) (FOR  
0 BCS35 REL)  
0 OR NTXF25AD01 FRAME RELAY BASIC (UPG FR NTXF25AC)

0 NTXQ35AA01 FRAME RELAY LEC BILLING  
0 NTXQ34AA01 FRAME RELAY BILLING BASE PACKAGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTXF25AC01 FRAME RELAY BASIC (UPG FR. NTXF25AB) (FOR  
0 BCS35 REL)  
0 OR NTXF25AD01 FRAME RELAY BASIC (UPG FR NTXF25AC)

0 NTXQ38AA01 SSP 800 CALLING AND DIALLED NUMBER DELIVERY  
0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTX001AA29 COMMON BASIC  
0 NTX555AB01 800 PLUS

0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTX001AA29 COMMON BASIC  
0 NTX555AB01 800 PLUS  
0 NTX801AA01 TOLL FEATURES I

0 NTXQ40AA02 SSP 800 OVERFLOW CALL ROUTING  
0 NTXQ39AA01 SSP 800 BILLING ENHANCEMENTS  
0 NTX001AA29 COMMON BASIC  
0 NTX555AB01 800 PLUS  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS

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0 93 12 030 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)0 NTXQ41AA01 NB / SB ENHANCEMENT  
0 NTX555AB01 800 PLUS0 NTXQ48AA01 SCP - CBIS SMS INTERFACE  
0 NTXQ45AA01 AIN GENERIC MESSAGING  
0 NTXQ55AA01 TCAP MONITOR ENHANCEMENTS  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT0 NTXQ51AA01 MS SR512 LIS CONTROLLER  
0 NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY ON MS  
0 NTX001AA29 COMMON BASIC0 NTXQ52AA01 SUPPORT FOR MS RESIDENT, LIS CONTROLLER  
0 NTXN83AA02 LIS COMMON - LMS FUNCTIONALITY ON MS  
0 NTXP44AA01 DMS SUPERNODE SE COMMON  
0 EITHER NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 OR NTXR61AA01 DMS SUPERNODE SERIES 60 PROCESSOR0 NTXQ56AA01 AIN REL. 0.1 TCP/IP  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXQ45AA01 AIN GENERIC MESSAGING  
0 NTXS71AA01 TCAP/TCP HANDLER  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I0 NTXQ60AA01 SL-100 ISDN CABINET CIRCUIT LOCATOR  
0 OR NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)0 NTXQ62AA01 ENHANCED MAINTENANCE CAPABILITY  
0 NTXN25AA02 EXTENDED PERIPHERAL EQUIPMENT  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX901AA24 LOCAL FEATURES I0 NTXQ65AB01 CCS7 AUTO ATTENDANT RELEASE LINK TRUNK (UPG OF NTXQ65AA)  
0 NTX001AA29 COMMON BASIC

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0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX801AA01 TOLL FEATURES I

0 NTXQ70AA01 UNIVERSAL CLASS FEATURE ACCESS  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX901AA24 LOCAL FEATURES I

0 NTXQ73AA01 ISUP TO MF 2 STAGE OUTPULSING(CANADA)  
0 NTX001AA29 COMMON BASIC  
0 NTX029AA01 DIRECT DIALLING OVERSEAS, TOLL (CANADA)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

0 NTXQ74AA01 NSS CUSTOMER GROUP TRANSPORT FOR PRI  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXQ75AA01 NSS VALIDATED ACCOUNT CODES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXE75AA05 OFFNET ACCESS SERVICES(UPG. BY NTXE75AB)  
0 OR NTXE75AB01 OFFNET ACCESS SERVICES (UPG OF NTXE75AA)

0 NTXQ79AA01 TWO DIGIT ANI I.D - END OFFICE NON-LAMA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTXQ81AA01 CLASS - NAME DISPLAY ON MADN  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH BASED  
0 NTXE58AA01 CLASS ON MVP  
0 NTXF56AA01 CLASS ON MDC (BASE)  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I

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## 0 NTXQ89AA01 CCS7 INTEGRATED LINK PROTOCOL TEST (ILPT7)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

## 0 NTXQ90AA01 ENHANCED RESIDENTIAL SERVICES

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX001AA29 COMMON BASIC

## 0 NTXQ90AB01 ENHANCED RESIDENTIAL SERVICES (UPG OF NTXQ90AA)

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX001AA29 COMMON BASIC

## 0 NTXQ95AA01 LINE LOG REDUCTION

0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXR21AA01 EADAS HARDWARE INVENTORY CONTROL

0 NTX001AA29 COMMON BASIC  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25

## 0 NTXR22AA01 MUSIC ON HOLD - LINE INTERFACE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXR25AA02 NETWORK FACILITY ACCESS

0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXR26AA01 SEAS INTERFACE 4.0

0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)  
0 NTX835AA03 STP - SEAS (1.1) OPERATIONS

## 0 NTXR28AA01 FRAME RELAY FRACTIONAL T1 ACCESS

0 NTXF20AA02 LMS ON LPP  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTX940AA13 CM BILGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS

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0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTXF25AC01 FRAME RELAY BASIC (UPG FR. NTXF25AB) (FOR  
0 BCS35 REL)  
0 OR NTXF25AD01 FRAME RELAY BASIC (UPG FR NTXF25AC)

0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY) BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXR35AA01 800 DIALED NUMBER DISPLAY AND BCLID  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXF55AA02 CLASS BULK CALLING LINE IDENTIFICATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX901AA24 LOCAL FEATURES I

0 NTXR40AA01 PCR ON MSB7  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXP92AA01 RSC-S BASIC  
0 OR NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)  
0 OR NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC

0 NTXR43AA01 MBG GENERIC ADDRESS PARAMETER  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS (UPG OF  
0 NTXN01AA)  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

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0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXR44AA01 POWER FEATURE AUDIO TRIAL  
0 NTXF88AB01 MBS INTERACTIVE DISPLAYS (UPG OF NTXF88AA)  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX901AA24 LOCAL FEATURES I

0 NTXR45AA01 AUTO ATTENDANT - RLT (DMS-100)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXR47AA01 GLOBAL TMS (PCM 30)  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTXP41AA01 TOPS HOST QUEUE MANAGEMENT SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXR49AA02 DIALABLE WIDE BAND SERVICE PRI  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTX143AA02 DS-1 - ESF  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)

0 NTXR50AA01 QMS EXTERNAL MANAGEMENT INFORMATION SYSTEM INTERFACE  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXN85AA01 MPC 1984 X.25  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25

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0 NTXR51AA02 GLOBAL OPERATOR SERVICES RATING SYSTEM  
0 NTXH38AA03 GLOBAL TOPS - BASIC  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL

0 NTXR55AA01 TL1 TESTING INTERFACE PARSER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXR58AA01 GLOBAL OPERATOR SERVICES BOOKED CALL DATA BASE  
0 NTXH38AA03 GLOBAL TOPS - BASIC  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

0 NTXR59AA01 CLASS: SPLIT NPA MANAGEMENT  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 EITHER NTXA00AB02 CLASS - CALL SETUP (UPGRADE OF NTXA00AA IN  
0 BCS32)  
0 OR NTXA00AC01 CLASS - CALL SETUP

0 NTXR62AA01 STUTTER DIALTONE ENHANCEMENT  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXR65AA01 FLEXIBLE DWS ACCESS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXS25AA01 DWS BASE

0 NTXR66AA01 DWS ACCESS TO CARRIER (ACCESS TANDEM)  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7 TRKS  
0 NTXS25AA01 DWS BASE  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTXE13AB01 CCS7 ISUP INTERLATA CONNECTION EAEO (REP.  
0 NTXE13AA)



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0 OR NTXE14AB03 CCS7 ISUP INTERLATA CONN ACCESS TANDEM  
0 (REP. NTXE14AA)

0 NTXR68AA01 64 KBIT CCS7 LINK INTERFACE  
0 EITHER NTXN19AA02 LIU7 FOR LPP BASED CCS7 APPLICATIONS  
0 OR NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

0 NTXR70AA01 CM BASE FOR OPC  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTX941AA12 CM COMMON

0 NTXR71AA01 RSC-S EXTENDED DISTANCE CAPABILITY  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 EITHER NTXP92AA01 RSC-S BASIC  
0 OR NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)

0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX940AA13 CM BILGE  
0 EITHER NTXN19AA02 LIU7 FOR LPP BASED CCS7 APPLICATIONS  
0 OR NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

0 NTXR74AA01 ENABLING OF MBG FEATURE NETWORKING  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS (UPG OF  
0 NTXN01AA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTXR75AA01 VCN 1A BILLING  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS (UPG OF  
0 NTXN01AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS (UPG FROM  
0 NTX112AA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

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0 NTXR76AA01 VCN 1A OM'S  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS (UPG OF  
0 NTXN01AA)  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS (UPG FROM  
0 NTX112AA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXR78AA01 MBG FEATURE NETWORKING CONTROL  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTXN01AB01 MULTI-LOCATION BUSINESS GROUPS (UPG OF  
0 NTXN01AA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXR80AA01 CONTROL OF MULTIPLE CALL FORWARD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF  
0 NTX413AA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXR83AA01 PER LINE FEATURE CONTROL  
0 NTXA35AA03 NETWORK NUMBER DISPLAY  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXR85AA01 DOWNLOADABLE TONES (ADSI SVCS)  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXR88AA01 NETWORK ACCESS REGISTERS FOR DMS100  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTXR89AA01 CENTREX COORDINATED VOICE AND DATA  
0 NTXJ60AB01 ISI COORDINATED VOICE AND DATA (UPG OF  
0 NTXJ60AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXJ59AB03 COMPUCALL BASE UTILITIES(UPG. FR. NTXJ59AA)  
0 OR NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG OF NTXJ59AB)

0 NTXR91AA01 GLOBAL PRI UUI  
0 NTXV06AA01 INTERNATIONAL ISDN PRI - BASE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)

0 NTXR92AA01 FCC DID ANSWER SUPERVISION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTXR94AA01 DATAPATH (SLE) SCREEN LIST EDITING  
0 NTXA45AA01 CLASS SELECTIVE CALL ACCEPTANCE  
0 NTXA95AA01 CLASS SELECTIVE CALL FORWARDING  
0 NTXA96AA01 CLASS SELECTIVE CALL REJECTION  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTX250AA15 DATAPATH - BASIC

0 NTXR95AA01 NAME DISPLAY - TCAP  
0 NTXA64AA05 RES(RESIDENTIAL ENHANCED SERVICES) BASE  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTXE52AA01 CALLING NAME DELIVERY SWITCH BASED  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

0 NTXS00AA01 INTERCHANGABLE NPA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXS01AA01 ISDN MULTI-POINT LOOP MAINTENANCE  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXS05AA01 XPM PLUS IN RSC  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING

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0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX901AA24 LOCAL FEATURES I

0 NTXS07AA01 TELCO DEFINED LOGIN BANNER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7 TRKS  
0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXS25AA01 DWS BASE  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXG01AA06 DMS-250 PRA  
0 OR NTXG01CA07 DMS-250 PRA (TYPE III)  
0 OR NTXL09AA02 DMS-250 UCS PRA  
0 OR NTX794AA01 PRA CCS7 INTERWORKING

0 NTXS11AA01 FILE TRANSFER PROTOCOL (DARPA)  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTX001AA29 COMMON BASIC

0 NTXS12AA01 DIGITAL TEST ACCESS FOR PRI  
0 NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)

0 NTXS17AA01 DATA CALL TESTER  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX883AA01 INTER OFFICE TRK BIT ERROR RATE TESTING  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX881AB02 SWITCH BIT ERROR RATE NTCE(REP. BY  
0 NTX881AC)  
0 OR NTX881AC03 SWITCH BIT ERROR RATE MAINTENANCE(UPG. OF  
0 NTX881AB)  
0 OR NTX882AA04 BIT ERROR RATIO INDICATOR FOR TOLL SWITCHES

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## 0 NTXS18AA01 TOPS INTERCHANGEABLE NPA

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

## 0 NTXS19AA01 TOPS DN CALL SCREENING

0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

## 0 NTXS22AA01 THIRD PARTY AGENT CONTROL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXJ59AB03 COMPUCALL BASE UTILITIES(UPG. FR. NTXJ59AA)  
0 OR NTXJ59AC01 COMPUCALL BASE UTILITIES (UPG OF NTXJ59AB)

## 0 NTXS25AA01 DWS BASE

0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 EITHER NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 OR NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTXS26AA01 DWS PRI BASE

0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXS25AA01 DWS BASE  
0 EITHER NTXG01AA06 DMS-250 PRA  
0 OR NTXG01CA07 DMS-250 PRA (TYPE III)  
0 OR NTXL09AA02 DMS-250 UCS PRA  
0 OR NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)

## 0 NTXS27AA01 DWS PRI TEST TOOL

0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXS25AA01 DWS BASE  
0 NTXS26AA01 DWS PRI BASE  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

## 0 NTXS28AA01 DWS INTERTOLL ISUP

0 NTXE01AA06 ENHANCED NETWORK - BASIC  
0 NTXS08AA01 ENHANCED TIME SWITCH  
0 NTXS09AA01 DIALABLE WIDEBAND SERVICE SS7 TRKS  
0 NTXS25AA01 DWS BASE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

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0 NTXS29AA01 APU MAINTENANCE  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF19AA02 TCP/IP PROTOCOLS  
0 NTXN18AA04 FBUS - LIU BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
  
0 NTXS35AA01 AABS CALL SCREENING  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING SERVICE  
0 NTX552AD01 CUSTOM CHARGE CALLING (UPGRADE OF NTX552AC)  
  
0 NTXS36AA01 XPM+ ON DTCI  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)  
  
0 NTXS37AA01 AABS ENHANCED SERVICES ACCESS  
0 NTXA17AA02 AUTOMATIC ALTERNATE BILLING SERVICE  
0 NTXA83AA02 TOPS MESSAGE SWITCH  
0 NTXN84AA01 AUTOMATIC OIA SESSION START  
0 NTXP41AA01 TOPS HOST QUEUE MANAGEMENT SYSTEM  
0 NTXP49AA01 TOPS OPEN POSITION PROTOCOL  
0 NTXR48AA01 QMS: CALL AND AGENT MANAGER  
0 NTXR52AA01 TOPS INCREASED MULTIPLEXING  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
  
0 NTXS51AA01 LINK SECTIONALIZATION CAPABILITIES  
0 NTXN19AA02 LIU7 FOR LPP BASED CCS7 APPLICATIONS  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)  
0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND BERT (REP.  
0 NTX839AA)  
  
0 NTXS67AA01 DCR MULTIPLE NETWORK ACCESS (MNA)  
0 EITHER NTXP55AB01 DYNAMICALLY CONTROLLED ROUTING (DCR/LDR)  
0 (UPG OF P55AA)  
0 OR NTX022AC01 DYNAMICALLY CONTROLLED ROUTING (DCR/HPR)  
0 (UPG OF 022AB)  
  
0 NTXS71AA01 TCAP/TCP HANDLER  
0 NTXF05AA03 ETHERNET INTERFACE UNIT  
0 NTXF19AA02 TCP/IP PROTOCOLS

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0 NTXQ45AA01 AIN GENERIC MESSAGING  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

0 NTXS72AA01 CC SOFTWARE SUPPORT FOR EDRAM UPLOADING  
0 NTXN16AA01 ENHANCED DRAM

0 NTXS74AA01 C7TUNIT  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS

0 NTXS76AA01 VPN AMA ENHANCEMENTS  
0 NTXH49AB01 AUSTRALIAN VPN - SSP (UPG FR. NTXH49AA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX159AA12 BELLCORE LAMA FORMAT

0 NTXS81AA01 END OFFICE 800 PLUS CALLER ID & DIALED NO. DISP - CMS  
0 NTXA82AA03 CLASS LINE OFFICE DATA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX941AA12 CM COMMON

0 NTXS82AA01 END OFFICE 800 PLUS CALLER ID & DIALED  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX941AA12 CM COMMON

0 NTXT00AA01 PCM-30 RSCS R1 TRUNKING  
0 NTXH52AA01 PCM30 RSCO SUPPORT  
0 NTXK77AA02 PCM-30 RSCO-S SUPPORT  
0 EITHER NTXP92AA01 RSC-S BASIC  
0 OR NTXP92AB01 RSC-S BASIC (UPG OF NTXP92AA)

0 NTXT03AA01 ISDN ETSI BRI COMPLIANCE  
0 NTXK76AA02 INTERNATIONAL BASIC RATE ACCESS  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)

0 NTXU17AA01 DMS-100 UK TONESET  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

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## 0 NTXU19AA01 DMS-100 ECHO CONTROL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 OR NTXK96AA01 BT #7 TUP VERSION 2+ (DMS-100)

## 0 NTXU20AA01 MAP INTERWORKING TO UK SIGNALLING SYSTEMS

0 NTXN19AA02 LIU7 FOR LPP BASED CCS7 APPLICATIONS  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTXU25AA01 CCITT SCCP (0/1) AND CCITT TCAP  
0 NTX001AA29 COMMON BASIC  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 EITHER NTXK96AA01 BT #7 TUP VERSION 2+ (DMS-100)  
0 OR NTX937AA06 BT #7 TUP(DMS-100)(UPG. BY NTX937AB)  
0 OR NTX937AB01 BT #7 TUP (DMS-100) (UPG OF NTX937AA)

## 0 NTXU27AA01 VPN CALL IDENTIFICATION ON ISUP (DMS-300)

0 NTX001AA29 COMMON BASIC

## 0 NTXV00AA01 DN SCREENING DATABASE - BASE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTXV01AA01 DN SCREENING ENHANCEMENTS I

0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXV01AB01 DN SCREENING ENHANCEMENTS I (UPG. FR. NTXV01AA)

0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTXV02AA01 DN SCREENING ENHANCEMENTS II

0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I



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0 NTXV05AA01 INS-1500 NETWORK SIDE BASIC CALL  
0 NTXV06AA01 INTERNATIONAL ISDN PRI - BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX244AA02 SEQUENTIAL TRUNK SELECTION(REP.BY NTX244AB)  
0 OR NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)  
  
0 NTXV06AA01 INTERNATIONAL ISDN PRI - BASE  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)  
  
0 NTXV07AA01 ETSI PRI (T)  
0 NTXV06AA01 INTERNATIONAL ISDN PRI - BASE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)  
  
0 NTXV07AB01 ETSI PRI (T) (UPG OF NTXV07AA)  
0 NTXV06AA01 INTERNATIONAL ISDN PRI - BASE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I

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0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXV08AA01 AUSTRALIA ISDN PRI  
0 NTXV06AA01 INTERNATIONAL ISDN PRI - BASE  
0 NTX001AA29 COMMON BASIC  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I

0 NTXV10AA01 ISDN NON-INITIALIZATION TERMINALS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXV10AB01 ISDN NON-INITIALIZATION TERMINALS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTXV11AA01 PDTC INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE

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0 NTXV12AA01 JAPAN CENTREX ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXH86AA01 JAPAN LINE INTERFACE  
0 OR NTXH86AB01 JAPAN LINE INTERFACE  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)  
0 OR NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
  
0 NTXV13AA01 CHINA C1 DP TRUNK INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
  
0 NTXV16AA01 CHILE SIGNALING  
0 NTX904AA04 R2 SIGNALLING BASE  
  
0 NTXV18AA01 JPN MESSAGE TRANSFER PART (MTP)  
0 NTXH14AA01 NTT NCCI CCITT #7 MTP  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
  
0 NTXV20AA01 DMS-100 AUTOMATIC FILE TRANSFER (AFT)  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTXG18BA01 DMS-250 SAFE STORE TAP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
  
0 NTXV21AA01 DMS-100 BEARER CAPABILITY SCREENING  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXV01AA01 DN SCREENING ENHANCEMENTS I  
  
0 NTXV22AA01 JPN ISUP TRUNK SIGNALING  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTXV18AA01 JPN MESSAGE TRANSFER PART (MTP)  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

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0 NTXV23AA01 JPN ISUP TRUNK INTERWORKINGS  
0 NTXV22AA01 JPN ISUP TRUNK SIGNALING  
0 NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 NTXZ09AA02 JAPAN TANDEM TRUNK SIGNALLING  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)

0 NTXV24AA01 JPN FLEXIBLE CHARGE SYSTEM CALL TERMINATION  
0 NTXV23AA01 JPN ISUP TRUNK INTERWORKINGS

0 NTXV25AA01 JPN AUTO MASS TRUNK CONVERSION  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX875AA01 CCS7 MASS TRUNK CONVERSION

0 NTXV26AA01 DN SCREEN ENHANCEMENT III - JAPAN MOBILE  
0 EITHER NTXV01AA01 DN SCREENING ENHANCEMENTS I  
0 OR NTXV01AB01 DN SCREENING ENHANCEMENTS I (UPG. FR.  
0 NTXV01AA)

0 NTXV27AA01 C7 TEST ENHANCEMENTS  
0 NTX001AA29 COMMON BASIC

0 NTXV50AA01 OFFNET GVPN CLI SCREENING  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTXV00AA01 DN SCREENING DATABASE - BASE  
0 NTXV54AA01 DMS100 NCCI#7 TO ANSI7+ INTERWORKING  
0 EITHER NTXV01AA01 DN SCREENING ENHANCEMENTS I  
0 OR NTXV01AB01 DN SCREENING ENHANCEMENTS I (UPG. FR.  
0 NTXV01AA)

0 NTXV51AA01 INTERNATIONAL GONCESTION CONTROL ON CCS7  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)

0 NTXV56AA01 JPN ISUP - DENY MALICIOUS CALL TERMINATION SUPP SVCS  
0 NTXH86AB01 JAPAN LINE INTERFACE  
0 NTXV22AA01 JPN ISUP TRUNK SIGNALING  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)

0 NTXV58AA01 JPN ISUP - CALLING NUMBER DELIVERY SS ON ACD LINES  
0 NTXH86AB01 JAPAN LINE INTERFACE  
0 NTXV23AA01 JPN ISUP TRUNK INTERWORKINGS  
0 NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)

0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTX001AA29 COMMON BASIC

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0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXW03AA01 WORLD LINE CARD OVER VOLTAGE REPORT  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXW20AA01 WORLD LINE CARD 900 +2  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXW21AA01 TEMPLATE FOR 900+2 FOR TYPE 2  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTX001AA29 COMMON BASIC

0 NTXW22AA01 WORLD LINE CARD, UK  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXW23AA01 WLC TEMPLATES FOR JAPAN, BRAZIL, PERU, POLAND  
0 NTXW00AA02 WORLD LINE CARD BASE  
0 NTX901AA24 LOCAL FEATURES I

0 NTXX27AA01 DMS100 NRR ROUTING SELECTOR REFINEMENT  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTXX29AA01 ANSI7+ NETINFO ENHANCEMENT  
0 NTXJ68AA01 IBN ISUP NETINFO TRANSLATIONS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXX89AA01 XPM+ ON ICP (MTX)  
0 NTXG52AA04 MTX INTEGRATED CELLULAR PERIPHERAL (ANALOG)  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC

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0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTX322AA18 MTX CALL PROCESSING

0 NTXX98AA01 DMS-MTX MNP  
0 NTXE98AA02 HIGH SPEED MPC  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTXG18BA01 DMS-250 SAFE STORE TAP  
0 NTXN85AA01 MPC 1984 X.25  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTXY08AA01 GSM-MSC BASE (GATEWAY FUNCTIONALITY)  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXM99AA02 GSM-MSC BASE  
0 NTXY14AA01 GSM MAP BASE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

0 NTXY09AA01 GSM-MSC SUPPLEMENTARY SERVICES I  
0 NTXM99AA02 GSM-MSC BASE  
0 NTXY14AA01 GSM MAP BASE  
0 NTX001AA29 COMMON BASIC  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

0 NTXY11AA01 MSC BASE (CUSTOM)  
0 NTXM99AA02 GSM-MSC BASE

0 NTXY13AA01 GSM HLR BASE  
0 NTXY14AA01 GSM MAP BASE  
0 NTX001AA29 COMMON BASIC

0 NTXY14AA01 GSM MAP BASE  
0 NTXU25AA01 CCITT SCCP (0/1) AND CCITT TCAP  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX941AA12 CM COMMON  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTXY15AA01 HLR PHASE 1 SUPPLEMENTARY SERVICES  
0 NTXY13AA01 GSM HLR BASE  
0 NTX001AA29 COMMON BASIC

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0 NTXY16AA01 GSM AUTHENTICATION CENTER  
0 NTXY13AA01 GSM HLR BASE

0 NTXY18AA01 GSM - IBN7 (ANSI) CONVERSION TO NXCP  
0 NTXA79AA03 IBN TRUNKS WITH ISUP SIGNALLING  
0 NTXM99AA02 GSM-MSC BASE  
0 NTXU19AA01 DMS-100 ECHO CONTROL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXY19AA01 GSM AUTHENTICATION ALGORITHM - MOU  
0 NTXY13AA01 GSM HLR BASE  
0 NTXY16AA01 GSM AUTHENTICATION CENTER  
0 NTX001AA29 COMMON BASIC

0 NTXY97AA01 TCAP TRID EXPANSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

0 NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)  
0 NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTXZ03AA01 ACD SUPPORT SOFTWARE 4 (EQ912)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTXZ07AA01 JAPAN ACD APPLICATION BASE  
0 NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)

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0 NTXZ11AA01 JAPANESE TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 EITHER NTXE09AA01 ACD ON 2500 SET(UPG. BY NTXE09AB)  
0 OR NTXE09AB01 ACD ON 2500 SET (UPG OF NTXE09AA IN BCS32)

0 NTXZ09AA02 JAPAN TANDEM TRUNK SIGNALLING  
0 NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 NTXZ11AA01 JAPANESE TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTXZ10AA01 JAPANESE TTC CARRIER(UPG.BY NTXZ10AA)  
0 NTXH10AA02 PCM300 MAINTENANCE ENHANCEMENTS  
0 NTXZ11AA01 JAPANESE TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTXZ11AA01 JAPANESE TONES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX001AA29 COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXP10AA01 NETWORK MODULE SOFTWARE

0 NTX006AA04 BUSINESS LINES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX007AA02 PBX INTERFACE I(REP.BY NTX007AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX007AB02 PBX INTERFACE I (UPGRADE OF NTX007AA)  
0 NTX000AA19 BILGE



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0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX008AA01 PBX INTERFACE II(UPG. BY NTX008AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX008AB02 PBX INTERFACE II(UPG. OF NTX008AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX019AA02 CIVIC SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX020AA01 VERTICAL SERVICES I (UPGRADED BY NTX020AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX020AB03 VERTICAL SERVICES I (UPGRADED BY NTX020AC)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX020AC01 VERTICAL SERVICES I (UPGRADE FROM NTX020AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX021AA04 REMOTE CALL FORWARDING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX020AA01 VERTICAL SERVICES I (UPGRADED BY NTX020AB)  
0 OR NTX020AB03 VERTICAL SERVICES I (UPGRADED BY NTX020AC)  
0 OR NTX020AC01 VERTICAL SERVICES I (UPGRADE FROM NTX020AB)  
0 OR NTX804AA02 OM POLLING & VERTICAL SERVICES(ORDER VIA MP  
0 NTX071BG & UP)

0 NTX022AA03 DYNAMICALLY CONTROLLED ROUTING(DCR/HPR)(UPG.BY NTX022AB)  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX801AA01 TOLL FEATURES I

0 NTX022AB01 DYNAMICALLY CONTROLLED ROUTING(DCR/HPR)(UPG. OF NTX022AA)  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX801AA01 TOLL FEATURES I

0 NTX022AC01 DYNAMICALLY CONTROLLED ROUTING (DCR/HPR) (UPG OF 022AB)  
0 NTXE65AA01 MPC X.25 INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX801AA01 TOLL FEATURES I

0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX024AA01 RLM INTRA-RLM CALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX025AA02 RLM EMERGENCY STAND-ALONE OPERATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX023AB03 REMOTE LINE MODULE (RLM)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX028AA01 DIRECT DIALLING OVERSEAS, LOCAL (CANADA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX029AA01 DIRECT DIALLING OVERSEAS, TOLL (CANADA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I

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## 0 NTX030BA03 TOPS ACD FEATURES

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

## 0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I

## 0 NTX035AA03 TOPS REMOTE CAMA

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

## 0 NTX036AA01 TOPS INWARD VALIDATION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

## 0 NTX039AA01 HOST OC DATA - LINK HANDLING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

## 0 NTX040AA03 COMMON CHANNEL INTEROFFICE SIGNALLING - BASIC

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

## 0 NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP APPLICATION)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

## 0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX043AA03 LOCAL CALL DETAIL RECORDING

0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I

0 NTX045AA01 USAGE SENSITIVE PRICING(USP BELLCORE FORMAT)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX020AA01 VERTICAL SERVICES I (UPGRADED BY NTX020AB)  
0 OR NTX020AB03 VERTICAL SERVICES I (UPGRADED BY NTX020AC)  
0 OR NTX020AC01 VERTICAL SERVICES I (UPGRADE FROM NTX020AB)

0 NTX048AA06 SYNCHRONIZATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX048AB01 SYNCHRONIZATION - CESIUM MASTER CLOCK  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION

0 NTX048BA02 SYNCHRONIZATION - STRATUM 3  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION

0 NTX048CA02 SYNCHRONIZATION - STRATUM 2  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX048AA06 SYNCHRONIZATION

0 NTX049AC01 CIRCLE DIGIT IDENTIFICATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX049AD01 SINGLE PARTY REVERTIVE CALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

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0 NTX049AE01 NORTH ELECTRIC ANI FORMAT GENERATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX049AG01 ITT ANI FORMAT (RECEIPT)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I

0 NTX049AH01 COME AGAIN SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX049AJ01 TOLL TANDEM SERVICES(REP BY NTX192AA AND/OR NTX193AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX049AL01 TIME AND TEMPERATURE ANNOUNCEMENT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX049AM01 PUERTO RICO DIALLING PLAN - LOCAL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX049AP01 PUERTO RICO DIALLING PLAN - TOLL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I

0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX052AB02 REMOTE OFFICE TEST LINE (ROTL)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 Software Features  
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## 0 NTX054AA05 LINE TEST POSITION (LTP)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTX055AA03 TRUNK TEST POSITION (TTP)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX055AB03 TTP-DIGIT VERIFICATION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX055AA03 TRUNK TEST POSITION (TTP)

## 0 NTX055AC02 TTP-TRANSMISSION MEASUREMENT

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX055AA03 TRUNK TEST POSITION (TTP)

## 0 NTX055BA01 RONI TRUNK TESTING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTX056AA05 ENHANCED ADMINISTRATION

0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

## 0 NTX057BA01 CUTOVER ASSISTANCE III (NON RESIDENT)

0 NTX057AB05 CUTOVER ASSISTANCE II (NON RESIDENT)

## 0 NTX058AD02 POLLING OMS DATA VIA DATAPAC (REP. BY NTX059AB FROM BCS20)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX059AB04 POLLING OM &amp; AUT.MSG ACCTG.DATA VIA DATAPAC(UPG.OF NTX058AD

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX060AA02 NETWORK MANAGEMENT - ENHANCED (REP. BY NTX060BA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX060AB11 NETWORK MANAGEMENT

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## 0 NTX060AB11 NETWORK MANAGEMENT

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX060AE03 NETWORK MANAGEMENT - ENHANCED(UPGRADED BY NTX060BA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX060AB11 NETWORK MANAGEMENT

## 0 NTX060BA02 NETWORK MANAGEMENT - ENHANCED( REPL. BY NTX060BB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX060AB11 NETWORK MANAGEMENT

## 0 NTX060BB01 NETWORK MANAGEMENT - ENHANCED

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX060AB11 NETWORK MANAGEMENT

## 0 NTX061AA01 CIRCUIT SWITCHED DIGITAL DATA SERVICE I

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX063AA02 ECHO SUPPRESSOR

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I

## 0 NTX065AA12 SERVICE ANALYSIS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX066AA02 BILINGUAL INTERFACE(UPG BY. NTX066AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX066AB01 BILINGUAL INTERFACE(UPG FR. NTX066AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX070AB02 AUTOVON - ASSISTANCE OPERATOR SYSTEM

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND ACCESS LINE

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0 INTERFACE  
0 NTX801AA01 TOLL FEATURES I

0 NTX070AD01 AUTOVON - AUTOMATIC SERVICE OBSERVING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND ACCESS LINE  
0 INTERFACE  
0 NTX801AA01 TOLL FEATURES I

0 NTX070AE01 AUTOVON - TRAFFIC SURVEILLANCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND ACCESS LINE  
0 INTERFACE  
0 NTX801AA01 TOLL FEATURES I

0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE DIALLING (IDDD)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX074AA09 DISK DATA STORAGE SYSTEM  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTX076AA01 AMA - ENHANCED  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX077AA01 ONLINE PERIPHERAL SOFTWARE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX080AA02 LAMA ENHANCED  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX080BA01 TERMINATING CALL BILLING(NT FORMAT)  
0 NTX000AA19 BILGE



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0 93 12 030 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX901AA24 LOCAL FEATURES I0 NTX080CA01 TERMINATING CALL BILLING(ATT FORMAT) (REP.BY NTX083AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I0 NTX082AA01 SUBSCRIBER LINE MEASUREMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I0 NTX082AB01 SUBSCRIBER LINE USAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I0 NTX083AA01 FEATURE GROUP A  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX901AA24 LOCAL FEATURES I0 NTX085AA05 TRAFFIC SEPARATION PEG COUNT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX087AA04 TRAFFIC SEPARATION USAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX088AA04 TRAFFIC SEPARATION REPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE0 NTX089AA01 ENHANCED COIN SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX090AA01 COIN SERVICES  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX160AA06 MULTIUNIT MESSAGE RATE SERVICES  
0 NTX901AA24 LOCAL FEATURES I

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0 NTX090AA01 COIN SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX093AA01 REMOTE/TOLL CALL FORWARDING-TOPS OFFICE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTX094AA01 DIGITAL SUBSCRIBER SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX096AA01 TOPS NOTIS FORMAT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX801AA01 TOLL FEATURES I

0 NTX099AA01 OPERATIONAL MEASUREMENTS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 93 12 030 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX103AA12 IBN - SMDR ENHANCED

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX055AB03 TTP-DIGIT VERIFICATION  
0 OR NTX980AA01 INTERNATIONAL TRUNK TST POSITION (ITTP)

## 0 NTX103BA02 IBN STATION SPECIFIC AUTHORIZATION CODES

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX105AA03 TRUNK QUEUING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTX108AA05 IBN - DISPLAY FEATURES

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTX110AA01 IBN - HOSPITAL

0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX111AA03 IBN - LARGE CONFERENCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX112AA01 IBN-VIRTUAL FACLT.Y.GRP. FOR INWATS/OUTWATS(UPG. BY NTX112AB  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX112AB03 IBN - VIRTUAL FACILITY GROUPS (UPG FROM NTX112AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX113AA01 IBN - AUTOVON INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX901AA24 LOCAL FEATURES I

0 NTX114AA01 IBN - GOVERNMENT OF CANADA FEATURES (REPLACED BY NTX410AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX120AA01 OFFICE HARDWARE INVENTORY PACKAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 93 12 030 NTX121AA01 OVERLAP OUTPUTSING (TRK TO TRK)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX122AA02 OM - CALL ATTEMPTS SUMMARY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX127AA01 WARM LINE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I0 NTX128AA01 ENHANCED ADMINISTRATION II(REPKGED TO NTX901AA AND NTX074AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX129AA02 TWO WAY OPERATOR OFFICE TRUNK  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I0 NTX131AA01 AUXILIARY OPERATOR SERVICES SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX134BA02 REMOTE OPERATOR CENTRALIZATION DATA LINK HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I0 NTX136AA03 AUTOMATIC TRANSMISSION MEASURING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX139AA01 REVERTIVE PULSING ON DIGITAL LINES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I0 NTX140AA02 TOPS DIAL UP AUTOQUOTE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I0  
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0 Software Features  
0 Appendix S

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0 NTX141AA01 TOPS CITY ZONE RATING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX143AA02 DS-1 - ESF  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX269AA07 UNIVERSAL TONE RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXN82AB01 RSC ENHANCED ESA (LINES & TRUNKS)(UPG FR  
0 NTXN82AA)  
0 OR NTXQ12AA01 RSC ENHANCED ESA(LINES ONLY)(FOR BCS34  
0 RELEASE)

0 NTX146AA03 REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTX147AA01 OUTSIDE PLANT MODULE MAINTENANCE(UPG. BY NTX147AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX146AA03 REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX147AB01 OUTSIDE PLANT MODULE MAINTENANCE(UPGRADE OF NTX147AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

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0 RELEASE 28.01  
0 93 12 030 EITHER NTX146AA03 REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 OR NTX651AA01 IRLCM0 NTX149AA03 RSC EMERGENCY STAND ALONE OPERATION - LINES  
0 NTXQ12AA01 RSC ENHANCED ESA(LINES ONLY)(FOR BCS34  
0 RELEASE)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I0 NTX149AB03 RSC ESA OPERATION - LINE AND TRUNK  
0 NTXN82AB01 RSC ENHANCED ESA (LINES & TRUNKS)(UPG FR  
0 NTXN82AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX152AA02 RSC TRUNKING (UPG. BY NTX152AB)  
0 OR NTX152AB01 RSC TRUNKING (UPG. OF NTX152AA)0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I0 NTX152AA02 RSC TRUNKING (UPG. BY NTX152AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I0 NTX152AB01 RSC TRUNKING (UPG. OF NTX152AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I0 NTX154AA03 RLCM - EMERGENCY STAND ALONE OPERATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX146AA03 REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX156AA02 INTRA RLCM CALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX146AA03 REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX157AA01 CCIS - INWATS OSO  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE SIGNALLING -  
0 BASIC  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX160AA06 MULTIUNIT MESSAGE RATE SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

0 NTX165AA06 BELLCORE - IBN/ESN DETAIL RECORDING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)



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## 0 NTX169BA01 800 PLUS SOUTHBOUND

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX555AB01 800 PLUS

## 0 NTX170AA01 CALLING CARD VALIDATION/OPERATOR ASSISTED

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE SIGNALLING -  
0 BASIC  
0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX801AA01 TOLL FEATURES I

## 0 NTX174AA03 AIOD(AUTO IDENTIFIED OUTWARD DIALING)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX175AA01 IBN - MULTI BILINGUAL CONSOLE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE DIALLING  
0 (IDDD)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE DIALLING  
0 (IDDD)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX187AA03 TOPS - EQUAL ACCESS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 EITHER NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)

0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT

0 NTX189AA01 SL-100 EQUAL ACCESS ENHANCED  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX190AA01 FEAT GRP B AMA - TANDEM (NT FORMAT)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX801AA01 TOLL FEATURES I

0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX801AA01 TOLL FEATURES I

0 NTX193AA01 4X OPERATION - AMR 5 FORMAT ANI  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX801AA01 TOLL FEATURES I

0 NTX195AA05 MECHANIZED LOOP TESTER (MLT) I/F  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTX196AA02 CALLING NUMBER ANNOUNCEMENT (CNA)  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX197AA01 CCIS DIRECT SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE SIGNALLING -  
0 BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX202AA01 DMS-250 OPERATIONAL MEASUREMENTS ON TAPE  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTX203AA01 DMS-250 104 TESTLINES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX204AA02 CCIS BANDED SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE SIGNALLING -  
0 BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX206AA02 UNAUTHORIZED DIGITONE SERVICE DETECTION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX208AA02 AUTOMATIC COIN TOLL SERVICE(ACTS)(UPG. BY NTX208AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

0 NTX208AB01 AUTOMATIC COIN TOLL SERVICE (ACTS) (UPG OF NTX208AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

0 NTX209AA03 FEATURE GRP B AMA - END OFFICE(ATT FORMAT) UPG.BY NTX209AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

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0 NTX209AB01 FEATURE GRP B AMA - END (ATT FORMAT)(UPG FR.NTX209AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

0 NTX210AA03 NO. 2 SCC INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX211AB01 FEATURE GRP B AMA - TANDEM(ATT FORMAT)(UPG FR.NTX211AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX801AA01 TOLL FEATURES I

0 NTX213AC01 SUBSCRIBER CARRIER MODULE(SCM)(REP. NTX213AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX215AA02 SES NO.2 - INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25

0 NTX219AB03 TEEN SERVICE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

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0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX000AA19 BILGE  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTXG01CA07 DMS-250 PRA (TYPE III)  
0 NTXG06AA02 DMS-250 EIOC MAP IMPLEMENTATION & NODE MTCE  
0 NTX000AA19 BILGE  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX221AB04 DMS-250 CALL DETAIL RECORDING TYPE II  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

0 NTX221BA08 DMS-250 CALL DETAIL RECORDING (TYPE II)  
0 NTX000AA19 BILGE  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTX221CA05 DMS-250 CALL DETAIL RECORDING (TYPE III)  
0 NTX000AA19 BILGE  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTX222AB04 DMS-250 CALL PROCESSING TYPE II  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)  
0 NTX234AB02 DMS-250 AUTHCODES TYPE II  
0 NTX321AA01 DMS-250 GENERIC OFF NET ACCESS TRUNKS  
0 NTX342AA02 DMS-250 EQUAL ACCESS BASE PACKAGE  
0 NTX343AB03 DMS-250 EQUAL ACCESS (TYPE II)

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0 NTX222AM05 DMS-250 CALL PROCESSING TYPE XIII  
0 NTXB56AA01 CDR BILLING ON CENTREX  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX341AM02 DMS-250 TOPS NATIONAL OPERATOR POSITION

0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX234BA01 DMS-250 AUTHCODES (TYPE II)  
0 NTX321BA01 DMS-250 GENERIC OFF NET ACCESS TRUNKS  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE  
0 NTX343BA01 DMS-250 EQUAL ACCESS (TYPE II)

0 NTX222CA09 DMS-250 CALL PROCESSING (TYPE III)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX321CA01 DMS-250 GENERIC OFF NET ACCESS TRUNKS  
0 NTX342CA01 DMS-250 EQUAL ACCESS BASE PACKAGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTX223AA01 DMS-250 ENHANCED KILLER TRUNKS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

0 NTX223CA01 DMS-250 ENHANCED KILLER TRUNKS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX226AA01 DMS-250 ATB BY NPA USING OPERATIONAL MEASUREMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

0 NTX226BA01 DMS-250 ATB BY NPA USING OPERATIONAL MEASUREMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

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0 NTX226CA01 DMS-250 ATB BY NPA USING OPERATIONAL MEASUREMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)0 NTX227AA01 DMS-250 TIME OF DAY ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)0 NTX227BA01 DMS-250 TIME OF DAY ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX227CA01 DMS-250 TIME OF DAY ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX228AA02 DMS-250 DCM CHANNEL UNIT CROSS REFERENCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)0 NTX228BA01 DMS-250 DCM CHANNEL UNIT CROSS REFERENCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX228CA01 DMS-250 DCM CHANNEL UNIT CROSS REFERENCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX229AA01 DMS-250 PRIORITY SCREENING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)0 NTX230AA03 DMS-250 GENERIC SPEED NUMBERS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)0 NTX230BA01 DMS-250 GENERIC SPEED NUMBERS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

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## 0 NTX230CA01 DMS-250 GENERIC SPEED NUMBERS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX222CA09 DMS-250 CALL PROCESSING (TYPE III)

## 0 NTX231AA01 DMS-250 INCOMING EXCLUSION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

## 0 NTX231BA01 DMS-250 INCOMING EXCLUSION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

## 0 NTX231CA01 DMS-250 INCOMING EXCLUSION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX222CA09 DMS-250 CALL PROCESSING (TYPE III)

## 0 NTX232AA01 DMS-250 ATB BY NPA USING LOGS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

## 0 NTX232BA01 DMS-250 ATB BY NPA USING LOGS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

## 0 NTX232CA01 DMS-250 ATB BY NPA USING LOGS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

## 0 NTX233AA01 DMS-250 OFF HOOK QUEUING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

## 0 NTX233BA01 DMS-250 OFF HOOK QUEUING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)



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## 0 NTX233CA01 DMS-250 OFF HOOK QUEUING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

## 0 NTX234AB02 DMS-250 AUTHCODES TYPE II

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

## 0 NTX234BA01 DMS-250 AUTHCODES (TYPE II)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

## 0 NTX234CA01 DMS-250 AUTHCODES (TYPE III) (VARIABLE DIGIT)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX222CA09 DMS-250 CALL PROCESSING (TYPE III)

## 0 NTX235AA02 DMS-250 RESTRICTED USAGE BY DATE AND TIME

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

## 0 NTX235BA02 DMS-250 RESTRICTED USAGE BY DATE AND TIME

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

## 0 NTX235CA01 DMS-250 RESTRICTED USAGE BY DATE AND TIME

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

## 0 NTX236AA01 DMS-250 ALTERNATE TRUNK GROUP TREATMENTS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

## 0 NTX236BA01 DMS-250 ALTERNATE TRUNK GROUP TREATMENTS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

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## 0 NTX236CA01 DMS-250 ALTERNATE TRUNK GROUP TREATMENTS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

## 0 NTX237AA02 DMS-250 NAILED UP CONNECTIONS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX238AA01 DMS-250 CONFERENCE CALLING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

## 0 NTX239AA02 DMS-250 TRANSLATION VERIFICATION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX055AB03 TTP-DIGIT VERIFICATION  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

## 0 NTX239BA02 DMS-250 TRANSLATION VERIFICATION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)  
0 NTX230BA01 DMS-250 GENERIC SPEED NUMBERS

## 0 NTX239CA01 DMS-250 TRANSLATION VERIFICATION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX222CA09 DMS-250 CALL PROCESSING (TYPE III)

## 0 NTX241AA01 ANI ASSIST CAPABILITY

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

## 0 NTX243AA07 AMA TELEPROCESSING SYSTEM(AMATPS)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT

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## 0 NTX244AA02 SEQUENTIAL TRUNK SELECTION(REP.BY NTX244AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF 244AA IN BCS23)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX245AA01 PUERTO RICO LINE OPTION CONTROL

0 NTX000AA19 BILGE  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX043AA03 LOCAL CALL DETAIL RECORDING  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX250AA15 DATAPATH - BASIC

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX251AA06 DATAPATH - MODEM POOLING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX255AA02 DATAPATH PROVISIONING (CANADA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX256AA04 DATAPATH - LOOP EXTENSION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX250AA15 DATAPATH - BASIC

## 0 NTX257AA01 DATAPATH - CLOSED USER GROUPS(CUG)

0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX259AA03 DATAPATH EXTENSION - DPX  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX260AA02 IBN - PRESET CONFERENCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX262AA01 IBN PRIORITY CONSOLE ALERTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX268AA02 FEAT GRP B AMA - END OFFICE (NT FORMAT)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX269AA07 UNIVERSAL TONE RECEIVER(DOMESTIC)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTX272AA02 FOCUSSED MAINTENANCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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## 0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25

0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

## 0 NTX274AA04 DTC 30 CARRIER MAINTENANCE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

## 0 NTX277AA02 DIALABLE LINE CIRCUIT IDENTIFICATION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTX290AA01 TANDEMING/SUPERVISION AND TREATMENT

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX291AA04 ENHANCED REAL TIME INDICATOR

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX292AA01 ENHANCED SECURITY PACKAGE I

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX292AB04 ENHANCED SECURITY - WITH PASSWORD ENCRYPTION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX292BA03 ENHANCED SECURITY - WITHOUT PASSWORD ENCRYPTION

0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

## 0 NTX293AA02 ENHANCED SECURITY PACKAGE II

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX292AB04 ENHANCED SECURITY - WITH PASSWORD  
0 ENCRYPTION  
0 OR NTX292BA03 ENHANCED SECURITY - WITHOUT PASSWORD  
0 ENCRYPTION

## 0 NTX297AA01 BRIDGES SERVICES

0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX020AA01 VERTICAL SERVICES I (UPGRADED BY NTX020AB)  
0 OR NTX020AB03 VERTICAL SERVICES I (UPGRADED BY NTX020AC)  
0 OR NTX020AC01 VERTICAL SERVICES I (UPGRADE FROM NTX020AB)  
0 OR NTX804AA02 OM POLLING & VERTICAL SERVICES(ORDER VIA MP  
0 NTX071BG & UP)

0 NTX299AA02 SPECIAL SERVICES - SCM(UPG BY NTX299AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX398AA12 SCM - 100S  
0 NTX901AA24 LOCAL FEATURES I

0 NTX299AB01 SPECIAL SERVICES - SCM(UPG OF NTX299AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX398AA12 SCM - 100S  
0 NTX901AA24 LOCAL FEATURES I

0 NTX300AA11 INTERNATIONAL SWITCHING CENTRE (ISC) BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX304AA01 NX64 KBIT/SEC SEMI-PERMANENT CONNECTIONS  
0 NTXK56AA01 PCM30 TIME SLOT FLEXIBILITY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX310AA01 DMS200/300 OPERATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I

0 NTX316AA01 DMS-300 INTERNATIONAL STP (MSB7)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

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0 NTX320AA01 DMS-250 SERVICE ANALYSIS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

0 NTX321AA01 DMS-250 GENERIC OFF NET ACCESS TRUNKS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

0 NTX321BA01 DMS-250 GENERIC OFF NET ACCESS TRUNKS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTX321CA01 DMS-250 GENERIC OFF NET ACCESS TRUNKS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX353CA05 DMS-250 VIRTUAL PRIVATE NETWORK (VNET)

0 NTX322AA18 MTX CALL PROCESSING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXG84AA01 MTX NORTH AMERICAN DIALLING PLAN  
0 OR NTXG85AA01 MTX UNIVERSAL DIALLING PLAN

0 NTX323AA03 MTX DIRECT INWARD MOBILE ACCESS (DIMA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX901AA24 LOCAL FEATURES I

0 NTX324AA02 MTX NONRES UTILITIES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX322AA18 MTX CALL PROCESSING

0 NTX325AA03 MTX VERTICAL FEATURES I  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX322AA18 MTX CALL PROCESSING  
0 NTX901AA24 LOCAL FEATURES I

0 NTX340AA02 DMS-250 ADAPTIVE ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

0 NTX340BA01 DMS-250 ADAPTIVE ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

0 NTX340CA01 DMS-250 ADAPTIVE ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTX341AA05 DMS-250 TOPS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)

0 NTX341AM02 DMS-250 TOPS NATIONAL OPERATOR POSITION  
0 NTXB56AA01 CDR BILLING ON CENTREX  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)  
0 NTX222AM05 DMS-250 CALL PROCESSING TYPE XIII

0 NTX341BA01 DMS-250 OPERATOR SERVICES  
0 NTXG12AA06 DMS-250 EOPS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTX341CA01 DMS-250 TOPS  
0 NTXG12CA06 DMS-250 EOPS (TYPE III)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC



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0 93 12 030 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX222CA09 DMS-250 CALL PROCESSING (TYPE III)0 NTX342AA02 DMS-250 EQUAL ACCESS BASE PACKAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )0 NTX342CA01 DMS-250 EQUAL ACCESS BASE PACKAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX353CA05 DMS-250 VIRTUAL PRIVATE NETWORK (VNET)0 NTX343AB03 DMS-250 EQUAL ACCESS (TYPE II)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)  
0 NTX342AA02 DMS-250 EQUAL ACCESS BASE PACKAGE0 NTX343BA01 DMS-250 EQUAL ACCESS (TYPE II)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE0 NTX343CA02 DMS-250 EQUAL ACCESS (TYPE III)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX342CA01 DMS-250 EQUAL ACCESS BASE PACKAGE0 NTX344CA06 DMS-250 NEMAS  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTX000AA19 BILGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

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0 NTX345CA04 DMS-250 MCCA (CALLING CARD)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX353CA05 DMS-250 VIRTUAL PRIVATE NETWORK (VNET)

0 NTX346BA01 DMS-250 INTRA-LATA INTRA-STATE SCREENING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE

0 NTX346CA01 DMS-250 INTRA-LATA INTRA-STATE SCREENING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX342CA01 DMS-250 EQUAL ACCESS BASE PACKAGE

0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTX348AA01 DMS-250 VIRTUAL NETWORKING - DATAPATH/MULTIFUNCTION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX430AA02 ESN

0 NTX349CA02 DMS-250 CAMA TRUNK GROUP CALL PROCESSING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX222CA09 DMS-250 CALL PROCESSING (TYPE III)  
0 NTX353CA05 DMS-250 VIRTUAL PRIVATE NETWORK (VNET)

0 NTX351BA02 DMS-250 AUTOMATIC TRUNK ROUTINING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX222BA07 DMS-250 CALL PROCESSING (TYPE II)

0 NTX351CA02 DMS-250 AUTOMATIC TRUNK ROUTINING  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX222CA09 DMS-250 CALL PROCESSING (TYPE III)

0 NTX353CA05 DMS-250 VIRTUAL PRIVATE NETWORK (VNET)  
0 NTXG06AA02 DMS-250 EIOC MAP IMPLEMENTATION & NODE MTCE  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTXL39AA02 DMS-250 TCAP PROTOCOL TO NCS/DAP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX221CA05 DMS-250 CALL DETAIL RECORDING (TYPE III)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTX354BA01 DMS-250 (AIOD) AUTOMATIC IDENTIFIED OUTWARD DIALING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE

0 NTX358BA03 DMS-250 CHIPS INTERFACE  
0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTX000AA19 BILGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTX359CA01 DMS-250 SPLASHBACK BY STS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)

0 NTX360AA03 DMS-250 TRAVEL CARD (IN SWITCH TCN DATABASE)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTX360BA02 DMS-250 TRAVEL CARD (IN SWITCH TCN DATABASE)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX365BA03 DMS-250 CCS7 TCAP BASED N00 SERVICE

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0 NTX361BA05 DMS-250 CCS7 IMTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX221BA08 DMS-250 CALL DETAIL RECORDING (TYPE II)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX361CA07 DMS-250 CCS7 IMTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX221CA05 DMS-250 CALL DETAIL RECORDING (TYPE III)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX362AA01 DMS-250 INCOMING EXCLUSION FOR 800 SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220AA13 DMS-250 BASE PACKAGE (TYPE I)  
0 NTX342AA02 DMS-250 EQUAL ACCESS BASE PACKAGE

0 NTX362BA02 DMS-250 INCOMING EXCLUSION FOR 800 SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX342BA01 DMS-250 EQUAL ACCESS BASE PACKAGE

0 NTX363BA01 DMS-250 CAC INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

0 NTX363CA01 DMS-250 CAC INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220CA08 DMS-250 BASE PACKAGE (TYPE III)  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )

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## 0 NTX364BA02 DMS-250 CCS7 TCAP BASED TCN SERVICE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

## 0 NTX365BA03 DMS-250 CCS7 TCAP BASED N00 SERVICE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)

## 0 NTX366BA01 DMS-250 CCS7 TCAP BASED ACCT CODE &amp; PRIV SPEED VALIDATION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

## 0 NTX367BA01 DMS-250 CCS7 TACAP BASED AUTHCODE VALIDATION

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT

## 0 NTX368BA01 DMS-250 MULTIPLE AUTHCODE SETS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX220BA06 DMS-250 BASE PACKAGE (TYPE II)  
0 NTX234BA01 DMS-250 AUTHCODES (TYPE II)

## 0 NTX369AA01 DMS-250 NT40 SUPPORT SYSTEM

0 NTXG13AA01 DMS BASE DATA ACCESS INTERFACE SESSION  
0 (DAIS)  
0 NTX000AA19 BILGE  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

## 0 NTX376AA05 MTX NETWORK MESSAGING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX325AA03 MTX VERTICAL FEATURES I  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX901AA24 LOCAL FEATURES I

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## 0 NTX376AB01 MTX IS41+ NETWORKING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX322AA18 MTX CALL PROCESSING  
0 NTX325AA03 MTX VERTICAL FEATURES I  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX380AA02 DUAL RCC

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX150AA04 RSC - INTRA RSC CALLING  
0 NTX269AA07 UNIVERSAL TONE RECEIVER(DOMESTIC)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX381AA01 RSC - REMOTE - OFF REMOTE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX146AA03 REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 OR NTX147AA01 OUTSIDE PLANT MODULE MAINTENANCE(UPG. BY  
0 NTX147AB)  
0 OR NTX147AB01 OUTSIDE PLANT MODULE MAINTENANCE(UPGRADE OF  
0 NTX147AA)

## 0 NTX385AA01 OM THRESHOLDING AND ALARMS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX290AA01 TANDEMING/SUPERVISION AND TREATMENT  
0 NTX801AA01 TOLL FEATURES I

## 0 NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX098AA07 BELLCORE CAMA FORMAT

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0 93 12 030 NTX290AA01 TANDEMING/SUPERVISION AND TREATMENT  
0 NTX801AA01 TOLL FEATURES I0 NTX387AB04 SMU - SUBSCRIBER MODULE URBAN ( REP NTX387AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I0 NTX387AC02 SMU - SUBSCRIBER MODULE URBAN(UPG.FR NTX387AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I0 NTX394AA01 TOPS - CREDIT CARD DIGIT CHECK  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I0 NTX395AA01 REMOTE MAKE BUZY VIA SCAN POINT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX398AA12 SCM - 100S  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I0 NTX399AA01 IBN/ESB COMPATIBILITY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX019AA02 CIVIC SERVICES  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

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## 0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE MEASUREMENTS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX411AA01 IBN - VOICE MESSAGING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX412AA01 IBN - CUSTOMER STATION CHANGE(REP. BY NTX412CA IN BCS31)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX412BA01 IBN - CUSTOMER STATION CHANGE(REP. BY NTX412CA IN BCS31)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX412CA04 IBN - CUSTOMER DATA CHANGE(UPG. BY NTX412CB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX412CB01 IBN - CUSTOMER DATA CHANGE (UPG. OF NTX412CA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX413AB01 IBN - ENHANCED CALL FORWARDING(UPGR. OF NTX413AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX414AA01 IBN - DIRECTED CALL PARK, BUSINESS SET AND 2500 SET

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)



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0 NTX901AA24 LOCAL FEATURES I

## 0 NTX415AA07 ACD BASIC

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX416AF01 ACD ENHANCED II (UPG. BY NTX416AG)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)

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0 93 12 030 NTX415AA07 ACD BASIC  
0 NTX901AA24 LOCAL FEATURES I0 NTX416AG01 ACD ENHANCED II(UPG. OF NTX416AF)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I0 NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I0 NTX416AI01 ACD ENHANCED II(UPG. OF NTX416AH)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)0 NTX416AJ01 ACD ENHANCED II (UPG. OF NTX416AI)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

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0 NTX416AK01 ACD ENHANCED II (UPG. OF NTX416AI) (UPG OF NTX416AJ)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTX417AA03 ACD MANAGEMENT REPORT DATA STREAM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)  
0 OR NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)  
0 OR NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)  
0 OR NTX416AF01 ACD ENHANCED II (UPG. BY NTX416AG)  
0 OR NTX416AG01 ACD ENHANCED II(UPG. OF NTX416AF)  
0 OR NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)  
0 OR NTX416AI01 ACD ENHANCED II(UPG. OF NTX416AH)  
0 OR NTX416AJ01 ACD ENHANCED II (UPG. OF NTX416AI)

0 NTX418AA01 IBN\_SERVICE ANALYSIS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX065AA12 SERVICE ANALYSIS  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX419AA01 MACD PIN CONFIGURATION AND CONTROL  
0 EITHER NTX416AI01 ACD ENHANCED II(UPG. OF NTX416AH)  
0 OR NTX416AJ01 ACD ENHANCED II (UPG. OF NTX416AI)

0 NTX420AA01 MACD NODAL SERVICE OBSERVING  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)  
0 OR NTX416AI01 ACD ENHANCED II(UPG. OF NTX416AH)

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0 OR NTX416AJ01 ACD ENHANCED II (UPG. OF NTX416AI)  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTX426AA02 ASYNCHRONOUS INTERFACE LINE CARD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX427AA04 END USER TESTING OF TRUNKS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTX292AB04 ENHANCED SECURITY - WITH PASSWORD  
0 ENCRYPTION  
0 OR NTX292BA03 ENHANCED SECURITY - WITHOUT PASSWORD  
0 ENCRYPTION  
0 EITHER NTX412BA01 IBN - CUSTOMER STATION CHANGE(REP. BY  
0 NTX412CA IN BCS31)  
0 OR NTX412CA04 IBN - CUSTOMER DATA CHANGE(UPG. BY  
0 NTX412CB)  
0 OR NTX412CB01 IBN - CUSTOMER DATA CHANGE (UPG. OF  
0 NTX412CA)

0 NTX430AA02 ESN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX431AA03 IBN - CUT THROUGH DIALING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX432AA01 NETWORK SPEED CALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

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0 NTX433AA01 TIME OF DAY ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I0 NTX434AA01 TIME OF DAY NCOS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I0 NTX435AA03 IBN SUPERSET  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I0 NTX436AA01 IBN ENHANCED DIAL PLAN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I0 NTX437AA01 RANDOM CONDITIONAL ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX441AA01 ANI SECURITY PACKAGE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX445AA01 O.M. SELECTIVE OUTPUT(UPGRADED BY NTX445AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC0 NTX445AB01 O.M. SELECTIVE OUTPUT (UPGRADE OF NTX445AA)  
0 NTX000AA19 BILGE  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC0 NTX447AA01 E911 - TANDEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX007AA02 PBX INTERFACE I(REP.BY NTX007AB)  
0 OR NTX007AB02 PBX INTERFACE I (UPGRADE OF NTX007AA)  
0 EITHER NTX877AA01 INTERFACE TO NON-DATA LINK CONSOLE(UPG. BY  
0 NTX877AB)  
0 OR NTX877AB01 INTERFACE TO NON-DATA LINK CONSOLE(UPG. OF  
0 NTX877AA)  
0 EITHER NTX387AB04 SMU - SUBSCRIBER MODULE URBAN ( REP  
0 NTX387AA)  
0 OR NTX387AC02 SMU - SUBSCRIBER MODULE URBAN(UPG.FR  
0 NTX387AB)  
0 OR NTX387AD01 SMU AND ISDN/MBS SMU

## 0 NTX451AA02 E-911 DATABASE

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXF61AA02 DMS INTEGRATED E911 PSAP FUNCTIONALITY  
0 OR NTX447AA01 E911 - TANDEM  
0 EITHER NTX877AA01 INTERFACE TO NON-DATA LINK CONSOLE(UPG. BY  
0 NTX877AB)  
0 OR NTX877AB01 INTERFACE TO NON-DATA LINK CONSOLE(UPG. OF  
0 NTX877AA)

## 0 NTX455AA01 1A EADAS NETWORK MANAGEMENT(UPG. BY NTX455AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)  
0 OR NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I

## 0 NTX455AB01 1A EADAS NETWORK MANAGEMENT (UPG. OF NTX455AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX060AB11 NETWORK MANAGEMENT  
0 NTX218AA03 1A/1B EADAS INTERFACE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)

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0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)  
0 OR NTX386AA04 ACCESS TANDEM SWITCH (UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)  
0 EITHER NTX060BA02 NETWORK MANAGEMENT - ENHANCED (REPL. BY  
0 NTX060BB)  
0 OR NTX060BB01 NETWORK MANAGEMENT - ENHANCED  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX471AA01 A-LAW COMPANDING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY NTX472AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

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0 NTX475AA01 TURKISH TRK TRANSMN TESTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX476AA01 WINK-1 LINE SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE

0 NTX477AA04 DELAY DIAL-1 SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE

0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND MAINTENANCE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXG60AA02 DMS-250 INTERNATIONAL CP CORE (IDC)  
0 OR NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX479AA03 INTL UNIV TONE RCVR SUPPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXG60AA02 DMS-250 INTERNATIONAL CP CORE (IDC)  
0 OR NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX480AA02 TURKISH TONE PLAN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE

0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC



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0 93 12 030 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE

0 NTX482AB03 TURKISH LINE CARD DIAGNOSTICS(REP. NTX482AA)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST POSITION (ITTP)  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)  
0 OR NTX981AA01 INTERNATIONAL LINE TEST  
0 POSITION(ILTP)(REP.BY NTX472AB)

0 NTX482BA02 CEP LINE CARD DIAGNOSTICS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX980AA01 INTERNATIONAL TRUNK TST POSITION (ITTP)  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTX482CA03 CHINA LINE CARD DIAGNOSTICS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTX482DA02 AUSTRALIA LINE CARD DIAGNOSTICS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX483AA03 INTERNATIONAL 101 COMMUNICATION TEST LINE(UPG.BY NTX483AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

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0 NTX483AB01 INTERNATIONAL 101 COMMUNICATION TEST LINE(UPG.FR. NTX483AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX484AA01 MALICIOUS CALL TRACE - INTL TOLL/TRANSIT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) - BASIC

0 NTX485AA03 INTL - CALL PROCESSING SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX486AA01 MF-3 REGISTER SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX487AA03 MALICIOUS CALL TRACE - INTL LOCAL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX484AA01 MALICIOUS CALL TRACE - INTL TOLL/TRANSIT  
0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) - BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) LOCAL  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTX488AA01 INTERNATIONAL TIME OF DAY ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXB57AA02 OPEN NUMBER TRANSLATIONS  
0 OR NTXG60AA02 DMS-250 INTERNATIONAL CP CORE (IDC)  
0 OR NTX470AA13 INTERNATIONAL - COMMON BASIC

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## 0 NTX489AA01 VISA SWITCHBOARD INTERFACE(TURKEY)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX481AA02 TURKISH OPERATOR SWITCHBOARD SIGNALLING

## 0 NTX492AA03 OPERATOR TOLL BREAK-IN

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) - BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

## 0 NTX493AA01 ADMINISTRATIVE CALL DIVERSION FEATURES

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) - BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) LOCAL  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

## 0 NTX494AA03 AUTOMATIC CALL RECORDING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

## 0 NTX495AA01 TS16 SIGNALLING FOR LD

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

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0 NTX496AA03 GATEWAY ACCESS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX498AA01 CEP CALL RECORDING(REP.BY NTX494AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTX499AA10 CEPT SUBSCRIBER SERVICES - I  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX494AA03 AUTOMATIC CALL RECORDING  
0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) - BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) LOCAL  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

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0 NTX552AB03 CUSTOM CHARGE CALLING(CCC)(UPG. BY NTX552AC)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX801AA01 TOLL FEATURES I

0 NTX552AC02 CUSTOM CHARGE CALLING(CCC)(UPG. FR NTX552AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX801AA01 TOLL FEATURES I

0 NTX552AD01 CUSTOM CHARGE CALLING (UPGRADE OF NTX552AC)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX801AA01 TOLL FEATURES I  
0 NTX825AB01 EXCHANGE ALTERNATE BILLING SERVICE(UPG OF  
0 NTX825AA IN BCS34

0 NTX554AA02 CCS7 - E800/SSP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX555AB01 800 PLUS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX558AA01 CCC END OFFICE DP/DTMF GENERATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

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0 NTX559AA01 CCC SSP DP/DTMF SEPARATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25

0 NTX562AA03 NOS - DATA COLLECTION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)

0 NTX563AA05 BNM - STATION ADMINISTRATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX812AA03 CENTRALIZED MAP

0 NTX571AA01 IBN - DIRECTED CALL PARK, 2500 SET ONLY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX573AA01 IBN SECURITY CODE - 2500 ONLY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX574AA01 IBN SECURITY CODE - 2500 AND BUSINESS SETS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I

0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX701BA08 AUTOVON BASIC FEATURES

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0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I

0 NTX601CA03 SCOPE-DIAL INTERSWITCH - PBX  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I

0 NTX605AA01 DUAL FUNCTION CAPABILITY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX601CA03 SCOPE-DIAL INTERSWITCH - PBX  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND ACCESS LINE  
0 INTERFACE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I

0 NTX607AA04 PBX ACCESS TO AUTOVON  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I

0 NTX610AA03 SCOPEDIAL - OVERSEAS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX701BA08 AUTOVON BASIC FEATURES

0 NTX611AA07 UK BUSINESS FEATURES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

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0 NTX612AA04 SCOPE DIAL - SPAIN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX601CA03 SCOPE-DIAL INTERSWITCH - PBX  
0 NTX605AA01 DUAL FUNCTION CAPABILITY  
0 NTX611AA07 UK BUSINESS FEATURES  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND ACCESS LINE  
0 INTERFACE  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I

0 NTX621AB02 SMU SPECIAL SERVICES(REP NTX621AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX387AB04 SMU - SUBSCRIBER MODULE URBAN ( REP  
0 NTX387AA)  
0 OR NTX387AC02 SMU - SUBSCRIBER MODULE URBAN(UPG.FR  
0 NTX387AB)  
0 OR NTX387AD01 SMU AND ISDN/MBS SMU

0 NTX622AA01 CONVERTIBLE RLCM - BASIC FEATURES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX146AA03 REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX640AA06 DIGITAL PHONE M2000-BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX640AB04 DIGITAL PHONE M2000 - BASIC (UPG.OF NTX640AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC



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0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX641AA01 DIGITAL TELEPHONES M2000 DISPLAY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX642AA03 DIGITAL TELEPHONES M3000  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX645AA01 TOPS - SERVICE BILLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTX650AA02 TS16 SIGNALLING FOR R1  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE

0 NTX651AA01 IRLCM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) - BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE PROCESSING

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0 ENVIRONMENT (FPE) LOCAL  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTX652AA02 INTRASWITCHING ON THE IRLCM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX651AA01 IRLCM  
0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) - BASIC  
0 NTX661AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) LOCAL  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTX653AA01 IRLCM - EMERGENCY STAND ALONE (ESA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTX655AA01 E & M SIGNALLING IN TS16  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE

0 NTX656AA01 CEP TONE PLAN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

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0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTX657AA01 INTERNATIONAL CAMA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX658AA02 MCL DMS-300 (A-LAW) SIGNALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE

0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING ENVIRONMENT (FPE) - BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX661AA01 INTERNATIONAL FEATURE PROCESSING ENVIRONMENT (FPE) LOCAL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX474AA07 INTERNATIONAL BASE METERING  
0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) - BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

0 NTX662AA01 EMERGENCY CUT-OFF  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC (UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)

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0 NTX663AA03 FAULTSMAN RINGBACK(ALL FEATURES MOVED TO NTX499AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX660AA01 INTERNATIONAL FEATURE PROCESSING  
0 ENVIRONMENT (FPE) - BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)  
  
0 NTX664AA02 OMS IN ERLANGS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS - BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
  
0 NTX666AA02 SEMI-PERMANENT CONNECTIONS - LOCAL  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX665AA02 SEMI-PERMANENT CONNECTIONS - BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX472AA03 INTERNATIONAL - LOCAL BASIC(UPGRADED BY  
0 NTX472AB)  
0 OR NTX472AB08 INTERNATIONAL - LOCAL BASIC (UPGR NTX472AA)  
  
0 NTX667AA01 PRINTED METER CHECK  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX478AA04 CCITT PCM (30+2) DIGITAL SIGNALLING AND  
0 MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX494AA03 AUTOMATIC CALL RECORDING  
0 OR NTX498AA01 CEP CALL RECORDING(REP.BY NTX494AA)

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0 NTX668AA01 INSERT TONE ON COIN PHONE TERMINATION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX669AA01 INTERNATIONAL NETWORK MANAGEMENT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX676AA01 TOPS - AUTOMATED BILLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX801AA01 TOLL FEATURES I

0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX801AA01 TOLL FEATURES I

0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND ACCESS LINE INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX801AA01 TOLL FEATURES I

0 NTX705AA01 AUTOVON OM SEPARATION  
0 NTX001AA29 COMMON BASIC  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 EITHER NTX701CA07 AUTOVON INTERSWITCH PBX  
0 OR NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND ACCESS LINE  
0 INTERFACE

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0 NTX707AA03 AUTOVON CCS7 BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX801AA01 TOLL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE DIALLING  
0 (IDDD)  
0 NTX801AA01 TOLL FEATURES I  
0 EITHER NTX187AA03 TOPS - EQUAL ACCESS  
0 OR NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)

0 NTX710AB01 INTERCHANGEABLE NPAS FOR LEAS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE DIALLING  
0 (IDDD)  
0 NTX801AA01 TOLL FEATURES I  
0 EITHER NTX187AA03 TOPS - EQUAL ACCESS  
0 OR NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)

0 NTX711AB02 EQUAL ACCESS END OFFICE ENHANCEMENTS (UPG. OF NTX711AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)

0 NTX712AA01 CCS7 DATA PORT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX713AA01 LATA-WIDE CENTREX BILLING  
0 NTX000AA19 BILGE

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0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX165AA06 BELLCORE - IBN/ESN DETAIL RECORDING  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT  
0 EITHER NTX112AA01 IBN-VIRTUAL FACILITY.GRP. FOR INWATS/  
0 OUTWATS(UPG. BY NTX112AB  
0 OR NTX112AB03 IBN - VIRTUAL FACILITY GROUPS (UPG FROM  
0 NTX112AA)

0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX187AA03 TOPS - EQUAL ACCESS

0 NTX715AA02 DSN 2-WIRE PREEMPTION(UPG. BY NTX715AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I

0 NTX715AB01 DSN 2-WIRE PREEMPTION(UPG. FR NTX715AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX601BA06 SCOPE-DIAL BASIC FEATURES  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX801AA01 TOLL FEATURES I  
0 NTX901AA24 LOCAL FEATURES I

0 NTX716AA05 DSN NETWORK MANAGEMENT ENHANCEMENT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX347AA06 DMS BASE DATA COMMUNICATION CC SOFTWARE )  
0 NTX701BA08 AUTOVON BASIC FEATURES  
0 NTX701CA07 AUTOVON INTERSWITCH PBX  
0 NTX701DA03 AUTOVON 4-WIRE SUBSCRIBER AND ACCESS LINE  
0 INTERFACE  
0 NTX801AA01 TOLL FEATURES I

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0 NTX717AA01 IBN TRK VERIFICATION DESIGNATED STN(UPG. BY NTX717AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I0 NTX717AB01 IBN TRK VERIFICATION DESIGNATED STN(UPGR.OF NTX717AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I0 NTX719AA01 BUSINESS SET BUSY INDICATOR  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX901AA24 LOCAL FEATURES I0 NTX720AA01 AOSS VR CALL HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX131AA01 AUXILIARY OPERATOR SERVICES SYSTEM  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX892AA04 MPC MULTILINK MANAGEMENT0 NTX721AA01 INTERNAL ANNOUNCEMENT RESPONSE CAPABILITY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX131AA01 AUXILIARY OPERATOR SERVICES SYSTEM  
0 NTX720AA01 AOSS VR CALL HANDLING0 NTX722AA01 AOSS/VR CCI PROTOCOL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX131AA01 AUXILIARY OPERATOR SERVICES SYSTEM  
0 NTX720AA01 AOSS VR CALL HANDLING0 NTX723AA01 AOSS VOICE RESPONSE HANDLING OF IBM PROTOCOL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX131AA01 AUXILIARY OPERATOR SERVICES SYSTEM  
0 NTX720AA01 AOSS VR CALL HANDLING0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA MP NTX704,706,708 OR 709)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC



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0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX801AA01 TOLL FEATURES I

## 0 NTX725AA03 REMOTE DLM WITH M2000

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX640AA06 DIGITAL PHONE M2000-BASIC  
0 OR NTX640AB04 DIGITAL PHONE M2000 - BASIC (UPG.OF  
0 NTX640AA)

## 0 NTX726AA02 RSC DLM MERIDIAN DIGITAL SETS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX145AA06 REMOTE SWITCHING CENTER  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX640AA06 DIGITAL PHONE M2000-BASIC  
0 OR NTX640AB04 DIGITAL PHONE M2000 - BASIC (UPG.OF  
0 NTX640AA)

## 0 NTX727AA02 ACD LOAD MANAGEMENT(UPG BY NTX727AC)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)  
0 OR NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)  
0 OR NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)  
0 OR NTX416AF01 ACD ENHANCED II (UPG. BY NTX416AG)  
0 OR NTX416AG01 ACD ENHANCED II(UPG. OF NTX416AF)  
0 OR NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)

## 0 NTX727AC01 ACD LOAD MANAGEMENT(UPG BY NTX727AD)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)

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0 NTX415AA07 ACD BASIC  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)  
0 OR NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)  
0 OR NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)  
0 OR NTX416AF01 ACD ENHANCED II (UPG. BY NTX416AG)  
0 OR NTX416AG01 ACD ENHANCED II(UPG. OF NTX416AF)  
0 OR NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)

0 NTX727AD01 ACD - LOAD MANAGEMENT III  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 EITHER NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)  
0 OR NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)  
0 OR NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)  
0 OR NTX416AF01 ACD ENHANCED II (UPG. BY NTX416AG)  
0 OR NTX416AG01 ACD ENHANCED II(UPG. OF NTX416AF)  
0 OR NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)  
0 OR NTX416AI01 ACD ENHANCED II(UPG. OF NTX416AH)  
0 OR NTX416AJ01 ACD ENHANCED II (UPG. OF NTX416AI)  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTX728AA02 SMDR DATA ACCESS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER

0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX731AA06 TOPS MP - TERMINAL HANDLER(ORDER VIA MP NTX704)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

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0 NTX732AA06 SIMPLIFIED MESSAGE DESK INTERFACE(SMDI)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX730AA02 MULTILINK ASCII DEVICE DRIVER  
0 NTX901AA24 LOCAL FEATURES I

0 NTX733AA02 ENHANCED SERVICE ORDER( UPG. BY NTX733AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX733AB02 ENHANCED SERVICE ORDER(UPG. BY NTX733AC)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX733AC01 ENHANCED SERVICE ORDER(UPG. OF NTX733AB IN BCS26)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX733AD01 ENHANCED SERVICE ORDER(UPG.BY NTX733AE)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX733AE01 ENHANCED SERVICE ORDER(UPG.OF NTX733AD IN BCS29)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX734AA01 EAEO - IBN PIC USING SERVORD  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)

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0 NTX735AA01 FLEXIBLE ANI  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX737AA02 FLEXIBLE BELLCORE AMA(UPG.BY NTX737AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT

0 NTX737AB02 FLEXIBLE BELLCORE AMA (UPG. OF NTX737AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT

0 NTX738AB02 SWITCH PERFORMANCE MONITORING SYSTEM (UPGRADE OF NTX738AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX738AC02 SWITCH PERFORMANCE MONITORING SYSTEM (UPG NTX738AB V.O.30)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)  
0 NTXR34AB01 XPM PLUS (PRODUCT LINE UPGRADE STRATEGY)  
0 BASIC  
0 NTXR42AA01 FIRMWARE DOWNLOADING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES

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0 93 12 030 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I0 NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE SERVICES(UPG BY NTX753AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB)0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES (UPG OF NTX753AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB)  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)0 NTX754AA02 ISDN ELECTRONIC KEY TELEPHONE SERVICE(UPG BY NTX754AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB)  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)0 NTX754AB02 ISDN ELECTRONIC KEY TELEPHONE SERVICE (UPG OF NTX754AA) (UP  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

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0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTX755AA01 ISDN SUPPLEMENTARY SERVICES COMPLIANCE(UPG. BY NTX755AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)

0 NTX755AB01 ISDN SUPPLEMENTARY SERVICES COMPLIANCE(UPG.FR.NTX755AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)

0 NTX755AC01 ISDN SUPPLEMENTARY SERVICES COMPLIANCE(UPG.FR. NTX755AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

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0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTX756AA01 ISDN ENHANCED DISPLAY SERVICES  
0 NTX001AA29 COMMON BASIC  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF NTX946AA IN  
0 BCS26)

0 NTX757AA02 TR444 ISUP INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 OR NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX761AA01 CLASS ON ISDN  
0 NTXE56AA02 CLASS SCREENING LIST EDITING  
0 NTXF72AB01 CLASS ON MBS (UPG OF NTXF72AA)  
0 NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)

0 NTX767AA03 TR-448 ISDN DIGIT ANALYSIS COMPLIANCE- END OFFICE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)

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0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX768AA02 TR-448 ISDN DIGIT ANALYSIS COMPLIANCE - TOLL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX801AA01 TOLL FEATURES I

0 NTX769AA01 TR444 ISUP INTERWORKING - TOLL OFFICE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX801AA01 TOLL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR. NTX790AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)  
0 EITHER NTX244AA02 SEQUENTIAL TRUNK SELECTION(REP.BY NTX244AB)  
0 OR NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)

0 NTX791AA02 ISDN PRA: NETWORK RING AGAIN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I



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0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTX792AA01 ISDN PRA: NETWORK NAME DISPLAY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF NTX946AA IN  
0 BCS26)  
0 EITHER NTX244AA02 SEQUENTIAL TRUNK SELECTION(REP.BY NTX244AB)  
0 OR NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTX793AA03 PRA INTEGRATED SERVICES ACCESS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTX794AA01 PRA CCS7 INTERWORKING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX244AA02 SEQUENTIAL TRUNK SELECTION(REP.BY NTX244AB)  
0 OR NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)

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0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTX795AA01 INFO+ ENHANCED NUMBER DELIVERY- PRIMARY RATE INTERFACE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 LOCAL FEATURES I  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTX796AA01 INFO+ ENHANCED NUMBER DELIVERY- BASIC RATE INTERFACE  
0 NTXE43AA01 TERMINATING BILLING OPTION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT  
0 EITHER NTX753AA06 ISDN FUNCTIONAL MODE BASIC RATE  
0 SERVICES(UPG BY NTX753AB)  
0 OR NTX753AB01 ISDN FUNCTIONAL MODE BASIC RATE SERVICES  
0 (UPG OF NTX753AA)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTX797AA01 PRI MESSAGE WAITING INDICATION  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 KBPS CLEAR

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0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX244AA02 SEQUENTIAL TRUNK SELECTION(REP.BY NTX244AB)  
0 OR NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTX797AB01 PRI MESSAGE WAITING INDICATION (UPG OF 797AA)  
0 NTXA68AA01 NETWORK MESSAGE SERVICE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX142AA02 DS-1 64 Kbps CLEAR  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX790AC02 ISDN - PRIMARY RATE ACCESS BASE(UPG FR.  
0 NTX790AB)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX244AA02 SEQUENTIAL TRUNK SELECTION(REP.BY NTX244AB)  
0 OR NTX244AB02 ENHANCED SEQUENTIAL TRUNK HUNTING(UPG OF  
0 244AA IN BCS23)  
0 EITHER NTX750AC02 ISDN BASIC ACCESS(UPG. FROM NTX750AB  
0 OR NTX750AD01 ISDN BASIC ACCESS (UPG FROM NTX750AC)

0 NTX801AA01 TOLL FEATURES I  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX802AA04 TOLL FEATURES II  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I

0 NTX803AA02 EQUAL ACCESS ALTERNATE SWITCHING POINT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)  
0 OR NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)

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0 NTX804AA02 OM POLLING & VERTICAL SERVICES(ORDER VIA MP NTX071BG & UP)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX806AA01 ENHANCED CALL FORWARDING - POTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE FROM NTX020AB)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX807AA01 ENHANCED CALL WAITING - POTS( UPG. BY NTX807AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE FROM NTX020AB)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX807AB01 ENHANCED CALL WAITING - POTS(UPG. OF NTX807AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE FROM NTX020AB)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX808AA01 ENHANCED 3-WAY CALLING - POTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX020AC01 VERTICAL SERVICES I (UPGRADE FROM NTX020AB)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX812AA03 CENTRALIZED MAP  
0 NTX001AA29 COMMON BASIC  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)

0 NTX813AA01 CENTRALIZED ALARMS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)

0 NTX817AA01 TRANSLATIONS DATABASE MANAGEMENT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX051AA02 AUTOMATIC TRUNK TESTING  
0 NTX053AA05 MAINTENANCE ASSISTANCE PACKAGE  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX562AA03 NOS - DATA COLLECTION  
0 EITHER NTX058AD02 POLLING OMS DATA VIA DATAPAC (REP. BY

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0 NTX059AB FROM BCS20)  
0 OR NTX059AB04 POLLING OM & AUT.MSG ACCTG.DATA VIA  
0 DATAPAC(UPG.OF NTX058AD  
0 OR NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 OR NTX804AA02 OM POLLING & VERTICAL SERVICES(ORDER VIA MP  
0 NTX071BG & UP)

0 NTX820AA01 ENHANCED 3-WAY CALLING - IBN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTX821AA01 TANDEM OPERATOR SERVICE ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX801AA01 TOLL FEATURES I

0 NTX822AA02 EBS AS MESSAGE CENTRE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX119AA05 IBN-MESSAGE SERVICE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX824AA01 ENHANCED CALL WAITING - IBN( UPG. BY NTX824AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX824AB01 ENHANCED CALL WAITING - IBN(UPGR. OF NTX824AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX825AB01 EXCHANGE ALTERNATE BILLING SERVICE(UPG OF NTX825AA IN BCS34  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX801AA01 TOLL FEATURES I

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0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

## 0 NTX827AA02 NEW PERIPHERALS PERFORMANCE MEASUREMENTS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

## 0 NTX829AA01 INTRALATA PIC FOR LEAS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX044AA04 CENTRAL AUTOMATIC MESSAGE ACCOUNTING (CAMA)  
0 NTX072AA01 INTERNATIONAL DIRECT DISTANCE DIALLING  
0 (IDDD)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX192AA01 4X OPERATION - BELL FORMAT ANI  
0 NTX290AA01 TANDEMING/SUPERVISION AND TREATMENT  
0 NTX710AA02 LATA EQUAL ACCESS SYSTEM  
0 NTX801AA01 TOLL FEATURES I  
0 EITHER NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)

## 0 NTX831AA02 SL1/SL100 DATA INTERWORKING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX250AA15 DATAPATH - BASIC  
0 NTX251AA06 DATAPATH - MODEM POOLING

## 0 NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

0 NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
0 NTXN00AA01 INTEGRATED SSP/STP - SINGLE POINT CODE  
0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXF15AA01 DMS-CORE MC68030 33MHZ PROCESSOR  
0 OR NTXF16AA01 DMS-CORE MC68030 40 MHZ PROCESSOR  
0 OR NTXF70AA01 SUPERNODE SN-20 PROCESSOR  
0 OR NTXF97AA02 BRISC SERIES SUPERNODE BASE

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## 0 NTX835AA03 STP - SEAS (1.1) OPERATIONS

0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON

## 0 NTX836AA01 LPP - V.35 SUBRATE LINKS

0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXN19AA02 LIU7 FOR LPP BASED CCS7 APPLICATIONS  
0 OR NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

## 0 NTX839AB02 LPP - ENHANCED MAINTENANCE AND BERT (REP. NTX839AA)

0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD  
0 MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX950AA06 MS BILGE  
0 NTX951AA08 MS COMMON  
0 EITHER NTXN19AA02 LIU7 FOR LPP BASED CCS7 APPLICATIONS  
0 OR NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

## 0 NTX840AA02 LIU7 GATEWAY MESSAGE SCREENING

0 NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTXN19AA02 LIU7 FOR LPP BASED CCS7 APPLICATIONS  
0 OR NTX833AB01 STP OPERATIONS(UPD OF NTX833AA)

## 0 NTX843AA01 CELLULAR INTERCONNECT

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)

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0 OR NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTX843AB01 CELLULAR INTERCONNECT(UPG. OF NTX843AA IN BCS27)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)  
0 OR NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT  
0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTX850AA01 TOPS ALTERNATE ANNOUNCEMENT  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX187AA03 TOPS - EQUAL ACCESS  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 NTX714AA01 TOPS INTERLATA CARRIER SERVICE  
0 EITHER NTX208AA02 AUTOMATIC COIN TOLL SERVICE(ACTS)(UPG. BY  
0 NTX208AB)  
0 OR NTX208AB01 AUTOMATIC COIN TOLL SERVICE (ACTS) (UPG OF  
0 NTX208AA)  
0 EITHER NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)

0 NTX850AB01 TOPS ALTERNATE ANNOUNCEMENT(UPG.FR.NTX850AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX188AA02 TOPS - BCR AMA FORMAT  
0 EITHER NTX208AB01 AUTOMATIC COIN TOLL SERVICE (ACTS) (UPG OF  
0 NTX208AA)  
0 OR NTX825AB01 EXCHANGE ALTERNATE BILLING SERVICE(UPG OF  
0 NTX825AA IN BCS34

0 NTX851AA01 SMDR DERIVED FROM BCR AMA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)



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0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX901AA24 LOCAL FEATURES I

0 NTX853AA01 IBN ALARM CALL STATUS ON CONSOLES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX856AA02 IBN ATTENDANT CONSOLE OM ON AN INDIVIDUAL CONSOLE BASIS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX410AA02 DYNAMIC ATTENDANT CONSOLE MEASUREMENTS  
0 NTX901AA24 LOCAL FEATURES I

0 NTX871AA01 REMOTE TOPS MP O.C. DATA LINK HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)

0 NTX873AA01 HOST TOPS MP O.C. - DATA LINK HANDLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030BA03 TOPS ACD FEATURES  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX724AA02 TOPS MP INTERFACE (ORDER VIA MP  
0 NTX704,706,708 OR 709)  
0 NTX801AA01 TOLL FEATURES I

0 NTX875AA01 CCS7 MASS TRUNK CONVERSION  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX877AA01 INTERFACE TO NON-DATA LINK CONSOLE(UPG. BY NTX877AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

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0 NTX877AB01 INTERFACE TO NON-DATA LINK CONSOLE(UPG. OF NTX877AA)

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTX901AA24 LOCAL FEATURES I

0 NTX878AB02 ENHANCED ELECTRONIC BUSINESS SET SERVICES(UPG.BY NTX878AC)

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES

0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

0 NTX901AA24 LOCAL FEATURES I

0 NTX878AC01 ENHANCED ELECTRONIC BUSINESS SET SERVICES(UPG. BY NTX878AD)

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 NTX101AA14 IBN - ENHANCED BUSINESS SERVICES

0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

0 NTX901AA24 LOCAL FEATURES I

0 NTX878AD01 ENHANCED ELECTRONIC BUSINESS SET SERVICES(UPG. BY NTX878AE)

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)

0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 EITHER NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)

0 OR NTX101AA14 IBN - ENHANCED BUSINESS SERVICES

0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)

0 OR NTX901AA24 LOCAL FEATURES I

0 NTX878AE01 ENHANCED ELECTRONIC BUSINESS SET SERVICES(UPG. FR. NTX878AD)

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET

0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)

0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)

0 EITHER NTXZ01AA01 ACD SUPPORT SOFTWARE 2 (EQ111)

0 OR NTX101AA14 IBN - ENHANCED BUSINESS SERVICES

0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)

0 OR NTX901AA24 LOCAL FEATURES I

0 NTX881AA01 SWITCH BIT ERROR RATE MAINTENANCE(UPG.BY NTX881AB)

0 NTX000AA19 BILGE

0 NTX001AA29 COMMON BASIC

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0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX881AB02 SWITCH BIT ERROR RATE NTCE(REP. BY NTX881AC)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX881AC03 SWITCH BIT ERROR RATE MAINTENANCE(UPG. OF NTX881AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTX882AA04 BIT ERROR RATIO INDICATOR FOR TOLL SWITCHES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX801AA01 TOLL FEATURES I

0 NTX883AA01 INTER OFFICE TRK BIT ERROR RATE TESTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX881AB02 SWITCH BIT ERROR RATE NTCE(REP. BY  
0 NTX881AC)  
0 OR NTX881AC03 SWITCH BIT ERROR RATE MAINTENANCE(UPG. OF  
0 NTX881AB)  
0 OR NTX882AA04 BIT ERROR RATIO INDICATOR FOR TOLL SWITCHES

0 NTX885AA02 SWITCH PATH DIAGNOSTICS (UPG. BY NTX885AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX885AB04 SWITCH PATH DIAGNOSTICS (UPG. OF NTX885AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX888AA01 EA0SS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)

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0 OR NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)

0 NTX891AA02 TOPS - EXCHANGE ACCESS OPR SERV SIG  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX030CC16 TOPS CALL PROCESSING FEATURES(REP NTX030CB)  
0 NTX098AA07 BELLCORE CAMA FORMAT  
0 NTX187AA03 TOPS - EQUAL ACCESS

0 NTX892AA04 MPC MULTILINK MANAGEMENT  
0 NTX000AA19 BILGE  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 EITHER NTXG21AA06 DMS-250 EIOC BASE PACKAGE  
0 OR NTX001AA29 COMMON BASIC

0 NTX898AA01 VARIABLE SPEED CALL ACCESS CODE - IBN  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX899AA01 CALL TRANSFER ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX901AA24 LOCAL FEATURES I

0 NTX901AA24 LOCAL FEATURES I  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX902AA07 LOCAL FEATURES II  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

0 NTX903AA01 TRANSMISSION MEASUREMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX904AA04 R2 SIGNALLING BASE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

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0 EITHER NTX801AA01 TOLL FEATURES I  
0 OR NTX901AA24 LOCAL FEATURES I

0 NTX909AA01 ANI TOLL  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX056AA05 ENHANCED ADMINISTRATION  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

0 NTX911AA01 3J TYPE II TRUNK AGENCY  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX913AA04 MERCURY CENTREX PCM-30 PERIPHERALS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I

0 NTX925AA01 ISC TIME OF DAY AND PERCENTAGE ROUTING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX936AA01 MULTIPLE POINT CODES FOR MTP(UPG.BY NTX936AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTX936AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTX936AA FOR LPP  
0 APPLICATION)

0 NTX936AB01 MULTIPLE POINT CODES FOR MTP(UPG. FR NTX936AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 EITHER NTX936AB01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTX936AA FOR LPP  
0 APPLICATION)

0 NTX937AA06 BT #7 TUP(DMS-100)(UPG. BY NTX937AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

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0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX937AB01 BT #7 TUP (DMS-100) (UPG OF NTX937AA)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX938AA01 OVERLAP OUTPUTSING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX940AA13 CM BILGE  
0 NTXR46AA01 ROBUSTNESS ENHANCEMENTS  
0 NTX001AA29 COMMON BASIC

0 NTX941AA12 CM COMMON  
0 NTX001AA29 COMMON BASIC

0 NTX942AB02 DMS - SUPERNODE SYSTEM LOAD MODULE(SLM)(UPG.FR. NTX942AB)  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON  
0 NTX950AA06 MS BILGE

0 NTX944AA03 BASE NODE MAINTENANCE  
0 NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
0 NTX001AA29 COMMON BASIC  
0 NTX940AA13 CM BILGE  
0 NTX941AA12 CM COMMON

0 NTX945AA03 MS BASE LINK MAINTENANCE  
0 NTXF71AB02 SUPERNODE ENHANCED MESSAGING(UPG. OF  
0 NTXF71AA)  
0 NTX001AA29 COMMON BASIC  
0 NTX941AA12 CM COMMON

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0 NTX946AA01 EBS - CALL NAME DISPLAY(UPG. BY NTX946AB)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX901AA24 LOCAL FEATURES I

0 NTX946AB01 EBS - CALL NAME DISPLAY(UPG.OF NTX946AA IN BCS26)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX108AA05 IBN - DISPLAY FEATURES  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX878AB02 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG.BY NTX878AC)  
0 OR NTX878AC01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. BY NTX878AD)  
0 OR NTX878AD01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. BY NTX878AE)  
0 OR NTX878AE01 ENHANCED ELECTRONIC BUSINESS SET  
0 SERVICES(UPG. FR. NTX878AD

0 NTX951AA08 MS COMMON  
0 NTX001AA29 COMMON BASIC

0 NTX956AA01 TOPS EMERGENCY CALLING  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX957AA01 EXPANDED CLASS OF SERVICE CODES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

0 NTX958AA05 DPNSS BASIC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX040AA03 COMMON CHANNEL INTEROFFICE SIGNALLING -  
0 BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX167AB11 CCS7 - TRUNK SIGNALLING ( REP.OF NTX167AA)  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I

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## 0 NTX961AA01 UK DMS-250 ENHANCEMENTS

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC

## 0 NTX963AA01 PRLCM ESA AND INTRASWITCHING

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX146AA03 REMOTE LINE CONCENTRATING MODULE (RLCM)  
0 NTX154AA03 RLCM - EMERGENCY STAND ALONE OPERATION  
0 NTX156AA02 INTRA RLCM CALLING  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX964AA01 DMS 100 CENTREX INTERNATIONAL

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX611AA07 UK BUSINESS FEATURES  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX968AA01 DMS-100 CENTREX INTL FEATURES

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX274AA04 DTC 30 CARRIER MAINTENANCE  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX913AA04 MERCURY CENTREX PCM-30 PERIPHERALS

## 0 NTX980AA01 INTERNATIONAL TRUNK TST POSITION (ITTP)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC

## 0 NTX981AA01 INTERNATIONAL LINE TEST POSITION(ILTP)(REP.BY NTX472AB)

0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX470AA13 INTERNATIONAL - COMMON BASIC  
0 NTX901AA24 LOCAL FEATURES I

## 0 NTX983AB02 SERVICE SWITCHING POINT PRIVATE VIRTUAL NTWKG(REP NTX983AA)

0 NTXN26AA01 ANNOUNCEMENTS ENHANCEMENTS  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED



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0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)  
0 OR NTX386AA04 ACCESS TANDEM SWITCH(UPG BY NTX386AB)  
0 OR NTX386AB02 ACCESS TANDEM SWITCH (UPG OF NTX386AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX984AA01 SERVICE SWITCHING POINT PRIV.VIRTUAL NETWRKG-ATT.SERVICES  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX042AA04 LOCAL AUTOMATIC MESSAGE ACCOUNTING (LAMA)  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX102AA05 IBN - STATION MESSAGE DETAIL RECORDING  
0 NTX103AA12 IBN - SMDR ENHANCED  
0 NTX159AA12 BELLCORE LAMA FORMAT  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE  
0 NTX550AA02 CCS7 - TRANSACTION SERVICE SUPPORT  
0 NTX901AA24 LOCAL FEATURES I  
0 NTX983AB02 SERVICE SWITCHING POINT PRIVATE VIRTUAL  
0 NTWK(G(Rep NTX983AA)  
0 EITHER NTXR72AA01 CCS7 MTP/SCCP FOR LPP BASED PLATFORMS  
0 OR NTX041AB09 CCS7 - MTP/SCCP(SEE NTXR72AA FOR LPP  
0 APPLICATION)

0 NTX986AA01 ANI WITH AMA  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX098AA07 BELLCORE CAMA FORMAT  
0 OR NTX159AA12 BELLCORE LAMA FORMAT

0 NTX987AA01 FIBER MAINTENANCE BASIC MODE  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX270AA19 NEW PERIPHERAL MAINTENANCE PACKAGE

0 NTX989AA01 CARRIER ACCESS CODE BLOCKING FOR IC/INC  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 EITHER NTX186AA08 EQUAL ACCESS END OFFICE(UPG BY NTX186AB)  
0 OR NTX186AB02 EQUAL ACCESS END OFFICE (UPG OF NTX186AA)  
0 OR NTX710AA02 LATA EQUAL ACCESS SYSTEM

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0 NTX991AB02 ACD-MGMT REP 2 WAY DATA STREAM(UPG BY NTX991AC)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)  
0 OR NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)  
0 OR NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)

0 NTX991AC01 ACD-MGMT REP 2 WAY DATA STREAM(UPG. BY NTX991AD)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)  
0 OR NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)  
0 OR NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)  
0 OR NTX416AF01 ACD ENHANCED II (UPG. BY NTX416AG)

0 NTX991AD01 ACD-MGMT REP 2 WAY DATA STREAM(UPG.. BY NTX991AE)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)  
0 OR NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)  
0 OR NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)  
0 OR NTX416AF01 ACD ENHANCED II (UPG. BY NTX416AG)  
0 OR NTX416AG01 ACD ENHANCED II(UPG. OF NTX416AF)  
0 OR NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)

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0 NTX991AE01 ACD-MGMT REP 2 WAY DATA STREAM(UPG.BY NTX991AF)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 NTX901AA24 LOCAL FEATURES I  
0 EITHER NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)  
0 OR NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)  
0 OR NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)  
0 OR NTX416AF01 ACD ENHANCED II (UPG. BY NTX416AG)  
0 OR NTX416AG01 ACD ENHANCED II(UPG. OF NTX416AF)  
0 OR NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)

0 NTX991AF01 ACD-MGMT REP 2 WAY DATA STREAM(UPG OF NTX991AE IN BCS32)  
0 NTX000AA19 BILGE  
0 NTX001AA29 COMMON BASIC  
0 NTX106AA10 IBN - PROPRIETARY BUSINESS SET  
0 NTX273AA07 MULTI - PROTOCOL CONTROLLER BX.25  
0 NTX407AB01 ACD - CALL PROCESSING (REP.NTX407AA)  
0 NTX415AA07 ACD BASIC  
0 NTX560AB03 NOP - GENERIC RO SERVICE(REP NTX560AA)  
0 EITHER NTX416AC01 ACD ENHANCED II(UPG.BY NTX416AC)  
0 OR NTX416AD01 ACD ENHANCED II(UPG. BY NTX416AE)  
0 OR NTX416AE01 ACD ENHANCED II(UPG. BY NTX416AF)  
0 OR NTX416AF01 ACD ENHANCED II (UPG. BY NTX416AG)  
0 OR NTX416AG01 ACD ENHANCED II(UPG. OF NTX416AF)  
0 OR NTX416AH01 ACD ENHANCED II(UPG. OF NTX416AG IN BCS32)  
0 OR NTX416AI01 ACD ENHANCED II(UPG. OF NTX416AH)  
0 OR NTX416AJ01 ACD ENHANCED II (UPG. OF NTX416AI)  
0 EITHER NTXZ00AA01 ACD SUPPORT SOFTWARE 1 (EQ110)  
0 OR NTX100AA27 INTEGRATED BUSINESS NETWORKS - BASIC (IBN)  
0 EITHER NTXZ02AA01 ACD SUPPORT SOFTWARE 3 (EQ911)  
0 OR NTX901AA24 LOCAL FEATURES I

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